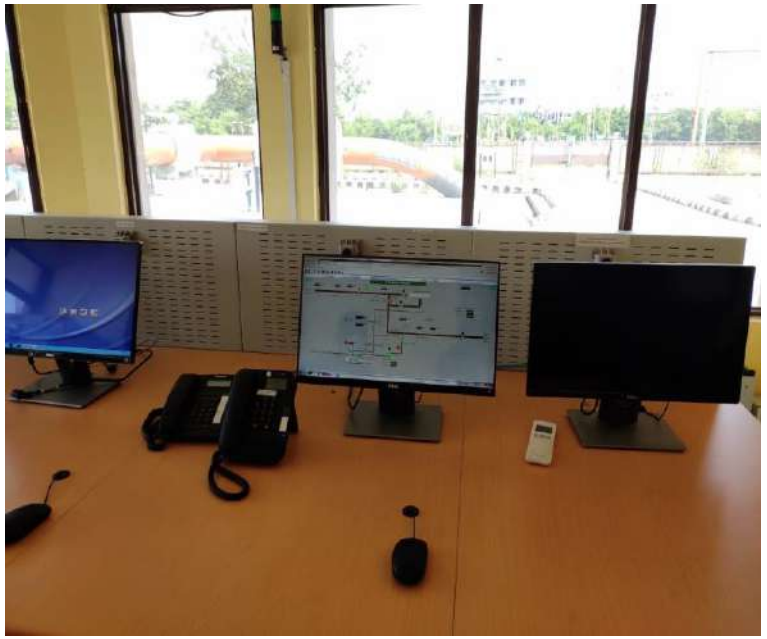
Pipe line thickness checked during inspection

Annexure-1

Crude Oil Pipeline- Entry-Exit at CPCL Site

Pipeline at CPCL Site

Visit by Joint Committee - pipeline route



Leak Detection Alert System, CPCL

Pipeline at Port Terminal

Pipeline Sign board at National Highway

SCADA- Server , CPCL

F.No.10-78/2008-IA-III

Annexure-2

Government of India
Ministry of Environment & Forests
(IA-III Division)

Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi - 110 003

Dated: January 3, 2014

To
Managing Director,
M/s Chennai Petroleum Corporation Ltd.,
536, Anna Salai, Teynampet,
Chennai – 600 018, Tamil Nadu

Subject: CRZ Clearance for laying of crude oil pipeline from Chennai Port to CPCL Refinery at Manali, Tamil Nadu by M/s Chennai Petroleum Corporation Ltd - Reg.

This has reference to your letter No. CPD:21:177 dated 24.07.2008 and subsequent letters dated 07.01.2010, 09.02.2010, 12.11.2010, 12.05.2011, 08.08.2011, 15.12.2011, 28.12.2011, 07.02.2012, 14.03.2012, 10.04.2012, 10.04.2013 and 08.05.2013 for seeking prior CRZ Clearance under the Coastal Regulation Zone (CRZ) Notification, 2011. The proposal has been appraised as per prescribed procedure in the light of provisions under the Coastal Regulation Zone Notification, 2011 on the basis of the mandatory documents enclosed with the application viz., the Questionnaire, EIA, EMP, recommendation of State Coastal Zone Management Authority, and the additional clarifications furnished in response to the observations of the Expert Appraisal Committee constituted by the competent authority in its meetings held on 30th - 31st July, 2008, 21st – 22nd August, 2008, 27th – 29th January, 2010, 19th – 20th April, 2010, 31st May, 2011, 17th – 18th October, 2011 and 10th - 12th June, 2013.

2. It is interalia, noted that the crude oil requirement of the Manali Refinery is being handled through Chennai Port Trust (ChPT) through a 30' dia, 8mm thick, 7.5 Km long pipeline commissioned in 1969. This pipeline traverses 6.8 Km underground and 0.7 Km above ground through metalled roads, railway tracks, marshy areas and highly inhabited colonies. A number of structures including petrol bunks have come up above this underground pipeline system over a period of time. The coating condition of the pipeline is not satisfactory. The present 30' dia underground pipeline was laid when the refining capacity was 2.5 MMTPA. The capacity of the Manali refinery has been enhanced to 9.5 MMTPA at present and this has increased the number of tankers unloaded through Chennai Port. The pressure head for pumping is restricted at 7 Kg/Sq.cm considering the age of the pipeline. It has been mentioned that the existing 30' Dia pipeline has not only become vulnerable with regard to its external coating, but also has a limitation to handle tankers within stipulated time.

3. A new crude oil pipeline of 42' dia. is proposed to be laid to bring crude oil from Chennai Port to Manali refinery for a distance of about 17 KM. The line size is so decided that it is optimum for unloading a parcel size of about 130,000MT crude oil from a Suez max tanker within the stipulated time.

4. There are numerous complaints from Kasimedu Fishermen's Development Association objecting the project. The main allegation was that the pipe line is passing through the thickly habitation areas and sought Public Hearing prior to the clearance as per the provisions of the CRZ Notification, 2011. The EAC examined the complaints and the map produced by both the proponent and complainant showing the pipeline route. EAC-appointed a two member sub committee - Member Secretary, Tamil Nadu Coastal Zone Management Authority and Director, Regional Office, MoEF, Bengaluru for site verification.

Accordingly, the sub-Committee visited the site on 28th and 29th July 2009 and submitted a report. Director, Regional Office, MoEF, Bengaluru, presented the finding / site visit report. The EAC noted that there is two stretches close to habitation hence, suggested the proponent to consider alternate route so to keep maximum distance between the habitation and pipeline and sought additional safety measures to be considered for these stretches.

5. CPCL submitted revised proposal after consideration of various alternatives. As per the revised proposal, it is proposed to go for Horizontal Directional Drilling (HDD) in the two stretches -Ramakrishna Nagar and Bharat Nagar, which will increase the depth to 10 mts against the earlier depth of 1.5 mts and thus increases the distance from habitation. The Tamil Nadu Coastal Zone Management Authority (TNCZMA) was requested to examine the revised proposal, conduct Public Hearing and to send the proceedings of Public Hearing and their recommendation. The Tamil Nadu Coastal Zone Management Authority sent the recommendation and public hearing proceeding on 22.04.2013. Simultaneously, further representations against the project were received from Kasimedu, Fisherman Associations. The expert appraisal committee examined the public hearing proceeding, videos, recommendation of Tamil Nadu, CZMA and the response submitted by the project proponent in respect various issues raised by the public during public hearing as well as in the representations.

6. The Committee noted that the alternative alignment from Ennore port as suggested by the Fisherman Association and the public during the public hearing also passes very close to the habitation at Netaji Nagar, Thazhangkuppam and Petiakuppam as reported by the committee constituted by MoEF. EAC noted that proponent has proposed following advanced safety features:-

a. The pipeline thickness is increased from 8 mm to 12.5 mm for increased strength.
b. Pigging facility is provided to monitor the pipeline thickness to detect any corrosion in the pipeline so that preventive action can be taken to prevent occurrence of leakage.
c. Cathodic protection to prevent external corrosion.
d. Corrosion Inhibitor is provided to prevent internal corrosion.
e. 3 Layered Polyethylene coating to prevent corrosion
f. SCADA system is provided to continuously monitor the Crude flow with Automatic Shutdown of pumping in the event of any leak in the pipeline.
g. Leak Detection System to identify any leaks with high accuracy of location is included in the project. This facility continuously monitors the Crude flow in the pipeline and immediately detects any leakage. On detection of the leakage, the systems will shut down the pipeline through remotely-operated valves.
h. Nitrogen purging facility to evacuate the crude from pipeline is provided.

7. The Expert Appraisal Committee, after due consideration of the relevant documents submitted by the project proponent and additional clarifications furnished in response to its observations, have recommended for the grant of CRZ Clearance for the project. Accordingly, the Ministry hereby accords necessary CRZ Clearance for the above project as per the provisions of CRZ Notification, 2011 and its subsequent amendments, subject to strict compliance of the terms and conditions as follows:

8. **SPECIFIC CONDITIONS:**

(i) Proponent shall lay the pipeline at Ramakrishna Nagar and Bharat Nagar at minimum depth of 30 feet below ground by HDD method.

(ii) The smooth and safe operation of the system shall be ensured by incorporating a computerized SCADA (Supervisory Control And Data Automation) system. Any leakage in the pipeline shall be immediately detected by the Computer system and product pumping shall be immediately cut off.

(iii) Proponent shall adhere to all the commitments made vide letter dated 11.06.2013 and adopt advance safety measures as follows:

a) The pipeline thickness is increased from 8 mm to 12.5 mm for increased strength.
b) Pigging facility is provided to monitor the pipeline thickness to detect any corrosion in the pipeline so that preventive action can be taken to prevent occurrence of leakage.
c) Cathodic protection to prevent external corrosion.
d) Corrosion Inhibitor is provided to prevent internal corrosion.
e) 3 Layered Polyethylene coating to prevent corrosion
f) SCADA system is provided to continuously monitor the Crude flow with Automatic Shutdown of pumping in the event of any leak in the pipeline.
g) Leak Detection System to identify any leaks with high accuracy of location is included in the project. This facility continuously monitors the Crude flow in the pipeline and immediately detects any leakage. On detection of the leakage, the systems will shut down the pipeline through remotely-operated valves.
h) Nitrogen purging facility to evacuate the crude from pipeline is provided.

(iv) Approval of the Chennai Port authorities shall be obtained for laying of pipeline within the port premises.

(v) Extra encasement for the stretch passing near the habitation and other sensitive places shall be provided so that no spillage under any accidental scenario including tsunami, earth quake, terrorist activity etc. is taken care of.

(vi) Necessary permission shall be obtained from PWD, Highway Division before laying the oil pipeline.

(vii) A NOC/Clearance for laying of pipeline shall be obtained from NHAI/Railways for right of way before initiation of the work and the same shall be submitted to the Ministry.

(viii) All the recommendation of the EMP shall be complied with letter and spirit. All the mitigation measures submitted in the EIA report shall be prepared in a matrix format and the compliance for each mitigation plan shall be submitted to MoEF along with half yearly compliance report to RO of MoEF.

(ix) Soil and water samples shall be regularly monitored along the pipeline route to check the leakage/contamination, if any and shall examine if any strengthening is required.

(x) Proper oil spillage contingency plan shall be put in place. Dedicated boats fitted with booms/skimies etc. shall be provided to avoid oil spillage.

(xi) The responses/commitments made during public hearing shall be complied with letter and spirit.

(xii) It shall be ensured that there is no disturbance to people, houses or fishing activity as a result of the project.

(xiii) Carryout a soil characterization study at selected points on the alignment and shall submit the study report to the Ministry within four weeks.

(xiv) All the conditions stipulated by Tamil Nadu Coastal Zone Management Authority (TNCZMA) shall be strictly complied with.

(xv) The project proponent shall set up separate environmental management cell for effective implementation of the stipulated environmental safeguards under the supervision of a Senior Executive.

(xvi) The funds earmarked for environment management plan shall be included in the budget and this shall not be diverted for any other purposes.

9. **General Conditions:**

(i) The construction of the structures should be undertaken as per the plans approved by the concerned local authorities/local administration, meticulously conforming to the existing local and Central rules and regulations including the provisions of Coastal Regulation Zone Notification, 2011 and the approved Coastal Zone Management Plan of Tamil Nadu.

(ii) In the event of a change in project profile or change in the implementation agency, a fresh reference shall be made to the Ministry of Environment and Forests.

(iii) The Ministry reserves the right to revoke this clearance if any of the conditions stipulated are not complied with the satisfaction of the Ministry.

(iv) Ministry of Environment & Forests or any other competent authority may stipulate any additional conditions or modify the existing ones, if necessary in the interest of environment and the same shall be complied with.

(v) Full support shall be extended to the officers of this Ministry/ Regional Office at Bangaluru by the project proponent during inspection of the project for monitoring purposes by furnishing full details and action plan including action taken reports in respect of mitigation measures and other environmental protection activities.

(vi) A six-Monthly monitoring report shall need to be submitted by the project proponents to the Regional Office of this Ministry at Bangaluru regarding the implementation of the stipulated conditions.

(vii) A copy of the clearance letter shall be marked to concerned Panchayat/local NGO, if any, from whom any suggestion/ representation has been made received while processing the proposal.

(viii) State Pollution Control Board shall display a copy of the clearance letter at the Regional Office, District Industries Centre and Collector's Office/Tehsildar's office for 30 days.

10. These stipulations would be enforced among others under the provisions of Water (Prevention and Control of Pollution) Act 1974, the Air (Prevention and Control of Pollution) Act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification 1994, including the amendments and rules made thereafter.

11. All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authorities.

12. The project proponent shall advertise in at least two local Newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded CRZ Clearance and copies of clearance letters are available with the Tamil Nadu Pollution Control Board and may also be seen on the website of the Ministry of Environment and Forests at http://www.envfor.nic.in. The advertisement should be made within 10 days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional office of this Ministry at Bangaluru.

13. This clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No.460 of 2004 as may be applicable to this project.

14. A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zilla Parisad/Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.

15. Any appeal against this 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.

16. The proponent shall upload the status of compliance of the stipulated Clearance conditions, including results of monitored data on their website and shall update the same

periodically. It shall simultaneously be sent to the Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely: SPM, RSPM, SO_2 NOx (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the project shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.

17. The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB.

18. The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent 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 EC conditions and shall also be sent to the respective Regional Offices of MoEF by e-mail.

(Lalit Kapur)
Director (IA-III)

Copy to:

(1) The Principal Secretary, Department of Environment and Forests, First Floor, Panagal Building, Saidapet, Chennai – 600 015, Tamil Nadu.
(2) The Chairman, CPCB, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi – 110032.
(3) The Director, Department of Environment, Government of Tamilnadu, Panagal Building, Ground Floor, Saidapet, Chennai-15, Tamil Nadu.
(4) The Chairman, Tamil Nadu Pollution Control Board, No. 76, Mount Salai, Gundy, Chennai, Tamil Nadu.
(5) The CCF, Regional Office, Ministry of Environment & Forests (SZ), Kendriya Sadan, IVth floor, E&F wings, 17th Main Road, Koramangala II Block, Bangalore – 560 034.
(6) Guard File.
(7) Monitoring Cell.

(Lalit Kapur)
Director (IA-III)

TAMIL NADU POLLUTION CONTROL BOARD

Annexure-3

By Registered Post with
Acknowledgement Due
(This document contains 11 Pages)

To

THE CHIEF MANAGER (CORPORATE PLANNING),
M/S.CHENNAI PETROLEUM CORPORATION LTD.,
(CRUDE PIPELINE PROJECT FROM CHENNAI
PORT TO MANALI REFINERY)
536, ANNA SALAI, TEYNAMPET,
CHENNAI-18

TAMILNADU POLLUTION CONTROL BOARD

CONSENT ORDER NO. : 4256 DATED : 07/02/2008

Proceedings No. : TS/TNPCB/F.033989/TVLR/RL/A/08 DATED : 07/02/2008

Consent for Establishment under Section 21 of the AIR (Prevention and control of Pollution) Act,1981, as amended in 1987.

Sub : TNPC Board - Consent for establishment
MESSERS CHENNAI PETROLEUM CORPORATION LIMITED,
CRUDE PIPELINE PROJECT FROM CHENNAI PORT
PASSES THROUGH TONDIARPET TALUK OF
CHENNAI DISTRICT & AMBATTUR TALUK OF
THIRUVALLUR DISTRICT

for the establishment or take steps to establish the industry under Section 21 of the AIR (Prevention and Control of Pollution) Act, 1981 as amended in 1987

Ref : 1.YOUR APPLICATION NO.2430 DT.13.9.2007
2.IR NO.DEE/TNPCB/TLR/F.RL192/2007 DT.6.11.2007
3.SUBCOMMITTEE RESOLUTION NO.25-15 DT.1.2.2008

BOARD RESOLUTION NO : DATED : / /

Consent to establish or take steps to establish is hereby granted under Section 21 of the AIR Prevention and Control of Pollution) Act, 1981 as amended in 1987 and the Rules and Orders made there under to
THE CHIEF MANAGER (CORPORATE PLANNING),
M/S.CHENNAI PETROLEUM CORPORATION LTD.,

(hereinafter referred to as 'The Applicant') authorising him/her/them to establish or take steps to establish the industry in the site mentioned below:
CRUDE PIPELINE PROJECT FROM CHENNAI PORT
PASSES THROUGH TONDIARPET TALUK OF
CHENNAI DISTRICT & AMBATTUR TALUK OF
THIRUVALLUR DISTRICT

This Consent to establish is valid for TWO years, or till the Industry obtains consent to operate under Section 21 of the AIR (Prevention and Control of Pollution) Act, 1981 as amended in 1987 whichever is earlier.

For MEMBER SECRETARY
TAMIL NADU POLLUTION CONTROL BOARD
CHENNAI

Copy to : The District Environmental Engineer, Tamil Nadu Pollution Control Board
THIRUVALLUR

For information and necessary action.

Copy to : The Joint Chief Environmental Engineer, TNPCB,

Copy to : The Commissioner / Executive Officer,
THIRUVOTRIYUR MUNICIPALITY AND CORPORATION OF CHENNAI

Spare :

SPECIAL CONDITIONS

1. Details of the products manufactured

SL.NO.	DESCRIPTION	QUANTITY/MONTH
(1)	(2)	(3)
1.	42" DIA. CRUDE PIPE LINE FOR TRANSPORTING CRUDE OIL FROM CHENNAI PORT TO CPCL REFINERY AT MANALI	95,00,000 MT/A

This consent is to establish is valid for the manufacture of Products and the rate of production mentioned above. Any change in the quantity or quality of the products has to be brought to the notice of the Board.

2. The height of following chimneys/stacks shall not be less that the figures indicated below for the discharge of emissions.

Chimney/Stack Number	Description of Chimney / Stack	Point of discharge in Metre (Above ground level)

3. The Unit shall install the following Air Pollution Control equipments / measures for the Control of emissions generated from the various sources of the plant.

A. For suspended particulate emission

SL.NO.	SOURCE	DETAILS OF CONTROL OF EQUIPMENT

B. For Gaseous Emission :

SL.NO.	SOURCE	DETAILS OF CONTROL OF EQUIPMENT

C. For Fugitive Emissions :

SL.NO.	SOURCE	DETAILS OF CONTROL

4. The unit shall procure Number of equipments for Continuous monitoring of Ambient Air Quality in respect of the parameters

5. The unit shall procure Number of equipments for carrying out stacks monitoring for the Parameters and keep ready.

6. The unit shall provide on line / automatic continuous stack monitoring unit for the stacks mentioned below :

SL.NO.	SOURCE	STACK	PARAMETERS

7. The Unit shall provide sensors connected with the Alaram System for the following locations in the plant.

Sl. No.	Location of the Sensor	No.of Sensor	Parameters

8. The Unit shall provide port holes and sampling facilities for the following stacks as per the Central Pollution Control Board guidelines.

SL.NO.	SOURCE	STACK

9. The unit shall provide sufficient acoustic measures for the following equipment.

SL.NO.	SOURCE	TYPE OF MEASURES

10. The unit shall install separate energy meter for the operation of the following Air Pollution Control equipments.

SL.NO.	SOURCE	AIR POLLUTION CONTROL MEASURES

(Continued in Annexure-I)

For MEMBER SECRETARY
TAMIL NADU POLLUTION CONTROL BOARD
CHENNAI
14/2/08

GENERAL CONDITIONS

1. The above consent to establish cannot be construed as consent to operate.

2. The applicant shall make a request for grant of consent to operate atleast sixty days, before the commissioning of trial production.

3. The unit shall carryout Ambient Air Quality Survey atleast for stations for seasons for the collection of baseline data, on the existing Ambient Air Quality level within the plant / outside the plant.

4. The applicant shall provide a meteorological station to collect the data on wind velocity, direction, temperature, rainfall etc.

5. The applicant shall prepare and submit a detailed Risk Assessment Report alongwith on site and off-site Emergency preparedness plan for within the premises of the plant as required under the Rules 13 and 14 of the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 as amended.

6. The unit shall install KVA Capacity generator exclusively for the operation of Air Pollution Control measures in case of power failure.

7. The unit shall also establish laboratory for analysis of gaseous / particulate emissions.

8. Any change in the details furnished in the conditions has to be brought to the notice of the Board and got approved by the Board, before obtaining consent to operate under the said Act.

9. The unit has to comply with the provisions of Public Liability Insurance Act, 1991 to provide immediate relief in the event of any hazard to human beings / other living creatures/plants and properties while handling and storage of hazardous substances.

10. Consent to operate will not be issued unless the unit compiled with the conditions of consent to establish, otherwise the order of consent to establish already issued will be revoked with immediate effect.

For MEMBER SECRETARY
TAMIL NADU POLLUTION CONTROL BOARD
CHENNAI
14/2/08

By Registered Post with
Acknowledgement Due
(This document contains 9 Pages)

TAMILNADU POLLUTION CONTROL BOARD

CONSENT ORDER NO. : 4312 DATED : 07/02/2008

Proceedings No. : T5/TNPCB/F.033989/TVLR/RL/W/08 DATED : 07/02/2008

Consent for Establishment under Section 25 of the WATER (Prevention and control of Pollution) Act,1974, as amended in 1988.

Sub : TNPC Board - Consent for establishment
MESSERS CHENNAI PETROLEUM CORPORATION LIMITED,
CRUDE PIPELINE PROJECT FROM CHENNAI PORT
PASSES THROUGH TONDIARPET TALUK OF
CHENNAI DISTRICT & AMBATTUR TALUK OF
THIRUVALLUR DISTRICT

for the establishment or take steps to establish the industry under Section 25 of the WATER (Prevention and Control of Pollution) Act, 1974 as amended in 1988 (Central Act 53 of 1988).

Ref : 1.YOUR APPLICATION NO.1649 DT.13.9.2007
2.IR NO.DEE/TNPCB/TLR/F.RL192/2007 DT.6.11.2007
3.SUBCOMMITTEE RESOLUTION NO.25-15 DT.1.2.2008

~~Board Resolution No~~ : ~~DATED~~ : / /

Consent to establish or take steps to establish is hereby granted under Section 25 of the WATER (Prevention and Control of Pollution) Act, 1974 as amended in 1988 (Central Act 53 of 1988) (hereinafter referred to as 'The Act') and the Rules and Orders made there under to
THE CHIEF MANAGER (CORPORATE PLANNING),
M/S.CHENNAI PETROLEUM CORPORATION LTD.,
(hereinafter referred to as 'The Applicant') authorising him/~~her/them~~ to establish or take steps to establish the industry in the site mentioned below;
CRUDE PIPELINE PROJECT FROM CHENNAI PORT
PASSES THROUGH TONDIARPET TALUK OF
CHENNAI DISTRICT & AMBATTUR TALUK OF
THIRUVALLUR DISTRICT

This Consent to establish is valid for TWO years, or till the Industry obtains consent to operate under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988 whichever is earlier.

18/2/08
For MEMBER SECRETARY
TAMIL NADU POLLUTION CONTROL BOARD
Grade
14/2/08 CHENNAI

To

THE CHIEF MANAGER (CORPORATE PLANNING),
M/S.CHENNAI PETROLEUM CORPORATION LTD.,
(CRUDE PIPELINE PROJECT FROM CHENNAI
PORT TO MANALI REFINERY)
536, ANNA SALAI, TEYNAMPET,
CHENNAI-18

Copy to : The District Environmental Engineer, Tamil Nadu Pollution Control Board
THIRUVALLUR

For information and necessary action.

~~Copy to : The Joint Chief Environmental Engineer, TNPCB~~

Copy to : The Commissioner / ~~Executive Officer~~,

THIRUVOTRIYUR MUNICIPALITY AND CORPORATION OF CHENNAI

Spare :

SPECIAL CONDITIONS

1. Details of the products manufactured

SL.NO.	DESCRIPTION	QUANTITY/MONTH
(1)	(2)	(3)
1.	42" DIA. CRUDE PIPE LINE FOR TRANSPORTING CRUDE OIL FROM CHENNAI PORT TO CPCL REFINERY AT MANALI	95,00,000 MT/A

This consent to establish is valid for the manufacture of products and the rate of production mentioned above. Any change in rate of and the quantity or quality of the products has to be brought to the notice of the Board.

2. The unit shall install Effluent Treatment Plant as proposed, to ensure that the effluents to be discharged shall satisfy the standards prescribed by the Board for disposal of effluents into inland surface waters/public sewers/marine coastal areas/on land for irrigation, as indicated in the Annexure-I.

3. The unit shall install sewage treatment systems for the treatment of waste water arising out of the sanitary facility and waste water generated from canteen as proposed in the Annexure-I.

4. The unit shall construct effluent drains/cable drains/storm water drains separately and provide different colour, sign boards along with alignment of various drains as indicated in the site plan, furnished by the industry.

5. Each vessel/reactor should have its own catch pit for the collection of spills and each pump in the process section must be mounted on its own catch pit with the suction line of the pump connected to pit to empty it periodically/regularly/continuously.

6. It has to be ensured by the unit that the floors with the expanded metal, slotted angle stool sinks, steel grates shall be built to the maximum possible to avoid floor washings.

7. If the plant layout demands that the vessels should be installed in upper floor, it shall provide suitable system to minimise spill/leakages and also to collect and drain the spillages into effluent drain leading to the Effluent Treatment Plant by providing suitable gradient to the properly lined bottom floor.

8. The unit shall construct tank or lagoon of adequate capacity with compatible impervious material for the storage of hazardous/solid wastes.

9. The unit shall ensure that the corrosion prone areas and construction material liable to almospheric and process induced corrosion shall be given special attention for immediate replacement with least preventive maintenance.

10. The unit has to provide facilities separately outside the main production plant for carrying out detoxification operations if any.

11. In order to collect spills from a particular vessel before the spilled materials get a chance for contamination with spills from another vessel, the two vessels must be installed at sufficient distance to ensure that intercontamination cannot take place.

12. Flange joints in the pipelines should be avoided wherever possible.

13. The unit shall establish laboratory with adequate analytical equipments for analysing the trade effluent/sewage as well as samples of water collected from the wells nearby if any.

14. The unit shall construct compound wall around the boundary of the unit, to a height of metres from ground level.

15. The unit shall appoint an Environmental Engineer with experience of minimum three years in maintenance of waste water treatment plants, before commissioning, along with supporting staff, chemist, technician and operators.

16. Following location specific conditions must be satisfied :

17. The following process specific conditions must be satisfied :

(Continued in Annexure-I)

18/2/08

For MEMBER SECRETARY
TAMIL NADU POLLUTION CONTROL BOARD
CHENNAI

14/2/08

GENERAL CONDITIONS

1. The above consent to establish cannot be construed as consent to operate.

2. The industry shall make a request for grant of consent to operate atleast sixty days before the commissioning of trial production.

3. The applicant shall maintain good house keeping both within the factory and in the premises. All pipes, valves, sewers and drains shall be leak proof. Floor washings shall be admitted in to the effluent collection system only and shall not be allowed to find their way to storm water drains or open areas.

4. The unit has to provide sludge and silt traps and manholes along the effluent drains for periodical desilting and desludging operation.

5. All places of storage of solid/liquid material are to be dyked with bunding facilities and the flooring within the dyked and bunding area shall be lined with impervious materials depending upon the nature of the solid/liquid to be stored.

6. As the unit proposes to utilise the treated trade effluent on inland for irrigation, the land has to be made fit for irrigation in consultation with the agricultural scientist to avoid more percolation

7. Samples of water from the wells or any other nearby water sources have to be taken by the unit and get them analysed by the Board Laboratory to develop base line data to assess the existing water quality.

8. The unit shall provide separate power connection for the Effluent Treatment Plant and install separate energy meter for the Effluent Treatment Plant as well as for aerators if any.

9. The unit shall provide an alternate power source sufficient to operate all the facilities to be installed in Effluent Treatment Plant by the applicant.

10. The consent does not authorise or approve the construction of any physical structures or facilities, or the undertaking of any work in any natural water course.

11. Any change in the details furnished in the conditions has to be brought to the notice of the Board and got approved by the Board, before obtaining consent to operate under the said Act.

12. The unit has to comply with the provisions of Public Liability Insurance Act, 1991 to provide immediate relief in the event of any hazard to human beings, other living creatures/plants and properties while handling and storage of hazardous substances.

13. Consent to operate will not be issued unless the unit complied with the conditions of consent to establish, otherwise, the order of consent to establish already issued will be revoked with immediate effect.

18/2/08

For MEMBER SECRETARY
TAMIL NADU POLLUTION CONTROL BOARD
CHENNAI.

14/2/08

TAMILNADU POLLUTION CONTROL BOARD

CONSENT ORDER NO. 160325196605 DATED: 25/07/2016.

PROCEEDINGS NO.T12/TNPCB/F.0813AMB/RL/AMB/A/2016 DATED: 25/07/2016

SUB: TNPC Board-Consent for Establishment – EXTENSION -M/S M/S. CHENNAI PETROLEUM CORPORATION LIMITED (CRUDE PIPELINE PROJECT) , S.F. No. , MANALI Village. Ambattur Taluk, Tiruvallur District- for the establishment or take steps to establish the industry under Section 21 of the Air(Prevention and control of Pollution)Act,1981, as amended in 1987 (Central Act, 14 of 1981)–Issued- Reg.

REF: 1. Proc.No:T5/TNPCBd/F.033989/TVLR/RL/W&A/08,dated:07.02.2008.
2. Proc.No:T3/TNPCBd/F.148AMB/RL/W&A/2014,dated:02.06.2014.
3. Unit's application No. 5196605, dated 02-06-2016.
4. IR.No : F.0813AMB/RL/DEE/AMB/2016 dated 23/06/2016.
5. Board's (Technical sub Committee) Resolution Item No.126 – 18, dated: 15.07.2016.

*conditions attached vide Annexure of Hard copy.

Consent to establish or take steps to establish was granted under Section 21 of the Air (Prevention and Control of Pollution) Act. 1981, as amended in 1987 (Central Act, 14 of 1981) (hereinafter referred to as 'The Act') to the Occupier of the unit of M/s.M/S CHENNAI PETROLEUM CORPORATION LIMITED (CRUDE PIPELINE PROJECT) authorizing to establish or take steps to establish the industry in the site of S.F.No.,MANALI village,Ambattur Taluk, Tiruvallur District vide reference First cited with validity for Two years .

The unit has requested for extension of time limit for establishing the plant since they could not establish the plant within the period of Two years vide reference second cited.

The subject was placed before the committee meeting vide reference fourth cited and the committee decided to extend the validity of the Consent to establish for further period.

In view of the above, the validity of the Consent to establish is extended for further period upto **July 24, 2018** , or till the industry obtains consent to operate under Section 21 of the Air (Prevention and control of Pollution) Act, 1981, as amended in 1987 whichever is earlier subject to special and general conditions specified in the Consent for Establishment issued vide reference first cited.

26/7/2016

For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai

26/7/16

To
The Director,
M/s.M/S. CHENNAI PETROLEUM CORPORATION LIMITED (CRUDE PIPELINE PROJECT),
MANALI, CHENNAI,
Pin: 600068

DGM (Opn)
25/7/16

Copy to:
1.The Commissioner, CHENNAI CORPORATION-Corporation, Ambattur Taluk, Tiruvallur District .
2. The District Environmental Engineer, Tamil Nadu Pollution Control Board, AMBATTUR.
3. The JCEE-Monitoring, Tamil Nadu Pollution Control Board, Chennai.

Annexure:

CTE Extension issued subject to the following conditions:

1) The unit shall comply with conditions imposed in the CTE issued to the unit under Water & Air Acts vide Board's Proc dt 07.02.2008.
2) The unit shall adhere and comply the conditions imposed in the CRZ clearance issued by MOEF vide Lr No 10-78/2008 –IA-III dt 03.01.2014.

For Member Secretary
TNPCB, Chennai.

TAMILNADU POLLUTION CONTROL BOARD

CONSENT ORDER NO. 160315196605 DATED: 25/07/2016.

PROCEEDINGS NO.T12/TNPCB/F.0813AMB/RL//AMB/W/2016 DATED: 25/07/2016

SUB: TNPC Board-Consent for Establishment – EXTENSION -M/S M/S. CHENNAI PETROLEUM CORPORATION LIMITED (CRUDE PIPELINE PROJECT) , S.F. No. , MANALI Village, Ambattur Taluk, Tiruvallur District- for the establishment or take steps to establish the industry under Section 25 of the Water (Prevention and control of Pollution)Act,1974, as amended in 1988(Central Act 53 of 1988) –Issued- Reg.

REF: 1. Proc.No:T5/TNPCBd/F.033989/TVLR/RL/W&A/08,dated:07.02.2008.
2. Proc.No:T3/TNPCBd/F.148AMB/RL/W&A/2014,dated:02.06.2014.
3. Unit's application No. 5196605, dated 02-06-2016.
4. IR.No : F.0813AMB/RL/DEE/AMB/2016 dated 23/06/2016.
5. Board's (Technical sub Committee) Resolution Item No.126 – 18, dated: 15.07.2016.

*conditions attached vide Annexure of Hard copy.

Consent to establish or take steps to establish was granted under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974, as amended in 1988 (Central Act 6 of 1974) (hereinafter referred to as 'The Act') to the Occupier of the unit of M/s.M/S. CHENNAI PETROLEUM CORPORATION LIMITED (CRUDE PIPELINE PROJECT) authorizing to establish or take steps to establish the industry in the site of S.F. No., village,Ambattur Taluk, Tiruvallur District vide reference First cited with validity for Two years .

The unit has requested for extension of time limit for establishing the plant since they could not establish the plant within the period of Two years vide reference second cited.

The subject was placed before the committee meeting vide reference fourth cited and the committee decided to extend the validity of the Consent to establish for further period.

In view of the above, the validity of the Consent to establish is extended for further period upto **July 24, 2018** , or till the industry obtains consent to operate under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974, as amended in 1987 whichever is earlier subject to special and general conditions specified in the Consent for Establishment issued vide reference first cited.

26/7/2016

~~For~~ **Member Secretary,**
Tamil Nadu Pollution Control Board,
Chennai

SSP
26/7/16

To
The Director,
M/s.M/S. CHENNAI PETROLEUM CORPORATION LIMITED (CRUDE PIPELINE PROJECT),
MANALI, CHENNAI,
Pin: 600068

DGM (Dev)
27/7/16

Copy to:

1.The Commissioner, CHENNAI CORPORATION-Corporation, Ambattur Taluk, Tiruvallur District .
2. The District Environmental Engineer, Tamil Nadu Pollution Control Board, AMBATTUR.
3. The JCEE-Monitoring, Tamil Nadu Pollution Control Board, Chennai.

TAMILNADU POLLUTION CONTROL BOARD

Annexure:

CTE Extension issued subject to the following conditions:

1) The unit shall comply with conditions imposed in the CTE issued to the unit under Water & Air Acts vide Board's Proc dt 07.02.2008.
2) The unit shall adhere and comply the conditions imposed in the CRZ clearance issued by MOEF vide Lr No 10-78/2008 –IA-III dt 03.01.2014.

26/7/2016

For Member Secretary
TNPCB, Chennai.

26/7/16

TAMILNADU POLLUTION CONTROL BOARD

CONSENT ORDER NO. 1804213695547 DATED: 16/11/2018.

PROCEEDINGS NO.T2/TNPCB/F.0813AMB/RL//AMB/A/2018 DATED: 16/11/2018

SUB: Tamil Nadu Pollution Control Board –CONSENT TO OPERATE –After CTE -M/s. M/S. CHENNAI PETROLEUM CORPORATION LIMITED (CRUDE PIPELINE PROJECT) , S.F.No. , MANALI villageAmbattur Taluk and Tiruvallur District - Consent for operation of the plant and discharge of emissions under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended in 1987 (Central Act 14 of 1981) –Issued- Reg.

REF: 1. PROCEEDINGS NO.T12/TNPCB/F.0813AMB/RL//AMB/W &A /2016 DATED: 25/07/2016
2. Unit's application for CTO on 18/7/2018
3. Minutes of CCC item NO. 250-3 dt: 15.11.2018

CONSENT TO OPERATE is hereby granted under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended in 1987 (Central Act 14 of 1981) (hereinafter referred to as "The Act") and the rules and orders made there under to

The Director,
M/s . M/S. CHENNAI PETROLEUM CORPORATION LIMITED (CRUDE PIPELINE PROJECT),
S.F No.,
MANALI Village,
Ambattur Taluk,
Tiruvallur District.

Authorizing the occupier to operate the industrial plant in the Air Pollution Control Area as notified by the Government and to make discharge of emission from the stacks/chimneys.

This is subject to the provisions of the Act, the rules and the orders made there under and the terms and conditions incorporated under the Special and General conditions stipulated in the Consent Order issued earlier and subject to the special conditions annexed.

This CONSENT is valid for the period ending March 31, 2019

G. GOPALAKRISHNAN

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Date: 2018.11.17 18:05:38 +05'30'

For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai

To
The Director,
M/s.M/S. CHENNAI PETROLEUM CORPORATION LIMITED (CRUDE PIPELINE PROJECT),
MANALI, CHENNAI,
Pin: 600068

Copy to:

1.The Commissioner, CHENNAI CORPORATION-Corporation, Ambattur Taluk, Tiruvallur District .
2. The District Environmental Engineer, Tamil Nadu Pollution Control Board, AMBATTUR.
3. The JCEE-Monitoring, Tamil Nadu Pollution Control Board, Chennai.
4. File

SPECIAL CONDITIONS

1. This consent to operate is valid for operating the facility for the manufacture of products (Col. 2) at the rate (Col. 3) mentioned below. Any change in the products and its quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Sl. No.	Description	Quantity	Unit
	Product Details		
1.	42 inch dia crude pipeline for transporting crude oil from Chennai port to CPCL Manali Refinery	10500000	MT/A

2. This consent to operate is valid for operating the facility with the below mentioned emission/noise sources along with the control measures and/or stack. Any change in the emission source/control measures/change in stack height has to be brought to the notice of the Board and fresh consent/Amendment has to be obtained.

I	**Point source emission with stack :**			
Stack No.	**Point Emission Source**	**Air pollution Control measures**	**Stack height from Ground Level in m**	**Gaseous Discharge in Nm3/hr**
Not Applicable	Not Applicable	Not Applicable		Not Applicable
II	**Fugitive/Noise emission :**			
Sl. No.	**Fugitive or Noise Emission sources**	**Type of emission**	**Control measures**	
1.	Not Applicable	Fugitive	Not Applicable	

3(a). The emission shall not contain constituents in excess of the tolerance limits as laid down hereunder :

Sl.	Parameter	Unit	Tolerance limits	Stacks

Annexure enclosed if applicable. :-

3.(b) The Ambient Air in the industrial plant area shall not contain constituents in excess of the tolerance limits prescribed below.

Sl. No.	Pollutant	Time Weighted Average	Unit	Tolerance Limits	
				Industrial, Residential, Rural and other area	Ecologically Sensitive Area (notified by Central Govt.)
1.	Sulphur Dioxide (SO2)	Annual 24 hours	microgram/m3 microgram/m3	50 80	20 80
2.	Nitrogen Dioxide (NO2)	Annual 24 hours	microgram/m3 microgram/m3	40 80	30 80
3.	Particulate Matter (Size Less than 10 micro M) or PM10	Annual 24 hours	microgram/m3 microgram/m3	60 100	60 100
4.	Particulate Matter (Size Less than 2.5 micro M) or PM2.5	Annual 24 hours	microgram/m3 microgram/m3	40 60	40 60
5.	Ozone (O3)	Annual 24 hours	8 Hours 1 Hour	100 180	100 180

Sl. No.	Pollutant	Time Weighted Average	Unit	Tolerance Limits	
				Industrial, Residential, Rural and other area	Ecologically Sensitive Area (notified by Central Govt.)
6.	Lead (Pb)	Annual 24 hours	microgram/m3 microgram/m3	0.5 1.0	0.5 1.0
7.	Carbon Monoxide (CO)	8 Hours 1 Hour	miligram/m3 miligram/m3	02 04	02 04
8.	Ammonia (NH3)	Annual 24 hours	microgram/m3 microgram/m3	100 400	100 400
9.	Benzene (C6H6)	Annual	microgram/m3	5	5
10.	Benzo(O) Pyrene (BaP) –particulate phase only	Annual	nanogram/m3	01	01
11.	Arsenic (As)	Annual	nanogram/m3	06	06
12.	Nickel (Ni)	Annual	nanogram/m3	20	20

3(c) The Ambient Noise Level in the industrial plant area shall not exceed the limits prescribed below:

Limits in L.eq.-dB(A)	Day Time	Night Time
ResidentialArea	55	45

4. All units of the Air pollution control measures shall be operated efficiently and continuously so as to achieve the standards prescribed in Sl. No.3 above.
5. The occupier shall not change or alter quality or quantity or the rate of emission or replace or alter the air pollution control equipment or change the raw material or manufacturing process resulting in change in quality and/or quantity of emissions without the previous written permission of the Board.
6. The occupier shall maintain log book regarding the stack monitoring system or operation of the plant or any other particulars for each of the unit operations of air pollution control systems to reflect the working condition which shall be furnished for verification of the Board officials during inspection.
7. The occupier shall at his own cost get the samples of emission/air/noise levels collected and analyzed by the TNPC Board Laboratory once in every 6 months/once in a year/periodically for the parameters as prescribed.
8. Any upset condition in any of the plants of the factory which is likely to result in increased emissions and result in violation of the standards mentioned in Sl.No.3 shall be reported to the Member Secretary / Joint Chief Environmental Engineer-Monitoring and the concerned District/Assistant Environmental Engineer of the Board by e-mail immediately and subsequently by Post with full details of such upset condition.
9. The occupier shall always comply and carryout the order/directions issued by the Board in this Consent Order and from time to time without any negligence. The occupier shall be liable for action as per provisions of the Act in case of non compliance of any order/directions issued.

Additional Conditions:

1. The unit shall adhere to AAQ/Emission/ANL standards as prescribed by the Board.
2. The unit shall provide Acoustic Enclosures for the Fire Fighting Engines.

G. GOPALAKRISHNAN

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Date: 2018.11.17 18:06:16 +05'30'

For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai

GENERAL CONDITIONS

1. The occupier shall make an application along with the prescribed consent fee for grant of renewal of consent at least 60 days before the date of expiry of this Consent Order along with all the required particulars ensuring that there is no change in production quantity and emission.
2. This Consent is given by the Board in consideration of the particulars given in the application. Any change or alteration or deviation made in actual practice from the particulars furnished, in the application will also be ground for review/variation/revocation of the Consent Order under Section 21 of the Act.
3. The conditions imposed shall continue in force until revoked under Section 21 of the Act.
4. After the issue of this order, all the 'Consent to Operate' orders issued previously under Air (Prevention and Control of Pollution) Act, 1981 as amended stands defunct.
5. The occupier shall maintain an Inspection Register in the factory so that the inspecting officer shall record the details of the observations and instructions issued to the unit at the time of inspection for adherence.
6. The occupier shall provide and maintain an alternate power supply along with separate energy meter for the Air Pollution Control measures sufficient to ensure continuous operation of all pollution control equipments to ensure compliance.
7. The occupier shall provide all facilities to the Board officials for collection of samples in and around the factory at any time.
8. The applicant shall display the flow diagram of the sources of emission and pollution control systems provided at the site.
9. The liquid effluent arising out of the operation of the air pollution control equipment shall also be treated in a manner and to the satisfaction of standards prescribed by the Board in accordance with the provisions of Water (Prevention and Control of Pollution) Act, 1974 as amended.
10. The air pollution control equipments, location of inspection chambers and sampling port holes shall be made easily accessible at all time.
11. In case of any episodal discharge of emission, the industry shall take immediate action to bring down the emission within the limits prescribed by the Board.
12. If applicable, the occupier has to comply with the provisions of Public Liability Insurance Act, 1991 to provide immediate relief in the event of any hazard to human beings, other living creatures/plants and properties while handling and storage of hazardous substances.
13. The issuance of this consent does not authorize or approve the construction of any physical structures or facilities or the undertaking of any work in any natural watercourse or in Government Poromboke lands.
14. The issuance of this Consent does not convey any property right in either real personal property or any exclusive privileges, nor does it authorize any injury to private property or Government property or any invasion of personal rights nor any infringement of Central, State laws or regulation.
15. The occupier shall forth with keep the Board informed of any accident of unforeseen act or event of any poisonous, noxious or polluting matter or emissions are being discharged into stream or well or air as a result of such discharge, water or air is being polluted.
16. If due to any technological improvements or otherwise the Board is of opinion that all or any of the conditions referred to above requires variation (including the change of any treatment system, either in whole or in part) the Board shall, after giving the applicant an opportunity of being heard, vary all or any of such conditions and thereupon the applicant shall be bound to comply with the conditions as so varied.
17. In case there is any change in the constitution of the management, the occupier of the new management shall file fresh application under Air (Prevention and Control of Pollution) Act, 1981, as amended in Form-I alongwith relevant documents of change of management immediately and get the necessary amendment with renewal of consent order.
18. In case there is any change in the name of the company alone, the occupier shall inform the same with relevant documents immediately and get the necessary amendments for the change of name from the Board.

19. The occupier shall display this consent order granted to him in a prominent place for perusal of the inspecting Officers of this Board.

G. GOPALAKRISHNAN

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For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai

TAMILNADU POLLUTION CONTROL BOARD

CONSENT ORDER NO. 1804113695547 DATED: 16/11/2018.

PROCEEDINGS NO.T2/TNPCB/F.0813AMB/RL/AMB/W/2018 DATED: 16/11/2018

SUB: Tamil Nadu Pollution Control Board –CONSENT TO OPERATE –After CTE -M/s. M/S. CHENNAI PETROLEUM CORPORATION LIMITED (CRUDE PIPELINE PROJECT) , S.F.No. , MANALI villageAmbattur Taluk and Tiruvallur District - Consent for the operation of the plant and discharge of sewage and/or trade effluent under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988 (Central Act 6 of 1974) – Issued- Reg.

REF: 1. PROCEEDINGS NO.T12/TNPCB/F.0813AMB/RL//AMB/W &A /2016 DATED: 25/07/2016
2. Unit's application for CTO on 18/7/2018
3. Minutes of CCC item NO. 250-3 dt: 15.11.2018

CONSENT TO OPERATE is hereby granted under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988 (Central Act, 6 of 1974) (hereinafter referred to as "The Act") and the rules and orders made there under to

The Director,
M/s . M/S. CHENNAI PETROLEUM CORPORATION LIMITED (CRUDE PIPELINE PROJECT)
S.F No.,
MANALI Village,
Ambattur Taluk,
Tiruvallur District.

Authorising the occupier to make discharge of sewage and /or trade effluent.

This is subject to the provisions of the Act, the rules and the orders made there under and the terms and conditions incorporated under the Special and General conditions stipulated in the Consent Order issued earlier and subject to the special conditions annexed.

This CONSENT is valid for the period ending March 31, 2019

G. GOPALAKRISHNAN

Digitally signed by G. GOPALAKRISHNAN
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Date: 2018.11.17 17:57:58 +05'30'

For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai

To
The Director,
M/s.M/S. CHENNAI PETROLEUM CORPORATION LIMITED (CRUDE PIPELINE PROJECT),
MANALI, CHENNAI,
Pin: 600068

Copy to:

1.The Commissioner, CHENNAI CORPORATION-Corporation, Ambattur Taluk, Tiruvallur District .
2. The District Environmental Engineer, Tamil Nadu Pollution Control Board, AMBATTUR.
3. The JCEE-Monitoring, Tamil Nadu Pollution Control Board, Chennai.
4. File

SPECIAL CONDITIONS

1. This consent to operate is valid for operating the facility for the manufacture of products (Col. 2) at the rate (Col. 3) mentioned below. Any change in the products and its quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Sl. No.	Description	Quantity	Unit
	Product Details		
1.	42 inch dia crude pipeline for transporting crude oil from Chennai port to CPCL Manali Refinery	10500000	MT/A

2. This consent to operate is valid for operating the facility with the below mentioned permitted outlets for the discharge of sewage/trade effluent. Any change in the outlets and the quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Outlet No.	Description of Outlet	Maximum daily discharge in KLD	Point of disposal
Effluent Type : Sewage			
1.	Not Applicable	0.0	Not Applicable
Effluent Type : Trade Effluent			
1.	Not Applicable	0.0	Not Applicable

3. The effluent discharge shall not contain constituents in excess of the tolerance Limits as laid down hereunder.

Sl. No.	Parameters	Unit	TOLERANCE LIMITS - OUTLETS -Nos				
			Sewage		Trade Effluent		
			-		-		
1.	pH						
2.	Temperature	oC					
3.	Particle size of Suspended solids	-					
4.	Total Suspended Solids	mg/l					
5.	Total Dissolved solids (inorganic)	mg/l					
6.	Oil & Grease	mg/l					
7.	Biochemical Oxygen Demand (3 days at 27oC)	mg/l					
8.	Chemical Oxygen Demand	mg/l					
9.	Chloride (as Cl)	mg/l					
10.	Sulphates (as SO4)	mg/l					
11.	Total Residual Chlorine	mg/l					
12.	Ammonical Nitrogen (as N)	mg/l					
13.	Total Kjeldahl Nitrogen (as N)	mg/l					
14.	Free Ammonia (as NH3)	mg/l					
15.	Arsenic (as As)	mg/l					
16.	Mercury (as Hg)	mg/l					
17.	Lead (as Pb)	mg/l					
18.	Cadmium(as Cd)	mg/l					
19.	Hexavalent Chromium (as Cr+6)	mg/l					
20.	Total Chromium (as Cr)	mg/l					
21.	Copper (as Cu)	mg/l					
22.	Zinc (as Zn)	mg/l					
23.	Selenium (as Se)	mg/l					
24.	Nickel (as Ni)	mg/l					
25.	Boron (as B)	mg/l					
26.	Percent Sodium	%					
27.	Residual Sodium Carbonate	mg/l					
28.	Cyanide (as CN)	mg/l					
29.	Fluoride (as F)	mg/l					
30.	Dissolved Phosphates(as P)	mg/l					
31.	Sulphide (as S)	mg/l					
32.	Pesticides	mg/l					
33.	Phenolic Compounds (as C6H5OH)	mg/l					
34.	Radioactive materials a) Alpha emitters	micro curie/ml					
35.	Radioactive materials b). Beta emitters	micro curie/ml					
36.	Fecal Coliform	MPN/100ml					

4. All units of the sewage and Trade effluent treatment plants shall be operated efficiently and continuously so as to achieve the standards prescribed in Sl No.3 above or to achieve the zero liquid discharge of effluent as applicable.

5. The occupier shall maintain the Electro Magnetic Flow Meters/water Meters installed at the inlet of the water supply connection for each of the purposes mentioned below for assessing the quantity of water used and ensuring that such meters are easily accessible for inspection and maintenance and for other purposes of the Act.
   a. Industrial Cooling, Spraying in mine pits or boiler feed.
   b. Domestic purpose.
   c. Process.
6. The occupier shall maintain the Electro Magnetic Flow Meters with computer recording arrangement for measuring the quantity of effluent generated and treated for the monitoring purposes of the Act.
7. Log book for each of the unit operations of ETP have to be maintained to reflect the working condition of ETP along with the readings of the Electro Magnetic Flow Meters installed to assess effluent quantity and the same shall be furnished for verification of the Board officials during inspection.
8. The occupier shall at his own cost get the samples of effluent/surface water/ground water collected in and around the unit by Board officials and analyzed by the TNPC Board Laboratory periodically.
9. Any upset condition in any of the plants of the factory which is, likely to result in increased effluent discharge and result in violation of the standards mentioned in Sl. No.3 above shall be reported to the Member Secretary / Joint Chief Environmental Engineer-Monitoring and the concerned District/Assistant Environmental Engineer of the Board by e-mail immediately and subsequently by Post with full details of such upset condition.
10. The occupier shall always comply and carryout the order/directions issued by the Board in this Consent Order and from time to time without any negligence. The occupier shall be liable for action as per provisions of the Act in case of non compliance of any order/directions issued.
11. The occupier shall develop adequate width of green belt at the rate of 400 numbers of trees per Hectare.
12. The occupier shall provide and maintain rain water harvesting facilities.
13. The occupier shall ensure that there shall not be any discharge of effluent either treated or untreated into storm water drain at any point of time.
14. In the case of zero liquid discharge of effluent units, the occupier shall adhere the following conditions as laid under.

    i). The occupier shall ensure zero liquid discharge of effluent, thereby no discharge of untreated / treated effluent on land or into any water bodies either inside or outside the premises at any point of time.

    ii) The occupier shall operate and maintain the Zero liquid discharge treatment components comprising of Primary, Secondary and tertiary treatment systems at all times and ensure that the RO permeate/Evaporator condensate shall be recycled in the process and the final RO reject shall be disposed off with the reject management system ensuring zero liquid discharge of effluents in the premises.

    iii) The occupier shall operate and maintain the reject management system effectively and recover the salt from the system which shall be reused in the process if reusable or shall be disposed off as ETP sludge.

    iv) In case of failure to achieve zero discharge of effluents for any reason, the occupier shall stop its production and operations forthwith and shall be reported to the Member Secretary/Joint Chief Environmental Engineer-Monitoring and the concerned District/Assistant Environmental Engineer of the Board by e-mail immediately and subsequently by Post with full details of such upset condition.

    v) The occupier shall restart the production only after ascertaining that the Zero discharge treatment system can perform effectively for achieving zero discharge of effluents.

Additional Conditions:

1. The unit shall treat and dispose the sewage through septic tank and soak pit arrangements.
2. The unit shall not generate trade effluent at any stage of its manufacturing process.
3. The unit shall ensure that it shall carry out it's operation only with valid Policy under Public Liability Insurance Act,1991.
4. The unit shall carry out mock drill and safety audit periodically.
5. The unit shall maintain the leak detection software in pipeline with real time model for detection sizing and location of leaks.
6. The unit shall provide necessary records for leakage and all the events shall be recorded including the day to day activities.
7. The unit shall comply all the conditions stipulated in the CRZ Clearance issued by the MoEF& CC, GOI under the provisions of the CRZ Notification 2011.
8. The unit shall carry out regular inspection as per OSID standards especially at places where the pipeline passes close to major water bodies frequency of patrolling shall be ensured during rainy season.
9. The unit shall provide monitoring well at every 1 Km along the length of the pipeline.
10. The unit shall not use 'use and throw away plastics' such as plastic sheets used for food wraping, spreading on dining table etc., plastic plates, plastic coated tea cups, plastic tumbler, water pouches and packets, plastic straw, plastic carry bag and plastic flags irrespective of thickness, within industry premises. Instead unit shall encourage use of eco friendly alternative such as banana leaf, arecanut palm plate, stainless steel, glass, porcelain plates/cups, cloth bag, jute bag etc.

G.
GOPALAKRISHNAN

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Date: 2018.11.17 17:58:37 +05'30'

For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai

GENERAL CONDITIONS

1. The occupier shall make an application along with the prescribed consent fee for grant of renewal of consent at least 60 days before the date of expiry of this Consent Order along with all the required particulars ensuring that there is no change in Production quantity and change in sewage/Trade effluent.
2. This Consent is issued by the Board in consideration of the particulars given in the application. Any change or alteration or deviation made in actual practice from the particulars furnished in the application will also be ground for review/variation/revocation of the Consent Order under Section 27 of the Act and to make such variation as deemed fit for the purpose of the Act.
3. The consent conditions imposed in this order shall continue in force until revoked under Section 27(2) of the Act.
4. After the issue of this order, all the 'Consent to Operate' orders issued previously under Water (Prevention and Control of Pollution) Act, 1974 as amended stands defunct.
5. The occupier shall maintain an Inspection Register in the factory so that the inspecting officer shall record the details of the observations and instructions issued to the unit at the time of inspection for adherence.
6. The occupier shall provide and maintain an alternate power supply along with separate energy meter for the Effluent Treatment Plant sufficient to ensure continuous operation of all pollution control equipments to maintain compliance.
7. The occupier shall provide all facilities to the Board officials for inspection and collection of samples in and around the factory at any time.
8. The occupier shall display the flow diagram of the sources of effluent generation and pollution control systems provided at the ETP site.
9. The solid waste such as sweepings, wastage, package, empty containers, residues, sludge including that from air pollution control equipments collected within the premises of the industrial plant shall be collected in an earmarked area and shall be disposed off properly.
10. The occupier shall collect, treat the solid wastes like food waste, green waste generated from the canteen and convert into organic compost.
11. The occupier shall segregate the Hazardous waste from other solid wastes and comply in accordance with Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008.
12. The occupier shall maintain good house-keeping within the factory premises.
13. All pipes, valves, sewers and drains shall be leak proof. Floor washings shall be admitted into the trade effluent collection system only and shall not be allowed to find their way in storm drains or open areas.
14. The occupier shall ensure that there shall not be any diversion or by-pass of trade effluent on land or into any water sources.
15. The occupier shall ensure that solar Evaporation pans shall be constructed in such a way that the bottom of the solar pan is at least 1 m above the Ground level (if applicable).
16. The occupier shall furnish the following returns in the prescribed formats to the concerned District office regularly.
    a) Monthly water consumption returns of each of the purposes with water meter readings in Form-I on or before 5th of every month.
    b) Yearly return on Hazardous wastes generated and accumulated for the period from 1st April to 31st March in Form–4 before the end of the subsequent 30th June of every year (if applicable).
    c) Yearly Environmental Statement for the period from 1st April to 31st March in Form –V before the end of the subsequent 30th September of every year(if applicable).
17. If applicable, the occupier has to comply with the provisions of Public Liability Insurance Act, 1991 to provide immediate relief in the event of any hazard to human beings, other living creatures/plants and properties while handling and storage of hazardous substances.
18. The issuance of this consent does not authorize or approve the construction of any physical structures or facilities or the undertaking of any work in any natural watercourse or in Government Poromboke lands.
19. The issuance of this Consent does not convey any property right in either real personal property or any exclusive privileges, nor does it authorize any injury to private property or Government property or any invasion of personal rights nor any infringement of Central, State laws or regulation.

20. The occupier shall forth with keep the Board informed of any accident of unforeseen act or event of any poisonous, noxious or polluting matter or emissions are being discharged into stream or well or air as a result of such discharge, water or air is being polluted.

21. If due to any technological improvements or otherwise the Board is of opinion that all or any of the conditions referred to above requires variation (including the change of any treatment system, either in whole or in part) the Board shall, after giving the applicant an opportunity of being heard, vary all or any of such conditions and thereupon the applicant shall be bound to comply with the conditions as so varied.

22. In case there is any change in the constitution of the management, the occupier of the new management shall file fresh application under Water (Prevention and Control of Pollution) Act, 1974, as amended in Form-II alongwith relevant documents of change of management immediately and get the necessary amendment with renewal of consent order.

23. In case there is any change in the name of the company alone, the occupier shall inform the same with relevant documents immediately and get the necessary amendments for the change of name from the Board.

24. The occupier shall display this consent order granted to him in a prominent place for perusal of the inspecting Officers of this Board.

G. GOPALAKRISHNAN

Digitally signed by G. GOPALAKRISHNAN
DN: c=IN, o=TAMILNADU POLLUTION CONTROL BOARD, ou=ENGINEERING DEPARTMENT, postalCode=641601, st=Tamil Nadu, 2.5.4.20=058979ea1d8088e89a1fa24e266b67aefc4862722bf73c149dad45126b084a11, cn=G. GOPALAKRISHNAN
Date: 2018.11.17 17:58:57 +05'30'

For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai

TAMILNADU POLLUTION CONTROL BOARD

Category of the Industry :

RED

CONSENT ORDER NO. 1908221214227 DATED: 21/11/2019.

PROCEEDINGS NO.T2/TNPCB/F.0813AMB/RL/AMB/A/2019 DATED: 21/11/2019

SUB: Tamil Nadu Pollution Control Board - RENEWAL OF CONSENT –M/s. M/S. CHENNAI PETROLEUM CORPORATION LIMITED (CRUDE PIPELINE PROJECT) , S.F.No. , MANALI village, Ambattur Taluk and Tiruvallur District - Renewal of Consent for the operation of the plant and discharge of emissions under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended in 1987 (Central Act 14 of 1981) –Issued- Reg.

REF: 1) Board Proceedings No. T2/TNPCB/F.0813AMB/RL/AMB/W&A/2018 DATED: 16/11/2018
2) Unit's application for CTO-Renew submitted through OCMMS on 18/02/2019 and resubmitted on 06/11/2019.
3) DEE's IR.No : F.0813AMB/RL/AEE/AMB/2019 dated 12/09/2019.

RENEWAL OF CONSENT is hereby granted under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended in 1987 (Central Act 14 of 1981) (hereinafter referred to as "The Act") and the rules and orders made there under to

The Director
M/s.M/S. CHENNAI PETROLEUM CORPORATION LIMITED (CRUDE PIPELINE PROJECT),
S.F.No. ,
MANALI village,
Ambattur Taluk,
Tiruvallur District.

Authorizing the occupier to operate the industrial plant in the Air Pollution Control Area as notified by the Government and to make discharge of emission from the stacks/chimneys.

This is subject to the provisions of the Act, the rules and the orders made there under and the terms and conditions incorporated under the Special and General conditions stipulated in the Consent Order issued earlier and subject to the special conditions annexed.

This RENEWAL OF CONSENT is valid for the period ending March 31, 2024

K. Gokuladas
Digitally signed by K. Gokuladas
Date: 2019.11.21 16:48:15 +05'30'

For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai

CGM(CTD)
For necessary action.
27/11

GM(CPPS)
For your records.
2/12

POLLUTION PREVENTION PAYS

SPECIAL CONDITIONS

1. This renewal of consent is valid for operating the facility for the manufacture of products (Col. 2) at the rate (Col. 3) mentioned below. Any change in the products and its quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Sl. No.	Description	Quantity	Unit
	Product Details		
1.	42 inch dia crude pipeline for transporting crude oil from Chennai port to CPCL Manali Refinery	10500000	MT/A

2. This renewal of consent is valid for operating the facility with the below mentioned emission/noise sources along with the control measures and/or stack. Any change in the emission source/control measures/change in stack height has to be brought to the notice of the Board and fresh consent/Amendment has to be obtained.

I	**Point source emission with stack :**			
Stack No.	**Point Emission Source**	**Air pollution Control measures**	**Stack height from Ground Level in m**	**Gaseous Discharge in Nm3/hr**
Not Applicable	Not Applicable	Not Applicable		Not Applicable
II	**Fugitive/Noise emission :**			
Sl. No.	**Fugitive or Noise Emission sources**	**Type of emission**	**Control measures**	
1.	Not Applicable	Fugitive	Not Applicable	

Additional Conditions:

1. The unit shall adhere to AAQ/Emission/ANL standards as prescribed by the Board.
2. The unit shall provide Acoustic Enclosures for the Fire Fighting Engines.

K. Gokuladas Digitally signed by K. Gokuladas Date: 2019.11.21 16:48:53 +05'30'

For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai

To
The Director,
M/s.M/S. CHENNAI PETROLEUM CORPORATION LIMITED (CRUDE PIPELINE PROJECT),
Chennai Petroleum Corporation Limited,
536, Anna Salai,
Teynampet,
Chennai,
Pin: 600018

Copy to:

1.The Commissioner, CHENNAI CORPORATION, Ambattur Taluk, Tiruvallur District .
2. The District Environmental Engineer, Tamil Nadu Pollution Control Board, AMBATTUR.
3. The JCEE-Monitoring, Tamil Nadu Pollution Control Board, Chennai.
4. File

TAMILNADU POLLUTION CONTROL BOARD

Category of the Industry :

RED

CONSENT ORDER NO. 1908121214227 DATED: 21/11/2019.

PROCEEDINGS NO.T2/TNPCB/F.0813AMB/RL/AMB/W/2019 DATED: 21/11/2019

SUB: Tamil Nadu Pollution Control Board - RENEWAL OF CONSENT – M/s. M/S. CHENNAI PETROLEUM CORPORATION LIMITED (CRUDE PIPELINE PROJECT) , S.F.No. , MANALI village, Ambattur Taluk and Tiruvallur District - Renewal of Consent for the operation of the plant and discharge of sewage and/or trade effluent under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988 (Central Act 6 of 1974) – Issued- Reg.

REF: 1) Board Proceedings No. T2/TNPCB/F.0813AMB/RL/AMB/W&A/2018 DATED: 16/11/2018
2) Unit's application for CTO-Renew submitted through OCMMS on 18/02/2019 and resubmitted on 06/11/2019.
3) DEE's IR.No : F.0813AMB/RL/AEE/AMB/2019 dated 12/09/2019.

RENEWAL OF CONSENT is hereby granted under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988 (Central Act, 6 of 1974) (hereinafter referred to as "The Act") and the rules and orders made there under to

The Director
M/s.M/S. CHENNAI PETROLEUM CORPORATION LIMITED (CRUDE PIPELINE PROJECT),
S.F.No. ,
MANALI Village ,
Ambattur Taluk ,
Tiruvallur District .

Authorising the occupier to make discharge of sewage and /or trade effluent.

This is subject to the provisions of the Act, the rules and the orders made there under and the terms and conditions incorporated under the Special and General conditions stipulated in the Consent Order issued earlier and subject to the special conditions annexed.

This RENEWAL OF CONSENT is valid for the period ending March 31, 2024

K. Gokuladas
Digitally signed by K. Gokuladas
Date: 2019.11.21 16:49:34 +05'30'

For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai

2.12.19
GM (EP&S)
For yr records pl.
2/12

SPECIAL CONDITIONS

1. This renewal of consent is valid for operating the facility for the manufacture of products/byproducts (Col. 2) at the rate (Col 3) mentioned below. Any change in the product/byproduct and its quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Sl. No.	Description	Quantity	Unit
	Product Details		
1.	42 inch dia crude pipeline for transporting crude oil from Chennai port to CPCL Manali Refinery	10500000	MT/A

2. This renewal of consent is valid for operating the facility with the below mentioned outlets for the discharge of sewage/trade effluent. Any change in the outlets and the quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Outlet No.	Description of Outlet	Maximum daily discharge in KLD	Point of disposal
Effluent Type : Sewage			
1.	Not Applicable	0.0	Not Applicable
Effluent Type : Trade Effluent			
1.	Not Applicable	0.0	Not Applicable

Additional Conditions:

1. The unit shall treat and dispose the sewage through septic tank and soak pit arrangements.
2. The unit shall not generate trade effluent at any stage of its manufacturing process.
3. The unit shall ensure that it shall carry out it's operation only with valid Policy under Public Liability Insurance Act, 1991.
4. The unit shall carry out mock drill and safety audit periodically.
5. The unit shall maintain the leak detection software in pipeline with real time model for detection sizing and location of leaks.
6. The unit shall provide necessary records for leakage and all the events shall be recorded including the day to day activities.
7. The unit shall comply all the conditions stipulated in the CRZ Clearance issued by the MoEF& CC, GOI under the provisions of the CRZ Notification 2011.
8. The unit shall carry out regular inspection as per OSID standards especially at places where the pipeline passes close to major water bodies frequency of patrolling shall be ensured during rainy season.
9. The unit shall provide monitoring well at every 1 Km along the length of the pipeline.
10. The unit shall collect monitoring well samples periodically and furnish the ROA of the same to the Board.
11. The unit shall not use 'use and throw away plastics' such as plastic sheets used for food wraping, spreading on dining table etc., plastic plates, plastic coated tea cups, plastic tumbler, water pouches and packets, plastic straw, plastic carry bag and plastic flags irrespective of thickness, within industry premises. Instead unit shall encourage use of eco friendly alternative such as banana leaf, arecanut palm plate, stainless steel, glass, porcelain plates/cups, cloth bag, jute bag etc.

K. Gokuladas

Digitally signed by K. Gokuladas
Date: 2019.11.21 16:50:02 +05'30'

For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai

To
The Director,
M/s.M/S. CHENNAI PETROLEUM CORPORATION LIMITED (CRUDE PIPELINE PROJECT),
Chennai Petroleum Corporation Limited,
536, Anna Salai,
Teynampet,
Chennai,
Pin: 600018

Copy to:

1.The Commissioner, CHENNAI CORPORATION, Ambattur Taluk, Tiruvallur District .
2. The District Environmental Engineer, Tamil Nadu Pollution Control Board, AMBATTUR.
3. The JCEE-Monitoring, Tamil Nadu Pollution Control Board, Chennai.
4. File

Annexure-4

तार-ü "विस्फोटक", नागपूर
Telegram: 'EXPLOSIVES', Nagpur
Website : http://peso.gov.in
Email: explosives@explosives.gov.in

दूरभाष/ Telephone : 0712-2510248

फ़ैक्स/ FAX : 2510577

कार्यालयीन उद्देश्य के सभी पत्रादि "मुख्य विस्फोटक नियंत्रक" के पदनाम से भेजे जाए उनके व्यक्तिगत नाम से नही.
All communications intended for this Office should be addressed to the 'Chief Controller of Explosives' and NOT to him by name.

भारत सरकार
GOVERNMENT OF INDIA
वाणिज्य और उद्योग मंत्रालय
Ministry of Commerce & Industry
पेट्रोलियम तथा विस्फोटक सुरक्षा संगठन
PETROLEUM AND EXPLOSIVES SAFETY ORGANISATION
(पूर्व नाम – विस्फोटक विभाग)
(Formerly- Department of Explosives)
'ए'-ब्लाक, पाँचवा तल, केन्द्रीय कार्यालय परिसर,
"A" Block, 5th Floor, CGO Complex,
सेमिनरी हिल्स, नागपुर - 440 006 (महा)
Seminary Hills, Nagpur- 440006

पत्रांक / No.:P-2(4)946
दिनांक / Dated :05/11/2018

To,
M/s. Chennai Petroleum Corporation Limited,
Manali, Chennai - 600068.

Sub: - Permission for commissioning of replacement of 30" dia Crude oil pipeline with new 42" dia x 17 Km long from Chennai Port to Manali Refinery - regarding.

Dear Sirs,

Please refer to your letter No. P&D/03/004 dated 01/11/2018 & P&D/03/005 dated 02/11/2018 on the above subject.

Since the subject pipelines work has been completed in all respect as per approval accorded vide this office letter of even number dated 11/05/2015 and also hydrotested in accordance with the rule 93 of Petroleum Rules, 2002, there is no objection to your commissioning of the subject pipelines, provided all the requirements of part V under Chapter III of the Petroleum Rules, 2002 are strictly complied..

The records of design, fabrication and testing of each section of pipeline, location of welds, material of construction, valves, bends, flanges etc. (with identification marking for each weld and fitting) may please be preserved for records.

Please note that operation of the pipeline shall be done according to SOP's furnished and regular patrolling is undertaken to ensure safe use and operation. Annual Safety Audit Report from an independent agency as required under Rule 10 of MSIHC Rules, 1989 shall be carried out and forwarded every year to this office for record.

Every precaution shall be taken to safely operate the pipeline and immediate action taken if any unsafe condition is noticed at any stage of operation and maintenance

This approval/permission does not absolve you from obtaining necessary permission/clearances from other authorities or under other statutes as applicable.

Copy of "As Built" drawing duly approved is also enclosed herewith.

Yours faithfully,

(K.S. Rao)
Controller of Explosives
for Chief Controller of Explosives

Copy forwarded to the Joint Chief Controller of Explosives, South Circle, Chennai.

for Chief Controller of Explosives

Annexure-5

HIGHWAYS DEPARTMENT

From
Thiru. K.G.Sathiya Prakash, M.E.,
Divisional Engineer (H),
C&M Division,
Thiruvallur.

To
The General Manager
(Projects, Development and R&D),
Chennai Petroleum Corporation Limited,
Manali, Chennai-68.

Letter No. 2471 / 2015 /JDO-2 /Dated: 22.06.2015

ஸ்ரீமன்மத வருடம், ஆனி 7
திருவள்ளுவர் ஆண்டு 2046

Sir,

Sub: Thiruvallur (H), (C&M) Division – Ambathur (H), (C&M), Sub Division – Restoration Charges for cut open the BT surface at 12/6-13/0 of Chennai – Ennore Road for laying of under ground Crude oil Pipe line by Open Trench method - Permission - Regarding.

Ref:
1. The General Manager, (Projects, Development and R&D), Chennai Petroleum Corporation Limited, Manali, Chennai-68 Letter No.P&D:03:89, Dated:28.05.2015.
2. This office Letter No.2471/ 2015 / JDO-2, Dated:10.06.2015.
3. The General Manager, (Projects, Development and R&D), Chennai Petroleum Corporation Limited, Manali, Chennai-68 Letter No.P&D:03:89, Dated:19.06.2015.

+-+-+-+-+-+-+-+-+-+-+-+-+-+

Under Clause 5 (1) of Miscellaneous Instructions to Highways Manual Volume III permission is hereby accorded to cut open the BT surface at 12/6-13/0 of Chennai – Ennore Road for laying of under ground Crude oil Pipe line by Open Trench method.

SUBJECT TO THE FOLLOWING CONDITIONS:

1) Advance intimation shall be given to the Assistant Divisional Engineer (H),(C&M), Ambathur & Assistant Engineer (H),(C&M) Ambathur section before commencing the work.
2) Adequate precaution shall be taken to avoid any possible accidents / barricading with indicators of Diversion Boards, Red Flags, Danger Lights shall be provided. Any accidents occurred during your work, you are 100% responsible for any loss.
3) The Trench by cutting open the road should be closed by the river sand soon after the purpose is over.
4) The super surface will be Restored to its original condition by this Department from the amount of Rs.25.00/- Lakhs vide Demand Draft No.121117, Dt.18.06.2015 for SBI, Madras Refineries Ltd., Manali, Chennai.
5) The Length and Depth of Cutting should be restricted to the Minimum Requirement applied by your Department.
6) In no case the proposed L,B&D of cutting should increase. If any increase proper intimation should be given to this office before execution of work.
7) The **Pipe line** should be laid at a depth of 1.65M below the road level so that there shall be sufficient cushion to the Traffic Load.

8) Permission now granted is valid for 30 days only and thereafter expiry of the same should be got revalidated.

9) As soon as the job is over the Assistant Divisional Engineer (H),(C&M), Ambathur / Assistant Engineer (H),(C&M) Ambathur section should be kept informed.

10) If any improvement work is taken up by this Department in future, the **Pipe line** should be shifted at your cost without any objections and claims.

11) After completion of work, the surplus earth should be removed from the site.

12) The Servicing Department should bear the cost if extra cutting is involved during execution causing damages to the riding surface.

13) Cutting the trench should be at the farthest end of the road irrespective of the encroachments.

14) The cutting trench should be filled up with sand instead of filling with the excavated earth.

15) Necessary barricading arrangement should be done in proper manner.

16) The permission will be cancelled immediately on the deviation of the above.

17) The date of permission given by this Department is the date on which the site was permitted to start of work after all precautionary measures done at site and also maintain the same till completion of work. Incase of any failure, the service department shall be responsible for any accident /fatal / property.

18) If the work for which permission now given is either not carried out / dropped / partly done by the **Chennai Petroleum Corporation Limited** the restoration charges once remitted shall not be refunded to **Chennai Petroleum Corporation Limited** by this department and no claims in this regard will be entertained at a later date.

19) The completion certificate should be sent to this office with in a week's time after completion of work.

Sd/- K.G.Sathiya Prakash
Divisional Engineer (H),
(C&M) Division, Tiruvallur

Copy to the Assistant Divisional Engineer (H),(C&M), Ambathur.

Copy to the Assistant Engineer (H),(C&M), Ambathur section.

Copy submitted to the Chief Engineer (H),(C&M), Chepauk, Chennai-5 for favour of kind information

Note: The Assistant Divisional Engineer(H),(C&M), Ambathur and Assistant Engineer, (H),(C&M) Ambathur section are instructed to ensure that the excavation is carried out in the extreme end of the road and not to allow for a longer stretch to be executed at a single time. If any deviation from the drawing is noticed, action is to be taken to stop the work and cancel the permission. Start the work after the precautionary measures done at site and also maintain the same till completion of work.

Copy to the District Collector, Tiruvallur

// True copy // By order //

Senior Draughting Officer

22/6/15

Annexure-6

→ Manager - Sp. Projects

SOUTHERN RAILWAY

Divisional office
Works Branch
Chennai – 03
Dt: 20.05. 2014.

M/W 372 / PL / CPCL /WCN

THE GENERAL MANAGER
Projects , Development and R & D,
Chennai Petroleum Corporation Limited , Manali.
CHENNAI – 600 068

Sub:-Granting of Way leave permission- Proposed laying of 1x 1300 mm dia (ID) MS Encasing pipe by pushing/ Jacking method across the Railway track at km 10.988 near Rob No.41 in MAS – GDR Section for CPCL for taking their 1x1067 mm OD M.S crude oil carrier pipe - Reg.

Ref:- 1.This office letter No. M/W 372 / PL / CPCL /WCN Dt: 27.11. 2013.
2. Cash receipt No. 982518 dt. 15.05.14.

Consequent to the sanction of way leave facility and remittance of full payment, enter upon permission is hereby accorded to CPCL to execute the above work at site under the supervision of Railway authorities. The terms and conditions stipulated in the letter under ref.1 is to be strictly adhered to. Before the commencement of the work a final agreement is to be executed in this office.

(*B.K.REDDY*)
Sr.DEN. / Co-ordn / MAS

Copy to Sr.DEE/G/MAS, Sr.DSTE/MAS, Sr.DEE/TRD/MAS
Copy to DEN/CEN, ADEN / TVT
Copy to SSE/P.WAY /TVT

Annexure-7

WATER RESOURCES DEPARTMENT

From

Er. G.Maduasuden, B.E.,
Chief Engineer, WRD.,
Chennai Region,
Chennai.5.

To

The Deputy General Manager
(On Going Projects)
Chennai Petroleum Corporation
Limited, Manali,
Chennai. 600 068.

Letter No.T5 (3) / 7504 / 2008 dated 12/7/2008

Sir,

Sub:- North Buckingham Canal – Laying of 42 " Crude Oil pipeline from Chennai Port to C.P.C.L.Manali, Chennai.68 permission requested for Buckingham canal sketch, Track rent approved permission – Regarding.

Ref:- D.G.M. CPCL , Manali, Chennai.68 lr.No. P & D/04/01 Dated 2.3.2007.

000

With reference to the Deputy General Manager, Chennai Petroleum Corporation Limited , Manali , Chennai.68 letter cited, I have inform that the "Right of way permission" is given to proposed laying of 42' dia Crude Oil pipe line from Chennai Port to Chennai Petroleum Corporation, Manali, Chennai.68 for Buckingham canal sketch.

I have also offered remarks on this subject as below:-

The Government of India have decided to declared that the Buckingham Canal as one of National Inland water ways. The permission given for laying the pipe line along with Buckingham canal banks from L.S. 8100 m To I.S. 11010 m restricted to allow only for crossing over the Buckingham canal the starting point L.S.11010 m.

1) It should be brought minimum 10m from the bed level of canal (ie) (-) 2.00m with reference to Maximum Supply Level for a length of 100 meters, which is going to be the total width of the National Inland water way.

2) No damages should be made to the canal Banks.

3) A sum of Rs. 5.00 Lakhs may be deposited towards the Caution deposit in favour of the Executive Engineer, Water Resources Department, Aranlar Basin Division, Chepauk, Chennai.5. The same will be refunded if any damaged will not accrued after completion of the above work.

4) The track rent works at 300/- at the rate of Rs.3000 /- km as per G.O.Ms.No.202 dated 24.4.2000, the track rent should be paid to this department.

5) The Chennai Petroleum Corporation Limited, Manali shall restore the entire pipeline portion property so as to cause no since in convenience for the free flow of water.

6) The Chennai Petroleum Corporation Limited, Manali shall always maintain the track in good condition.

7) If any damage is done to any of the Public Works Department property the damaged shall be repaired at the own cost of the Chennai Petroleum Corporation Limited, Manali .

8) In case if any repairs are proposed to be carried out to the pipeline in future prior permission of the department should be obtained.

9) The permission now granted is liable to be revoked (or) break (or) any of the condition and in the event of such recoverable the Chennai Petroleum Corporation Limited shall not be eligible to any compensation who so ever.

10) This department is liable to cancel the permission granted without any prior intimation.

11) Advance intimation should be communicated to the concerned officer's before commencement of the work.

12) The track rent amount fixed is for one year from the date of issue of order and it will have to renewed before 30 days of expiry of the order.

13) Chennai Petroleum Corporation Limited should be enter into a agreement with the Executive Engineer, Water Resources Department, Aranlyar Basin Division, Chepauk, Chennai.5.

14) After the completion of work the materials used should be removed completely at the own cost.

15) The track rate now fixed will be revised from time to time based as Government Orders in future if any.

16) Necessary modification will be carried out at your own cost according to the norms of National Waterway during the development.

for Chief Engineer,
WRD., Chennai Region,
Chennai.5.

चेन्नै पेट्रोलियम कॉर्पोरेशन लिमिटेड
(इंडियनऑयल का ग्रुप कम्पनी)
Chennai Petroleum Corporation Limited
(A group company of IndianOil)

Ref: P&D/04/01

02.03.2007

The Executive Engineer,
Public Works Department,
Araniyaru Basin Division, W.r.O,
Chepauk,
Chennai – 600 005.

Dear Sir,

Sub: Laying of 42" dia Crude oil Pipeline from Chennai Port to CPCL Manali – Permission request for B' Canal stretch – reg.

We wish to inform you that Chennai Petroleum Corporation Limited has proposed to install a 42" dia 16 KM long Crude Oil Pipeline from Chennai Port to CPCL along the proposed Ennore Express Highway, Manali Oil Refinery Road and along Buckingham Canal upto CPCL Refinery.

The proposed route between MMDA & CPCL compound wall and the Buckingham Canal western bank falls in PWD land as indicated in the alignment drawing enclosed. The Topo Map demarcating the B'Canal and CPCL Refinery with the pipeline corridor is also enclosed for your reference. Though the proposed pipeline starts from Chennai Port, the pipeline corridor from KM Ch.11.200 to KM Ch.14.100 near CPCL runs in PWD land. Therefore, we request that necessary permission / approval may please be accorded for taking up the crude oil pipeline along B'canal including canal crossing at Manali Oil Refinery Road Bridge, which is under the control of your division. The charges if any, to be paid may please be informed for remittance so as to take up the work by CPCL directly at the earliest.

We will be glad to furnish further clarifications, if any required on the subject matter.

Thanking you,

Yours faithfully,
For CHENNAI PETROLEUM CORPN. LTD.,

2/3

G.ARAVINDAN
DY.GENERAL MANAGER (ONGOING PROJECTS)

2/3/07

Encl: 1. The Route Map drawing
2. The area Topo Map

मणली, चेन्नै – 600 068.
Manali, Chennai - 600 068.
फोन/Phone : 2594 4000 to 009
फेक्स/Fax : 91-44-25941047, 25941247
वेब साइट/Website : www.cpcl.co.in

PROPOSED METRO RAIL PARK
ENNORE PORT ROAD
KATHIVAKKAM
ENNORE
ERNAVOOR
NCTPP ROAD
MANALI NEW TOWN
ANDARKUPPAM
MANALI ROAD
VICHOOR ROAD
VICHOOR INDUSTRIAL ESTATE
MINJUR
TO CHENNAI
TO PONNERI
KOSASTHALAIYAR RIVER
CHENNAI MUNICIPAL AREA LIMIT
VICHOOR ROAD

Annexure-8

From,	To,
The District Revenue Officer/Zonal Officer, Zone – 1 (Tituvottriyur), Corporation of Chennai, 645, T.H.Road, Chennai 600 019	The General Manager (P&D/R&D), Chennai Petroleum Corporation Limited, Manali, Chennai 600 068

Z.O.C.No.D2/03279/2015 Date: 01.2016

Sir,

Sub: Zone -1 Road cut – Permission requested by Chennai Petroleum Corporation Limited, to cut open the road in Dn. 4 & 5, Zone – 1 (Tiruvottriyur) Providing Underground crude oil pipeline at service road for laying of 42 inches dia underground Crude oil pipe line permission Granted – Regarding.

Ref: 1.Your letter P & D: Dated 06.05.2015
2. State Bank of India Cheque No. 121243, Dated: 15.07.2015 for Rs.15,50,250/-

******

As per your letter in the reference cited above, road cut permission will be accorded after remitted a sum of Rs.15,50,250/- (Rupees fifteen lakhs Fifty thousand and two hundred and fifty only) towards the road cut and Chennai Petroleum Corporation Limited, to cut open the road in Dn. 4 & 5, Zone – 1 (Tiruvottriyur) Providing underground crude oil pipeline at service road for laying of 42 inches dia underground crude oil pipeline Zone -1 (Tiruvottriyur).

The permission granted for the road cut to be made by Chennai Petroleum Corporation Limited subject to the following conditions:

1. The Permission is valid for a period of one month from the date of according permission and if the work could not be completed within the given time frame, fresh permission has to be obtained.

2. The service department has to cut either by trench cutting or by making pits, only in the geometrical shape, through machine cut. The machine excavator should not be used for BT surface at any cause.

3. The excavated earth should be fully removed from site.

4. The service departments / Companies need to submit a schedule of programme for cutting open the road for laying the cables / pipes through trenchless technology trenching through the concerned Zonal Officers to the Superintending Engineer (BRR) or region as the case may be carrying out the work including restoration as per the standards.

5. If the cable pipe is laid in the footpath, the footpath has to be restored to the working stage
6. When the workup is done, the serves department should take preventive steps to insure that no accident take place. The applicant is liable to pay compensation amount to the departments/local bodies/individuals concerned for as any accident that is caused.

7. To the serve departments to deviated from their scheduled route, such deviation should be informed well in advance to the S.E. (BRR)for bus route roads and concerned Zonal Officer for IRR.

8. Sign board should be placed along the route where work is in progress with the phone number of the concerned official of the serve department who should be contacted during emergency. The Sign board will also specify the date on which the road cut work is to be commenced and the date by which the road cut will be restored.

9. The excavated depth should be filled with quarry dust to the full depth with proper compaction.

10. Proper curing and barricading to be done for a minimum period of three days

11. Restoration work should be done under the supervision of Zonal official in case of IRR and in the case of Bus route Roads in co-ordination with Bus route Roads Department.

12. The road cut should be completed within 3months from the date of permission.

13. The agency doing the road cut should inform other service departments before commencement of the work in advance.

14. Traffic Police should be informed in advance and necessary permission has to be obtained from them from traffic point of view, wherever required.

15. The necessary completion certificate should be furnished immediately after completion of the work.

16. The service department is requested furnish the advance programmed of road cut for the road cut requested place.

Exe.Engineer – 1

District Revenue Officer/
Zonal Officer -1

Annexure-9

STATUS REPORT ON NEW 42" CRUDE OIL PIPELINE FROM CHENNAI PORT TO CPCL

BACKGROUND

- Crude Oil earlier pumped from ChPT to Refinery thru a 30" dia pipeline which was laid during 1969, when Refining Capacity was 2.5 MMTPA
- Pipeline being 49 years old, being operated at lower pressure (5.5 kg/sq.cm). The tanker discharge rate is low, leading to higher demurrage for CPCL.
- Refinery has grown from 2.5 MMTPA in 1969 in stages over the years to current level of 10.5 MMTPA. Age & Size of the pipeline restricts further capacity augmentation of Manali Refinery.
- Habitations have come up on the 30" old crude oil pipeline route / congested area.
- Failure of old 30" line will interrupt supply of crude to Refinery for sustenance.

NEW 42' CRUDE OIL PIPELINE

- New 42" dia pipeline has been laid and commissioned in a different route - along the road berm from Chennai Port Trust (ChPT) to Manali Refinery.
- Pipe with increased wall thickness / higher operating pressure.
  - Reduction in tanker unloading time / berth occupancy / Port congestion
  - Reduction in demurrages due to higher line sizing & pumping rate.
- Pipeline easily approachable for maintenance / handling emergencies.
- Secured and safe crude oil availability to refinery and Product availability to Southern States.

COMPARISSION OF OLD & NEW PIPELINE

Sl. No.	Parameter	Old Pipeline	New Pipeline
1	Pipeline Size & Length	30" & 7.2 km	42" & 17.0 km
2	Normal Operating Pressure	5.5 kg/cm^2	10.0 kg/cm^2
3	Wall Thickness	8 mm	12.5 mm(Open Cut) 17.5mm(HDD)
4	SCADA* / Leak Detection	Not Provided	Provided
5	External Coating	Coal tar Wrapping Coat	**3 layer Poly Ethylene (4mm)**

6	Piggability	Not Piggable	**Piggable**
7	Leak Detection System	Not Provided	Provided
8	Corrosion Inhibitor Dosing	Not Provided	Provided
9	Crude Oil Pumping Rate	3000 m^3/Hr	6200 m^3/Hr

42" CRUDE PIPELINE PROJECT APPROVALS

Sl. No.	Approval	Issuing Authority
1	CRZ clearance	MoEF& CC
2	Consent to Establish and Consent to Operate	TNPCB
3	Scheme Approval and Commissioning Approval from Petroleum & Explosive Safety Organization	CCoE, PESO
4	Chennai Port Trust	CME, ChPT
5	NHAI Approval	NHAI , TNRDC
6	Railway Approval	Sothern Railways
7	Chennai Corporation Approval	PWD , Chennai
8	State Highway Approval	C&M Division

MATERIALS OF CONSTRUCTION

- Trestle Piping 30"/36"/42" - API5L , X42 , 12.5mm Thickness
- Mainline Pipes Open Cut - API5L, X42 , 12.5mm Thickness
- HDD & Marshy Areas - API5L, X42 , 17.5mm Thickness

SCRAPPER BARREL LAUNCHING STATION INSIDE CHENNAI PORT

Facilities developed inside Chennai Port (Area 58x60m)

1. Control Equipment Building
2. Scrapper Launching Barrel
3. PIG handling System
4. Ultrasonic Flow Meter (UFM)
5. Corrosion Inhibitor System
6. 20kL Sump Tank & Sump Pump
7. Cathodic Protection -TR Unit
8. SCADA System
9. Density Cum Viscosity Meter
10. 12" Fire Water Network hooked up with Chennai Port Network
11. Highmast

SCRAPPER RECEIVING STATION INSIDE CPCL

Facilities developed inside CPCL

1. Control room Building
2. Scrapper Receiving Barrel
3. PIG handling System
4. Ultrasonic Flow Meter (UFM)
5. 20kL Sump Tank & Sump Pump
6. Cathodic Protection
7. SCADA System
8. Density Cum Viscosity Meter
9. 12" Fire Water Network hooked up with CPCL Network
10. Highmast

DETAILS OF THE HDD CROSSINGS:

Sl. No	Description of Location	Length in M
1	Chennai port Crossing	635.72
2	Fisheries Harbour	431.52
3	N4 Police Station	791.51
4	NTO Kuppam Crossing	446.78
5	KanniKoil, Thiruvotriyur Grave and PattinatharKoil	980.79
6	MoR Junction	753.29
7	Ramakrishna Nagar, Bharath Nagar & Railway Crossing	911.62
8	Subramani Nagar &Kalaingnar Nagar	545.97
9	Buckingham Canal	878.920
	Total	6375.67

SAFETY FEATURES:

The pipeline is provided with the state of art facilities which include the following.

1. Higher thickness for increased safety.
2. 3Layer Polyethylene (3LPE) Coating for prevention of corrosion.
3. Impressed current Cathodic protection
4. Leak Detection System
5. Corrosion Inhibitor System
6. Piggable pipeline which permits cleaning of pipeline to prevent internal corrosion. Health assessment through intelligent pigging can be done.

STATUS OF THE WORK

The work of laying 42" new crude pipeline commenced on 07.06.2017 and the same was completed on 30.11.2018. The requisite clearances for the commissioning from the concerned authorities were obtained (like approval from Petroleum Explosive Safety Organisation(PESO), Consent to Operate from TNPCB). The pipeline was commissioned on 24.12.2018 and the crude oil was transported from Chennai Port to CPCL and the new 42" crude pipeline is operational since then. The details of crude transported using the 42" crude pipeline is attached as Annexure -1.

The pipeline project was dedicated to the nation by the Hon'ble Prime Minister on 10.02.2019 through Video Conference.

Purushotham
23/10/2020

(PURUSHOTHAM.)
DGM-Projects
CPCL,
Chennai-68.

Photographs taken during construction of 42" Crude pipeline

Inside ChPT near BD -3

HDD pulling near Buckhingham Canal

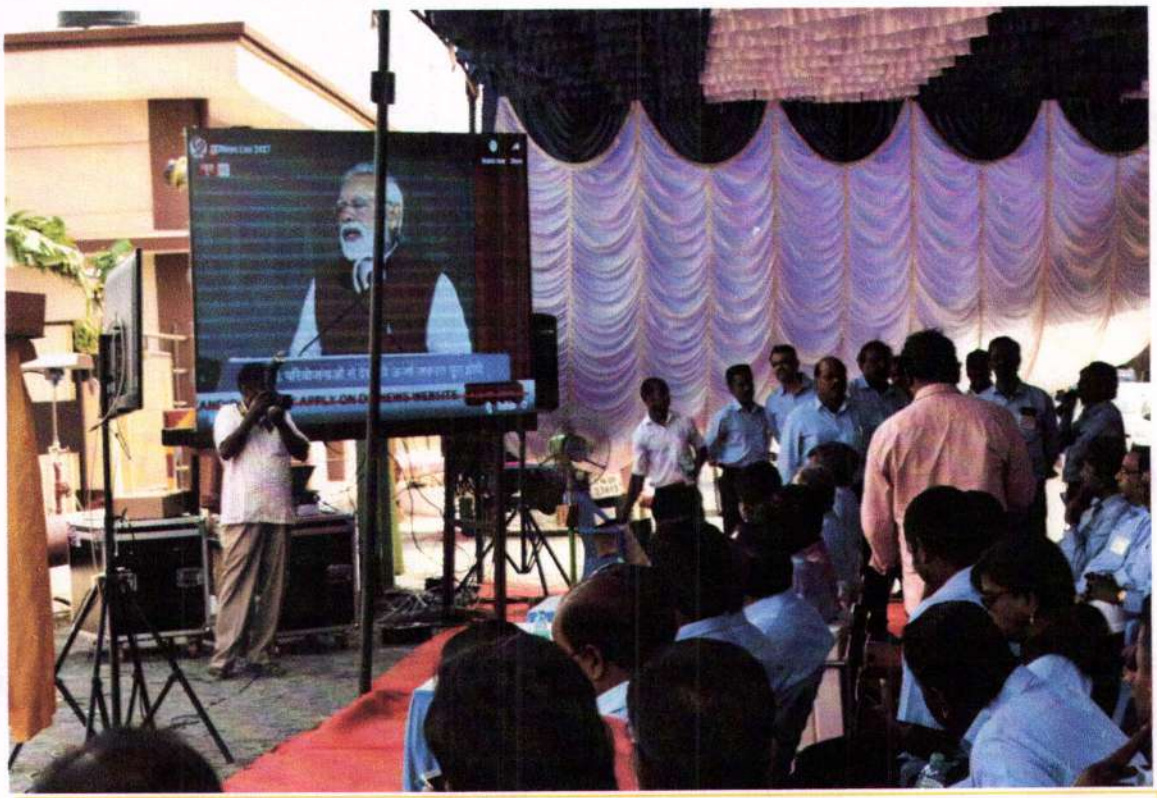
Pipeline laying in KVK Kuppam

Pipeline laying near NTO Kuppam

HDD String

HDD work in Thiruvottiyur Kuppam

Pipeline laying near NTO Kuppam



Honorable Prime Minister dedicating new 42" Crude Pipeline to Nation

Annexure - I

42" Crude Receipt Line Operational Details Since Commssioning (24-Dec-2018) To 20-Oct-2020							
S NO	Discharge Start Date	VESSEL	DOCK	LINE	OPERATION	GRADE	Qty - KL
1	12/24/2018	MT SWARNA GANGA	BD III	42"	CRUDE	BOM	63346.00
2	12/26/2018	MT DESH MAHIMA	BD III	42"	CRUDE	LBN	46790.00
			BD III	42"	CRUDE	MIR	50212.00
3	12/31/2018	MT TONY	BD III	42"	CRUDE	BAH	160508.00
4	02-01-219	MT SCF URAL	BD III	42"	CRUDE	BAL	166973.20
5	1/5/2019	MT JAG LADIKI	BD III	42"	CRUDE	AZE	163499.00
6	1/9/2019	MT DESH SHAKTHI	BD III	42"	CRUDE	KUW	160648.00
7	1/11/2019	MT SWARNA KRISHNA	BD III	42"	CRUDE	RAVVA	78214.00
8	1/17/2019	MT S.B.PUTRA	BD III	42"	CRUDE	BOM	62772.00
9	1/20/2019	MT NEW TRUST	BD III	42"	CRUDE	ARB	160884.00
10	1/24/2019	MT TORM VOL BORG	BD I	42"	CRUDE	SER	88672.00
11	1/26/2019	MT JAG LOG	BD III	42"	CRUDE	BAL	158640.00
12	1/28/2019	MT S.KRISHNA	BD III	42"	CRUDE	BOM	62827.00
14	2/1/2019	MT PARASHURAM	BD III	42"	CRUDE	RAVVA	83846.00
15	2/3/2019	MT KHIBINI	BD III	42"	CRUDE	KUW	162820.00
16	2/11/2019	MT SWARNA GODAVARI	BD III	42"	CRUDE	BOM	62432.84
17	2/15/2019	MT GIANNIS	BD III	42"	CRUDE	BAH	165661.60
18	2/18/2019	MT NORDIC MOON	BD III	42"	CRUDE	ARB	171055.70
19	2/19/2019	MT SWARNA KRISHNA	BD III	42"	CRUDE	BOM	62503.00
20	2/21/2019	MT.SEADANCE	BD III	42"	CRUDE	SER/CHA	98965.00
21	2/24/2019	MT.SCF SAYAN	BD III	42"	CRUDE	BAL	154086.82
24	3/2/2019	MT S. GODAVARI	BD III	42"	CRUDE	BOM	66023.75
25	3/6/2019	MT CHAFA	BD III	42"	CRUDE	KUW	160418.36
26	3/10/2019	MT TILOS I	BD III	42"	CRUDE	CAB	160302.70
27	3/12/2019	MT S . KRISHNA	BD III	42"	CRUDE	BOM	62641.17
28	3/14/2019	MT SYMPONY	BD III	42"	CRUDE	ARB	161343.16
29	3/20/2019	MT MARATHI	BD III	42"	CRUDE	BAH	153889.86
30	3/23/2019	MT SWARNA SINDHU	BD III	42"	CRUDE	BOM	66497.17
31	3/24/2019	MT JAG LAKSHITA	BD III	42"	CRUDE	UPP	160815.67
32	3/26/2019	MT KALUGA	BD III	42"	CRUDE	SER	96603.99
35	4/4/2019	MT MONDE TOLEDO	BD III	42"	CRUDE	AGB	156946.60
36	4/6/2019	MT POSEDION	BD III	42"	CRUDE	BAL	161737.17
37	4/13/2019	MT S.B.PUTRA	BD I	42"	CRUDE	BOM	62634.33
38	4/15/2019	MT ISTANBUL	BD III	42"	CRUDE	ARB	159713.96
39	4/17/2019	MT FAIRWAY	BD III	42"	CRUDE	BAH	154551.41
40	4/21/2019	MT S . KRISHNA	BD III	42"	CRUDE	BOM	63358.60
41	4/25/2019	MT SEACROSS	BD III	42"	CRUDE	BAL	154826.15
42	4/27/2019	MT S. KRISHNA	BD III	42"	CRUDE	RAVVA	74082.38
45	5/1/2019	MT TONY	BD III	42"	CRUDE	HUN	145778.28
46	5/6/2019	MT S. KRISHNA	BD I	42"	CRUDE	BOM	44038.27
47	5/11/2019	MT DELTA HELLAS	BD III	42"	CRUDE	BAL	154614.90
48	5/13/2019	MT PARASHURAM	BD III	42"	CRUDE	BOM	62964.60
49	5/18/2019	MT KISLAND	BD III	42"	CRUDE	ARB	161129.80
50	5/20/2019	MT ODESSA	BD III	42"	CRUDE	BAH	160684.50
51	5/22/2019	MT S.KRISHNA	BD III	42"	CRUDE	BOM	82447.84
52	5/29/2019	MT DESH SHAKTHI	BD III	42"	CRUDE	BAL	168576.80
53	5/31/2019	MT MARIA GRACE	BD III	42"	CRUDE	SAH	168723.33
55	6/1/2019	MT SIKINOS I	BD III	42"	CRUDE	BAL	163448.00
56	6/6/2019	MT JAG LEENA	BD III	42"	CRUDE	ESC	151247.70
57	6/9/2019	MT SWARNA GANGA	BD III	42"	CRUDE	NRM	50384.00
58	6/16/2019	MT SWARNA SINDHU	BD III	42"	CRUDE	BOM	63967.88
59	6/17/2019	MT SCF CAUCASUS	BD III	42"	CRUDE	BAH	155669.72
60	6/19/2019	MT ASTRO PERSEUS	BD III	42"	CRUDE	ARB	161484.00
61	6/25/2019	MT SWARNA GANGA	BD III	42"	CRUDE	BOM	62797.13
62	6/27/2019	MT DESH SHAKTHI	BD III	42"	CRUDE	BAL	155392.44
64	7/1/2019	MT SIKINOS I	BD III	42"	CRUDE	BAL	155216.54

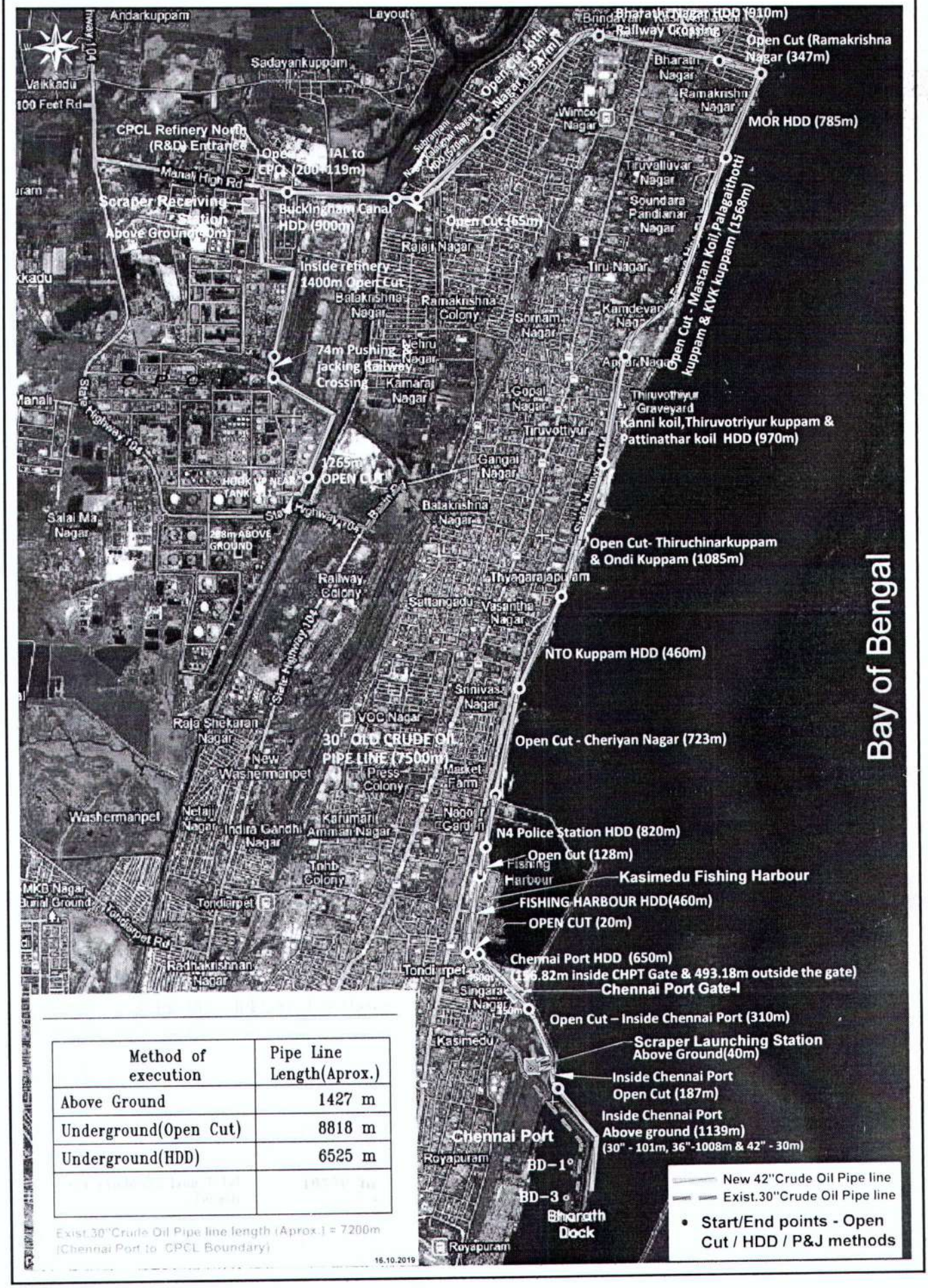
65	7/3/2019	MT S. GANGA	BD III	42"	CRUDE	RAVVA	71778.00
66	7/10/2019	MT S. GANGA	BD III	42"	CRUDE	NRM	46838.00
67	7/12/2019	MT AGISTRI	BD III	42"	CRUDE	ARB	160972.76
68	7/14/2019	MT AGBAMI	BD III	42"	CRUDE	AGB	156262.33
69	7/16/2019	MT MAHARISHI PARASHURAM	BDIII	42"	CRUDE	BOM	62743.00
70	7/19/2019	MT NEW LEGEND	BD III	42"	CRUDE	MUR	119008.00
71	7/21/2019	MT LESVOS	BD III	42"	CRUDE	BAH	155371.36
72	7/23/2019	MT STROOPER	BDIII	42"	CRUDE	SEL	95830.00
73	7/24/2019	MT NEW LEGEND	BD III	42"	CRUDE	MUR	42263.00
75	8/1/2019	MT DESH SHAKTI	BD III	42"	CRUDE	MUR	168649.45
76	8/8/2019	MT JAG LATEEF	BDIII	42"	CRUDE	DAS	37079.40
77	8/12/2019	MT BACALIAROS	BDIII	42"	CRUDE	ESC	153165.09
78	8/14/2019	MT LESVOS	BDIII	42"	CRUDE	ARB	161701.64
79	8/16/2019	MT M. PARASHURAM	BDIII	42"	CRUDE	BOM	62576.60
80	8/17/2019	MT NOVO	BDIII	42"	CRUDE	BAH	156075.62
81	8/19/2019	MT ELENI	BDIII	42"	CRUDE	AGB	156949.00
82	8/23/2019	MT TONY	BDIII	42"	CRUDE	BAL	168630.00
83	8/31/2019	MT DESH SHAKTHI	BDIII	42"	CRUDE	BAL	168625.70
85	9/3/2019	MT SWARNA GODAVARI	BD III	42"	CRUDE	BOM	73737.00
86	9/4/2019	MT JAG LALIT	BD III	42"	CRUDE	ESC	150541.30
87	9/6/2019	MT SWARNA GANGA	BD III	42"	CRUDE	NRM	71028.90
88	9/16/2019	MT ELENI	BD III	42"	CRUDE	BAL	155951.29
89	9/23/2019	MT SWARNA SINDHU	BD III	42"	CRUDE	BOM	77030.99
90	9/25/2019	I. WARRIOR	BD III	42"	CRUDE	AZE	169384.86
91	9/27/2019	MT AMAZON	BD III	42"	CRUDE	BAL	155392.93
93	10/4/2019	MT SWARNA GODAVARI	BD III	42"	CRUDE	BOM	68221.01
94	10/12/2019	MT SWARNA SINDHU	BD III	42"	CRUDE	BOM	63105.58
95	10/14/2019	MT F.WARRIOR	BD III	42"	CRUDE	BAL	165639.80
96	10/16/2019	MT CRIMSON	BD III	42"	CRUDE	ARB	161533.40
97	10/20/2019	MT S.KRISHNA	BD III	42"	CRUDE	NRM	61932.23
98	10/21/2019	MT OLYMPIC FIGHTER	BD III	42"	CRUDE	BAH	155231.72
99	10/31/2019	MT Swarna Ganga	BD III	42"	CRUDE	BOM	60703.53
101	11/6/2019	MT Swarna Krishna	BD III	42"	CRUDE	BOM	82663.66
102	11/8/2019	MT Desh Shakthi	BD III	42"	CRUDE	BAL	168343.35
103	11/10/2019	MT Kriti Island	BD III	42"	CRUDE	MUR	169877.30
104	11/13/2019	MT Sikinos I	BD III	42"	CRUDE	AGB	156490.26
105	11/14/2019	MT Ithaki Warrior	BD III	42"	CRUDE	ARB	161020.50
106	11/17/2019	MT Olymbic Fighter	BD III	42"	CRUDE	BAL	154905.64
107	11/27/2019	MT Swarna Sindhu	BD III	42"	CRUDE	BOM	72619.88
109	12/1/2019	Mt PHAETHON	BD III	42"	CRUDE	BSR	152469.35
110	12/3/2019	Mt Delta spirit	BD III	42"	CRUDE	BAH	154662.54
111	12/5/2019	mt BORDIERO	BD III	42"	CRUDE	AGB	156636.80
112	12/10/2019	MT SWARNA SINDHU	BD III	42"	CRUDE	NRM	69451.80
113	12/11/2019	MT SWARNA KRISHNA	BD III	42"	CRUDE	BOM	61357.43
114	12/17/2019	MR CRIMPSON	BD III	42"	CRUDE	ARB	160925.80
115	12/20/2019	MT MOUNT FUGI	BD III	42"	CRUDE	BAL	154645.14
116	12/27/2019	MT DESH SHOBHA	BD III	42"	CRUDE	BAH	154871.45
117	12/30/2019	MT DELTA SKY	BD III	42"	CRUDE	AMENUM	153722.31
122	1/3/2020	MT SEA AMBER	BD III	42"	CRUDE	BAL	154053.81
123	1/6/2020	MT PARASHURAM	BD III	42"	CRUDE	BOM	63100.70
124	1/9/2020	mt swarna godavari	BD III	42"	CRUDE	BOM	82878.85
125	1/12/2020	MT KRITI ISLAND	BD III	42"	CRUDE	ARB	160794.40
126	1/16/2020	mt swarna godavari	BD III	42"	CRUDE	RAV	64816.22
127	1/18/2020	MT DESH SHAKTHI	BD III	42"	CRUDE	ARB	160583.82
128	1/20/2020	MT Mount Fugi	BD III	42"	CRUDE	BAH	154725.02
129	1/23/2020	NARIMANAM	BD III	42"	CRUDE	NRM	69986.55
130	1/26/2020	MONTE SERENATOR	BD III	42"	CRUDE	BAL	165597.31
131	1/29/2020	SWARNA KRISHNA	BD III	42"	CRUDE	BOM	59742.86
133	2/4/2020	MT AEGEAN VISION	BD III	42"	CRUDE	BAL	166962.90
134	2/9/2020	MT LESVOS	BD III	42"	CRUDE	ESC	149775.53
135	2/13/2020	MT DESH ABHIMAN	BD III	42"	CRUDE	BAL	154342.60

136	2/16/2020	MT PARASHURAM	BD III	42"	CRUDE	BOM	60135.80
137	2/20/2020	MT CRIMSON	BD III	42"	CRUDE	ARB	160359.86
138	2/27/2020	MT S KRISHNA	BD III	42"	CRUDE	BOM	61151.16
139	2/28/2020	MT JAG LALITH	BD III	42"	CRUDE	ESC	152345.60
141	3/1/2020	MT AEGAN VISION	BD III	42"	CRUDE	BAL	167311.80
142	3/7/2020	MT MARAN HERCULES	BD III	42"	CRUDE	SAH	104542.00
143	3/9/2020	MT SWARNA KRISHNA	BD III	42"	CRUDE	RAVA	69692.54
144	3/16/2020	MT SWARNA VISHNU	BD III	42"	CRUDE	ARB	157593.00
145	3/18/2020	MT SWARNA KRISHNA	BD III	42"	CRUDE	NRM	69828.91
146	3/19/2020	MT MAHARISHI PARASHURAM	BD III	42"	CRUDE	BOM	63116.80
147	3/20/2020	MT CRIMSON	BD III	42"	CRUDE	BAH	156156.74
148	3/24/2020	MT TATAKI	BD III	42"	CRUDE	BAL	166102.16
149	3/26/2020	MT SWARNA GANAGA	BD III	42"	CRUDE	BOM	59605.25
152	4/5/2020	MT RIDGE BURYJOHNZIPER	BD III	42"	CRUDE	AME	161055.05
153	4/14/2020	MT PATROCLUS	BD III	42"	CRUDE	ARB	155595.50
154	4/19/2020	MT RESOLVE	BD III	42"	CRUDE	BOM	59709.40
155	4/25/2020	MT JAG LATEEF	BD III	42"	CRUDE	DAS	162172.60
156	4/30/2020	MT MARAN HERCULAS	BD III	42"	CRUDE	PLU	168508.00
158	5/8/2020	MT SWARNA GANGA	BD III	42"	CRUDE	NRM	63116.42
159	5/18/2020	MT SWARNA BRAHMAPUTRA	BD III	42"	CRUDE	BOM	61824.24
160	5/21/2020	MT CRIMSON	BD III	42"	CRUDE	BAH	155153.33
161	5/27/2020	MT SWARNA BRAHMAPUTRA	BD III	42"	CRUDE	RAV	79777.26
163	6/2/2020	MT NORDIC GRACE	BD III	42"	CRUDE	BAH	158763.30
164	6/11/2020	MT DESH ABHIMANN	BD III	42"	CRUDE	BAL	154226.00
165	6/18/2020	MT SWARNA GANGA	BD III	42"	CRUDE	BOM	69155.00
166	6/21/2020	MT MOUNT FUJI	BD III	42"	CRUDE	BAL	151048.44
167	6/24/2020	MT MAHARISHI PARASHURAM	BD III	42"	CRUDE	BOM	62505.50
168	6/27/2020	MT NEW PRIDE	BD III	42"	CRUDE	ARB	161468.00
170	7/7/2020	MT KIRTI ISLAND	BD III	42"	CRUDE	DAS	161907.60
171	7/11/2020	MT JAG LALIT	BD III	42"	CRUDE	AME	160573.30
172	7/14/2020	MT MAHARISHI PARASURAM	BD III	42"	CRUDE	BOM	62744.50
173	7/16/2020	MT JAG LATEEF	BD III	42"	CRUDE	BAL	155541.10
174	7/21/2020	MT ANTIGUAI	BD III	42"	CRUDE	ARB	154019.00
175	7/28/2020	MT RESOLVE	BD III	42"	CRUDE	BOM	61987.60
176	8/6/2020	MT SAMAHAT	BD III	42"	CRUDE	BAH	139.27
177	8/8/2020	MT CRIMSON	BD III	42"	CRUDE	BAL	132.59
178	8/28/2020	MT MARAN HELLAN	BD III	42"	CRUDE	BAS-LT	133.27
179	8/30/2020	MT RESOLVE	BD III	42"	CRUDE	NRM	54.96
180	9/1/2020	MT RIDGEBURRY ALINA L	BD III	42"	CRUDE	SAXI BATUQUE	123.20
181	9/3/2020	MT M' PARASHURAM	BD III	42"	CRUDE	MH	50.32
182	9/5/2020	MT CRIMSON	BD III	42"	CRUDE	BAS-LT	133.99
183	9/7/2020	MT S' KRISHNA	BD III	42"	CRUDE	MH	50.27
184	9/15/2020	MT S' BRAHMAPUTRA	BD III	42"	CRUDE	MH	50.63
185	9/17/2020	MT SAMOS	BD III	42"	CRUDE	ARAB MIX	136.91
186	9/21/2020	MT JAG LATEEF	BD III	42"	CRUDE	BAS-HY	140.53
187	9/26/2020	MT S' KRISHNA	BD III	42"	CRUDE	BH-NBP	55.65
188	9/29/2020	MT NORDIC MOON	BD III	42"	CRUDE	BONNY LT	134.85
189	10/3/2020	MT CRIMSON	BD III	42"	CRUDE	BAS-LT	132.14
190	10/6/2020	MT S' BRAHMAPUTRA	BD III	42"	CRUDE	NRM	44.13
191	10/14/2020	MT S' SINDHU	BD III	42"	CRUDE	MH	56.70
192	10/17/2020	MT MOGRA	BD III	42"	CRUDE	ARAB LT	135.64
193	10/20/2020	MT JAG LATEEF	BD III	42"	CRUDE	BAS-HY	139.07

Chennai Petroleum Corporation Ltd.,
(A group company of Indian Oil)

AERIAL MAP

NEW 42" CRUDE OIL PIPE LINE ROUTE FROM CHENNAI PORT TO CPCL, MANALI REFINERY



Method of execution	Pipe Line Length(Aprox.)
Above Ground	1427 m
Underground(Open Cut)	8818 m
Underground(HDD)	6525 m

Exist.30"Crude Oil Pipe line length (Aprox.) = 7200m
(Chennai Port to CPCL Boundary)

16.10.2019

Annexure-10

Importance and significance of the new crude oil pipeline project for CPCL refinery

The present pipeline from Chennai Port to CPCL ha been commissioned in 1969. This 7.5km long 30inch Dia. 8mm Thk pipeline. This line passes through metalled roads, marshy areas, railway tracks and highly inhabitated areas. No. of structures including petrol pumps have come up above the Underground pipeline over a period of time.

The old pipe line is presently operating at 5kg/cm2 against its operating pressure of 9.5 kg/cm2.

Considering the ageing of the pipeline, the operating parameters have been scaled down. Due to the ageing factor and inhabitation, no further coating repairs can be undertaken in the pipeline.

In order to overcome all the above shortcomings, the new 42" Dia pipeline of 17km length(2.8km inside CPCL + 11.9km CPCL outer to ChPT outer + 2.3km inside ChPT) has been designed with increased safety features away from the habituated areas and along the service road of Ennore Expressway.The new pipeline would serve as the lifeline to CPCL and thereby serving the entire state of Tamil Nadu.

Importance and Significance of project for state- contribution to exchequer in form of taxes etc. CPCL Manali is the only major Refinery in Tamil Nadu catering to the needs of the petroleum products in the State of Tamil Nadu and neighboring states. Any damage to the existing pipeline thereby affecting the crude oil supply to the refinery, shall have a detrimental effect in functioning of the refinery and thereby affecting the supply of essential petroleum products such as Petrol, Diesel, LPG, Lube oil etc. This shall have consequential effect on increasing the coastal input and increase in the cost of the essential commodities.

Distinctive State Of the art and Safety features of the project

a. Pipeline system designed and engineered as per applicable International Standards and Codes.

b. Pipeline thickness is increased from 8mm(old) to 12.7 mm Thickness for open cut area and 17.48mm for HDD sections which is going 20m below ground level. The pipes have been manufactured as per API Standards.

c. The pipes used for this project is manufactured as API 5L X42 standard and tested as per API 1104.

d. The operating pressure of this new crude oil line is 10Kg/cm2 and pre hydrotest is planned for each segment at 64kg/cm2. The final hydrotest of this line is 5 times of operating pressure 50Kg/cm2.

e. Pigging facility has been provided in the pipeline to ensure internal cleanliness of the pipeline and monitor corrosion. Intelligent pigging at regular intervals for monitoring of pipeline helath condition.

f. Corrosion inhibitor is injected at Chennai port to prevent internal corrosion. Also corrosion monitoring probes providing for this line to monitor corrosion loss on daily basis.

g. The pipes are coated with 3 –Layer polyethylene coating and cathodic protection has been provided to prevent external corrosion.

h. SCADA System with 24 hours monitoring and Automatic shutdown of pumping in case of emergency.

i. Leak detection system with high accuracy to ensure automatic shutdown of pumping in case of even minor leakages.

पुरुषोत्तम
PURUSHOTHAM
उप महाप्रबंधक (परियोजना-मेकेनिकल)
Dy. General Manager (Projects-Mechanical)
चेन्नै पेट्रोलियम कॉर्पोरेशन लिमिटेड
Chennai Petroleum Corporation Ltd.
मणली / Manali, चेन्नै / Chennai - 600 068.

Chennai Petroleum Corporation Limited

Crisis Management Plan for the upcoming 42" Crude Oil Pipeline from Chennai Port To CPCL, Manali Project

0	27/09/14	P&D:03:089	SONAL GUPTA	T.RAJASEKARAN	D.ARTHUR.MANOHAR
REV. NO.	DATE	DOC.NO.	PREPARED BY	CHECKED BY	APPROVED BY

1.0 Introduction:

Chennai Petroleum Corporation Limited (CPCL) (a group Company of Indian Oil Corporation Limited), is in the business of petroleum refining and petrochemicals. CPCL is in the process of laying a 42" dia crude oil pipeline from Chennai Port Trust (ChPT) Oil Jetty, to its Refinery at Manali, Chennai, in the state of Tamil Nadu, all along the Ennore expressway and through Manali Oil Refinery Road upto CPCL, for replacing their existing old 30" crude oil pipeline for improvement in productivity and expansion of the Refinery capacity. The proposed length of the pipeline is approximately 17 km.

The scope of work under this project broadly involves Mainline works, Combined Stations Works of Mechanical, Civil, Electrical & Instrumentation works at Chennai Port Trust and at CPCL, Telecommunication/OFC works & Cathodic Protection works for 42" Crude oil pipeline from Chennai Port Trust (ChPT) to CPCL, Manali Refinery.

2.0 Measures for prevention of Disaster and Terrorist Activities (4.2.7)

The following measures have been taken to ensure the pipeline integrity in the event of disaster and terrorist activities:

I. Design Measures:

a. Proposed pipeline thickness (12.5 mm) is more than required thickness.

b. Radiographic Examination of the Weld, hydro-testing in the field after laying of the pipeline.

c. Cathodic Protection to prevent external corrosion on carrier pipe.

d. 3 Layer Polyethylene coating to prevent external corrosion on carrier pipes.

II. Operational Measures:

a. SCADA (Supervisory Control and Data Acquisition) system for leak identification.

b. Effective and efficient monitoring and control of entire pipeline network from MCC (Master Control Centre)

c. Emergency shutdown of entire pipeline from MCC.

d. To display operation parameters/ alarms to the entire pipeline.

e. Corrosion Inhibitor injection at ChPT to protect the pipeline from internal corrosion.

f. Nitrogen purging at ChPT to evacuate the pipeline to CPCL crude oil tanks in case of emergency.

g. System is supported by Optical Fibre communication network – a reliable communication.

h. Periodic Inspection through Scraper and intelligent pigging of the pipeline.

i. Fortnightly walk-through survey by dedicated team.

j. Weekly checking of Cathodic Protection system by external agency to ensure proper functioning.

k. Daily walk-through survey by external agency

In case of leak or damage to the crude oil pipeline, CPCL is solely responsible for handling the entire emergency till restoration of normalcy.

3.0 Knowledge Management For Chemical Terrorism Disaster (4.3.2.C)

Proposed pipeline shall be laid minimum 1.5 metre below the ground level. Hence, there is very remote possibility of chemical terrorism disaster affecting the pipeline system.

4.0 Financial Arrangements for Implementation of Disaster preparedness, prevention, mitigation, response, relief, recovery and rehabilitation (6.2)

CPCL will provide necessary funds for implementation of disaster preparedness, prevention, mitigation, response, relief, recovery and rehabilitation

There are tie-ups with neighboring industries/ state government/ hospitals etc. to handle and manage the disasters.

5.0 Implementation Model (6.3.1 (iii) (i))

a. All the existing rule and regulations to ensure the safety and security of the pipeline have been considered.

b. SCADA for effective monitoring and control for entire pipeline has been provided to detect Crude oil leakage.

c. Emergency response and Disaster management team has been constituted to handle the situation and provide relief.

d. Training shall be provided to all site personnel, medical personnel, fire services and population staying close the pipeline route.

e. Drills shall be conducted on yearly basis to ensure that the staff and relevant authorities are adequately trained and all emergency equipments are in good working condition.

f. Restricted access shall be provided.

g. The tie-ups with neighboring industries/ state government/ fire services hospitals etc shall be strengthened to handle disaster.

6.0 Risk assessment and mitigation and Response to Disaster (2.i)

CPCL has carried out Risks analysis and Environmental Management plan using the services of M/s. Enviro Care Systems, Chennai and carried out a Hazardous Operation study to mitigate the risks by employing the services of **Cell for Industrial Safety & Risk Analysis (CISRA)** at **Central Leather Research Institute**, Adyar, Chennai.

The Risk analysis executive summary is given below:

a. Pool fire and fire ball modeling has been for various scenarios and the distances for 4.5 kw/m^2.The anticipated effect is 98 metre.

b. To tackle the consequences of a major emergency, a comprehensive disaster management plan has been formed.

The On-site Emergency action plan of the DMP consists of :

- First information
- Responsibilities of Chief Incident Controller
- Responsibilities of Work Incident Controller.

- Responsibilities of Emergency Communication Officer.
- Responsibilities of Key personnel.
- Responsibilities and action to be taken by essential staff and various teams during emergency

The Off-site emergency plan of DMP follows the On-site emergency plan. Off-site emergency is principally the responsibility of the Public Administration, with the assistance of many other agencies.

The major recommendations of the report are given below:

a. Periodic inspection of pipeline integrity.
b. Continuous patrolling at vulnerable locations.
c. Provide hydrocarbon monitors for identifying leaks at vulnerable locations.
d. Regular monitoring is recommended for controlling any entry of impurities in the crude oil.
e. Strainers to be cleaned periodically.

The Emergency Response team has been constituted by CPCL for disaster.

The plan for handling the above emergency situations is given below:

A. Communication Protocol for emergencies

B. Communication Process

C. Handling of Emergency.

A. Communication Protocol:

The following will be the main members and alternate members of the task force to handle emergencies from CPCL:

Department	Main Member	Alternate Member
Manufacturing	DGM (OMS)	CM/SM OMS
Maintenance	DGM (Maint-offsite)	CM(Maint-offsite)
Engg & Inspection	DGM (E&I)	CM(Insp)
Fire & Safety	DGM (F&S)	SM(F&S)
EP&S	DGM (EP&S)	SM(EP&S
Corp Communication	SM (CC)	SO(CC)

B. Communication Process:

Sl. No.	Description of activity	Action by
1	Whomsoever in CPCL receives information or comes to know of pipeline leak in public area shall immediately inform SMSO the details as made known to him.	Person who receives the information
2	The pipeline reported to be leaking as per the first information needs to be ascertained. Pending this confirmation, SMSO shall arrange to communicate on "first information as received" to DGM(OMS), DGM(E&I), DGM(Maint-offsite), SM(CC), DGM(EP&S), DGM(F&S) He may communicate thru phone / send mass SMS with the assistance of QC-Lab.	SMSO
2.1	On receipt of the first information DGM(OMS), DGM(E&I), DGM(Maint-offsite), DGM(F&S) will communicate the message to their respective GMs. SM(CC), will communicate to GM(HR) & DGM(admin),	DGM(OMS), DGM(E&I), DGM(Maint-offsite), SM(CC), DGM(F&S

3	Identifying the location of the pipeline leak based on the information received in consultation with the officials of ChPT.	DGM (OMS),& DGM(E&I) Who will report to GM(O)
4	Deputing persons to the reported location of pipeline leak to confirm the pipeline, colour of oil leaked, extent of leak, etc. • CISF • Pipeline Health monitoring agency	DGM (Admn) DGM (E,I&ITS), who will report to GM (O)
5	Ascertaining exact location of the leak and type of emergency • leak in CPCL owned pipeline • leak in pipeline owned by others	GM (O), who will instruct SMSO to inform all the task force members
6	If crude oil pipeline is found to be leaking / fire develops:	
	• Information to MoPNG, Secretary /AS/ JS	Emergency Control room, D (O)/ MD
	• Information & submission of report to TNPCB & OISD	GM (T)
	• Seeking police protection at the location of leak	GM(HR)
	• Information to Media	GM (T) assisted by SM CC)
7	If leak is from other pipelines, • Information to SM (CC) for keeping media informed	GM (T)
	• Information to concerned officials of IOC/BPC/MIA Industry	DGM (OMS)

C. Handling of emergency:

Sl. No.	Description of activity	Action by
1	In case the leak is from Crude oil line, • Information to ChPT for immediate suspension of pumping • Coordination for evacuation of line, to reduce leak and to facilitate identification of exact location and taking up repair work.	DGM(OMS)
2	• Cordoning the area with Police for safety and for traffic diversion, as required.	DGM(Admin)
3	Positioning Foam Tender, ERV as required	DGM (F&S)
4	• Mobilization of Line identifier at site, identification of leaking spot for excavation by Maintenance and recommendation for repair. • Mobilization of adequate resources for identifying the leaks .(JCB, shoring & shutting material, dewatering pumps, Gully suckers & Manpower with tools) • Excavation to the required depth to identify the leaks. • Replacement of the contaminated earth with fresh earth. • After arresting the leaks, with proper clearance from concerned, back filling and restoring the site to the original condition.	DGM (E,I&ITS) / CM (Maint-Civil)
6	• Identification of approximate location of the leak for facilitating excavation • Identification of exact location of leak after excavation for facilitating repair • Inspection and recommendation for repair • Testing after repair and clearance for refill	DGM(E&I)

7	• Identify the leaks in coordination with Inspection • Arresting the leak (if it is minor one) using suitable online leak arrest- clamps for 42"Crude oil line. • Co- ordination with concerned departments and arrange Fire trucks as stand by & Gully suckers for removal of spilled oil from the leaky location during the Maint activities. • If it is a major leak, displacement of the line content, in coordination with OM&S & ChPT/IOTL officials • Repair work & Testing as per the CPCL Inspection advise and procedures	CM – Offsite Mechanical -I

7.0 Waste disposal plan i.e. disused pipelines and refinery effluent

(i) Disused Pipeline

The existing 30" crude oil pipeline will be made hydrocarbon free by water and steam flushing. The same shall be disconnected and discontinued at CHPT.

At CPCL also the pipeline will be isolated using blinds and valves.

As the existing 30" crude oil pipeline is buried, The same shall be left as it is and will be declared as redundant.

(ii) Leaked Crude Oil

In case of leak in the crude oil pipeline, the same will be collected from the leaky location and the oil content will be recovered after treating in the existing Effluent treatment plants at the Refinery.

****

Annexure-12

DEPARTMENT OF ENVIRONMENT

From
Dr. H. Malleshappa, I.F.S.,
Member Secretary, TNSCZMA &
Director of Environment,
Ground Floor, Panagal Building,
Saidapet, Chennai 600 015

To
1) The Member-Secretary,
Tamil Nadu Pollution Control Board,
76, Mount Salai, Guindy,
Chennai – 600 032.

2) The District Environmental Engineer /
Convener-DCZMA,
Tamil Nadu Pollution Control Board,
77-A,South Avenue Road,
Ambattur Industrial Estate,
Ambattur Taluk, Chennai - 600 058.

R.C.No.P1 / 2445 / 2016 dated 08.09.2017

Sir,

Sub.: DoE – Representation of Thiru M.R. Thiyagarajan on alleged violation of CRZ by M/s. Chennai Petroleum Corporation Ltd., – Forwarded - Regarding

Ref.: Govt. of India, MoEF & CC letter No.10-78/2008-IA.III dated 25.08.2017

In the ref. cited, Govt. of India, MoEF & CC has forwarded a representation received from Thiru M.R. Thiyagarajan of Meenava Thanthai K.R.Selvarajkumar Meenavar Nala Sangam regarding alleged violation of CRZ Clearance conditions issued to M/s. Chennai Petroleum Corporation Ltd., for laying of pipelines of crude oils from Chennai Port to CPCL Refinery at Manali.

A copy of the reference cited letter is enclosed herewith and requested to furnish present stage of the implementation of the project issue immediately, so as to take further action in this regard.

Yours faithfully,
Sd./- H. Malleshappa,
Director of Environment &
Member Secretary, TNSCZMA

Encl.: As above

Copy: File

/ Forwarded by Order /

8/9/17
For Director of Environment

Annexure-13

Surya Facilities Services Pvt Ltd.
No.:82, 3rd floor, Arcot Road, AVM Avenue, Virugambakkam, Chennai - 92
Daily Walk Through Inspection Report

SURVEY DONE FOR : CPCL, Manali, Chennai - 68 | **INSPECTION DATE 20-10-2020**

SL. NO.	INSPECTION PARAMETER / LOCATION	(A) 42 inch Crudeline from CHPT to CPCL, Manali				(B) 10 inch LPG Pipeline from CPCL to CPCL Bulk storage		
		TLP -19 R&D gate to TLP-13	TLP-13 MOR jn. To TLP-8	TLP-8(KLS gas) to TLP-5	TLP-5 (N4 bus stop) to TLP-3 FHMC	CPCL compd.west end to MFL Maingate.	MFL Maingate to TLP-3 (Jagadamba Co2	TLP-3 to IOTL Maingate
1.1	sapilng/Trees planted in row	OK	OK	20 Nos	OK	OK	NIL	OK
1.2	Water Stagnation	NIL	NIL	NIL	NIL	NIL	NIL	NIL
1.3	Leak / Oil Stagnation	NIL	NIL	NIL	NIL	NIL	NIL	NIL
1.4	Temporary hutment nearby location	NIL	YES Nos	NIL	NIL	NIL	NIL	NIL
1.5	Debris dumping / collection	NIL	NIL	NIL	NIL	NO	NIL	NIL
1.6	Excavation/Construction/Boring	NO	YES Nos	NO	NO	NO	NO	NO
1.7	OFC Marked TLP box and post condition	OK	OK	OK	OK	OK	NIL	OK

Major Observations / Remarks:-

42" Crude line near TLP BOX-3 EMRIP alignment road work started by Chennai Fishing work in progress

42" Crude line near IMC fiber optic cable laying is not done

42" crude line near TLP Box - 11 (20.10.2020)

10"LPG line near MFL yard (20.10.2020)

Review / Inspected By: 20/10/2020

For Surya Facilities Services Pvt Ltd
V. Muthu V. Muthuraman

20.10.20 **For Chennai Petroleum Corporation Limited**

Chief Manager (Inspection)

Surya Facilities Services Pvt Ltd.
No.:82, 3rd floor, Arcot Road, AVM Avenue, Virugambakkam, Chennai - 92
Daily Walk Through Inspection Report

SURVEY DONE FOR : CPCL, Manali, Chennai - 68 | **INSPECTION DATE 21-10-202**

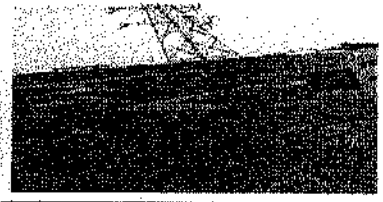
SL. NO.	INSPECTION PARAMETER / LOCATION	(A) 42 Inch Crudeline from CHPT to CPCL, Manali				(B) 10 inch LPG Pipeline from CPCL to CPCL Bulk storage		
		TLP -19 R&D gate to TLP-13	TLP-13 MOR jn. To TLP-8	TLP-8(KLS gas) to TLP-5	TLP-5 (N4 bus stop) to TLP-3 FHMC	CPCL compd.west end to MFL Maingate.	MFL Maingate to TLP-3 (Jagadamba Co2	TLP-3 to IOTL Maingate
1.1	sapilng/Trees planted in row	OK	OK	20 Nos	OK	OK	NIL	OK
1.2	Water Stagnation	NIL	NIL	NIL	NIL	NIL	NIL	NIL
1.3	Leak / Oil Stagnation	NIL	NIL	NIL	NIL	NIL	NIL	NIL
1.4	Temporary hutment nearby location	NIL	YES Nil	NIL	NIL	NIL	NIL	NIL
1.5	Debris dumping / collection	NIL	NIL	NIL	NIL	NO	NIL	NIL
1.6	Excavation/Construction/Boring	NO	YES Nil	NO	NO	NO	NO	NO
1.7	OFC Marked TLP box and post condition	OK	OK	OK	OK	OK	NIL	OK

Major Observations / Remarks:-

42" Crude line near TLP BOX-3 EMRIP alignment road work started by Chennai Fishing work in progress

42" Crude line near IMC fiber optic cable laying is not done

42" crude line near TLP Box - 7 (21.10.2020)



10"LPG line near MFL river (21.10.2020)

Review / Inspected By: 21/10/2020

For Surya Facilities Services Pvt Ltd
V. Muthu V. Muthukumar

21.10.20

For Chennai Petroleum Corporation Limited

Chief Manager (Inspection)

CPCL

42" Crude Oil Pipeline from CHPT to CPCL

CP System Survey Report

CES

Annexure-14

TR Unit Parameters:	LOCATON	TIME TOTALISER READING		TR unit AC (input)		TR unit DC (Output)		REFERENCE CELL PSP (V)			Auto/ Manual	DATE: 25.09.2020
		PREVIOUS	PRESENT	VOLT (V)	CURRENT (A)	VOLT (V)	CURRENT (A)	RE-1	RE-2	RE-3		
	1. CHPT	-	-	230	2.8	1.7	2.9	0.910	1.030	1.000	Auto	DONE BY: A.VINOTHKUMAR
	2. CPCL	-	-	242	0.1	3.3	2.8	1.090	0.980	1.010	Auto	

SL. No.	TLP No.	CHAINAGE (km)	LOCATION	TLP TYPE	POTENTIAL READINGS (wrt. Cu/ $CuSo_4$ Cell) in (- ve Volts)										REMARKS
					P1	P2	P3	P4	CORR. COUPON	Mg. ANODE	GRONDING CELL				
											PROTECTED		UNPROTECTED		
											PIPE	Zn. ANODE	PIPE	Zn. ANODE	
GROUP A															
1	1	-	IJ 1	B	0.921	0.828	-	-	0.048	-	0.921	1.209	0.828	1.163	
2	2	-	IJ 2	B	1.002	1.001	1.000	-	0.391	-	1.002	0.939	0.605	0.975	
GROUP B															
1	1	0	CHPT SLB Area	B	1.039	0.844	-	-	0.478	-	1.039	1.035	0.844	0.915	
2	2	0.035	CHPT SLB Area	DMV	0.945	0.944	-	-	0.335	-	0.945	0.995	-	-	
3	3	1.13	Rasimedu (Near High Mast Light)	A	0.995	0.992	-	-	0.355	1.521	-	-	-	-	Mg A2-1.443
4	4	1.693	Fisheries Harbour (HDD Entry)	B	0.980	0.975	0.970	0.979	0.465	1.509	-	-	-	-	
5	5	2.516	North of N4 Bus Stop (HDD Exit)	B	0.995	0.994	0.993	0.995	0.459	1.490	-	-	-	-	
6	6	2.632	East of Veeraraghavan Road (Bunker Area)	A	0.970	0.971	-	-	0.457	1.571	-	-	-	-	
7	7	3.24	BPCL Petrol Bunk (NTO Kuppam)	B	0.978	0.980	0.980	0.980	0.535	1.553	-	-	-	-	
8	8	3.72	North of KLS Gas Station (ONGC Kuppam Amma Unavagam opp.)	A	0.971	0.970	-	-	0.263	1.492	-	-	-	-	
9	9	4.795	RTO (Kanni Koil- HDD Punch Out Point)	B	0.945	0.945	0.944	0.944	0.518	1.564	-	-	-	-	
10	10	5.79	Near STS Services PVT Ltd.(HDD Entry)	A	0.939	0.939	-	-	0.468	1.565	-	-	-	-	
11	11	6.542	East of Carborundum (East Gate)	B	0.933	0.933	0.935	0.935	0.327	1.438	-	-	-	-	Mg A2-1.441
12	12	7.33	East of MRF Road (MOR Jn. Punch Out)	A	0.935	0.935	-	-	0.254	1.579	-	-	-	-	
13	13	8.098	South west of MOR junction. (MOR Jn. Punch in)	B	0.913	0.915	0.910	0.913	0.352	1.417	-	-	-	-	
14	14	8.466	Ramakrishna Nagar Ground (Punch Out)	A	0.996	0.997	-	-	0.135	1.322	-	-	-	-	
15	15	9.39	Mullai Nagar, SW of Ennavoor bridge	B	0.983	1.098	0.978	0.977	0.552	1.478	-	-	-	-	
16	16	10.05	National Hospital	A	0.912	0.912	-	-	0.629	1.641	-	-	-	-	
17	17	10.705	West of TKS Nagar Main Road(North of Sarc Steels)	B	0.924	0.922	0.920	0.920	0.499	1.603	-	-	-	-	
18	18	11.325	Kargil Nagar (Buckingam Canal HDD Entry Point)	A	0.965	0.965	-	-	0.478	1.625	-	-	-	-	
19	19	12.227	CPCL R&D (Northside of Compond Wall)	DAC	-	0.934	0.936	-	0.435	-	0.934	1.112	0.936	1.138	-
20	20	12.565	CPCL (SRB Area)	DMV	0.900	0.901	-	-	0.561	-	0.900	1.003	-	-	-
21	21	12.586	CPCL (SRB Area)	B	0.771	0.563	-	-	0.445	-	0.771	0.915	0.563	0.905	-

General Observation:

MONITORED BY	REVIEWED BY	ENGINEER- INSPECTION	CHIEF MANAGER - INSPECTION

	42" Crude Oil Pipeline from CHPT to CPCL	CES
	CP System Survey Report	DATE: 25.09.2020
	GROUP C	DONE BY: A.VINOTHKUMAR

SL. No.	TLP No.	CHAINAGE (km)	LOCATION	TLP TYPE	POTENTIAL READINGS (wrt. Cu/ $CuSo_4$ Cell) in (- ve Volts)										REMARKS
					P1	P2	P3	P4	CORR. COUPON	Mg. ANODE	GRONDING CELL				
											PROTECTED		UNPROTECTED		
											PIPE	Zn. ANODE	PIPE	Zn. ANODE	
1	1	0.000	Inside SRB Compound	E	0.947	0.584	-	-	-	-	0.947	0.931	0.584	0.878	-
2	2	0.055	Northside of Pond	B	1.011	1.011	1.006	1.011	0.372	1.277	-	-	-	-	-
3	3	1.198	South of Watch tower	DAC	1.031	1.031	-	-	0.229	-	1.031	0.755	-	-	-
4	4	1.909	East of Plant 223 (New DM Plant)	DAC	0.999	0.998	-	-	-	-	0.999	1.022	-	-	-
5	5	1.972	Northside of Railway crossing	D					-	-	-	-	-	-	-
6	6	2.016	Southside of Railway crossing	D					-	-	-	-	-	-	-
7	7	2.316	Northsdie of Ref-II Flare @ Road-11	DAC	0.955	0.932	-	-	0.701	-	0.955	1.155	-	-	-
8	8	2.729	Southeast of Tk-418/421	C	0.978	0.965	0.912	-	0.147	1.518	-	-	-	-	-
9	9	2.835	East of Tk-419	B	0.995	0.992	0.987	0.991	0.139	-	-	-	-	-	-
10	10	2.916	Near ATF/ Zero Sko Blending Header	C	0.968	0.962	0.963	-	0.155	-	-	-	-	-	-
11	11	3.001	Near Piperack @ East of Temple	E	0.905	0.677	-	-	-	-	0.905	0.989	0.677	0.965	-

General Observation:

(P)- Protected (UP)- Unprotected

MONITORED BY	REVIEWED BY	ENGINEER- INSPECTION	CHIEF MANAGER - INSPECTION

42" Crude Oil Pipeline from CHPT to CPCL

CP System Survey Report

CPCL | CES

TR Unit Parameters:	LOCATON	TIME TOTALISER READING		TR unit AC (Input)		TR unit DC (Output)		REFERENCE CELL PSP (V)			Auto/ Manual	DATE: 26.08.2020
		PREVIOUS	PRESENT	VOLT (V)	CURRENT (A)	VOLT (V)	CURRENT (A)	RE-1	RE-2	RE-3		
	1. CHPT	-	-	-	-	-	-	-	-	-	-	DONE BY: A.DHANASEELAN
	2. CPCL	-	-	-	-	-	-	-	-	-	-	

Sl. No.	TLP No.	CHAINAGE (km)	LOCATION	TLP TYPE	POTENTIAL READINGS (wrt. Cu/ $CuSo_4$ Cell) in (- ve Volts)										REMARKS
					P1	P2	P3	P4	CORR. COUPON	Mg. ANODE	GRONDING CELL				
											PROTECTED		UNPROTECTED		
											PIPE	Zn. ANODE	PIPE	Zn. ANODE	
GROUP A															
1	1	-	TJ 1	E	-	-	-	-	-	-	-	-	-	-	
2	2	-	TJ 2	E	-	-	-	-	-	-	-	-	-	-	
GROUP B															
1	1	0	CHPT SLB Area	-	-	-	-	-	-	-	-	-	-	-	
2	2	0.035	CHPT SLB Area	-	-	-	-	-	-	-	-	-	-	-	
3	3	1.13	Kasimedu (Near High Mast Light)	A	0.983	0.984	-	-	0.351	1.511	-	-	-	-	Mg AZ-1.469
4	4	1.693	Fisheries Harbour (HDD Entry)	B	1.031	1.030	1.031	1.028	0.495	1.565	-	-	-	-	
5	5	2.516	North of N4 Bus Stop (HDD Exit)	B	1.998	0.998	0.995	0.995	0.491	1.502	-	-	-	-	
6	6	2.632	East of Veereraghavan Road (Bunker Area)	A	0.941	0.941	-	-	0.433	1.520	-	-	-	-	
7	7	3.24	BPCL Petrol Bunk (NTO Kuppam)	B	0.978	0.978	0.977	0.976	0.438	1.561	-	-	-	-	
8	8	3.72	North of KLS Gas Station (ONDI Kuppam Amma Unavaram opp.)	A	0.971	0.973	-	-	0.180	1.510	-	-	-	-	
9	9	4.795	RTO (Kanni Koil- HDD Punch Out Point)	B	0.995	0.995	0.994	0.995	0.471	1.560	-	-	-	-	
10	10	5.79	Near STS Services PVT Ltd (HDD Entry)	A	0.935	0.935	-	-	0.470	1.491	-	-	-	-	
11	11	6.542	East of Carborundum (East Gate)	B	0.981	0.980	0.981	0.982	0.373	1.480	-	-	-	-	Mg AZ-1.511
12	12	7.33	East of MRF Road (MOR jn. Punch Out)	A	0.901	0.901	-	-	0.258	0.575	-	-	-	-	
13	13	8.098	South west of MOR Junction. (MOR jn. Punch in)	B	0.929	0.929	0.927	0.929	0.528	1.453	-	-	-	-	
14	14	8.466	Ramakrishna Nagar Ground (Punch Out)	A	0.779	0.779	-	-	0.015	1.301	-	-	-	-	
15	15	9.39	Mullai Nagar. SW of Ernavoor bridge	B	0.901	0.901	0.903	0.903	0.533	1.580	-	-	-	-	
16	16	10.05	National Hospital	A	0.923	0.923	-	-	0.630	1.651	-	-	-	-	
17	17	10.705	West of TKS Nagar Main Road(North of Sato Steels)	B	0.910	0.908	0.908	0.911	0.497	1.610	-	-	-	-	
18	18	11.325	Kargil Nagar (Buckingam Canal HDD Entry Point)	A	0.971	0.971	-	-	0.435	1.671	-	-	-	-	
19	19	12.227	CPCL R&D (Northside of Compond Wall)	DAC	-	-	-	-	-	-	-	-	-	-	-
20	20	12.565	CPCL (SRB Area)	DMV	-	-	-	-	-	-	-	-	-	-	-
21	21	12.586	CPCL (SRB Area)	E	-	-	-	-	-	-	-	-	-	-	-

General Observation:

MONITORED BY	REVIEWED BY	ENGINEER- INSPECTION	CHIEF MANAGER - INSPECTION

	42" Crude Oil Pipeline from CHPT to CPCL	
	CP System Survey Report	DATE: 21.08.2020
	GROUP C	DONE BY: JJ/ JS

SL. No.	TLP No.	CHAINAGE (km)	LOCATION	TLP TYPE	POTENTIAL READINGS (wrt. Cu/ $CuSo_4$ Cell) in (- ve Volts)										REMARKS
					P1	P2	P3	P4	CORR. COUPON	Mg. ANODE	GRONDING CELL				
											PROTECTED		UNPROTECTED		
											PIPE	Zn. ANODE	PIPE	Zn. ANODE	
1	1	0.000	Inside SLB Compound	E	0.869 (P)	0.684 (UP)	-	-	-	-	0.881	1.120	0.985	1.044	
2	2	0.055	Northside of Pond	B	0.860	0.864	0.865	0.868	0.300	1.312/ 1.415	-	-	-	-	
3	3	1.198	South of Watch tower	DAC	0.901	0.901	-	-	0.212	-	0.905	1.115 /1.015	-	-	
4	4	1.909	East of Plant 223 (New DM Plant)	DAC	0.890	0.891	-	-	-	-	0.925	1.165/ 1.013	-	-	
5	5	1.972	Northside of Railway crossing	D	NA	NA	NA	NA	-	-	-	-	-	-	Cables Found Cut.
6	6	2.016	Southside of Railway crossing	D	0.905	0.905	0.778 (casing)	0.778 (casing)	-	-	-	-	-	-	
7	7	2.316	Northsdie of Ref-II Flare @ Road-11	DAC	0.915	0.915	-	-	0.685	-	0.815	1.200/ 1.105	-	-	
8	8	2.729	Southeast of Tk-418/421	C	0.878	0.878	0.875	-	0.245	1.432/ 1.158	-	-	-	-	
9	9	2.835	East of Tk-419	B	0.906	0.905	0.905	0.906	0.468	-	-	-	-	-	
10	10	2.916	Near ATF/ Zero Sko Blending Header	C	0.891	0.891	0.898	-	-	0.268	-	-	-	-	
11	11	3.001	Near Piperack @ East of Temple	E	0.855 (P)	0.652 (UP)	-	-	-	-	0.856	0.992	0.915	0.967	

General Observation:

(P)- Protected (UP)- Unprotected

MONITORED BY	ASSISTANT MANAGER- INSPECTION	CHIEF MANAGER - INSPECTION
21/8/2020		

42" Crude Oil Pipeline from CHPT to CPCL

CP System Survey Report

TR Unit Parameters:	LOCATION	TIME TOTALISER READING		TR unit AC (input)		TR unit DC (Output)		REFERENCE CELL PSP (V)			Auto/ Manual	DATE: 20.08.2020
		PREVIOUS	PRESENT	VOLT (V)	CURRENT (A)	VOLT (V)	CURRENT (A)	RE-1	RE-2	RE-3		
	1. CHPT	-	-	239	0.27	1.6	1.9	1.07	1.06	1.12	Auto	DONE BY: JJ / JS
	2. CPCL	-	-	240	0.31	3.4	1.7	0.89	0.91	0.95	Auto	

SL. No.	TLP No.	CHAINAGE (km)	LOCATION	TLP TYPE	POTENTIAL READINGS (wrt. Cu/ CuSo4 Cell) in (- ve Volts)											REMARKS
					P1	P2	P3	P4	CORR. COUPON	Mg. ANODE	GRONDING CELL					
											PROTECTED		UNPROTECTED			
											PIPE	Zn. ANODE	PIPE	Zn. ANODE		
GROUP A																
1	1	-	IJ 1	E	1.001 (P)	0.667 (UP)	-	-	0.355	-	1.01	0.954	0.654	1.112		
2	2	-	IJ 2	E	0.903 (P)	0.802 (UP)	0.845	-	0.265	-	0.908	1.224	-	1.205 (In Spun)		
GROUP B																
1	1	0	CHPT SLB Area	E												
2	2	0.035	CHPT SLB Area	DMV												
3	3	1.13	Kasimedu (Near High Mast Light)	A												
4	4	1.693	Fisheries Harbour (HDD Entry)	B												
5	5	2.516	North of N4 Bus Stop (HDD Exit)	B												
6	6	2.632	East of Veeraraghavan Road (Bunker Area)	A												
7	7	3.24	BPCL Petrtol Bunk (NTO Kuppam)	B												
8	8	3.72	North of KLS Gas Station (ONDI Kuppam Amma Unavagam opp.)	A												
9	9	4.795	RTO (Kanni Koil- HDD Punch Out Point)	B												
10	10	5.79	Near STS Services PVT Ltd.(HDD Entry)	A												
11	11	6.542	East of Carborundum (East Gate)	B												
12	12	7.33	East of MRF Road (MOR jn. Punch Out)	A												
13	13	8.098	South west of MOR Junction. (MOR jn. Punch In)	B												
14	14	8.466	Ramakrishna Nagar Ground (Punch Out)	A												
15	15	9.39	Mullai Nagar. SW of Ernavoor bridge	B												
16	16	10.05	National Hospital	A												
17	17	10.705	West of TKS Nagar Main Road(North of Saro Steels)	B												
18	18	11.325	Kargil Nagar (Buckingam Canal HDD Entry Point)	A												
19	19	12.227	CPCL R&D (Northside of Compond Wall)	DAC												
20	20	12.565	CPCL (SRB Area)	DMV												
21	21	12.586	CPCL (SRB Area)	E												

General Observation:

MONITORED BY	ASSISTANT MANAGER- INSPECTION	CHIEF MANAGER - INSPECTION

Annexure-15

REPORT ON GROUND WATER SAMPLE TESTS ALONG THE EXISTING NEW 42" CRUDE OIL PIPELINE ROUTE FOR CPCL

चेन्नै पेट्रोलियम कॉर्पोरेशन लिमिटेड
(इंडियनऑयल की ग्रुप कम्पनी)
Chennai Petroleum Corporation Limited
(A group company of IndianOil)

Document No: IC/18-19/OEC/029/CPCL/RSUN/02

Date: 13.03.2019

CLIENT:

Chennai Petroleum Corporation Ltd
Chennai – 600068

CONSULTANT:

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01	For Approval	MM	KJ	RSUN/	13-03-2019
Rev.	**Description**	**Prepared**	**Verified**	**Approved**	**Date**

Client	**Chennai Petroleum Corporation Ltd**		**Date**	**13.03.2019**	
Project	REPORT ON CONDUCTING GROUND WATER SAMPLE TESTS ALONG THE NEW 42" CRUDE OIL PIPELINE ROUTE FOR CPCL		**Sheet No.**	2	
Subject	Testing of Ground water sample Test – First Interim Report		**By**	IITM	
Document No.	IC/18-19/OEC/CPCL/RSUN/02	Rev 01	**Location**	Chennai	

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Client	**Chennai Petroleum Corporation Ltd**		**Date**	**13.03.2019**	
Project	REPORT ON CONDUCTING GROUND WATER SAMPLE TESTS ALONG THE NEW 42" CRUDE OIL PIPELINE ROUTE FOR CPCL		**Sheet No.**	3	
Subject	Testing of Ground water sample Test – First Interim Report		**By**	IITM	
Document No.	IC/18-19/OEC/CPCL/RSUN/02	Rev 01	**Location**	Chennai	

1.0 INTRODUCTION

Chennai Petroleum Corporation Limited (CPCL) formerly known as MRL (Madras Refinery Limited) is one of the largest and most integrated refineries in South India producing fuel products, lubricants and additives.

CPCL's product range is wide and varied such as fuel like diesel, kerosene, LPG, ATF and Bitumen. CPCL also provides high quality feedstock's for other industries like propylene, superior kerosene, butylene's, naphtha, paraffin wax and sulphur. The crude oil pipe line is laid on residential and commercial Zone.

CPCL has issued the work order to M/s IITM vide their reference no: PMC0451819/25588295 dated on 30/07/2018 for soil & Ground water sample tests along the proposed 42'' crude oil pipeline route and testing water samples. Initially, 13 Bore holes and first water samples are taken 01-08-2018 to 30-10-2018 and test results are kept as basic record for comparison with future water quality testing to find out is there any leakages or spills from laid crude oil pipe line which may lead to contamination of soil and water in the surrounding areas.

After 3 months, collection of water samples were carried out first week of February 2019 and the water samples were tested for 35 parameters at M/s Chennai Testing Laboratory Private Limited, Chennai – 32 and the results are furnished in Table 4.1.1.

PIPELINE LOCATION AND EXECUTION

Location

The new 42" crude oil pipeline route from Chennai Port Trust to Manali refinery.

Length of the Pipeline	Village	Taluk	District	State
0 – 3.3 km	Chennai	Tondaiyarpet	Chennai	Tamil Nadu
3.3 – 7.6 km	Thiruvottiyur	Ambattur	Tiruvallur	Tamil Nadu

7.6 – 11.5 km	Ernavur	Ambattur	Tiruvallur	Tamil Nadu
11.5 – 13.8 km	Sathankadu Village	Ambattur	Tiruvallur	Tamil Nadu
13.8 – 16.6	Manali	Ambattur	Tiruvallur	Tamil Nadu

2.0 PLAN SHOWING THE PATH OF LAID PIPELINE

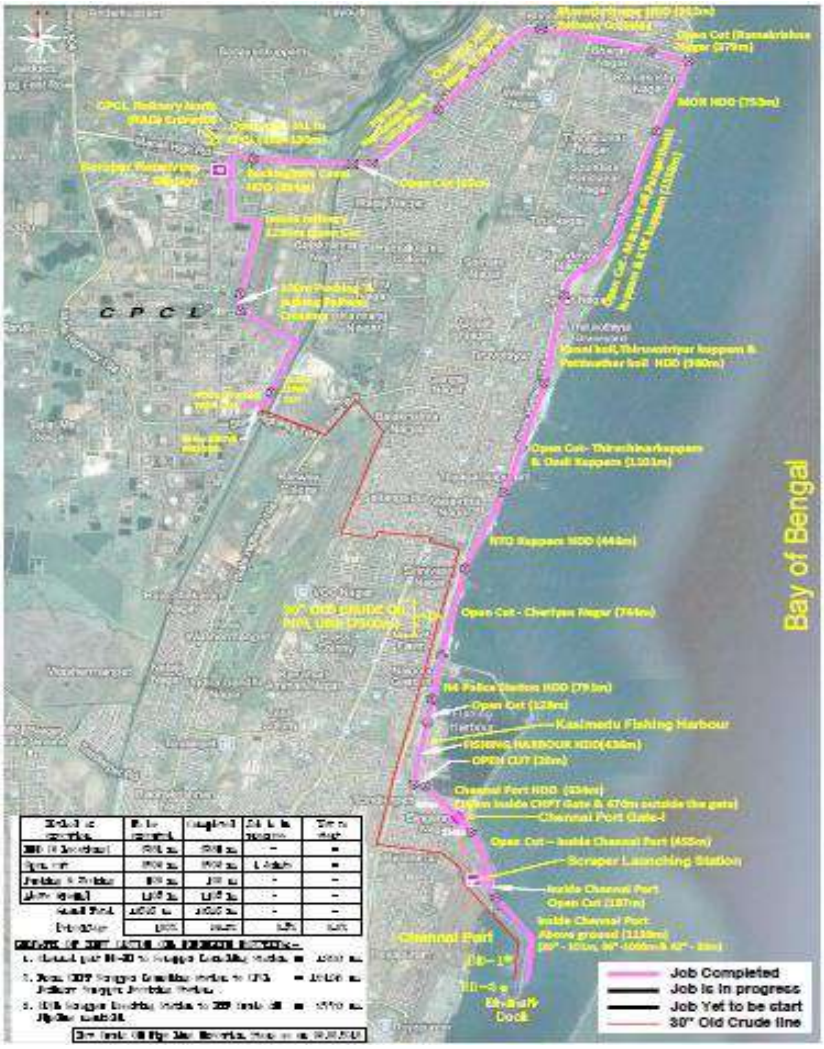

Photo.1 Shows the New laid crude oil pipe line

Client	**Chennai Petroleum Corporation Ltd**		**Date**	**13.03.2019**	
Project	REPORT ON CONDUCTING GROUND WATER SAMPLE TESTS ALONG THE NEW 42" CRUDE OIL PIPELINE ROUTE FOR CPCL		**Sheet No.**	5	
Subject	Testing of Ground water sample Test – First Interim Report		**By**	IITM	
Document No.	IC/18-19/OEC/CPCL/RSUN/02	Rev 01	**Location**	Chennai	

S.No.	PLACE OF AREA	BORE HOLE NO.S	LATTITUDE AND LONGITUDE
1.	NTO Kuppam	BH-01	13° 8'36.98"N 80°18'0.24"E
2.	Ellaiamman Koil	BH-02	13° 9'23.80"N 80°18'18.69"E
3.	Tiruvottiyur Kuppam	BH-03	13° 9'50.90"N 80°18'24.90"E
4.	Masthan Koil	BH-04	13°10'9.15"N 80°18'39.58"E
5.	Ramakrishna Nagar	BH-05	13°10'59.04"N 80°18'57.55"E
6.	Ramakrishna Nagar 1	BH-06	13°11'4.00"N 80°18'49.00"E
7.	Mahalakshmi Nagar	BH-07	13°11'10.00"N 80°18'21.90"E
8.	Murugappa Nagar	BH-08	13°10'57.20"N 80°18'1.20"E
9.	Jothi Nagar	BH-09	13°10'51.70"N 80°17'55.50"E
10.	Jothi Nagar	BH-10	13°10'48.00"N 80°17'52.60"E
11.	Madura Nagar	BH-11	13°10'40.50"N 80°17'45.80"E
12.	Sathya Moorthy Nagar	BH-12	13°10'30.57"N 80°17'33.63"E
13.	Indian Additives Ltd, Manali	BH-13	13°10'31.67"N 80°17'2.43"E

Photo.2 Shows the Borehole locations

2.1. SITE PHOTOS

Photo.3 Show the machinery setting out.

Photo.4 Shows the Boring progress.

Photo. 5 Shows the Bore hole locations.

Photo.6 shows the water samples collecting in bore hole locations.

Client	**Chennai Petroleum Corporation Ltd**		**Date**	**13.03.2019**	
Project	REPORT ON CONDUCTING GROUND WATER SAMPLE TESTS ALONG THE NEW 42" CRUDE OIL PIPELINE ROUTE FOR CPCL		**Sheet No.**	8	
Subject	Testing of Ground water sample Test – First Interim Report		**By**	IITM	
Document No.	IC/18-19/OEC/CPCL/RSUN/02	Rev 01	**Location**	Chennai	

EXECUTIVE SUMMARY

BORING

With core cutting tool of size of 150mm dia. up to a depth of 15m are drilled 1 to 3m adjacent to the pipe line at 13 locations along the crude oil pipe line route.

GI – PIPE INSTALLATION

6 m GI – pipe with slotted holes of 10 numbers are driven to the whole depth. Slotted holes are provided for entry of ground water.

WATER SAMPLE COLLECTION

From bored locations, water samples are collected in specified containers and the following parameters are analyzed on the collected water samples.

Sl. No	Parameter	Unit	Testing Method
1	pH	–	IS 3025(Part4):1983 RA:2012
2	TDS	mg/L	IS 3025(Part16):1984 RA:2014
3	TSS	mg/L	IS 3025(Part17):1984 RA:2012
4	COD	mg/L	IS 3025(Part58):2006 RA:2012
5	BOD	mg/L	IS 3025(Part44):1993 RA:2014
6	Total petroleum Hydrocarbons (C_6 – C_{36})	mg/L	UV-VIS spectrometer, FTIR.
7	Heavy metals	mg/L	APHA 23rd Edition:3111 B
8	Volatile organic Compound	mg/L	SEAAL/EN/SOP/03
9	Color	Hazen	IS 3025(Part4):1983 RA:2012
10	Odor	–	IS 3025(Part5):1983 RA:2012
11	Temperature	^{O}C	IS 3025(Part9):1984 RA:2006
12	Electrical Conductivity	µS/cm	IS 3025(Part14):1984 RA:2013
13	Turbidity	NTU	IS 3025(Part10):1984 RA:2012
14	Phenolic compounds	mg/L	IS 3025(Part43):1992 RA:2014
15	Selenium	mg/L	APHA 23rd Edition:3111 B
16	T.Iron	mg/L	IS 3025(Part53):2003 RA:2014
17	Nitrates	mg/L	APHA(23rd Edition)4500 - No3
18	Fluorides	mg/L	APHA(23rd Edition)4500 - F-B
19	T.Hardness	mg/L	IS 3025(Part21):2009 RA:2014
20	Mg. Hardness	mg/L	IS 3025(Part46):1994 RA:2014
21	Chlorides	mg/L	IS 3025(Part32):1988 RA:2014
22	Sulphates	mg/L	IS 3025(Part24):1986 RA:2014
23	P.Alkalinity	mg/L	IS 3025(Part23):1986 RA:2014
24	M. Alkalinity	mg/L	IS 3025(Part23):1986 RA:2014

4.0 WATER SAMPLE DATA ANALYSIS

The results provided on your water test reports reflect the properties of the sample you submitted and the testing procedures based on national and international method by our laboratory.

IS 10500:2012 Specification is drinking water standards for safe consuming of water. Based on your 13 water samples required parameters results some of the parameters are not compiles with IS 10500:2012 specification due to high concentration of suspended solids and turbidity. Non-complies parameters are mention in below table

SI. No	Non-complies parameters	Sample Reference Code	IS 10500:2012 Specification	Effects
1.	Total Dissolved Solids	BH-1 to BH-13	2000 mg/L	Dissolved minerals like Iron or Manganese. High TDS also can indicate hardness (scaly deposits) or cause staining, or a salty, bitter taste.
2.	Cadmium	BH-7 & BH-12	0.003 mg/L	Cadmium has the chronic potential to cause kidney, liver, bone and blood damage from long- term exposure at levels above the limit.
3.	Total Chromium	BH-2, BH-3, BH-7& BH-12	0.05 mg/L	Chromium is toxic to humans, produces lung tumors when inhaled and causes skin irritations. Long-term exposure may cause skin and nasal ulcers. Chromium accumulates in the spleen, bones, kidneys and liver. It is believed that hexavalent chromium (Cr6+) will be reduced to Cr3+ causing DNA damage in the cell.
4	Copper	BH-1, BH-2, BH-7, BH-8, BH-11, BH-12 & BH-13	1.5 mg/L	Too much copper can cause adverse health effects, including vomiting, diarrhea, stomach cramps, and nausea. It has also been associated with liver damage and kidney disease.

5.	Nickel	BH-1, BH-2, BH-3, BH-7, BH-12 & BH-13	0.02 mg/L	When ingested through water, in small amounts, it is harmless to humans and in fact necessary in our diet. Inhalation of nickel is the greatest risk of developing health problems, as it becomes highly carcinogenic.
6.	Lead	BH-1, BH-2, BH-3, BH-4, BH-6, BH-7, BH-12 & BH-13	0.01 mg/L	Lead accumulates in the bones, resulting in elevated levels in the blood. Known effects range from subtle biochemical changes at low levels of exposure to severe neurological and toxic effects — even death — at much higher levels.
7.	Turbidity	BH-1 to BH-13	5 NTU	If turbidity is high, be aware of possible bacterial contamination.
8.	Total Iron	BH-1 to BH-13	1.0 mg/L	Metallic taste; discoloured beverages; yellowish stains, stains laundry. Iron overload can lead to hemochromatosis, which can lead to liver, heart and pancreatic damage, as well as diabetes
9.	Nitrates	BH-1	45 mg/L	Methemoglobinemia (blue baby disease) in infants (birth to 6 months); low health threat to children and adults.
10.	Fluorides	BH-3, BH-5, BH-7, BH-11, BH-12 & BH-13	1.0 mg/L	Fluorosis is a disease caused by water that contains high amount of fluoride.

11.	Total Hardness	BH-1, BH-4, BH-5, BH-6, BH-7, BH-8, BH-9, BH-10, BH-11, BH-12 & BH-13	600 mg/L	Very hard — select detergents and use some non-precipitating softening agent to cope with cleaning problems.
12.	Magnesium	BH-1 to BH-13	100 mg/L	Magnesium is proven to lower blood pressure, which is believed to also decrease the mortality risk and incidence of stroke.
13.	Chlorides	BH-1 to BH-13	1000 mg/L	Salty or brackish taste; corrosive; blackens and pits stainless steel
14.	Sulphates	BH-1, BH-6 & BH-9	400 mg/L	Water containing appreciable amounts of sulphate tends to form hard scales in boilers and heat exchangers and high sulphate can cause laxative effects.
15	Alkalinity	BH-1 to BH-13, Except- BH-11	600 mg/L	Alkalosis can also cause a decrease in free calcium in the body, which can affect bone health.

Note-1: BOD & COD parameters are not mentioned in IS 10500:2012 specification. Whereas COD parameter is compare to waste water specification it is higher concentration.

Test Results of water samples are enclosed for your kind reference

COMPARSION OF WATER SAMPLE TEST RESULT

SI NO	TEST PARAMETER	TSET METHOD	UNIT	Permissible limit IS 10500:2012	BH - 1		BH - 2		BH - 3		BH - 4	
					Stage -I	Stage -II	Stage -I	Stage -II	Stage -I	Stage -II	Stage -I	Stage -II
1	pH	IS 3025 Part 11:1983 RA:2012	–	6.5 to 8.5	7.42	7.2	8.12	7.2	7.41	7.4	7.78	7.8
2	Total Dissolved Solids	IS 3025 Part 16:1984 RA:2014	mg/L	2000	3140	1326	3160	1440	2020	1366	2380	1228
3	Total Suspended Solids	IS 3025 Part 17:1984 RA:2012	mg/L	NS	280	58	270	136	300	78	182	184
4	Chemical Oxygen Demand	IS 3025 Part 58:2006 RA:2012	mg/L	NS	22	110	43	160	47	148	34	60
5	Biochemical Oxygen Demand	IS 3025 Part 44:1993 RA:2014	mg/L	NS	15.2	24	4.03	32	12.1	36	7.86	14
6	Arsenic	APHA 23rd Edition:3120-B:2017	mg/L	0.05	<0.002	< 0.001	<0.002	< 0.001	<0.002	< 0.001	<0.002	< 0.001
7	Barium	APHA 23rd Edition:3111-D:2017	mg/L	0.7	<0.50	< 0.50	<0.50	< 0.50	<0.50	< 0.50	<0.50	< 0.50
8	Cadmium	APHA 23rd Edition:3120-B:2017	mg/L	0.003	<0.003	< 0.002	<0.003	< 0.002	<0.003	< 0.002	<0.003	< 0.002
9	Chromium	APHA 23rd Edition:3111-B:2017	mg/L	0.05	<0.120	< 0.01	0.28	0.01	0.10	0.01	0.20	< 0.01
10	Cobalt	APHA 23rd Edition:3111-D:2017	mg/L	NS	<0.20	< 0.01	<0.20	< 0.01	<0.20	< 0.01	<0.20	< 0.01
11	Copper	APHA 23rd Edition:3111-B:2017	mg/L	1.5	2.08	0.12	0.38	0.14	<0.05	< 0.09	<0.05	< 0.16
12	Manganese	APHA 23rd Edition:3111-B:2017	mg/L	0.3	0.4	0.08	0.6	0.05	0.8	0.08	0.94	0.05
13	Nickel	APHA 23rd Edition:3111-B:2017	mg/L	0.02	0.53	0.01	0.11	0.01	0.21	0.01	<0.1	<0.01

14	Lead	APHA 23rd Edition:3111-B:2017	mg/L	0.01	1.66	0.005	1.64	0.005	1.52	0.005	0.28	0.005
15	Vanadium	APHA 23rd Edition:3111-D:2017	mg/L	NS	<0.50	< 2.0	<0.50	< 2.0	<0.50	< 2.0	<0.50	< 2.0
16	Zinc	APHA 23rd Edition:3111-B 2017	mg/L	15	0.52	0.08	0.68	0.08	0.72	0.08	0.59	0.08
17	Mercury	APHA 23rd Edition:3112-B:2017	mg/L	0.001	0.001	< 0.002	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001
18	Volatile Organic Compound (54)	SEAAL/WA/SOP/03	µg/L	NS	<0.10	< 0.10	<0.10	< 0.10	<0.10	< 0.10	<0.10	< 0.10
19	Colour	IS 3025 Part 4 :1983 RA:2012	Hazen	15	1.00	5.00	1.00	10.00	1.00	10.00	1.00	5.00
20	Odour	IS 3025 Part 5:1983 RA:2012	–	NS	Unobjectionable		Unobjectionable		Unobjectionable		Unobjectionable	
21	Temperature	IS 3025 Part 9:1984 RA:2006	^{o}C	NS	30.0	27.9	30.0	28.1	30.0	28.2	30.0	28.1
22	Electrical Conductivity	IS 3025 Part 14:1984 RA:2013	µS/cm	40000	4449	2224	3372	2428	3357	2284	5435	2092
23	Turbidity	IS 3025 Part 10:1984 RA:2012	NTU	5	580	42	130	78	270	52	52.6	84
24	Phenolic Compounds	IS 3025 Part 43:1992 RA:2014	mg/L	0.002	<0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
25	Selenium	APHA 23rd Edition:3111 B	mg/L	0.01	<0.002	< 0.005	< 0.002	< 0.005	< 0.002	< 0.005	< 0.002	< 0.005
26	Total Iron	IS 3025 Part 53:2003 RA:2014	mg/L	0.3	0.5	1.09	0.9	1.62	1.2	1.35	0.74	4.58

27	Nitrates	APHA 23rd Edition 4500 - No3	mg/L	45	46.9	14.2	6.49	15.8	24.4	11.5	14.8	12.9
28	Fluorides	APHA 23rd Edition 4500 - F-B	mg/L	1.5	0.96	0.62	0.94	0.91	1.44	0.99	0.82	0.4
29	Total Hardness	IS 3025 Part 21:2009 RA:2014	mg/L	600	286	240	77.5	160	89.8	80	571	120
30	Magnesium Hardness	IS 3025 Part 46:1994 RA:2014	mg/L	100	102	140	36.7	100	65.3	40	285	80
31	Chloride	IS 3025 Part 32:1988 RA:2014	mg/L	1000	742	377	742	586	742	486	1584	576
32	Sulphates	IS 3025 Part 24:1986 RA:2014	mg/L	400	516	176	78.8	166	174	74.5	182	59.6
33	P - Alkalinity	IS 3025 Part 23:1986 RA:2014	mg/L	NS	<1.00	Nil	<1.00	44	<1.00	177	<1.00	22
34	M - Alkalinity	IS 3025 Part 23 :1986 RA:2014	mg/L	600	267	309	232	177	309	243	414	88
35	Total Petroleum Hydrocarbon	SEAAL/WA/SOP/04	mg/L	0.5	<0.10	< 0.05	<0.10	< 0.05	<0.10	< 0.05	<0.10	< 0.05

Note: NS: Not Specified

Client	**Chennai Petroleum Corporation Ltd**		**Date**	**13.03.2019**
Project	REPORT ON CONDUCTING GROUND WATER SAMPLE TESTS ALONG THE NEW 42" CRUDE OIL PIPELINE ROUTE FOR CPCL		**Sheet No.**	15
Subject	Testing of Ground water sample Test – First Interim Report		**By**	IITM
Document No.	IC/18-19/OEC/CPCL/RSUN/02	Rev 01	**Location**	Chennai

SI NO	TEST PARAMETER	TSET METHOD	UNIT	Permissible limit IS 10500:2012	BH - 5		BH - 6		BH - 7		BH - 8	
					Stage -I	Stage -II	Stage -I	Stage -II	Stage -I	Stage -II	Stage -I	Stage -II
1	pH	IS 3025 Part 11:1983 RA:2012	–	6.5 to 8.5	6.59	7.6	7.37	7.5	6.79	7.4	6.62	7.5
2	Total Dissolved Solids	IS 3025 Part 16:1984 RA:2014	mg/L	2000	2010	1370	3800	1520	2210	1770	2220	1506
3	Total Suspended Solids	IS 3025 Part 17:1984 RA:2012	mg/L	NS	140.0	990	138	192	350	150	115	14060
4	Chemical Oxygen Demand	IS 3025 Part 58:2006 RA:2012	mg/L	NS	18	116	42	33	27	40	29	330
5	Biochemical Oxygen Demand	IS 3025 Part 44:1993 RA:2014	mg/L	NS	20.5	28	2.03	10	24.2	12	4.05	82
6	Arsenic	APHA 23rd Edition:3120-B:2017	mg/L	0.05	<0.002	< 0.001	<0.002	< 0.001	<0.002	< 0.001	<0.002	< 0.001
7	Barium	APHA 23rd Edition:3111-D:2017	mg/L	0.7	<0.50	< 0.50	<0.50	< 0.50	<0.50	< 0.50	<0.50	< 0.50
8	Cadmium	APHA 23rd Edition:3120-B:2017	mg/L	0.003	<0.003	< 0.002	<0.003	< 0.002	<0.003	<0.002	<0.003	< 0.002
9	Chromium	APHA 23rd Edition:3111-B:2017	mg/L	0.05	<0.40	< 0.01	<0.40	< 0.01	0.5	< 0.01	< 0.40	< 0.01
10	Cobalt	APHA 23rd Edition:3111-D:2017	mg/L	NS	<0.20	< 0.20	< 0.20	< 0.01	< 0.20	< 0.01	< 0.20	< 0.01
11	Copper	APHA 23rd Edition:3111-B:2017	mg/L	1.5	<0.05	< 0.11	<0.05	< 0.08	0.76	0.13	0.07	0.16
12	Manganese	APHA 23rd Edition:3111-B:2017	mg/L	0.3	0.08	0.09	0.4	0.04	0.8	0.11	0.9	0.09

13	Nickel	APHA 23rd Edition:3111-B:2017	mg/L	0.02	<0.01	< 0.01	<0.1	< 0.01	0.44	0.01	<0.1	< 0.1
14	Lead	APHA 23rd Edition:3111-B:2017	mg/L	0.01	<0.20	< 0.005	0.31	0.005	1.03	0.005	<0.20	< 0.005
15	Vanadium	APHA 23rd Edition:3111-D:2017	mg/L	NS	<0.50	< 2.0	<0.50	< 2.0	<0.50	< 2.0	<0.50	< 2.0
16	Zinc	APHA 23rd Edition:3111-B 2017	mg/L	15	0.28	0.08	0.39	0.08	0.45	0.08	0.48	0.08
17	Mercury	APHA 23rd Edition:3112-B:2017	mg/L	0.001	<0.001	< 0.001	<0.001	< 0.001	<0.001	< 0.001	<0.001	< 0.001
18	Volatile Organic Compound (54)	SEAAL/WA/SOP/03	µg/L	NS	<0.10	< 0.10	<0.10	< 0.10	<0.10	< 0.10	<0.10	< 0.10
19	Colour	IS 3025 Part 4 :1983 RA:2012	Hazen	15	1.00	15.00	1.00	15.00	1.00	5.00	1.00	30
20	Odour	IS 3025 Part 5:1983 RA:2012	–	NS	Unobjectionable		Unobjectionable		Unobjectionable		Unobjectionable	
21	Temperature	IS 3025 Part 9:1984 RA:2006	^{O}C	NS	30.00	27.9	30.00	28.1	30.00	27.8	30.00	28.1
22	Electrical Conductivity	IS 3025 Part 14:1984 RA:2013	µS/cm	40000	4720	2294	5925	2533	5500	3012	6265	2508
23	Turbidity	IS 3025 Part 10:1984 RA:2012	NTU	5	18.2	384	48.2	340	210	60	24.5	1710
24	Phenolic Compounds	IS 3025 Part 43:1992 RA:2014	mg/L	0.002	<0.001	< 0.001	<0.001	< 0.001	<0.001	< 0.001	<0.001	< 0.001
25	Selenium	APHA 23rd Edition:3111 B	mg/L	0.01	<0.002	< 0.005	<0.002	< 0.005	<0.002	< 0.005	<0.002	< 0.005
26	Total Iron	IS 3025 Part 53:2003 RA:2014	mg/L	0.3	1.12	5.9	2.18	8.0	170	1.49	1.02	41.2
27	Nitrates	APHA 23rd Edition 4500 - No3	mg/L	45	16.8	8.2	22.5	10.7	8.39	18.6	18.6	2.1

Client	**Chennai Petroleum Corporation Ltd**		**Date**	**13.03.2019**	
Project	REPORT ON CONDUCTING GROUND WATER SAMPLE TESTS ALONG THE NEW 42" CRUDE OIL PIPELINE ROUTE FOR CPCL		**Sheet No.**	17	
Subject	Testing of Ground water sample Test – First Interim Report		**By**	IITM	
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28	Fluorides	APHA 23rd Edition 4500 -FB	mg/L	1.5	1.27	0.52	0.72	0.37	1.02	0.8	0.53	0.3
29	Total Hardness	IS 3025 Part 21:2009 RA:2014	mg/L	600	694	220	615	100	673	100	735	320
30	Magnesium Hardness	IS 3025 Part 46:1994 RA:2014	mg/L	100	204	100	295	40	285	80	195	160
31	Chloride	IS 3025 Part 32:1988 RA:2014	mg/L	1000	900	407	1880	318	1386	506	1258	417
32	Sulphates	IS 3025 Part 24:1986 RA:2014	mg/L	400	122	154	202	146	188	416	195	53.2
33	P - Alkalinity	IS 3025 Part 23:1986 RA:2014	mg/L	NS	<1.00	Nil	<1.00	66	<1.00	< 22	<1.00	Nil
34	M - Alkalinity	IS 3025 Part 23 :1986 RA:2014	mg/L	600	320	265	378	508	273	155	325	508
35	Total Petroleum Hydrocarbom	SEAAL/WA/SOP/04	mg/L	0.5	<0.10	< 0.05	<0.10	< 0.05	<0.10	< 0.05	<0.10	< 0.05

Note: NS: Not Specified

Client	**Chennai Petroleum Corporation Ltd**		**Date**	**13.03.2019**
Project	REPORT ON CONDUCTING GROUND WATER SAMPLE TESTS ALONG THE NEW 42" CRUDE OIL PIPELINE ROUTE FOR CPCL		**Sheet No.**	18
Subject	Testing of Ground water sample Test – First Interim Report		**By**	IITM
Document No.	IC/18-19/OEC/CPCL/RSUN/02	Rev 01	**Location**	Chennai

SI NO	TEST PARAMETER	TSET METHOD	UNIT	Permissible limit IS 10500:2012	BH - 9		BH - 10		BH - 11		BH - 12		BH - 13	
					Stage -I	Stage -II	Stage -I	Stage -II	Stage -I	Stage - II	Stage -I	Stage - II	Stage -I	Stage - II
1	pH	IS 3025 Part 11:1983 RA:2012	–	6.5 to 8.5	7.80	7.2	7.79	8.0	5.52	7.9	7.38	7.9	6.53	7.9
2	Total Dissolved Solids	IS 3025 Part 16:1984 RA:2014	mg/L	2000	2300	2824	3150	1528	2160	2258	2230	7952	3110	3688
3	Total Suspended Solids	IS 3025 Part 17:1984 RA:2012	mg/L	NS	105	64	178	40	160	74	320	52	210	48
4	Chemical Oxygen Demand	IS 3025 Part 58:2006 RA:2012	mg/L	NS	40	50	36	32	31	60	45	36	28	86
5	Biochemical Oxygen Demand	IS 3025 Part 44:1993 RA:2014	mg/L	NS	2.02	12	5.04	10	6.05	14	10.1	8	4.03	20
6	Arsenic	APHA 23rd Edition:3120-B:2017	mg/L	0.05	<0.002	< 0.001	<0.002	< 0.001	<0.002	< 0.001	<0.002	< 0.001	<0.002	< 0.001
7	Barium	APHA 23rd Edition:3111-D:2017	mg/L	0.7	<0.50	< 0.50	<0.50	< 0.50	<0.50	< 0.50	<0.50	< 0.50	<0.50	< 0.50
8	Cadmium	APHA 23rd Edition:3120-B:2017	mg/L	0.003	<0.003	< 0.002	<0.003	< 0.002	<0.003	< 0.002	<0.003	<0.002	<0.003	< 0.002
9	Chromium	APHA 23rd Edition:3111-B:2017	mg/L	0.05	<0.40	< 0.01	<0.40	< 0.01	<0.40	< 0.01	2.98	<0.01	<0.40	< 0.01
10	Cobalt	APHA 23rd Edition:3111-D:2017	mg/L	NS	<0.20	< 0.01	<0.20	< 0.01	<0.20	< 0.01	<0.20	< 0.01	<0.20	< 0.01
11	Copper	APHA 23rd Edition:3111-B:2017	mg/L	1.5	<0.05	< 0.08	<0.05	< 0.05	0.09	0.14	4.83	0.06	0.21	0.17

Client	**Chennai Petroleum Corporation Ltd**	**Date**	**13.03.2019**
Project	REPORT ON CONDUCTING GROUND WATER SAMPLE TESTS ALONG THE NEW 42" CRUDE OIL PIPELINE ROUTE FOR CPCL	**Sheet No.**	19
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12	Manganese	APHA 23rd Edition:3111-B:2017	mg/L	0.3	0.21	0.12	0.70	0.07	<0.05	< 0.07	0.6	0.11	0.3	0.12
13	Nickel	APHA 23rd Edition:3111-B:2017	mg/L	0.02	<0.1	< 0.01	<0.10	< 0.01	0.10	0.01	3.08	0.01	0.18	0.01
14	Lead	APHA 23rd Edition:3111-B:2017	mg/L	0.01	0.29	0.005	<0.20	< 0.005	<0.20	< 0.005	12.6	<0.005	0.85	<0.005
15	Vanadium	APHA 23rd Edition:3111-D:2017	mg/L	NS	<0.50	< 2.0	<0.50	< 2.0	<0.50	< 2.0	<0.50	< 2.0	<0.50	< 2.0
16	Zinc	APHA 23rd Edition:3111-B 2017	mg/L	15	0.53	0.08	0.55	0.08	0.61	0.08	0.74	0.08	0.69	0.08
17	Mercury	APHA 23rd Edition:3112-B:2017	mg/L	0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001
18	Volatile Organic Compound (54)	SEAAL/WA/SOP/03	µg/L	NS	<0.10	< 0.10	<0.10	< 0.10	<0.10	< 0.10	<0.10	< 0.10	<0.10	< 0.10
19	Colour	IS 3025 Part 4 :1983 RA:2012	Hazen	15	1.00	15.00	1.00	5.00	1.00	10.00	1.00	5.00	1.00	75.00
20	Odour	IS 3025 Part 5:1983 RA:2012	–	NS	Unobjectionable		Unobjectionable		Unobjectionable		Unobjectionable		Unobjectionable	
21	Temperature	IS 3025 Part 9:1984 RA:2006	^{o}C	NS	30.0	27.8	30.0	27.9	30.0	28.1	30.0	28.2	30.0	28.1
22	Electrical Conductivity	IS 3025 Part 14:1984 RA:2013	µS/cm	40000	6850	4875	6620	2548	6020	3804	7460	13770	5480	6210
23	Turbidity	IS 3025 Part 10:1984 RA:2012	NTU	5	40.2	36	43.6	22	17.6	36	720	12	24.5	24.5
24	Phenolic Compounds	IS 3025 Part 43:1992 RA:2014	mg/L	0.002	<0.001	< 0.001	<0.001	< 0.001	<0.001	< 0.001	<0.001	< 0.001	<0.001	< 0.001
25	Selenium	APHA 23rd Edition:3111 B	mg/L	0.01	<0.002	< 0.005	<0.002	< 0.005	<0.002	< 0.005	<0.002	< 0.005	<0.002	< 0.005
26	Total Iron	IS 3025 Part 53:2003 RA:2014	mg/L	0.3	1.3	3.8	0.50	2.2	0.3	1.9	0.7	1.4	0.6	1.6

Client	**Chennai Petroleum Corporation Ltd**	**Date**	**13.03.2019**
Project	REPORT ON CONDUCTING GROUND WATER SAMPLE TESTS ALONG THE NEW 42" CRUDE OIL PIPELINE ROUTE FOR CPCL	**Sheet No.**	20
Subject	Testing of Ground water sample Test – First Interim Report	**By**	IITM
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27	Nitrates	APHA 23rd Edition 4500 - No3	mg/L	45	17.1	15.6	12.4	14.3	16.8	17.6	12.4	16.2	17.1	19.8
28	Fluorides	APHA 23rd Edition 4500 - F-B	mg/L	1.5	0.69	0.82	0.96	0.84	1.64	0.87	1.25	0.81	1.18	3.3
29	Total Hardness	IS 3025 Part 21:2009 RA:2014	mg/L	600	1183	760	632	200	714	220	816	1400	714	460
30	Magnesium Hardness	IS 3025 Part 46:1994 RA:2014	mg/L	100	551	420	255	120	204	100	469	1140	184	300
31	Chloride	IS 3025 Part 32:1988 RA:2014	mg/L	1000	1534	1072	1980	526	1138	804	2425	3385	1039	1628
32	Sulphates	IS 3025 Part 24:1986 RA:2014	mg/L	400	507	347	196	284	162	522	237	1181	117	335
33	P - Alkalinity	IS 3025 Part 23:1986 RA:2014	mg/L	NS	<1.00	Nil	<1.00	Nil	<1.00	22	<1.00	44	<1.00	44
34	M - Alkalinity	IS 3025 Part 23 :1986 RA:2014	mg/L	600	758	309	442	243	66.3	663	352	376	352	1017
35	Total Petroleum Hydrocarbom	SEAAL/WA/SOP/04	mg/L	0.5	<0.10	< 0.05	<0.10	< 0.05	<0.10	< 0.05	<0.10	< 0.05	<0.10	< 0.05

Remarks:

1. The results of ground water samples are within the limits with respect to IS 10500:2012 code Standards.
2. On comparison of test result of stage-1 and stage-2 has shown that there are no leakages or spills from crude oil pipe and also there is no contamination of water in the new pipe line surrounding areas.

EXAMINE THE CONTAMINATION OF WATER DUE TO CRUDE OIL

RESULT AND ANALYSIS

Observation

BORE NO.	WATER SAMPLE	Presence of crude oil (UV-Vis) (Yes or No)	Presence of crude oil based on FTIR (Yes or No)
1	Depth of Ground water table	No	No
2		No	No
3		No	No
4		No	No
5		No	No
6		No	No
7		No	No
8		No	No
9		No	No
10		No	No
11		No	No
12		No	No
13		No	No

UV-Vis studies shows that there is no presence of crude oil in the water sample. FTIR studies on the first four samples also confirm that there is no crude oil present in the water sample.

TEST RESULTS FOR UV-Vis and FTIR

From the UV-Vis and FTIR analysis of the water sample, it has been found that there is no contamination of crude oil in water sample along the pipeline as on the date of sampling the water sample.

6.0 CONCLUSION

This report gives the details of ground water sample tests conducted after 3months at new crude oil pipe line route from Chennai Port to Manali refinery.in the month of February 2019. Physical, Chemical and Biological parameters have been analyzed to assess the existing status of the ground water quality and compared with results of soil samples tested data after 3 months. The results of ground water samples have been compared with. IS 10500:2012 code Standards. Two analytical methods were primarily used to detect the oil contamination. They are UV-VIS spectrometer and Fourier transforms infrared spectrometer. UV-Vis studies are good enough to understand any crude oil contamination. FTIR studies are done to get more confirmation. Based on conducted test results, there was no oil contamination on both water samples.

Comparison of test results of stage-1 and stage-2 it is concluded that there are no leakages or spills from crude oil pipe and also there is no contamination of water in the new pipe line surrounding area.

ANNEXURE 1 – SAMPLE DETAILS

Client	**Chennai Petroleum Corporation Ltd**		**Date**	**13.03.2019**	
Project	REPORT ON CONDUCTING GROUND WATER SAMPLE TESTS ALONG THE NEW 42" CRUDE OIL PIPELINE ROUTE FOR CPCL		**Sheet No.**	24	
Subject	Testing of Ground water sample Test – First Interim Report		**By**	IITM	
Document No.	IC/18-19/OEC/CPCL/RSUN/02	Rev 01	**Location**	Chennai	

Soil and Water sample details given following

Sample Points	Location	(Coordination)		Length of pipe line (m)	Sample Depth (m)	Water Sample collecting date & time	
		Latitude(n)	Longitude(E)			Date	Time (hours)
BH-1	Near NTO kuppam, Tollgate, Thangal, Thiyagarajapuram.	13° 8'36.98"N	80°18'0.24"E	3.30	10	04.02.2019	10.00
BH-2	Near Ellaiamman koil,Tiruchina Kuppam, Thiruvottiyur.	13°09'23.8"N	80°18'18.69"E	4.90	11	04.03.2019	12.30
BH-3	Near Tiruvottiyur Kuppam, Appar Nagar, Pattinathar koil, STP service Pvt ltd Thiruvottiyur	13°09'50.9"N	80°18'24.9"E	5.70	10	04.03.2019	15.30
BH-4	Near Masthan koil, Jeevarathinammal Nagar, Thiruvottiyur, Carborundam Universel Ltd. opposite	13°10'9.15"N	80°18'39.58"E	6.30	2	05.03.2019	11.00
BH-5	Near Ramakrishna nagar, Bharathiyar Beach, ICI.	13°10'59.04"N	80°18'57.55"E	8.00	2	05.03.2019	14.30
BH-6	Near Ramakrishna nagar 1 St main road, Lift gate,Thiruvottiyur	13°11'04"N	80°18'49"E	8.50	6	05.03.2019	17.00

BH-7	Near Mhalakshmi Nagar, Eranavoor, dvs Engineering company opposite.	13°11'10"N	80°18'21.9"E	9.30	10	06.03.2019	11.00
BH-8	Near Murugappa Nagar, Thiruvottiyur, Sri Lakshmi Weighing Bridge Opposite.	13°10'57.2"N	80°18'01.2"E	9.90	2.5	06.03.2019	14.30
BH-9	Near Jothi Nagar, Thiruvottiyur, Near Amma Unavagam	13°10'51.7"N	80°17'55.5"E	10.30	2.5	06.03.2019	17.45
BH-10	Near Jothi Nagar, Thiruvottiyur, Near Steel Shop India Pvt .ltd opposite.	13°10'48"N	80°17'52.6"E	10.40	2.5	07.03.2019	10.30
BH-11	Near Madura Nagar, Thiruvottiyur, Near Mosque opposite.	13°10'40.5"N	80°17'45.8"E	10.65	6	07.03.2019	12.00
BH-12	Near Sathya Moorthy Nagar, Tiruvottiyur, Near Buckingham canal.	13°10'30.57"N	80°17'33.6"E	11.30	6	07.03.2019	16.00
BH-13	Near Indian Aditives Limited, Bharat Petroleum Manali, Near CPCL Refinery North R&D Entrance	13°10'31.3"N	80°17'02.4"E	12.1	8	08.03.2019	11.00