BEFORE THE NATIONAL GREEN TRIBUNAL

SOUTHERN ZONE, CHENNAI

ORIGINAL APPLICATION NO.175/ 2020

IN THE MATTER OF:

Sh. Venkatapathi Raja Yenumala ..... Applicant

Versus

Union of India, Rep. by its Secretary
Ministry of Environment, Forests and Climate Change,
Indira Paryavaran Bhavan, Jorbagh Road,
New Delhi 110 003 and 11 Others .....RESPONDENT(S)

INDEX

Signed and verified on this 09th day of April, 2021 at Chennai.

H.D.V 9/4/2021

Deponent

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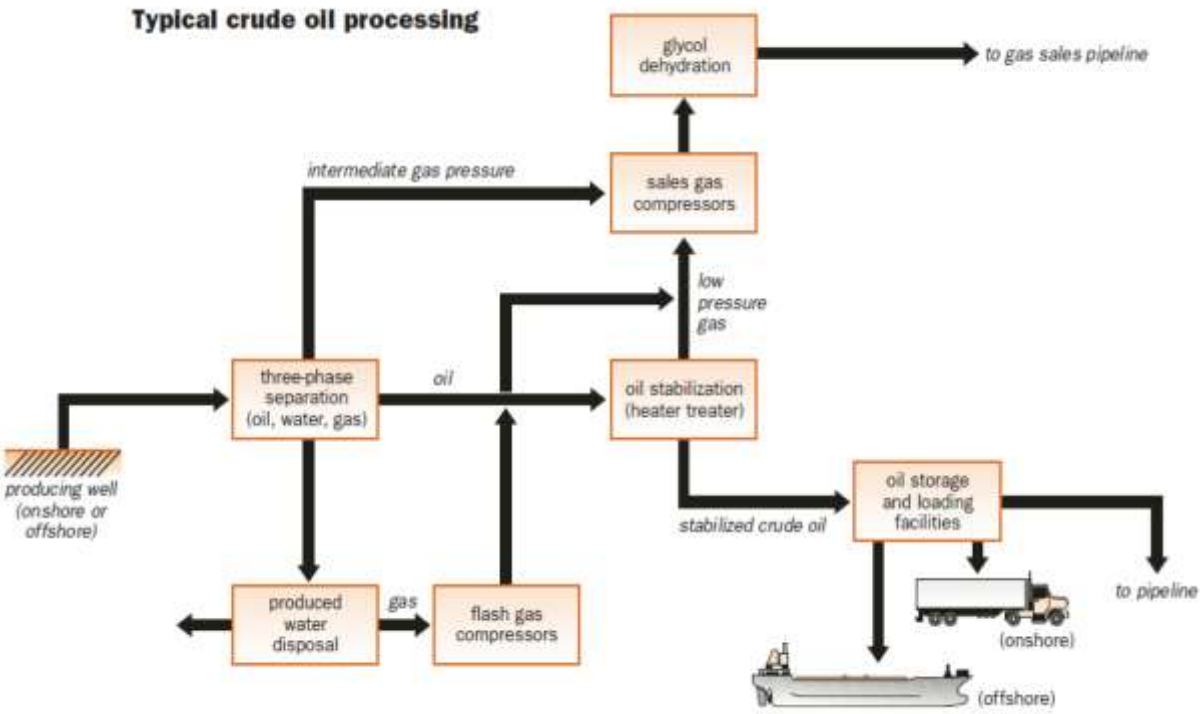
केन्द्रीय प्रदूषण नियंत्रण बोर्ड REGIONAL DIRECTORATE (CHENNAI) CENTRAL POLLUTION CONTROL BOARD MINISTRY OF ENVIRONMENT FORESTS & CLIMATE CHANGE GOVT OF INDIA क्षेत्रीय निदेशालय (चेन्नई) CHENNAI-58 600 058

JOINT INSPECTION REPORT OF COMMITTEE CONSTITUTED BY HON'BLE NATIONAL GREEN TRIBUNAL, SOUTHERN BENCH, CHENNAI VIDE ORDER DATED 08.09.2020 IN THE MATTER OF OA NO. 175 OF 2020 (VENKATAPATHI RAJA YENUMALA VS UNION OF INDIA & ORS)



SUBMITTED TO

HON'BLE NATIONAL GREEN TRIBUNAL

SOUTHERN BENCH, CHENNAI

APRIL, 2021

1.0 Preamble

An application was filed in Hon'ble NGT Southern bench alleging that air, sound, soil and water pollution is caused on account of the activities of the M/s GAIL India Ltd (formerly Gas Authority of India Ltd) and M/s ONGC (Oil & Natural Gas Corporation Ltd) units in the State of Andhra Pradesh along the Krishna-Godavari Basin located in East Godavari and West Godavari District of Andhra Pradesh. According to the applicant oil leakage is being caused in the pipe lines established by these units causing damage to the agricultural land and also affecting the water bodies. It is also alleged that the units are not following the pollution control mechanism and there is no proper maintenance of pipelines. In order to ascertain the impact of the activities of M/s GAIL and M/s ONGC in Krishna Godavari River bed in East Godavari and West Godavari District, Hon'ble NGT has appointed a Joint Committee.

2.0 Orders of the Hon'ble Tribunal

Hon'ble NGT, Southern Bench, Chennai in Original Application No. 175/2020(SZ) in the matter of Venkatapathi Raja Yenumala Vs Union of India & Ors vide order dated 08-09-2020 has directed " *In order to ascertain the impact of the activities of the respondents 3 & 4 in the area in question namely Krishna Godavari River bed in East Godavari and West Godavari District, we feel it appropriate to appoint a Joint Committee comprising of 1) a Senior Officer from Regional Office, Ministry of Environment & Climate Change (MoEF&CC), Chennai, 2) a Senior Officer from Regional Office, Central Pollution Control Board (CPCB), Chennai, 3) a Senior Officer as deputed by the Chairman of the Andhra Pradesh Pollution Control Board (APPCB), 4) the District Collector, East Godavari and West Godavari Districts or a Senior Officer not below the rank of Assistant Collector/Sub Divisional Magistrate designated by the respective District Collectors and 5) an Expert on Petroleum Engineering from Andhra University College of Engineering, Visakhapatnam to inspect the area in question and submit a factual as well as action taken report, if there is any violation found*." Copy of Hon'ble NGT order is placed as Annexure-I.

In compliance to Hon'ble NGT order, committee comprising of following members was composed:

Name & designation of the official	Department with address

Sh. Himanshu Kaushik, IAS	Sub Collector and Sub Divisional Magistrate Amalapuram, East Godavari
Sh. K S Viswanathan, IAS	Sub Collector and Sub Divisional Magistrate Narsapuram West Godavari
Dr. C. Palpandi Scientist-C	Ministry of Environment Forest and Climate Change, Regional Office, Chennai
Prof. M. Deepa	Dept. of Chemical Engineering, A.U College of Engineering (A) Andhra University, Visakhapatnam
Sh. P. Ravindranath Senior Environmental Engineer	Andhra Pradesh Pollution Control Board, Zonal Office, Visakhapatnam
Smt. Mahima T Scientist-D	Central Pollution Control Board Regional Directorate, Chennai

The Committee has been vested with the mandate to visit and inspect the area in question and vested with following scope vide Order dated 08.09.2020:

1. To inspect the area in question, to verify if any air, water, sound and soil pollution is caused in these areas due to activities of M/s GAIL and M/s ONGC.
2. To verify whether the units have committed any violation of Environmental Clearance and CRZ Clearance and if so what is the impact of those on environment and the nature of damage caused to the environment and assess environmental compensation.
3. To ascertain whether the pollution Control mechanism provided by the units is adequate or not and if not, what are the upgradation and improvement required to minimize or avoid such incidents in future and also to prevent causing of pollution to the people in the locality
4. To conduct Ambient Air Quality test, ground water quality and quality of water test in water bodies and sea and to verify whether if there is any contamination caused

The committee convened the first meeting on 12.11.2020 and prepared road map for completing the task vested on the committee. Subsequently, the second meeting was convened on 19.11.2020 to decide the list of parameters to be analyzed. The committee visited the site from 8th to 11th December, 2020 and carried out first round of ambient air quality monitoring for all notified parameters & noise, fugitive emission monitoring, collection of water &

wastewater samples and soil samples. The committee again visited the site during 24th to 26th February and carried out second round of ambient VOC monitoring.

3.0 About M/s ONGC, Rajahmundry Asset

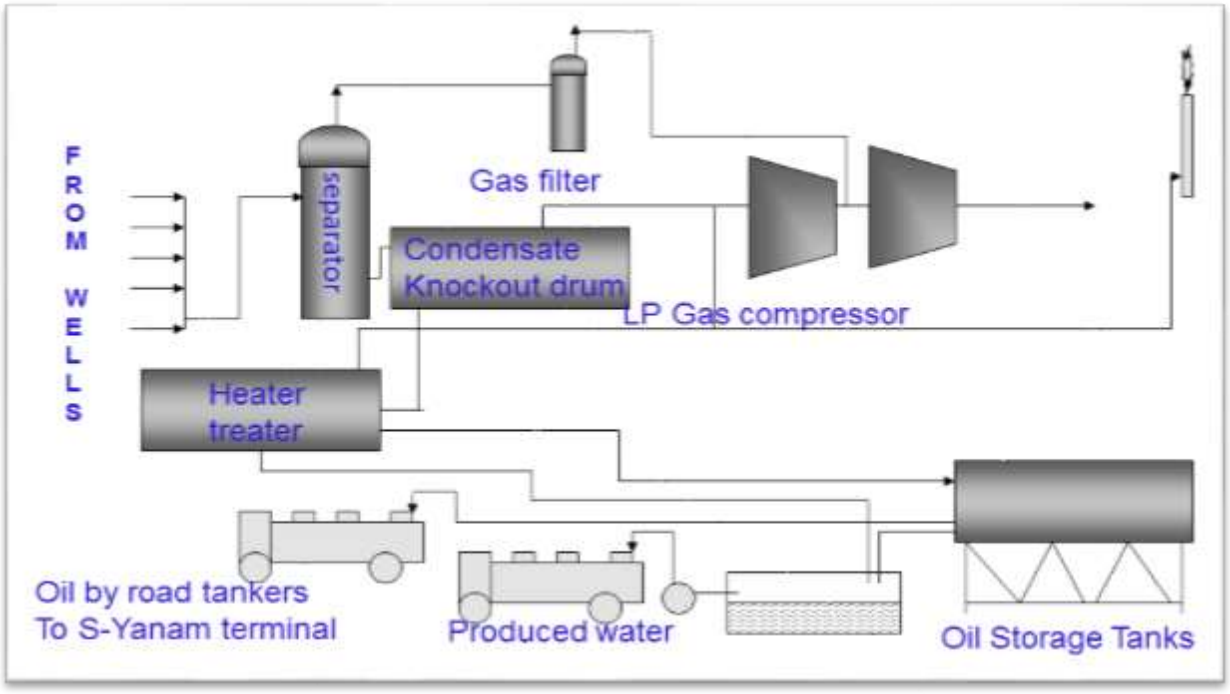


Fig: crude oil processing at ONGC Rajahmundry asset

Well fluid comprising of oil, water and gas is transferred from well head to installation via flow lines and are separated into three phases: oil, water and gas. The high pressure gas is compressed, dehydrated by glycol dehydration, filtered into cartridge filters to scrub out any entrained liquid from the gas and gas at high pressure is fed to GAIL trunk line after treatment. If well delivers low pressure gas, the gas compressors will boost the gas to required pressure to push the gas in Gas grid.

The liquid in the form of emulsion containing oil water mix is further stabilized in the heater treater along with demulsified chemicals for separating oil from water. After stabilization in heater treater, oil is stored into oil storage tanks. The drained out water after further treatment is disposed as per conditions stipulated in CFO. Purified oil is transported either to Tatipaka Refinery or to S-Yanam/EIPL Vizag for further transportation to HPCL Vizag through Cairn India limited. The quantity of producer water generated from the extraction well varies from well to well and depends mainly on age of the well. When the well fluid contains more than

98% water content, the well is abandoned. As the well gets old, the quantity of water increases in the well fluid and quantity of oil reduces. Totally 106 wells in East Godavari district and 16 wells in West Godavari district are flowing/ operational by M/s ONGC. ONGC has obtained environmental clearance for all wells. M/s ONGC is operating 13 facilities and the details of the facilities operated are given in table 1.

M/s ONGC has obtained EC from MOEFCC for on land development and production of oil & Gas from development of total 61 wells in East Godavari district and 34 wells in West Godavari district. M/s ONGC is operating 13. The treatment capacities of ETP for all installations is given in table1a & 1b and details of the facilities operated are given in table 1c.

Table1a: Effluent generation Vs treatment capacity

Sl. No	Installation	Qty of effluent in KLD as specified in CFO issued during 2015	Present approximate qty of effluent generated in KLD	ETP capacity in KL
1	Kesanapalli(W) GGS	600	2000	ETP-1→ 750 KLD(old ETP not in operation) ETP-2→ 1500 KLD
2	Adavipalem GCS	70	53	
3	Ponamanda GCS	50	20	
4	Mori GCS	41	85	
Total effluent to be treated in Kesanapalli ETP-2			2158	
5	Tatipaka Complex (GCS + Refinery)	225+15	310	Tatipaka ETP-500 KL capacity
6	Mandapeta-GCS	37	20	
Total effluent to be treated in Tatipaka ETP			330 KLD	
7	Endamuru-GCS	40	66	No ETP, ED well injection
8	Kavitam EPS	10	15	No ETP, disposed in KMDB ED well injection
9	Narsapur GCS	55	90	
10	Pasarlapudi-GCS	53	64	Gopavaram ETP - 600 KL
11	Gopavaram-GGS	6	1130 KLD	

				GMAE injection facility500 KLD
			1194 KLD	
12	Odalarevu	60	60	Odalarevu ETP

Total operational Effluent disposal (ED) well: 20no

ETP total Capacity: 2600 m3/day (Kesanapalli ETP -2no: 1500KLPD+ Gopavaram ETP: 600KLPD+TatipakaETP-500KLPD)

GMAE injection facility (Part of Gopavaram GGS): 500m3/day

KMDB injection facility: 100m3/day

Total quantity of effluent generated: 3838m3/day (East /west Godavari Dist average for year 2020-21

Quantity of effluent untreated and discharged directly into ED well: 1238KLD

Underground pipe lines are laid by M/s ONGC for transfer of effluent from installation to ED well and distance from ETP to Effluent disposal wells varies from 500m to 5km.

in Pasarlapudi/ Mandapeta/ Narasapur GCS where road tankers are being used for effluent transportation around and distance is around 50km.

Table 1b: details of ETP

Effluent Treatment Plant [ETP]	Type of Disposal	Capacity[KL/Day]	Qty of Effluent received KLD	Remarks
Tatipaka ETP	ED well disposal	500	330	adequate
Kesanapalli-ETP I	ED well disposal	750	Not in operation	
Kesanapalli-ETP II	Sea Disposal	1500	2158	Not adequate
Gopavaram -ETP	ED well disposal	600	1130	

Table 1c: details of facilities operated by M/s ONGC in East and West Godavari districts

Sl. No	Address and Details of the activity	GPS Location	CFO validity till	Consented production		Water		
				Natural Gas (Lakh m3 per day)	Condensate Oil (m3/day)	Consumption (utility/firefighting)	Effluent Generation (average perday-2020-21)and disposal point	ETP Details
1	Adavipalem GCS	16° 24' 07" N, 81° 51' 37" E	31.07.2023	4.15	35	3	Gen: 53m3/d Disposal: ED well injection	By pipe line to Kesanapalli-W ETP
2	Endamuru GCS	16° 51' 31" N, 82° 08' 17" E	31.07.2023	3.15	5	8	Gen: 66m3/day Separator; Disposal: ED well injection	ED well Injection in the installation

3	Kesanapalli GGS	16° 24' 27" N, 81° 55' 12" E	31.07.2023	2.69	530	56	Gen: 2000m3/d Disposal: ED well injection/ Marine sea disposal	KSP(W) ETP-1: 750 KLPD; KSP(W) ETP-2: 1500 KLPD ((Marine disposal)
4	Mandapeta GCS	16° 48' 52" N, 81° 54' 04" E	31.07.2023	4.16	11	8	Gen: 20m3/d; Disposal: ED well injection	By Tanker to TPK ETP
5	Mori GCS	16° 22' 19" N, 81° 47' 29" E	31.07.2023	3.00	8.8	5	Gen: 85m3/d; Disposal: ED well injection	By pipe line to Kesanapalli-W ETP
6	Gopavaram GGS	16° 30' 39" N, 82° 04' 05" E	30.09.2023	1.00	350(Crude Oil)	7	Gen: 1130m3/d; Disposal:	GVM ETP: 600 KLPD along with GMAE injection facility(500m3/day)

							ED well injection	
7	Pasarlapudi	16° 31' 15" N, 81° 58' 41" E	31.07.2023	8.73	28	5	Gen: 64m3/d; Disposal: ED well injection	By Tanker to TPK ETP
8	Ponnamanda	16° 26' 20" N, 81° 54' 40" E	31.07.2023	3.61	20.5	3	Gen: 20m3/d; Disposal: ED well injection	By pipe line to Kesanapalli-W ETP
9	Tatipaka GCS	16° 29' 57" N, 81° 53' 49" E	31.07.2023	18.52	56	116	Gen: 310m3/d; Disposal: ED well injection	TPK ETP: 500 KLPD
10	Tatipaka Refinery	16° 30' 08" N, 81° 53' 46" E	30.09.2022	-	Naphtha 60 TPD Kerosene 40 TPD	166	15m3/day	

					Diesel 40 TPD LSHS 60TPD			
11	Kavitam EPS	16° 36' 28" N, 81° 46' 01" E	31.05.2024	1.5	50	3	Gen: 15 ; Disposal: ED well injection	By tanker to KMDB injection facility(100m3/day)
12	Narsapur GCS	16° 27' 34" N, 81° 42' 35" E	31.07.2023	5.0	1.0	13	Gen: 90m3/d; Disposal: ED well injection	
13	Odalarevu		31.10.2021	-	60	-	ED well	

ED well: effluent disposal well

From table 1a, 1b and 1c, it is observed that the present actual quantity of effluent generation is exceeding the consented quantity of effluent generation as per consent order issued by APPCB during 2015.

3.a. Sources of emissions from the facilities and measures taken to comply with standards

3.a. i *Flare stack emissions*

Flaring is essentially required in these facilities. The excess gas if any and liberated gas from low pressure system will be routed to flare system. The composition and volume of gas handled in flare stack in different facilities is given below:

Table 2: flare stack emissions

Sl. No.	Installation	Flare Type (Elevated/ Ground)	Gas Composition [C1 %]	Present Flare (SCMD)	Flare stack capacity [SCMD]
1	Kesanapalli(W) GGS	Elevated	85.64	1500	160000
2	Ponamanda GCS	Elevated	91.77	500	50000
3	Tatipaka Complex	Elevated	92.76	500	3000000
4	Mori GCS	Elevated	99.07	5000	1000000
5	Adavipalem GCS	Elevated	86.96	200	250000
6	Endamuru-GCS	Elevated	93.46	800	200000
7	Mandapeta-GCS	Elevated	88.05	2200	700000
8	Narsapur GCS	Elevated	95.81	200	300000
9	Kavitam EPS	Elevated	79.5	0	50000
10	Pasarlapudi-GCS	Elevated	93.53	600	100000
11	Gopavaram-GGS	Elevated	90.76	20000	100000

SCMD: standard cubic meters per day

GGS: Group gathering station. Four to six wells are connected to one cluster and five clusters are connected to GGS.

3.a. ii *Emissions during dehydration of gas for achieving water dew point*

Moisture content in the gas is removed and dry gas is sent to M/s GAIL. The moisture content separated from gas contains hydrocarbon which may contribute to significant emissions if it is not treated properly. Rajahmundry Asset has adopted tri-ethylene glycol based dehydration to achieve water dew point and hydrocarbon dew point.

In this process, moisture in the gas is absorbed using glycol. rich glycol after absorbing moisture from gas, is sent to the flash drum to remove the dissolved hydrocarbons, if any. The rich glycol will be passed through series of filters and then routed to heat exchangers where the hot lean glycol from the regeneration column will transfer heat to the rich glycol. Thus the preheated rich glycol will be routed to the regenerated column where the absorbed moisture in the glycol will be vaporized through re-boiler system. The liberated water vapor is released from the top of the regeneration column.

3.a.iii ***Fugitive emissions from storage tanks, process area etc.***, sources include valves of all types, flanges, pump and compressor seals, pressure relief valves, sampling connections and process drains

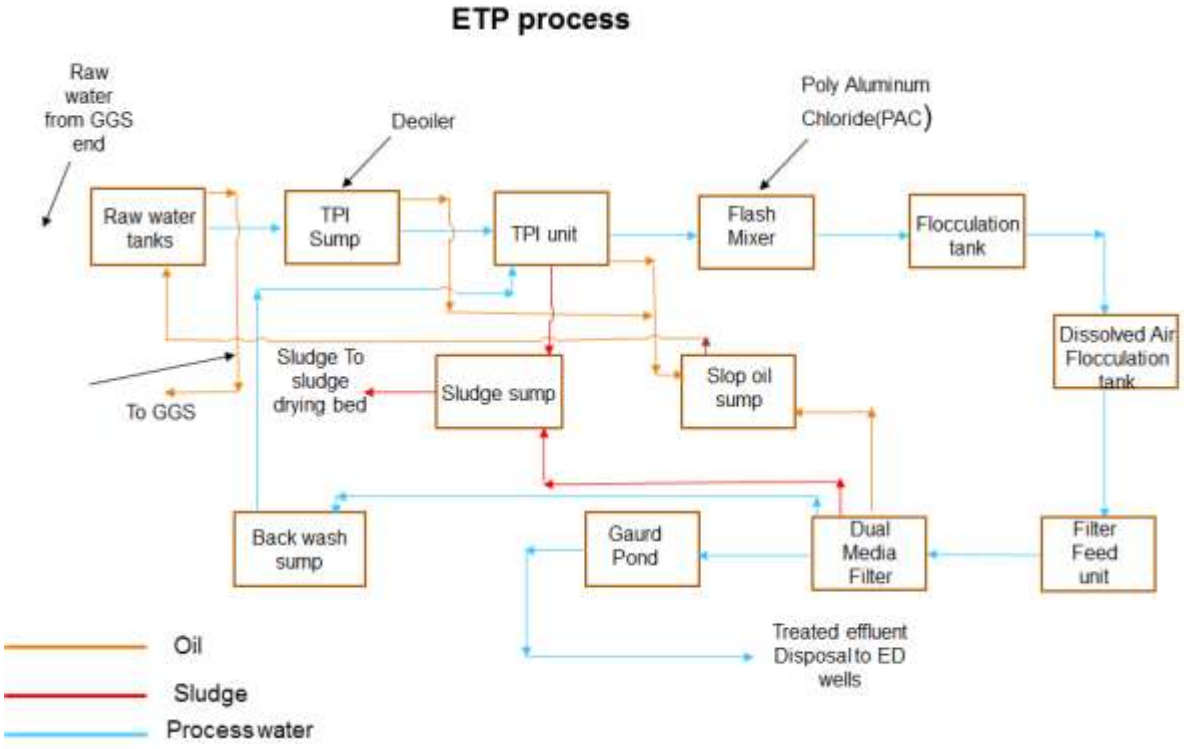
3.a. iv ***H_2S emission***

Natural gas produced from Kesanapalli (w) GGS, Tatipaka and Gopavaram fields contains H_2S concentration in the range of 15-50 ppm from the flowing wells. This gas needs to be treated to meet PNGRB (Petroleum and Natural Gas Regulatory Board) guidelines of H_2S concentration less than 3 ppm before supply to M/s GAIL. Treatment of sour gas for reducing H_2S concentration is called sweetening. Liquid scavenger system is being used in all the above installations to bring down level of H_2S to less than 3ppm. Presently new Liquid H_2S Scavenger is being dosed continuously round the clock at above installations for sweetening of natural gas to meet PNGRB guidelines and H_2S Scavenger is being dosed in LP and HP lines through atomizers. Sweetening of gas is one of the contributor to emissions.

3.b Sources of effluent and its treatment

3.b.i ETP process Description in Rajahmundry asset

Raw effluent is first passed through de-oiler, free Oil is separated by gravity, which is collected by Oil skimmer and flows to slop oil sump by gravity. Further oil is removed by corrugated plate interceptor (CPI) separator with De-oiler and Induced Gas Floatation. The free oil again flows to the slop oil sump and sludge to the sludge pit. The oil free effluent is treated in SBR (Sequential batch reactor) followed by media filter. Treated effluent is stored in guard ponds and disposed as per conditions stipulated in consent.



Totally four effluent treatment plants are in operation in East and West Godavari districts to treat the produced water from the production installations. From table 1a,1b & 1c it is clear that Gopavaram ETP and Kesanapalli ETP-II are not adequate in terms of capacity to treat the actual quantity of effluent generated. In Gopavaram GCS, in the CFO it is mentioned as 6.0 KLD which is not matching with the actual effluent generated. The installations shall augment their treatment capacities.

3.b. ii ***Status of Storm water drains and mode of disposal of storm water. Onsite drainage system and sediment control measures***

The storm water drains are available in the installations for drain out of the accumulated rain water during the rainy season. During inspection, it was observed that the drains in Tatipaka, Kesanapalli, Malkipuram, odalarevu were blocked and filled with effluent but the drains were not cleaned. It was reported that whenever the drains are filled & choked with the sediments, they are manually cleaned but however there is no standard procedure followed by the unit for cleaning of drains, frequency of cleaning and for removal of sediments.

3.c Prevailing Pipeline leakage detection and repair methodology in place

In Rajahmundry asset, most of the pipelines are well flow lines of dia 4" non piggable lines. Leakage if any is reported by well maintenance team, flow line patrol party, villagers and locals.

Most of the underground pinhole leaks in the flow line occurs with a hole of approximate size 1-2 mm develops causing the release of flow line fluid at the point of damage due to internal corrosion due to sand and water due to matured brown fields. The following actions are taken after detection of leak:

- The nearby GGS/ GCS crew visits the site
- The well is closed and source gas is stopped immediately.
- The entrapped gas/ liquid is depressurized to the flare line in the GGS/GCS.
- Leaked pipeline is repaired through clamping/ sleeve welding/ partial replacement based on the pipeline conditions.
- After the leakage, the spilled water/ oil is evacuated with a tanker to nearby installations and soil is restored back to its original conditions
- The farmers/ land owners are compensated based on the assessment of Committee for the crop compensation and land restoration

The facilities are normally using Steel pipelines with design life of 20 years. In Rajahmundry Asset, old pipelines laid during 1988 and new pipelines laid during 2020 are existing. The age of pipelines ranges from about 30 years to 3 months old. At present flow lines are replaced based on the condition of pipelines. There is no specific guideline or time frame for replacement of pipeline. Earlier (till 2009) CTE (coal tar enamel) coated pipes were in use, now since 2010, only 3 LPE pre-coated pipes are being used. As this type of coating is better and stronger, external corrosion of pipelines have minimized. Replacement of all CTE coated pipelines are being done systematically in a phased manner by the facility.

Table 3: Pipeline specification

Sl.No	Diameter of pipelines	4" dia 7.9 mm thickness, API 5l – X 46 grade, 3 LPE coated
1	Hydro-testing	All new pipe line are Hydro-tested at 150 Kg/Cm^2
2	Depth below which pipelines are laid	Minimum 1 meter underground
3	Total Length of Pipeline	989 Kms

4	New Lines (less than 20 yrs)	738 Kms
5	Replacement Lines	351 Kms

3.c. i ***Measures in place for upkeep of pipelines***

- Use of corrosion inhibitors to mitigate internal corrosion of pipelines
- Installation of Gravel packing, sand filters in the sand bearing gas wells to mitigate sand incursion and prevent internal leakage due to sand abrasion.
- Periodic hydro testing of pipelines to check the integrity of pipelines.
- Identification and systematic replacement of old and vulnerable pipelines
- Ultrasonic Thickness measurement of 235 KM length had been done to assess the integrity of pipelines.

3.c. ii ***Measures taken by the units to prevent pipeline leakages***

- Sand traps are installed to control sand production from low producing wells
- All High productive wells are installed with GP kits to ensure complete control over the sand production from the reservoir to the surface through well tubing
- 16no of old flow lines were replaced with new 19 flow lines
- Nine out of 20 flowing wells are provided with gravel pack near the perforation as on September, 2020. This measures are reported to reduce entrainment of sand in pipelines.

3.c.iii ***Measures taken by M/s ONGC to avert accidents Post 27.06.2014 explosion in M/s GAIL facility***

PNGRB has notified the Gas quality specifications as per Gazette of India implemented for gas supply through pipeline from ONGC installations to GAIL grid, which is as follows:

Table 4: PNGRB Gas quality specifications

Parameters	Limit
Hydrocarbons dew point (Degree Celsius, max) *****	0
Water dew point (Degree Celsius, max**) ***	0
Hydrogen Sulphide (ppm by wt.max.)	5
Total Sulphur (ppm by wt.max.)	10
Carbon dioxide (mole % max)	6
Total inserts (mole %)	8

*** At the pipeline operating pressure**

As per the decision of MoPNG in Nov2014, treatment facilities are to be installed at ONGC locations after GAIL accident in Jun 2014 and gas need to be supplied as per PNGRB guidelines in the GAIL trunk pipe line. Accordingly, Rajahmundry Asset has hired GDU facilities at seven installations namely Pasarlapudi, Narsapur, Endamuru, Mandapeta, Tatipaka, Kesanapalli (W) and Mori for supplying dry gas to M/s GAIL grid after the treatment of the wet Gas through gas dehydration and dew point depressant facilities as per PNGRB guidelines. For sales gas specification to M/s GAIL, it was decided that dry gas (WDP & HDP max. at 0^0 C) is being supplied to consumers through GAIL trunk line.

4.0 Details of monitoring at installations

The committee carried out ambient air monitoring, fugitive emission monitoring, collected soil samples, water samples at Tatipaka GCS & refinery, Kesanapalli GGS and Odalarevu as alleged in the application. Observations made by the committee and monitoring & analysis results ae summarized below.

4.a Tatipaka GCS and mini refinery: the capacity of GCS system is 7lakh m3/ day and capacity of mini refinery is 300m3/ day. The CFO issued by APPCB is valid till 31.07.2023. Common ETP from both GCS and refinery and treated effluent is disposed by deep well injection. Four abandoned wells are used for effluent disposal.

4.a. i *Non-compliances observed*:

a. KG basin is close to sea and during rainy season water logging is normally observed in the region and the same is reported in other committee report submitted to Hon'ble NGT in the matter OA 91/2020 (SZ). The storm water from the installation is discharged into main drains laid outside the unit premises. During inspection the committee observed that due to heavy rains and water logging, effluent was getting mixed with storm water and from the main drain it may ultimately join sea.

b. The tilted plate interceptor and slop oil tank are not working properly. The capacity and retention time of plate interceptor is not adequate to treat the effluent. Hence the oil removed from effluent is stagnated and overflowing. The unit has obtained consent from APPCB during 2015 and subsequently the consent is renewed (online consent monitoring and management system) but however post 2015 due to ageing of wells the quantity of producer water is increasing and there by the quantity of effluent generated is also increased. But the units have not amended the consent for the revised quantity effluent generated. Thereby presently the effluent generated from the

installation is more than the quantity specified in the CFO issued by APPCB and moreover the existing ETP is not adequate in terms of capacity to treat the present effluent generated. Sludge drying beds are not in operation. As per the CFO issued to Tatipaka GCS on 27.02.2015 the quantity of effluent is 225 KLD but presently effluent generated is more than 500 KLD. In addition, 15 KLD of effluent generated from Tatipaka mini refinery, Endamuru GCS and Mandapeta GCS has to be treated. Hence the existing ETP of capacity 500KL is not adequate to treat the present quantity of effluent generated.

c. TVOC levels measured using handheld PID analyzer in the ETP area is varying from 2.2ppm to 4.0ppm.
d. There is no dedicated hazardous waste storage shed. ETP sludge, empty barrels, slop oil are stored haphazardly within the unit premises.
e. In old GCS plant drain effluent is joining storm water drains and pH of drain effluent was 14 and same was joining storm water drain.
f. LDAR of refinery is not carried out. TVOC levels near the valves of distillation column is around 5ppm and near sampling point is 70ppm.
g. In the gas dehydration unit in the re-boiler system, rich glycol (containing moisture) is heated to 200^0C and moisture is knocked out into the atmosphere. During knocking out some glycol vapors is carried along with moisture. There was odor nuisance in the area.

4.a. ii ***Water and wastewater analysis*:** The committee collected raw effluent, treated effluent and effluent from guard ponds to ascertain whether unit is treating the effluent or not. The committee collected ground water samples from four different places surrounding the installations. The detailed water, effluent analysis, stack monitoring report, fugitive emission

monitoring report and ambient air quality monitoring report is enclosed as Annexure-IIa. The key parameters from the analysis results are reproduced in table 5a. Oil & grease, phenols, benzene and TPH are the key indicators for pollution from the installations.

Table 5a: Analysis results of ground water samples collected from different places surrounding the installation & effluent- Tatipaka GCS & refinery for key parameters

Sample description	TOC (mg/l)	Oil and Grease (mg/l)	Phenols (mg/L)	Benzene (µg/l)	TPH (mg/l) Std-0,5
Borewell at K.Rajeswararao House.D . No:1-307,Near Peerlacheravu,Nagaram(m),manidikudura.- Tatipaka	12	BDL(DL:4.0)	BLQ(LOQ: 0.001)	BLQ(LOQ:20)	BLQ(LOQ: 0.005)
Borewell at P.Nanibabu House S/O P.Gandhi D.No 1-185 Nagaram village Pin-533247. - Tatipaka	3	BDL(DL:4.0)	BLQ(LOQ: 0.001)	BLQ(LOQ:20)	BLQ(LOQ: 0.005)
Borewell at L.Nagarutham S/O Sesherao House D.No 8/14 Molletviveri Meraka. - Tatipaka	5	BDL(DL:4.0)	BLQ(LOQ: 0.001)	BLQ(LOQ:20)	BLQ(LOQ: 0.005)
Borewell at Venkateshwararao S/O Swamy House Molletiveri Meraka. - Tatipaka	3	BDL(DL:4.0)	BLQ(LOQ: 0.001)	BLQ(LOQ:20)	BLQ(LOQ: 0.005)

Table 5b: Effluent analysis results- Tatipaka GCS

location	TSS mg/L		Oil & grease mg/L	
	Measured value	Standard limit	Measured value	Standard limit
GP-1 - Tatipaka	14	100	BDL(DL:4.0)	10
GP-2 - Tatipaka	20		BDL(DL:4.0)	

Raw Effluent - Tatipaka	63		620	
Treated Effluent - Tatipaka	78		BDL(DL:4.0)	

TOC- Total organic carbon, GP- guard pond, BDL- below detection limit, TPH- Total petroleum hydrocarbon (mineral oil)

From table 5b, based on effluent results it is concluded that the unit is meeting the standards w.r.t deep well injection.

In the borewell samples benzene, TPH, O&G and phenols are below detection limit. Since the key indicator parameters are not present in the borewell water samples, based on the current analysis report the committee opines that ground water surrounding Tatipaka GCS and refinery is not contaminated.

4.a.iii *Ambient air quality monitoring in and around Tatipaka***:** Ambient air quality monitoring was carried out in two phases. During first round of monitoring (December 2020) there was odour nuisance and the unit submitted to the committee that it shall take up corrective measures and initiated clean-up of wastes dumped in open, the flanges were sealed. Again second round of ambient VOC monitoring was carried out during February, 2021. Ambient air monitoring was carried out for all notified parameters namely Sulphur Dioxide as SO_2, Nitrogen Dioxide as NO_2, particulate matter (PM10), particulate matter (PM2.5), ozone, lead, carbon monoxide, ammonia, benzene, Benzo(a) pyrene, arsenic and nickel.

The key parameters in ambient monitoring is Benzene and key parameter results are given in

table 5c: Ambient air quality monitoring results in and around Tatipaka

Sample description	Ambient Benzene (µg/m3) Std limit-05 µg/m3
First round of monitoring during December, 2020	
Near CISF - Tatipaka	697
Near Raw Water treatment plant- Tatipaka	92
Near ETP -Tatipaka	1018
Near Pump House -Tatipaka	2051
Average ambient benzene/ VOC contributed by the installation	964.5 µg/m3

Second round of ambient & fugitive VOC monitoring (copy of the results enclosed as Annexure-IIb)	
Balla Sathya Narayana House,Babu Nagar Nagaram Panchayat,NE Corner	0.14
Kattamurai Kanagaraj,Mulletivari Nanakka Manepalli Road,Nagaram Panchayat.	0.02
Ramprasath house,seshayya Kalya Gatta Road,Nagaram Panchayat	0.31
Vananasi Vani Marekka,Nagaram Village Door.no:5-54.	0.48
ONGC Tallipakka,Near ETP Plant inside- fugitive	0.10

During the first round of monitoring it was observed that the unit is complying with ambient air quality standards w.r.t all parameters except Benzene. The unit has taken corrective measures and it is observed that during second round of monitoring the unit is complying with ambient standards w.r,t Benzene also.

From the results it is evident that the unit has not taken proper preventive measures and thereby has contributed towards ambient VOC's/ Benzene. Subsequently the unit has implemented corrective actions and the values have drastically reduced and within the ETP section also the benzene concentration is low.

4.a.iv *Stack monitoring*: Crude furnace stack was monitored during December, 2020. From the results it is observed that the unit is complying with stack monitoring results.

Table 5d: Crude furnace stack monitoring Tatipaka

Location -Crude Furnace Stack - Tatipaka			
S.NO	**Parameter**	**Result**	**Unit**
1	Stack Temperature	627	°C
2	Velocity	3.01	m/Sec
3	Volume of Gas Discharge	5817	Nm3/Hr
4	Oxygen as O2	12.7	%
5	Carbon Monoxide as CO	BDL(DL:1.14)	mg/m3
6	Carbon Dioxide as CO2	6.4	%

7	Particulate Matter	12.6	mg/Nm3
8	Sulphur Dioxide as SO2	209	mg/Nm3
9	Oxides Of Nitrogen as NO2	10	mg/Nm3
10	Moisture	3.7	%
11	Hydrogen Sulphide	BDL(DL0.02)	mg/m3
12	Vanadium as V	BDL(DL0.03)	mg/m3
13	Nickel as Ni	BDL(DL0.03)	mg/m3

4.a. v ***Ambient Noise Monitoring*****:** The committee monitored ambient noise levels both during day time and night time. From the noise monitoring, it is observed that the unit is complying with ambient air quality standards w.r.t noise.

Table 5e: Ambient Noise monitoring Tatipaka

S.NO	Location	Noise Day	Standard	Noise Night	standard
Noise level db A					
3	Near CISF-Tatipaka	64.8	75	62.9	70
4	Near Raw Water Treatment Plant - Tatipaka	56.8		54.8	
5	Near ETP - Tatipaka	63.4		59.8	
6	Near Pump house -Tatipaka	57.2		52.4	

4.a.vi ***Environmental compensation from Tatipaka refinery***

EC for violation of CFO conditions	EC=PI x N x R x S x LF Where, EC = Environmental Compensation in INR PI = Pollution Index of industrial sector (red-80) N = Number of days of violation took place (from the date of violation to date of compliance- 01.11.2015 to 25.02.2021=1943days

	Date of non-compliance: the unit has installed TEG dehydration system during November, 2015 without recovering glycol vapors te moisture was knocked out which was one of the major source of benzene. Post 2015, the unit has not amended the consent for the actual quantity of effluent generated. Present ETP is not adequate in terms of capacity to treat the actual effluent generated. The unit has not maintained any records for hazardous waste disposed. During first round of monitoring ambient benzene was in the range of 92 to 2051 µg/m3 against the standard limit of 05 µg/m3. Considering these points the date of non- compliance is considered from 01.11.2015 R = A factor in Rupees for EC (Rs. 250/-) S = Factor for scale of operation (large-1.5) LF = Location factor (population is varying between 1 to 5 lacs =1.25) =80*1943 days*250*1.5*1.25 =**7,28,62,500** Seven crores eighty-six lacs sixty two thousand five hundred only

* TEG gas dehydration system is installed during November, 2015 post accident at M/s GAIL facility due to which the glycol vapors are let out into environment while knocking out moisture. At Tatipaka facility this is one of the main source of ambient Benzene. Hence for assessment of violation, date is taken as 01.11.2015

4.b Kesanapalli GGS:

4.b.i *Non-compliances observed*

1. Effluent is getting mixed with storm water and storm water is discharged into main drain outside the unit premises. pH of the storm water was 12. In addition the leaves and garden waste is in the drain and getting putrefied in the drain itself.
2. The effluent stored in treated effluent sump was red in color and ph was more than 12.

Storm water drains

treated effluent sump

ETP area where oil spill is covered by fresh soil

3. There is no dedicated hazardous waste storage sheds
4. The unit was disposing the effluent by means of marine disposal but however the unit has not obtained necessary permissions from APPCB for marine disposal. Further, part of the pipeline used for deep sea disposal (1000m stretch of pipeline taking deep sea) is broken and washed away. presently the unit is disposing the effluent in the coast. The unit had obtained CRZ clearance for laying of pipelines.
5. Water logging observed at the entrance of the unit.
6. In the ETP area, the unit had covered with fresh soil. The committee excavated the portion of the soil and found that black oily soil was present below upto depth of 1m. On enquiring it was informed that there was oil spill and the unit had covered with fresh soil.
7. Opposite to new ETP boundary wall, waste oil & sludge is dumped on land to an extent of two to three acres.

Two to three acres of Area opposite to ETP likely to be contaminated

Satellite image 10/2018 satellite image 12/2020

On comparison of satellite images of 2018 and 2020, it is clear that the unit has cleared green belt for waste disposal.

4.b.ii *Water and wastewater analysis results*: The committee collected effluent & sediment samples and carried out ambient air quality monitoring. The details water, wastewater, sediment analysis report and ambient air quality and fugitive emission monitoring report of Kesanapalli is enclosed as Annexure-III.

Table 6a: effluent analysis results for key parameters for kesanapalli GGS

Sample description	TOC (mg/l)	Oil and Grease (mg/l)	Phenols (mg/L) -	Benzene (µg/l)	TPH (mg/l) Std-0,5
Borewell Vaddeeswara Rao, Malkipuram house, Turupalam village-Kesanapalli	25	BDL(DL :4.0)	BLQ(LOQ: 0.001)	BLQ(LOQ:20)	BLQ(LOQ: 0.005)
Near Security Gate(GGS Plant) Strom water drain into outside -Kesanapalli	12	BDL(DL :4.0)	BLQ(LOQ: 0.001)	BLQ(LOQ:20)	BLQ(LOQ: 0.005)
Stagnated pond water opp to DG Room -Kesanapalli	60	BDL(DL :4.0)	BLQ(LOQ: 0.001)	BLQ(LOQ:20)	1.39

From the ground water results it is understood that ground water is not contaminated due to activities of M/s ONGC and M/s GAIL. Sample was collected from the water logged area and it contains TPH which implies that effluent is mixed with storm water in the unit premises.

Table 6b: Analysis results of effluent samples collected in Kesanapalli

location	TSS mg/L		Oil & grease mg/L	
	Measured value	Standard limit	Measured value	Standard limit
Old ETP Raw Effluent Inlet-Kesanapalli	-	100	-	10
Old ETP Collection tank - T 103 inlet-Kesanapalli	61		5	

Old ETP filter feed sump and pump shed-Kesanapalli	14		BDL(DL:4.0)	
Old ETP outlet-Kesanapalli	43		BDL(DL:4.0)	
New ETP Inlet-Kesanapalli	75		240	
Near ETP Waste Water Joining Abandoned SBR-Kesanapalli	16		BDL(DL:4.0)	
New ETP Treated Effluent after media filter-Kesanapalli	31		BDL(DL:4.0)	
New ETP Gate Value pit connected to treated effluent water sump-Kesanapalli	27		BDL(DL:4.0)	
Turpupalem Beach deep well injection Effluent collection Sump-Kesanapalli	26		BDL(DL:4.0)	

Effluent samples are complying with deep injection well standard.

4.b.iii *Sediment analysis results*: The committee collected sediment samples and results of key parameters are as follows:

Table 6c: sediment analysis results collected near Kesanapalli installation

	Benzene mg/kg	TPH mg/kg	Phenols mg/kg	Iron mg/kg	Mercury mg/kg	Lead mg/kg
Screening values	50	5000	3,8	-	50	600
In between SBR Abandoned sump and treated	BLQ (LOQ:20)	BLQ (LOQ:0.1)	BLQ (LOQ:0.1)	3392	BLQ [LOQ:2.0]	BLQ [LOQ:2.0]

effluent collection sump -sediment-1 -Kesanapalli						
Near Beach-Turpupalam-sediment-2 - Kesanapalli	BLQ (LOQ:20)	0.1018	BLQ (LOQ:0.1)	13186	BLQ [LOQ:2.0]	12.3
Near Beach-Turpupalam-sediment-3 - Kesanapalli	BLQ (LOQ:20)	BLQ (LOQ:0.1)	BLQ (LOQ:0.1)	5090	BLQ [LOQ:2.0]	3.4
Stagnated pond water Sludge opposite to DG room - Kesanapalli	BLQ(LOQ:20)	2.8992	4.36	5932	201	4.5

In around 5acres of land opposite to DG room the effluent & sludge is accumulated. From the sediment sampling it is learnt that mercury is present in the range of 201 mg/Kg. As per Guidance document for assessment and remediation of contaminated sites in India the screening value of mercury for identification of probably contaminated site is 50mg/Kg and in the soil collected since the mercury concentration is exceeding the screening values, it is identified as probably contaminated site. APPCB shall take up a detailed analysis in the area and re-ascertain whether the area is contaminated or not.

The unit shall dismantle the abandoned sump present in the Kesanapalli GGS and the effluent present in the sump shall be treated properly in ETP and after complying with APPCB discharge standards shall be disposed as per condition stipulated in CFO.

The committee observed that naturally the beach sand in kesanapalli area is having high iron content due to which the color of the beach sand is slightly black.

4.b.iv *Environmental compensation to be levied from Kesanapalli GCS*

EC for violation of CFO conditions, sea disposal without obtaining permission from APPCB	EC=PI x N x R x S x LF Where, EC = Environmental Compensation in INR PI = Pollution Index of industrial sector (red-80) N = Number of days of violation took place (from the date of violation observed to date of compliance- The unit was not granted permission by APPCB for deep sea disposal. As per CFO issued by APPCB treated effluent has to be disposed by deep well injection. As per records unit is disposing effluent by sea disposal since february, 2018 hence date of non-compliance is taken as 25.02. 2018 to 25.02.2021=1096 days (after 25.02.2021, APPCB may levy additional compensation till compliance is achieved R = A factor in Rupees for EC (Rs. 250/-) S = Factor for scale of operation (large-1.5) LF = Location factor (population is varying between 1 to 5 lacs =1.25) =80*1096*250*1.5*1.25 =Rs. 4,11,00,000/- Rupees Four crore eleven lakhs nine lacs only

4.c M/s GAIL and ONGC Odalarevu plant

ONGC onshore terminal and M/S GAIL gas terminal are located adjacent to each other at odalarevu. The dry gas after treatment is sent from ONGC to GAIL. In KG basin M/s GAIL is not involved in the extraction of gas from the wells and is having only gas terminals where dry gas is received from ONGC terminals.

4.c.i ***Non compliances observed in M/s ONGC onshore terminal***

1. The ETP is not functioning properly. Oil is removed from slop oil tank and then effluent is stored in holding ponds. Multimedia filters were not in operation on the day of the visit. effluent is disposed on the ground without treatment. The detailed analysis and monitoring results of odalarevu facility water is enclosed as Annexure-IVa.
2. Severe odour nuisance and VOC levels inside unit premises was varying from 4.0ppm to 6.0ppm when measured using handheld PID (photo ionic detector) analyzer.

3. During the visit, there were rains and water logging was observed in the area. Both Effluent mixed with storm water was present in the unlined lagoon in more than 10acres of land between M/s GAIL and M/s ONGC terminals. The pH of the lagoon water was around 5.
4. The storm water drains are completely clogged and was filled with thick oily sludge.
5. Reported that the unit is facing water logging issues since 2017 onwards. Reported that the ETP is not properly working since 2017 and the unit is yet to replace worn out pumps
6. The committee collected water & sediment samples, conducted ambient air quality monitoring during December, 2020 and carried out exclusive ambient VOC monitoring during February, 2021.

4.c.ii ***Non-compliances observed in M/s GAIL terminal*:** Pigging operations are carried out once in six months to remove the waste deposited in pipelines. The pigging waste are hazardous in nature, the unit is storing the waste in open near to the pipelines. Though the unit reported that waste was sent to TSDF but however no records were found.

Satellite image of the installations

4.c.iv *water and wastewater analysis results*

Table 7a: Water analysis results for key parameters for kesanapalli GGS

Sample description	TOC (mg/l)	Oil and Grease (mg/l)	Phenols (mg/L)	Benzene (µg/l)	TPH (mg/l)
Storm Water Drain opp to fire Water pump (S1 Vashita) - Odalarevu	21	BDL(DL :4.0)	BLQ(LOQ: 0.001)	31.24	BLQ(LOQ: 0.005)
Contaminated Strom water Drain (Near ETP Area) - Odalarevu	28	BDL(DL :4.0)	BLQ(LOQ: 0.001)	BLQ(LO Q:20)	BLQ(LOQ: 0.005)
Stagnated Water -1 Beside Gail Pipe Line-Odalarevu	25	BDL(DL :4.0)	BLQ(LOQ: 0.001)	BLQ(LO Q:20)	0.05
Near Land Fall KP -6 Road(ONGC pipe line indicator)-Odalarevu	94	BDL(DL :4.0)	0.2	BLQ(LO Q:20)	0.08
Sample collected from unline lagoon beside gail pipe line - Odalarevu	661	BDL(DL :4.0)	2.7	BLQ(LO Q:20)	BLQ(LOQ: 0.005)
Borewell - Vashita borewell (Opposite to admin block) - Odalarevu	3	BDL(DL :4.0)	BLQ(LOQ: 0.001)	BLQ(LO Q:20)	BLQ(LOQ: 0.005)
Near Condenstate storm water pit - Odalarevu	5	BDL(DL :4.0)	BLQ(LOQ: 0.001)	BLQ(LO Q:20)	BLQ(LOQ: 0.005)
Storm Water drain outlet outside in the industry - - Odalarevu	3	BDL(DL :4.0)	BLQ(LOQ: 0.001)	BLQ(LO Q:20)	BLQ(LOQ: 0.005)
Tatipaka Near gail pipe line Nagaram – Odalarevu accident spot	10	BDL(DL :4.0)	BLQ(LOQ: 0.001)	BLQ(LO Q:20)	BLQ(LOQ: 0.005)

Table 7b: Effluent analysis results

Sample description	TSS (mg/l)	Standard limit mg/L	Oil and Grease (mg/l)	Standard limit mg/L
ETP Inlet 1-Odalarevu	75	100	BDL(DL:4.0)	10
Treated Efflent before Injection-Odalarevu	15		BDL(DL:4.0)	
ETP Inlet 2 -Odalarevu	79		BDL(DL:4.0)	

The raw effluent is having benzene in the range of 603µg/L to 1159 µg/L. benzene being volatile in nature escapes into the atmosphere when effluent is stored in holding tanks.

The treated effluent is meeting the standards w.r.t. deep well injection

Samples were collected from main storm water drain outside the unit premises and found that it is not contaminated with effluent.

The installation is located very close to the sea and there were no bore well near the installation hence committee could not conduct ground water sampling.

Effluent collected from lagoon is having BOD 447mg/L, COD 1762 mg/L and TOC 661 mg/L

4.c.v *Sediment analysis results*

The committee collected sediment samples and analysis results are as follows:

Table 7c: Sediment analysis results Odalarevu

Sediment analysis results Odalarevu			
location	Benzene	TPH	phenols
Screening values	50	5000	3,8
Storage tank Sludge - Odalarevu	BLQ(LOQ:20)	41.5191	3.60
Sediment-Near ETP arae - Odalarevu	BLQ(LOQ:20)	179.5684	0.62
Sediment 2 beside gail pipe line - Odalarevu	BLQ(LOQ:20)	1.1571	BLQ(LOQ:0.1)
Sediment -Tadipaka Near Gail pipe line Nagaram- Odalarevu	BLQ(LOQ:20)	1.7317	1.79

Sediment - Kesandasipalam Accident Point from 2014 - Odalarevu	9.77	BLQ(LOQ:0.1)	BLQ(LOQ:0.1)

From the sediment analysis results, it is observed that sediment samples Odalarevu ETP and near sludge storage tank is not contaminated. Under the supervision of APPCB the unit shall restore it to original position.

4.c.vi *Fugitive emission monitoring*

The committee carried out ambient air quality monitoring during December, 2020 and ambient VOC & fugitive monitoring during February, 2021. The results of key ambient parameters is given below:

Table 7d: Ambient air quality monitoring Odalarevu for key parameter Benzene

Sample description	Benzene (µg/m3)
First round of monitoring during December, 2020	
Near Odalarevu village adjacent to ETP	122
Near Security Main gate -Odalarevu	68.8
Second round of VOC monitoring (copy enclosed as Annexure-IVb)	
Near ETP oddalarevu	BLQ (LOQ-0.1)
Church,Odalarevu	BLQ (LOQ-0.1)
Peddinti Narashima Phanikumar house Odalarevu,Near ramalayam Temple	BLQ (LOQ-0.1)
Marilamma center,Kandapalli Rambabu House	BLQ (LOQ-0.1)

4.c.vii *Environmental Compensation*

The unit is complying with ambient air quality standards w.r.t noise

EC for violation of CFO conditions, sea disposal without obtaining	EC=PI x N x R x S x LF Where, EC = Environmental Compensation in INR PI = Pollution Index of industrial sector (red-80) N = Number of days of violation took place (from the date of violation observed to date of compliance- reported by unit since January, 2017 ETP is not working properly to

permission from APPCB	25.02.2021=1516 days (after 25.02.2021, APPCB may levy additional compensation till compliance is achieved R = A factor in Rupees for EC (Rs. 250/-) S = Factor for scale of operation (large-1.5) LF = Location factor (population is varying between 1 to 5 lacs =1.25) =80*1516*250*1.5*1.25 =5,68,50,000/- Rupees Five crore sixty eight lakhs fifty thousand only

5.0 Observations in Previous accident sites

The committee visited two sites where previously accidental leakage has took place. One is Kesanadasipalem and the other is Nagaram. It was observed during committee inspection that area where previously accident has took place is completely restored. The soil was excavated till the pipeline is visible. No leakage was observed. There was no odour nuisance and VOC was monitored using handheld PID analyser and it measured 0ppm in both sites. Sediment samples were collected at locations where the leakages have occurred and on comparison of the results with MOEFCC screening values for identification of hazardous waste contaminated soil it is found that the soil in both the locations are not contaminated. This implies that the unit has completely restored the nagaram area and Kesanadasipalem area where previously accident had took place.

Photo: Nagaram

Kesanadasipalem

Table 8: Sediment analysis results in Nagaram and Kesanadasipalem

Sediment analysis results in previous accident sites Nagaram and Kesanadasipalem								
location	Benzene mg/kg	TPH mg/kg	Phenols mg/kg	Arsenic mg/kg	Vanadium mg/kg	Mercury mg/kg	Chromium Total) mg/kg	Lead mg/kg
Screening levels for Agriculture	50	5000	3,8	12	130	50	64	70
Sediment -Tadipaka Near Gail pipe line Nagaram- Odalarevu	BLQ(LOQ:20)	1.7317	1.79	3.2	73.8	4.4	36.8	10.4
Sediment - Kesandasipalam Accident Point from 2014 - Odalarevu	9.77	BLQ (LOQ:0.1)	BLQ (LOQ:0.1)	BLQ (LOQ:2.0)	61.2	BLQ (LOQ:2.0)	10.9	4.6

The sediment samples collected at accident sites Nagaram and Kesaadasipalem were compared with the soil screening values for agricultural purposes as per the Guidance document for assessment and remediation of contaminated sites and it is found that the sites are not contaminated. During visit also it was observed that normal plantation has come up in the area and area is restored.

6.0 Conclusions and Recommendations

i. The design life period of pipes are 20 years. In KG basin, CTE pipelines older than 30 years are still in use. The unit shall prepare guidelines or time frame for replacement of old pipelines. Very Old CTE coated pipes may be replaced with 3 LPE pre-coated pipes.

ii. Presently nine out of 20 flowing wells are provided with gravel pack to minimize sand entrainment. The unit shall provide gravel pack near the perforation to all flowing wells to reduce entrainment of sand in pipelines thereby reduce the chances of pipeline leakage.

iii. M/s ONGC and M/s GAIL in KG basin are more focused on production and extraction of oil & gas which is essentially required for the development but the environmental aspects and pollution mitigation measures within their premises is not much focussed. The effluent treatment plants are not properly operated, hazardous wastes such as ETP sludge, slop oil is not disposed as per Hazardous Waste and Management Rules, high fugitive benzene emissions, not complying with APPCB CFO conditions and CRZ violation w.r.t Kesanapalli marine disposal. On verification of records the committee observed that any leakages or accident outside the unit premises in farmers land is immediately attended and addressed with 24 hours (all minor pinhole leakages are closed with 24hrs) and the unit has taken measures to restore the area as so to prevent any public outcry.

iv. It is observed that while knocking out moistire in gas dehydration system using tertiary ethylene glycol, glycol vapors are escaping with moistureTo ensure that moisture from gas dehydration- TEG unit is collected separately treated so as to remove the glycol vapours and then moisture is let into atmosphere. IN no case the unit shall knock out the untreated moisture containing glycol vapours into the atmosphere.

v. The unit has dumped the ETP sludge within its premises, oil spill inside the premises is not cleaned up, effluent is getting mixed with storm water, ambient benzene in the unit premises is very high, LDAR is not carried out. But however the committee observed that the unit has not dumped any waste outside its premises.

vi. Around five acres of land inKesanapalli GGS is probably contaminated with mercury. The committee submits to Hon'ble NGT to direct unit to clean & restore the probably contaminated area under supervision of APPCB as per procedure laid in the " Guidance document on Assessment and remediation of contaminated sites" .

vii. Kesanapalli GGS shall immediately stop disposal of treated effluent by marine outfall near the coast and dispose the treated effluent as per the conditions stipulated in CFO issued by APPCB.

viii. During monsoon due to heavy rains and water logging effluent is mixed with storm water due to which around three acres of land in Tatipaka near to old ETP and 10 acres of land in odalarevu in between GAIL and ONGC terminals is having high COD, bod and TOC. The unit shall ensure that effluent will not allowed to mix with storm water.

ix. The committee carried out Ambient air quality monitoring in two installations namely Tatipaka and odalarevu installations during December, 2020 for all notified parameters namely Sulphur Dioxide as SO_2, Nitrogen Dioxide as NO_2, particulate matter (PM10), particulate matter (PM2.5), ozone, lead, carbon monoxide, ammonia, benzene, Benzo(a) pyrene, arsenic, nickel and noise. Both installations are complying with ambient air quality standards w.r.t all parameters except Benzene. The ambient benzene concentration in the Tatipaka unit premises is ranging between 92 µg/ m3 to 2051 µg/ m3 and in odalarevu installation 68.8 µg/ m3 and 122 µg/ m3 against the ambient standard of 05 µg/ m3. One of the reason for high ambient benzene concentration within the unit premises may due to placing the monitoring station close to fugitive source. The unit submitted to the committee that it has undertaken corrective actions like arresting fugitive emissions etc. The committee again carried out ambient benzene monitoring both inside and outside the unit premises in the villages both upwind and cross-wind directions. The ambient benzene concentration in the villages in Tatipaka is ranging from 0.02 µg/ m3 to 0.48 µg/ m3 and within unit premises it is reduced to 0.1 µg/ m3. Both Tatipaka and odalarevu facilities shall install continuous ambient monitoring facility and VOC sensors within the unit premises and results shall be displayed at the entrance of the unit for public and also the results shall be connected to APPCB server.

x. The committee observed during both the visits that the treatment plants are not properly operated and storm water drains are filled with sludge. Records on hazardous waste disposal was not shown to the committee. The ETP sludge and oily sludge from slop oil tank is stored in open. The unit has not taken any measures for the cleanup of sludge and storm water drains under the supervision of APPCB. The units shall ensure that the hazardous waste generated shall be disposed as per the conditions stipulated in CFO and in compliance with Hazardous Waste Management Rules, 2016.

xi. The units shall pay Environmental compensation to CPCB as follows:
Tatipaka GGS→ Rs. 7,28,62,500
Kesanapalli GGS→ Rs. 4,11,00,000/-
Odalarevu GGS→ Rs. 5,68,50,000/-

xii. During visit the committee observed that the storm water drains are clogged, filled with effluent, oily sludge is deposited in the drains in ETP area. Firstly the units shall ensure that the entire storm water from the unit shall be collected and reused with in the unit premises and it shall not sent outside the unit premises. The committee submits to Hon'ble NGT to direct APPCB to impose this as one of the consent conditions as not to discharge any storm water outside the unit premises. The unit shall have a fixed frequency for cleaning the drains and oily sludge settled in the drains shall be sent to TSDF or as directed by APPCB.

xiii. The unit has obtained consent from APPCB during 2015 and subsequently the consent is renewed (online consent monitoring and management system) but however post 2015 due to ageing of wells the quantity of produce water is increasing and there by the quantity of effluent generated is also increased. The actual quantity of effluent generated is higher than the quantities stipulated in the CFO. The unit shall either apply for amendment of consent issued by APPCB for the actual quantity of effluent generated or shall restrict their effluent generated to the quantities specified in CFO. Presently all units are having valid CFO issued by APPCB.

xiv. There are four ETP's to treat effluent generated from 12 installations. Capacity of Tatipaka ETP is 500 KL against the quantity of effluent received 330 KLD, Capacity of Kesanapalli ETP-2 is 1500 KLD against quantity of effluent received 2158 KLD and capcity of Gopavaram ETP is 600 KL against quantity of effluent received 1130 KLDwhich implies that the Kesanapalli and Gopavaram ETP's are inadequate to treat the actual effluent generated. The units shall augment their treatment capacity so as to treat the actual effluent generation or restrict their production so as to minimize the generation of produce water to the tune of their ETP capacity.

Based on raw effluent and treated effluent results, ambient air quality results, stack monitoring it is concluded that Tatipaka GCS, Kesanapalli GCS and Odalarevu GCS is complying with the standards w.r.t deep well injection, ambient air quality w.r.t noise and all other parameters except benzene. Post implementation of corrective measures the unit is found complying with ambient benzene standards also. samples collected from the borewell samples around the

installation do not contain benzene, TPH, O&G and phenols. Since the key indicator parameters are not present in the borewell water samples, based on the current analysis report the committee opines that ground water surrounding Tatipaka GCS & refinery, Kesanapalli GCS and odalarevu GCS is not contaminated. Sediment samples were collected from nagaram & Kesanadasipalem area where major accidents are reported to have taken place. The analysis results were compared with soil screening values for agricultural purposes as per "Guidance document for assessment and remediation of contaminated sites" and it is found that the sites are not contaminated. During accident site visit the committee observed that plantation has come up in the area.

Himanshu Kaushik, IAS
Sub Collector and Sub Divisional Magistrate
Amalapuram, East Godavari

K S Viswanathan, IAS
Sub Collector and Sub Divisional Magistrate
Narsapuram West Godavari

Dr. Palpandi
Scientist-C, Ministry of Environment Forest and Climate Change, Regional Office, Chennai

Prof. M. Deepa
Dept of Chemical Engineering,
A.U College of Engineering (A)
Andhra University, Visakhapatnam

P. Ravindranath
Senior Environmental Engineer
Andhra Pradesh Pollution Control Board
Zonal Office, Visakhapatnam

Mahima T
Scientist-D
Central Pollution Control Board
Regional Directorate, Chennai

Item No.5:

BEFORE THE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE, CHENNAI

Original Application No.175 of 2020 (SZ)
(Through Video Conference)

IN THE MATTER OF:

Venkatapathi Raja Yenumula,
East Godavari District,
Andhra Pradesh. ...Applicant(s)

Versus

Union of India and Ors.
...Respondent(s)

Date of hearing: 08.09.2020.

CORAM:

HON'BLE MR. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER

HON'BLE MR. SAIBAL DASGUPTA, EXPERT MEMBER

For Applicant(s): M/s. Sravan Kumar.

For Respondent(s): M/s. Madhuri Donti Reddy for R5, R7 to R9, R11 to R13.

ORDER

1. The grievance in this application is regarding the pollution namely air, sound, soil and water caused on account of the activities of the 3rd & 4th respondents units in the State of Andhra Pradesh along the Krishna-Godavari Basin located in

East Godavari and West Godavari District of Andhra Pradesh.

2. According to the applicant, there used to be normal phenomena of oil leakage being caused in the pipe lines established by these units causing damage to the agricultural land and also affecting the water bodies.
3. The units are not following the pollution control mechanism which is intended to prevent such activities and there is no proper maintenance of the pipe lines that is being carried out by them which caused in frequent oil / gas leakage resulting in such incidents causing death of the people.
4. Certain such incidents were pointed out by the applicant in the application. The District Collector, East Godavari had conducted the review meeting regarding the frequent gas leakage occured in the district and certain directions were given to ONGC as well GAIL authorities to take proper precautionary measures to avoid such things in future but no action has been taken by them and inspite of that, similar incidents had occurred on 18.05.2020 and 21.08.2020 respectively.
5. It is also alleged in the application that they are discharging untreated effluents into the nearby water bodies and seashore causing water pollution as well as marine pollution affecting the marine ecology. Instead of discharging the treated effluents into the deep sea as per the conditions of Environmental Clearance,

they are discharging the same into the seashore and shallow sea causing pollution to the sea water which affects the marine life and indirectly affects the livelihood of the local fishermen community who are doing traditional fishing for their livelihood.

6. Though they are bound to carry out certain activities under the Corporate Social Responsibility (CSR), the same were not being done by them in an effective manner. They are also not following the procedure for safe transportation of the gas/oil produced by them by providing necessary safety measures which also causes damage to the environment.
7. Though, this was brought to the notice of the authorities and certain directions have been issued after studying the matter by the committee constituted by the authorities, the same were not implemented by the respondents 3 & 4 in their units in this area.
8. In respect of an earlier incident, the Hon'ble High Court of Andhra Pradesh had constituted a committee and directed the MoEF&CC to issue necessary precautionary guidelines to such industries to avoid recurrence of such incidents in future but inspite of that nothing has been done. All illegal activities carried out by the respondents 3 & 4 are in violation of the Environment (Protection) Act, Disaster Management Act, Coastal Regulation Zone Notification, 2011 & 2019 and Biological

Diversity Act, 2002 apart from violating the provisions of the Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981.

9. So, the applicant filed this application seeking the following relief:-

(i) *Appoint a committee similar to O.A. No.43 & 44 of 2020 (SZ) or O.A. No.66 of 2020 to find the loss caused to environment by the respondent No.3 & 4 in Krishna Godavari Basin of Andhra Pradesh by conducting comprehensive survey by taking the representations from the affected villagers, aggrieved persons etc.*

(ii) *Directed the respondents No.1, 2 & 5 to take action on the persons responsible for continuous environmental disaster such as accidents, gas leakages due to lack of effective monitoring in the KG Basin region.*

(iii) *Direct respondent 1,5, 8, 10, 11, 12 to conduct cumulative study on damage caused to ecology, agriculture lands, Bay of Bengal, ground water, water bodies etc due to the activities of ONGC and GAIL in East Godavari and West Godavari districts of Andhra Pradesh.*

(iv) *Impose exemplary fine on respondents No.3 & 4 for the continuous irreparable damage caused to environment, sea, loss of health to the people, fertility of agriculture land, biodiversity etc. in East Godavari and West Godavari districts.*

(v) *Direct respondent No.4 to pay compensation to the people/victims who were denied justice in Nagaram fire tragedy and implement the assurances made at*

the time of massive fire accident due to GAIL gas pipeline leakage.

(vi) Direct respondent No.3, 4, 8 & 9 to record all the incidents of gas leakages/environmental disasters and register an FIR immediately in future.

(vii) Direct Respondent No.3, 4 & 8 to provide fire safety measures to save ecology by setting up of Fire Stations at all Gas Collection stations and important places as the large scale oil and gas activities are taking place in East Godavari and West Godavari districts of Andhra Pradesh as the Environmental Clearance issued by Union Environment, Forest and CC and Consent for Operation orders issued by Andhra Pradesh Pollution Control Board mandates the project proponent to provide safety measures in the plant and the place of operation.

(viii) Direct the respondent No.1 to 5 implement the Corporate Social Responsibility funds transparently and complete all the pending works initiated under CSR programs by respondent No.3 & 4 in accordance with Office Memorandum No.3-11013/25/2014-IA.I, dated 11.08.2014 of MoEF.

(ix) Punish the responsible negligent persons who have caused death of 23 persons and injury 17 persons, damaging the houses, agriculture, horticulture etc. and illegal beach sand mining by the contractors of ONGC for the construction of Odarevu Gas Collection Station for the past 5 years.

(x) Direct the respondent No.2 to 5 to take appropriate measures to control erosion, rising of sea in East Godavari district of Andhra Pradesh due to the activities of ONGC and GAIL in Krishna Godavari

Basin.

(xi) Pass any such order, as this Hon'ble Tribunal may deem fit and proper in the facts and circumstances of the case."

10. On going through the allegations made in the application, we are satisfied that there arises a substantial question of environment which requires the interference of this Tribunal for resolving the issue. So, the matter is admitted.

11. When the matter came for hearing today through Video Conference, Sri. Sravan Kumar entered appearance for the applicant. Smt. Madhuri Donti Reddy represented respondents 5, 7 to 9, 11 to 13.

12. We are of the opinion that 10th respondent is unnecessary party to this proceeding, so the 10th respondent is deleted from the party array and respondents 11 to 13 as mentioned in the application are re-arrayed as respondents 10 to 12 respectively.

13. Issue notice to the respondents 1 to 4, 6 by registered post, e-mail and Dusthi if possible.

14. The applicant is directed to serve the copy of the application to the standing counsel appearing for the respondents 5, 7 to 12 within a week.

15. The applicant is also directed to produce necessary requisite before this Tribunal within a week along with necessary

postal cover and postal stamps so as to enable this Tribunal to send notice to the respondents through this Tribunal as well.

16. In order to ascertain the impact of the activities of the respondents 3 & 4 in the area in question namely Krishna Godavari River bed in East Godavari and West Godavari District, we feel it appropriate to appoint a Joint Committee comprising of 1) a Senior Officer from Regional Office, Ministry of Environment & Climate Change (MoEF&CC), Chennai, 2) a Senior Officer from Regional Office, Central Pollution Control Board (CPCB), Chennai, 3) a Senior Officer as deputed by the Chairman of the Andhra Pradesh Pollution Control Board (APPCB), 4) the District Collector, East Godavari and West Godavari Districts or a Senior Officer not below the rank of Assistant Collector/Sub Divisional Magistrate designated by the respective District Collectors and 5) an Expert on Petroleum Engineering from Andhra University College of Engineering, Visakhapatnam to inspect the area in question and submit a factual as well as action taken report, if there is any violation found.

17. The committee is at liberty to co-opt any other expert to assist them in preparing the report in the field of Petroleum Engineering in respect of the safety measures to be taken to avoid such things in future.

18. The committee is directed to go into the question as to

whether there was any air, water, sound and soil pollution caused on account of the activities to the respondents 3 & 4 in these areas, whether they have committed any violation of Environment Clearance and CRZ Clearance granted and if so what is the impact of those on environment and the nature of damage caused to the environment and assess environmental compensation accordingly.

19. The committee is also directed to ascertain as to whether the pollution control mechanism provided by the respondents 3 & 4 are adequate to meet the situation and if not, what are the upgradation and improvement required to minimize or avoid such incidents in future and also to prevent causing of pollution to the people in the locality. They are also directed to conduct Ambient Air Quality test, Ground water quality and quality of water test in water bodies and sea and if there is any contamination caused, the nature of remediation to be taken to restore the same to its original position.

20. The committee is also directed to ascertain as to whether there was any damage caused to the resident of the locality on account of any of the violation committed by the units of respondents 3 & 4 and that may also be taken into consideration while assessing the environmental compensation to be recovered from them.

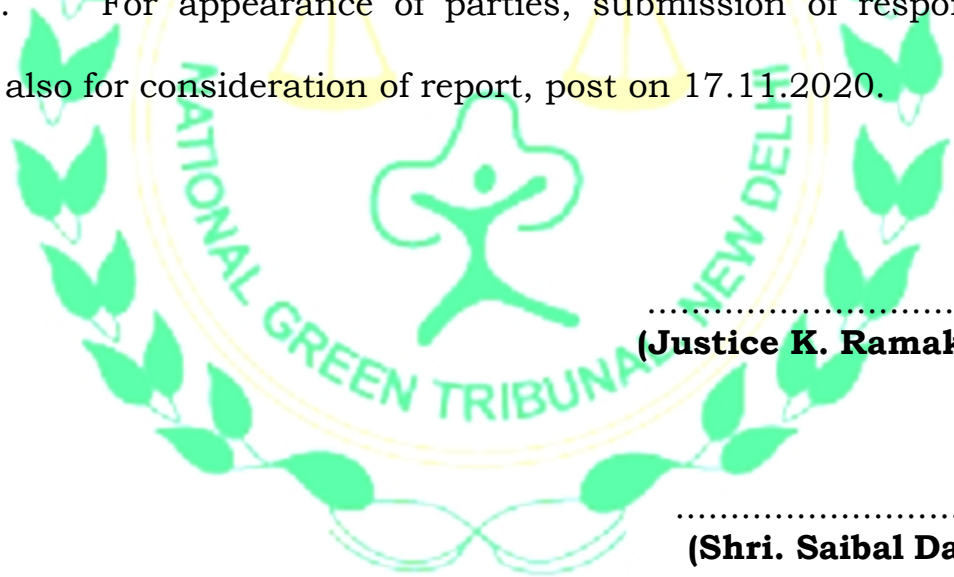
21. The Central Pollution Control Board (CPCB), Regional Office, Chennai will be the nodal agency for co-ordination and for providing necessary logistics for that purpose.

22. The applicant is directed to submit the set of papers to the members of the committee within a week.

23. The committee is directed to submit the report to this Tribunal by e-filing on or before 17.11.2020.

24. The Registry is directed to communicate this order to the members of the committee through e-mail immediately so as to enable them to comply with the direction.

25. For appearance of parties, submission of responses and also for consideration of report, post on 17.11.2020.



.....J.M.
(Justice K. Ramakrishnan)

.....E.M.
(Shri. Saibal Dasgupta)

O.A. No.175/2020,
08th September, 2020. Mn.

Annexure-II- Analysis and Monitoring Results of Tatipaka

Ground Water Analysis Results- Tatipaka GCS (samples collected from industry surroundings)

S.NO	Sample Code No	Sample Description	PH	EC (us/cm)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)	TOC (mg/l)	Total Hardness (mg/l)	Calcium (mg/l)	Total Alkalinity (mg/l)	Chloride (mg/l)	Sulphate (mg/l)	Phosphorous (mg/l)	Sodium (mg/l)	Potassium (mg/l)	Nitrate (mg/l)	TSS (mg/l)	Fluoride (mg/l)	Cyanide (mg/l)	Sulphide (mg/l)	Oil and Grease (mg/l)	NH3-N (mg/l)	Hexavalent Chromium (mg/l)	enols (mg/L)
1	EN20120023.13	Borewell at K.Rajeswararao House.D. No:1-307,Near Peerlacheravu,Nagaram(m),manidikudura.- Tatipaka	7.64	2450	1320	31	BDL(DL:2.0)	12	349	124	568	403	31	12.4	320	70	7.1	5.84	0.11	DL(DL:0.	DL(DL:1.(	DL(DL:4.(	1.6	DL(DL:0.0	Q(LOQ:0.001)
2	EN20120023.14	Borewell at P.Nanibabu House S/O P.Gandhi D.No 1-185 Nagaram village Pin-533247. - Tatipaka	8.02	1325	753	9	BDL(DL:2.0)	3	252	66	345	242	24	3.61	172.2	11	4.8	2	0.12	DL(DL:0.	DL(DL:1.(	DL(DL:4.(	DL(DL:1.(	DL(DL:0.0	Q(LOQ:0.001)
3	EN20120023.15	Borewell at L.Nagaruthama S/O Sesherao House D.No 8/14 Molletviveri Meraka. - Tatipaka	7.78	6700	3780	13	BDL(DL:2.0)	5	223	43	629	1742	135	11.0	1290	60	31	8.5	0.31	DL(DL:0.	DL(DL:1.(	DL(DL:4.(	DL(DL:1.(	DL(DL:0.0	Q(LOQ:0.001)
4	EN20120023.16	Borewell at Venkateshwararao S/O Swamy House Molletiveri Meraka. - Tatipaka	8.16	5080	2850	9	BDL(DL:2.0)	3	524	70	528	1289	144	3.9	920	65	14	7.8	0.15	DL(DL:0.	DL(DL:1.(	DL(DL:4.(	DL(DL:1.(	DL(DL:0.0	Q(LOQ:0.001)

Effluent Analysis Results-Tatipaka GCS

	Sample code	location	TSS	oil & grease
1	EN20120023.17	GP-1 - Tatipaka	14	DL(DL:4.0)
2	EN20120023.18	GP-2 - Tatipaka	20	DL(DL:4.0)
3	EN20120023.19	Raw Effluent - Tatipaka	63	620
4	EN20120023.20	Treated Effluent - Tatipaka	78	DL(DL:4.0)

First round of ambient air quality monitoring inside Tatipaka GCS

S.NO	Location	Sample No	Sulphur Dioxide as SO_2 (µg/m3)	Nitrogen Dioxide as NO_2 (µg/m3)	Particulate Matter (PM 10) (µg/m3)	Particulate Matter (PM 2.5) (µg/m3)	Ozone as O_3 (µg/m3)	Lead as Pb (µg/m3)	Carbon Monoxide as CO (mg/m3)	Ammonia as NH3 (µg/m3)	Benzene (µg/m3)	Benzo (a)Pyrene (Particulate Phase) (ng/m3)	Arsenic as As (ng/m3)	Nickel as Ni (ng/m3)
1	Near CISF - Tatipaka	AN20120023.0	8.1	10.2	59.8	30.3	29.5	BLQ(LOQ:0.002)	BDL(DL:1.14)	BDL(DL:20)	697	BLQ(LOQ:0.03)	BLQ(LOQ:2.0)	BLQ(LOQ:2.0)
2	Near Raw Water treatment plant-Tatipaka	AN20120023.0	10.6	11.1	65.2	28	24.1	BLQ(LOQ:0.002)	BDL(DL:1.14)	BDL(DL:20)	92	BLQ(LOQ:0.03)	BLQ(LOQ:2.0)	BLQ(LOQ:2.0)
3	Near ETP - Tatipaka	AN20120023.0	9.9	10.3	69.3	27.5	31.4	BLQ(LOQ:0.002)	BDL(DL:1.14)	BDL(DL:20)	1018	BLQ(LOQ:0.03)	BLQ(LOQ:2.0)	BLQ(LOQ:2.0)
4	Near Pump House -Tatipaka	AN20120023.0	10.3	12.4	63.3	31.8	33.5	BLQ(LOQ:0.002)	BDL(DL:1.14)	BDL(DL:20)	2051	BLQ(LOQ:0.03)	BLQ(LOQ:2.0)	BLQ(LOQ:2.0)

Second round of ambient VOC monitoring

Sl.No	Location	Ambient Benzene (µg/m3) Std limit-05 µg/m3
1	Balla Sathya Narayana House,Babu Nagar Nagaram Panchayat,NE Corner	0.14
2	Kattamurai Kanagaraj,Mullet ivari Nanakka Manepalli Road,Nagaram Panchayat.	0.02
3	Ramprasath house,seshayya Kalya Gatta Road,Nagaram Panchayat	0.31
4	Vananasi Vani Marekka,Nagaram Village Door.no:5-54.	0.48
	ONGC Tallipakka,Near ETP Plant Plant inside- fugitive	0.1

Location -Crude Furnace Stack - Tatipaka			
S.NO	**Parameter**	**Result**	**Unit**
1	Stack Temperature	627	°C
2	Velocity	3.01	m/Sec

3	Volume of Gas Discharge	5817	Nm3/Hr
4	Oxygen as O2	12.7	%
5	Carbon Monoxide as CO	BDL(DL:1.14)	mg/m3
6	Carbon Dioxide as CO2	6.4	%
7	Particulate Matter	12.6	mg/Nm3
8	Sulphur Dioxide as SO2	209	mg/Nm3
9	Oxides Of Nitrogen as NO2	10	mg/Nm3
10	Moisture	3.7	%
11	Hydrogen Sulphid	BDL(DL0.02)	mg/m3
12	Vanadium as V	BDL(DL0.03)	mg/m3
13	Nickel as Ni	BDL(DL0.03)	mg/m3

Fugitive - Parameter - Result(µg/m3)

S.NO	Location	Sample No	Toluene	Benzene	m-Xylene	o-Xylene	Ethylbenzene	Isopropylbenzene	Propylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Naphthalene	1,2-Dichlorobenzene
1	Refinery Plant Near Module-101 – (GCS – Tatipaka)	AN20120023-1	70.385	11.5726	3.866	2.2359	2.9052	0.4163	0.4506	1.0295	0.7347	0.6104	155.804
2	Refinery Plant-Near Crude Furnace Stack - (GCS – Tatipaka)	AN20120023-1	4.9879	0.5478	1.0508	0.8071	1.0372	0.1179	0.1781	0.525	0.258	0.4574	235.839
3	Gas Dehydration Plant -(GCS – Tatipaka)	AN20120023-1	2.939	1.2226	0.2241	0.1527	0.2833	0.0456	0.0791	0.109	0.0438	0.9781	11.0321

Noise dB(A)

S.NO	Location	Sample No	Noise Day	Noise Night
1	Near CISF-Tatipaka	EN20120023.06	64.8	62.9
2	Near Raw Water Treatment Plant - Tatipaka	EN20120023.07	56.8	54.8
3	Near ETP - Tatipaka	EN20120022.08	63.4	59.8
4	Near Pumo house - Tatipaka	EN20120023.08	57.2	52.4

GLens Innovation Labs Pvt Ltd.

NABL ACCREDITED AS PER ISO/IEC 17025 : 2017, CERTIFIED AS PER ISO 9001:2015 & ISO 45001 : 2018

TEST REPORT

Report No	:	**EN21030004-01 to 03**	**Report Date**	:	**15 Mar 2021**

SAMPLE DRAWN BY LABORATORY

Customer Name	:	**M/S. Oil and Natural Gas Corporation Limited C/O. Central Pollution Control Board**			
Customer Address	:	Tatipaka,Valluru Raod, Andhra Pradesh 534266			
Sample Name	:	Ambient-VOC			
Sample Code	:	EN21030004-01 to 03	**Sampling Date**	:	24 to 25 Feb 2021
Sampling Location	:	ONGC Tatipaka - Balla Sathya Narayana House,Babu Nagar Nagaram Panchayat,NE Corner	**Sample Received on**	:	01 Mar 2021
Sample Condition	:	Fit for Analysis	**Test Started on**	:	01 Mar 2021
Instrument Used	:	Personal Sampler	**Test Completed on**	:	09 Mar 2021

Test Results

Latitude:16.5054551N, Longitude:81.8984969E

Date & Time: 24.02.2021 [17:10 Hrs] – 25.02.2021 [17:10 Hrs]

S.NO	Parameter	17:10 - 01:10 Hrs	01:10- 09:10 Hrs	09:10 - 17:10 Hrs	24 hours Average
		Concentration (µg/m3)			
1	BENZENE	0.24	BLQ(LOQ:0.1)	0.19	0.14

Note: BLQ-Below Limit of Quantification, LOQ-Limit of Quantification

.....End of Report.....

Authorized Signature

E. Prithivirajan

Manager - Lab

GLens Innovation Labs Pvt Ltd.

NABL ACCREDITED AS PER ISO/IEC 17025 : 2017, CERTIFIED AS PER ISO 9001:2015 & ISO 45001 : 2018

TEST REPORT

Report No	:	**EN21030004-04 to 06**	**Report Date**	:	**15 Mar 2021**

SAMPLE DRAWN BY LABORATORY

Customer Name	:	**M/S. Oil and Natural Gas Corporation Limited C/O. Central Pollution Control Board**			
Customer Address	:	Tatipaka,Valluru Raod, Andhra Pradesh 534266			
Sample Name	:	Ambient-VOC			
Sample Code	:	EN21030004-04 to 06	**Sampling Date**	:	24 to 25 Feb 2021
Sampling Location	:	ONGC Tatipaka - Kattamurai Kanagaraj,Mulletivari Nanakka Manepalli Road,Nagaram Panchayat	**Sample Received on**	:	01 Mar 2021
Sample Condition	:	Fit for Analysis	**Test Started on**	:	01 Mar 2021
Instrument Used	:	Personal Sampler	**Test Completed on**	:	09 Mar 2021

Test Results

Latitude:16.4989375N,Longitude:81.8907007E					
Date & Time: 24.02.2021 [17:30 Hrs] - 25.02.2021 [17:30 Hrs]					
S.NO	**Parameter**	**17:30 - 01:30 Hrs**	**01:30- 09:30 Hrs**	**09:30 - 17:30 Hrs**	**24 hours Average**
		Concentration (µg/m3)			
1	BENZENE	BLQ(LOQ:0.1)	BLQ(LOQ:0.1)	BLQ(LOQ:0.1)	BLQ(LOQ:0.1)

Note: BLQ-Below Limit of Quantification, LOQ-Limit of Quantification

.....End of Report.....

Authorized Signature
E. Prithivirajan
Manager - Lab

#.6/1, Ist Floor, Sri Jothi Complex, Murugesan Street, Balavinayagar Nagar, Arumbakkam, Chennai – 600 106.

GLens Innovation Labs Pvt Ltd.

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TEST REPORT

Report No	:	**EN21030004-07 to 09**	**Report Date**	:	**15 Mar 2021**

SAMPLE DRAWN BY LABORATORY

Customer Name	:	**M/S. Oil and Natural Gas Corporation Limited C/O. Central Pollution Control Board**			
Customer Address	:	Tatipaka,Valluru Raod, Andhra Pradesh 534266			
Sample Name	:	Ambient-VOC			
Sample Code	:	EN21030004-07 to 09	**Sampling Date**	:	24 to 25 Feb 2021
Sampling Location	:	ONGC **Tatipaka** - Ramprasath house,seshayya Kalya Gatta Road,Nagaram Panchayat	**Sample Received on**	:	01 Mar 2021
Sample Condition	:	Fit for Analysis	**Test Started on**	:	01 Mar 2021
Instrument Used	:	Personal Sampler	**Test Completed on**	:	09 Mar 2021

Test Results

Latitude:16.4973943N,Longitude:81.8912084E

Date & Time: 24.02.2021 [17:45 Hrs] – 25.02.2021 [17:45 Hrs]

S.NO	Parameter	17:45 - 01:45 Hrs	01:45- 09:45 Hrs	09:45 - 17:45 Hrs	24 hours Average
		Concentration (µg/m3)			
1	BENZENE	0.26	0.31	BLQ(LOQ:0.1)	0.19

Note: BLQ-Below Limit of Quantification, LOQ-Limit of Quantification

.....End of Report.....

Authorized Signature

E. Prithivirajan

Manager - Lab

GLens Innovation Labs Pvt Ltd.

NABL ACCREDITED AS PER ISO/IEC 17025 : 2017, CERTIFIED AS PER ISO 9001:2015 & ISO 45001 : 2018

TEST REPORT

Report No	:	**EN21030004-10 to 12**	**Report Date**	:	**15 Mar 2021**

SAMPLE DRAWN BY LABORATORY

Customer Name	:	**M/S. Oil and Natural Gas Corporation Limited C/O. Central Pollution Control Board**			
Customer Address	:	Tatipaka,Valluru Raod, Andhra Pradesh 534266			
Sample Name	:	Ambient-VOC			
Sample Code	:	EN21030004-10 to 12	**Sampling Date**	:	24 to 25 Feb 2021
Sampling Location	:	ONGC Tatipaka - Vananasi Vani Marekka,Nagaram Village Door.no:5-54	**Sample Received on**	:	01 Mar 2021
Sample Condition	:	Fit for Analysis	**Test Started on**	:	01 Mar 2021
Instrument Used	:	Personal Sampler	**Test Completed on**	:	09 Mar 2021

Test Results

Latitude:16.4977185N,Longitude:81.8992881E

Date & Time: 25.02.2021 [09:00 Hrs] - 26.02.2021 [09:00 Hrs]

S.NO	Parameter	09.00- 17:00 Hrs	17.00- 01:00 Hrs	01:00 - 09:00 Hrs	24 hours Average
		Concentration (µg/m3)			
1	BENZENE	0.26	1.19	BLQ(LOQ:0.1)	0.48

Note: BLQ-Below Limit of Quantification, LOQ-Limit of Quantification

.....End of Report.....

Authorized Signature
E. Prithivirajan
Manager - Lab

GLens Innovation Labs Pvt Ltd.

NABL ACCREDITED AS PER ISO/IEC 17025 : 2017, CERTIFIED AS PER ISO 9001:2015 & ISO 45001 : 2018

TEST REPORT

Report No	:	**EN21030004-13 to 15**	**Report Date**	:	**15 Mar 2021**

SAMPLE DRAWN BY LABORATORY

Customer Name	:	**M/S. Oil and Natural Gas Corporation Limited C/O. Central Pollution Control Board**			
Customer Address	:	Tatipaka,Valluru Raod, Andhra Pradesh 534266			
Sample Name	:	Fugitive Emssion-VOC			
Sample Code	:	EN21030004-13 to 15	**Sampling Date**	:	25 to 26 Feb 2021
Sampling Location	:	ONGC Tatipaka - ONGC Tatipaka,Near ETP Plant (Fugitive source)Plant inside	**Sample Received on**	:	01 Mar 2021
Sample Condition	:	Fit for Analysis	**Test Started on**	:	01 Mar 2021
Instrument Used	:	Personal Sampler	**Test Completed on**	:	09 Mar 2021

Test Results

Latitude:16.5011632N,Longitude:81.8963958E

Date & Time: 25.02.2021 [09:20 Hrs] - 26.02.2021 [09:20 Hrs]

S.NO	Parameter	09.20- 17:20 Hrs	17.20- 01:20 Hrs	01:20 - 09:20 Hrs	24 hours Average
		Concentration (µg/m3)			
1	BENZENE	BLQ(LOQ:0.1)	0.29	BLQ(LOQ:0.1)	0.10

Note: BLQ-Below Limit of Quantification, LOQ-Limit of Quantification

.....End of Report.....

Authorized Signature
E. Prithivirajan
Manager - Lab

Annexure-III Analysis and Monitoring results of Kesanapalli

Water Analysis Results																								
S.NO	Sample Code No	Sample Description	PH	EC (us/cm)	TDS (mg/l)	COD (mg/l)	BOD (mg/l)	TOC (mg/l)	Total Hardness (mg/l)	Calcium (mg/l)	Total Alkalinity (mg/l)	Chloride (mg/l)	Sulphate (mg/l)	Phosphorous (mg/l)	Sodium (mg/l)	Potassium (mg/l)	Nitrate (mg/l)	TSS (mg/l)	Fluoride (mg/l)	Cyanide (mg/l)	Sulphide (mg/l)	Oil and Grease (mg/l)	NH3-N (mg/l)	Hexavalent Chromium (mg/l)	enols (mg/L)
1	EN2012 0021.14	Stagnated pond water opp to DG Room - Kesanapalli	8.77	4380	2460	160	43	60	116	23	325	1359	46	0.91	789	26	9.5	13	0.31	BDL(DL :0.1)	BDL(DL :1.0)	DL(DL:4.	1.1	DL(DL:0.0	Q(LOQ:0.001)
2	EN2012 0021.15	Near Security Gate(GGS Plant) Strom water drain into outside - Kesanapalli	7.64	3220	1830	32	8	12	427	113	792	695	27	0.78	457	14	2.4	11	0.25	BDL(DL :0.1)	BDL(DL :1.0)	DL(DL:4.	DL(DL:1.	DL(DL:0.0	Q(LOQ:0.001)
3	EN2012 0021.16	Turpupalam Beach deep well injection Effluent collection Sump-Kesanapalli	9.40	15490	10700	168	43	63	78	16	2081	4682	46	1.11	4440	59	2.4	26	0.38	BDL(DL :0.1)	BDL(DL :1.0)	DL(DL:4.	DL(DL:1.	DL(DL:0.0	Q(LOQ:0.001)
4	EN2012 0021.17	Borewell Vaddeeswara Rao, Malkipuram house, Turupalam village-Kesanapalli	8.29	1294	780	66	15	25	340	47	325	282	22	0.98	154.6	19	12	BDL(DL :1.0)	0.24	BDL(DL :0.1)	BDL(DL :1.0)	DL(DL:4.	DL(DL:1.	DL(DL:0.0	Q(LOQ:0.001)

Effluent Treatment Results

			TSS (mg/l)	Oil & Grease (mg/l)																				
1	EN2012 0021.06	Old ETP Raw Effluent Inlet-Kesanapalli	-	-																				
2	EN2012 0021.07	Old ETP Collection tank - T 103 - inlet-Kesanapalli	61	5																				
3	EN2012 0021.08	Old ETP filter feed sump and pump shed-Kesanapalli	14	BDL(DL :4.0)																				
4	EN2012 0021.09	Old ETP OUTLET-Kesanapalli	43	BDL(DL :4.0)																				

5	EN2012 0021.10	New ETP Inlet-Kesanapalli	75	240															
6	EN2012 0021.11	Near ETP Waste Water Joining Abandoned SBR-Kesanapalli	16	BDL(DL :4.0)															
7	EN2012 0021.12	New ETP Treated Effluent after media filter-Kesanapalli	31	BDL(DL :4.0)															
8	EN2012 0021.13	New ETP Gate Value pit connected to treated effluent water sump-Kesanapalli	27	BDL(DL :4.0)															

Fugitive - Parameter - Result(µg/m3)

S.NO	Location	Sample No	Toluene	Benzene	m-Xylene	o-Xylene	Ethylbenzene	Isopropylbenzene	Propylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Naphthalene	1,2-Dichlorobenzene
1	Old ETP Raw Effluent Tank-103,104 – (GGS Plant Kesanapalli)	EN2012 0021-01	103.458	7.3193	18.5937	10.6214	11.1045	1.1456	0.7323	1.3312	0.8344	0.6773	5.0523
2	Old ETP-Raw Effluent Sump - GGS Plant-Kesanapalli	EN2012 0021-02	113.36	4.6222	14.8034	9.0711	9.1169	1.153	0.9314	3.4262	1.5638	1.1183	10.2852
3	Old ETP-Near Oil/Oil Sludge - (GGS Plant-Kesanapalli)	EN2012 0021-03	8.7997	1.9933	5.055	2.4793	2.84	0.309	0.7766	1.9537	0.551	2.3847	0.9284
4	Gas Dehydration Plant -(GGS Plant-Kesanapalli)	EN2012 0021-04	3.3218	3.2259	0.1264	0.0767	0.1279	0.0316	0.0776	0	0	0.1053	0.9461
5	Near ETP Area-(GGS Plant - Kesanapalli)	EN2012 0021-05	6.7764	2.1829	3.6219	2.8397	1.555	0.2529	0.3638	1.3391	0.6595	0.7165	40.4868

Sediment - Parameter - Result																		
S.NO	Sample Code No	Sample Description	PH	EC (us/cm)	Fluoride (mg/kg)	Cyanide (mg/kg)	Calcium (mg/kg)	Chloride (mg/kg)	Sulphate (mg/kg)	Phosphorous (mg/kg)	Hexavalent Chromium (mg/kg)	Sodium (mg/kg)	Potassium (mg/kg)	Nitrate (mg/kg)	TOC (%)	Oil &Grease (mg/kg)	NH3-N (mg/kg)
1	EN2012 0021.18	Inbetween SBR Abantand sump and treated effluent collection sump - sediment -1 - Kesanapalli	7.36	4040	0.15	BDL(DL :1.0)	62	3091	270	3.6	BDL(DL :5.0)	240	4.75	66	1.37	BDL(DL :4.0)	BDL
2	EN2012 0021.19	Near Beach-Turpupalam-sediment -2 - Kesanapalli	7.33	2660	0.16	BDL(DL :1.0)	386	19185	669	6.7	BDL(DL :5.0)	421	16	137	0.54	BDL(DL :4.0)	44.1
3	EN2012 0021.20	Near Beach-Turpupalam-sediment -3 - Kesanapalli	9.03	941	0.18	BDL(DL :1.0)	157	10887	808	4.6	BDL(DL :5.0)	254	25	144	0.51	BDL(DL :4.0)	30.8
4	EN2012 0021.21	Stagnated pond water Sludge opposite to DG room - Kesanapalli	9.24	716	0.14	BDL(DL :1.0)	82	5409	96	33.4	BDL(DL :5.0)	104	1.06	85	4.20	BDL(DL :4.0)	21.1

Sediment - Parameter - Result																				
S.NO	Sample Name	Sample Description	Boron (mg/kg)	Aluminium (mg/kg)	Vanadium (mg/kg)	Chromium (mg/kg)	Manganese (mg/kg)	Iron (mg/kg)	Cobalt (mg/kg)	Nickel (mg/kg)	Copper (mg/kg)	Zinc (mg/kg)	Arsenic (mg/kg)	Selenium (mg/kg)	Cadmium (mg/kg)	Mercury (mg/kg)	Lead (mg/kg)	Benzene (µg/kg)	Benzo(a) pyrene (µg/kg)	TPH (mg/kg)	Phenols(mg/kg)
1	EN2012 0021.18	Inbetween SBR Abantand sump and treated effluent collection sump - sediment -1 - Kesanapalli	20.9	705	24.2	5.7	58.7	3392	2.3	3.1	8.8	18.5	BLQ[LOQ:2.0]	BLQ[LOQ:2.0]	BLQ[LOQ:2.0]	BLQ[LOQ:2.0]	BLQ[LOQ:2.0]	BLQ(LOQ:20)	BLQ(LOQ:20)	BLQ(LOQ:0.1)	BLQ(LOQ:0.1)
2	EN2012 0021.19	Near Beach-Turpupalam-sediment -2 - Kesanapalli	4.01	507	112.6	16.1	180	13186	7.2	9.3	21.1	48.3	BLQ[LOQ:2.0]	2.9	BLQ[LOQ:2.0]	BLQ[LOQ:2.0]	12.3	BLQ(LOQ:20)	BLQ(LOQ:20)	0.1018	BLQ(LOQ:0.1)
3	EN2012 0021.20	Near Beach-Turpupalam-sediment -3 - Kesanapalli	BLQ[LOQ:2.0]	1091	34.6	10.0	73.3	5090	4.2	5.9	9.1	15.7	BLQ[LOQ:2.0]	BLQ[LOQ:2.0]	BLQ[LOQ:2.0]	BLQ[LOQ:2.0]	3.4	BLQ(LOQ:20)	BLQ(LOQ:20)	BLQ(LOQ:0.1)	BLQ(LOQ:0.1)

4	EN2012 0021.21	Stagnate d pond water Sludge opposite to DG room - Kesanapa lli	22.9	1065	35.3	10.3	250	5932	5.3	7.8	18.8	22.5	BLQ[LO Q:2.0]	BLQ[LO Q:2.0]	BLQ[LO Q:2.0]	201	4.5	BLQ(LO Q:20)	BLQ(LO Q:20)	2.8992	4.36

Annexure-IV- Analysis and Monitoring Results of Tatipaka

Waste Water - Parameter - Result																								
S.NO	**Sample Code No**	**Sample Description**	**PH**	**EC (us/cm)**	**TDS (mg/l)**	**COD (mg/l)**	**BOD (mg/l)**	**TOC (mg/l)**	**Total Hardness (mg/l)**	**Calcium (mg/l)**	**Total Alkalinity (mg/l)**	**Chloride (mg/l)**	**Sulphate (mg/l)**	**Phosphorous (mg/l)**	**Sodium (mg/l)**	**Potassium (mg/l)**	**Nitrate (mg/l)**	**TSS (mg/l)**	**Fluoride (mg/l)**	**Cyanide (mg/l)**	**Sulphide (mg/l)**	**Oil and Grease (mg/l)**	**NH3-N (mg/l)**	**Hexavalent Chromium (mg/l)**	**enols (mg/L)**
1	EN20120022.11	Storm Water Drain opp to fire Water pump (S1 Vashita) - Odalarevu	7.66	3000	1770	57	14	21	524	78	426	695	13	0.85	489	39	12	6	0.24	DL(DL:0.	DL(DL:1.(	DL(DL:4.(	1.1	DL(DL:0.0	Q(LOQ:0.001)
2	EN20120022.15	Contaminated Strom water Drain (Near ETP Area) - Odalarevu	8.62	2070	1195	75	16	28	330	47	244	513	42	1.14	375	14	9.5	10	0.2	DL(DL:0.	DL(DL:1.(	DL(DL:4.(	DL(DL:1.(	DL(DL:0.0	Q(LOQ:0.001)
3	EN20120022.17	Stagnated Water - 1 Beside Gail Pipe Line-Odalarevu	7.59	12760	7500	66	10	25	1106	132	386	3675	75	0.46	3120	72	7.1	49	0.2	DL(DL:0.	DL(DL:1.(	DL(DL:4.(	DL(DL:1.(	DL(DL:0.0	Q(LOQ:0.001)
4	EN20120022.18	Near Land Fall KP -6 Road(ONGC pipe line indicator)- Odalarevu	7.65	1328	730	251	71	94	456	101	305	166	49	0.81	106	12.6	26	7	0	DL(DL:0.	DL(DL:1.(	DL(DL:4.(	DL(DL:1.(	DL(DL:0.0	0.2
5	EN20120022.19	Sample collected from unline lagoon beside gail pipe line - Odalarevu	5.48	31600	20310	1762	447	661	1804	575	162	11830	14	0.10	4990	36	0.0	70	0	DL(DL:0.	DL(DL:1.(	DL(DL:4.(	44.1	DL(DL:0.0	2.7
6	EN20120022.22	Borewell - Vashita borewell (Opposite to admin block) - Odalarevu	8.07	3150	2030	9	BDL(DL: 2.0)	3	698	124	447	775	46	0.10	450	270	9.5	BDL(DL: 1.0)	0	DL(DL:0.	DL(DL:1.(	DL(DL:4.(	DL(DL:1.(	DL(DL:0.0	Q(LOQ:0.001)
7	EN20120022.23	Near Condenstate storm water pit - Odalarevu	8.04	403	235	13	BDL(DL: 2.0)	5	118	29	145	44	7	1.53	19	6.5	4.8	1.8	0	DL(DL:0.	DL(DL:1.(	DL(DL:4.(	DL(DL:1.(	DL(DL:0.0	Q(LOQ:0.001)
8	EN20120022.24	Storm Water drain outlet outside the industry - - Odalarevu	7.40	19890	11680	9	BDL(DL: 2.0)	3	2231	171	406	6594	524	0.81	3400	120	9.5	41	0.2	DL(DL:0.	DL(DL:1.(	DL(DL:4.(	1.1	DL(DL:0.0	Q(LOQ:0.001)

Effluent Treatment Results

			TSS (mg/l)	Oil & Grease (mg/l)	
14	EN20120022.12	ETP Inlet-1 - Odalarevu	75	DL(DL:4.0)	
16	EN20120022.16	Treated Efflent before Injection- Odalarevu	15	DL(DL:4.0)	
20	EN20120022.21	ETP Inlet 2- Odalarevu	79	DL(DL:4.0)	

Sediment - Parameter - Result																	
S.NO	**Sample Code No**	**Sample Description**	**PH**	**EC (us/cm)**	**Fluoride (mg/kg)**	**Cyanide (mg/kg)**	**Calcium (mg/kg)**	**Chloride (mg/kg)**	**Sulphate (mg/kg)**	**Phosphorous (mg/kg)**	**Hexavalent Chromium (mg/kg)**	**Sodium (mg/kg)**	**Potassium (mg/kg)**	**Nitrate (mg/kg)**	**TOC (%)**	**Oil &Grease (mg/kg)**	**NH3-N (mg/kg)**
1	EN20120022.13	Storage tank Sludge - Odalarevu	6.9	1456	0.18	DL(DL:1.(	1468	4825	979	32.4	DL(DL:5.(	206	22	100	4.99	DL(DL:4.(	67.8
2	EN20120022.14	Sediment-Near ETP arae - Odalarevu	7.65	55	0.3	DL(DL:1.(	31	342	249	33.8	DL(DL:5.(	169	9	364	4.32	DL(DL:4.(	27.4
3	EN20120022.20	Sediment 2 beside gail pipe line - Odalarevu	7.11	535	0.35	DL(DL:1.(	185	2248	79	30.4	DL(DL:5.(	188	9	122	0.00	DL(DL:4.(	55.0

4	EN20120022.26	Sediment - Tadipaka Near Gail pipe line Gagara - Odalarevu	6.97	124	0.4	DL(DL:1.(	657	655	1875	23.9	DL(DL:5.(	204	38	292	9.68	DL(DL:4.(	65.9
5	EN20120022.27	Sediment - Kesandasipalam Accident Point from 2014 - Odalarevu	6.93	54	0.22	DL(DL:1.(	15	226	207	33.1	DL(DL:5.(	203	29	1004	3.12	DL(DL:4.(	113.4

S.NO	Sample Name	Sample Description	ron (mg/k	inium (ma	dium (mg	mium (mg	nganese (m	ron (mg/kg	balt (mg/k	ckel (mg/k	pper (mg/k	inc (mg/k	enic (mg/	enium (mg	mium (mg/	cury (mg/	ead (mg/k	Benzene (µg/kg)	Benzo(a) pyrene (µg/kg)	TPH (mg/kg)	Phenols(mg/kg)
1	EN20120022.13	Storage tank Sludge - Odalarevu	292.8	785	10.7	6.1	361	7144	2.0	7.3	78.9	108.8	4.2	LQ[LOQ:2	LQ[LOQ:2	24.5	8.9	BLQ(LOQ:20)	BLQ(LOQ:20)	41.5191	3.60
2	EN20120022.14	Sediment-Near ETP arae - Odalarevu	3.9	935	33.6	10.8	74.9	5315	3.8	5.5	29.7	25.0	LQ[LOQ:2	LQ[LOQ:2	LQ[LOQ:2	2.8	3.5	BLQ(LOQ:20)	BLQ(LOQ:20)	179.5684	0.62
3	EN20120022.20	Sediment 2 beside gail pipe line - Odalarevu	2.4	1042	43.7	12.0	84.1	6884	4.3	6.3	11.2	25.0	LQ[LOQ:2	LQ[LOQ:2	LQ[LOQ:2	7.9	3.2	BLQ(LOQ:20)	BLQ(LOQ:20)	1.1571	BLQ(LOQ:0.1)
4	EN20120022.26	Sediment - Tadipaka Near Gail pipe line Gagara - Odalarevu	3.2	12473	73.8	36.8	936	24230	17.0	37.0	47.5	53.8	3.2	2.0	LQ[LOQ:2	4.4	10.4	BLQ(LOQ:20)	BLQ(LOQ:20)	1.7317	1.79
5	EN20120022.27	Sediment - Kesandasipalam Accident Point from 2014 - Odalarevu	LQ[LOQ:2	993	61.2	10.9	110	7279	5.3	7.0	15.8	24.5	LQ[LOQ:2	LQ[LOQ:2	LQ[LOQ:2	LQ[LOQ:2	4.6	9.77	0.00	BLQ(LOQ:0.1)	BLQ(LOQ:0.1)

Fugitive - Parameter - Result(µg/m3)													
S.NO	Location	Sample No	Toluene	Benzene	m-Xylene	o-Xylene	Ethylbenzene	Isopropylbenzene	Propylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Naphthalene	1,2-Dichlorobenzene
1	Opposite To Fire Water Building (GCS Plant – Odalarevu)	20120022	2.5421	0.369	0.6084	0.4291	0.618	0.0971	0.1232	0.2905	0.1868	0.1799	14.8261
2	ETP Area (GCS Plant – Odalarevu)	20120022	3.6104	0.5603	0.7611	0.535	0.8428	0.1243	0.1742	0.5028	0.2836	0.3933	5.1201
3	G1-OWS (GCS Plant – Odalarevu)	20120022	7.5305	0.153	19.3728	7.0328	9.9348	1.1865	3.3741	6.312	2.1698	0.4304	2.7007
4	Tk-33 Opposite To Oil Storage Tank (GCS Plant – Odalarevu)	20120022	3.4538	1.2981	0.4863	0.2924	0.8099	0.0696	0.1257	0.2164	0.1273	0.3559	5.4107
5	Gas Dehydration Unit (GCS Plant – Odalarevu)	20120022	1.7481	0.3019	1.2118	1.0016	0.4744	0.2311	0.4526	1.6964	1.0352	0.5374	0.8854
6	Slug Catcher (GCS Plant – Odalarevu)	20120022	2.1554	0.5049	0.2614	0.2405	0.2808	0.0506	0.1459	0.7812	0.2378	0.5577	14.1535

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NABL ACCREDITED AS PER ISO/IEC 17025 : 2017, CERTIFIED AS PER ISO 9001:2015 & ISO 45001 : 2018

TEST REPORT

Report No	:	**EN21030005-01 to 03**	**Report Date**	:	**15 Mar 2021**

SAMPLE DRAWN BY LABORATORY

Customer Name	:	**M/S. Oil and Natural Gas Corporation Limited C/O. Central Pollution Control Board**			
Customer Address	:	Odalaravu, Andhra Pradesh 533210			
Sample Name	:	Fugitive Emission-VOC			
Sample Code	:	EN21030005-01 to 03	**Sampling Date**	:	25 to 26 Feb 2021
Sampling Location	:	ONGC Odalarevu,Near ETP Plant(Fugitive source) Plant inside	**Sample Received on**	:	01 Mar 2021
Sample Condition	:	Fit for Analysis	**Test Started on**	:	01 Mar 2021
Instrument Used	:	Personal Sampler	**Test Completed on**	:	09 Mar 2021

Test Results

Latitude:16.4198358N,Longitude:81.9716281E

Date & Time: 25.02.2021 [11:45 Hrs] - 26.02.2021 [11:45 Hrs]

S.NO	Parameter	11.45- 19:45 Hrs	19.45- 03:45 Hrs	03:45 - 11:45 Hrs	24 hours Average
		Concentration (µg/m3)			
1	BENZENE	BLQ(LOQ:0.1)	BLQ(LOQ:0.1)	BLQ(LOQ:0.1)	BLQ(LOQ:0.1)

Note: BLQ-Below Limit of Quantification, LOQ-Limit of Quantification

.....End of Report.....

Authorized Signature
E. Prithivirajan
Manager - Lab

ORGINAL

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NABL ACCREDITED AS PER ISO/IEC 17025 : 2017, CERTIFIED AS PER ISO 9001:2015 & ISO 45001 : 2018

TEST REPORT

Report No	:	EN21030005-04 to 06	**Report Date**	:	15 Mar 2021

SAMPLE DRAWN BY LABORATORY

Customer Name	:	M/S. Oil and Natural Gas Corporation Limited C/O. Central Pollution Control Board			
Customer Address	:	Odalaravu, Andhra Pradesh 533210			
Sample Name	:	Ambient-VOC			
Sample Code	:	EN21030005-04 to 05	**Sampling Date**	:	25 to 26 Feb 2021
Sampling Location	:	ONGC Odalarevu- Church,Odalarevu	**Sample Received on**	:	01 Mar 2021
Sample Condition	:	Fit for Analysis	**Test Started on**	:	01 Mar 2021
Instrument Used	:	Personal Sampler	**Test Completed on**	:	09 Mar 2021

Test Results

Latitude:16.4237320N,Longitude:81.9743000E

Date & Time: 25.02.2021 [12:15 Hrs] - 26.02.2021 [12:15 Hrs]

S.NO	Parameter	12.15- 20:15 Hrs	20.15- 04:15 Hrs	04:15 - 12:15 Hrs	24 hours Average
		Concentration (µg/m3)			
1	BENZENE	BLQ(LOQ:0.1)	BLQ(LOQ:0.1)	BLQ(LOQ:0.1)	BLQ(LOQ:0.1)

Note: BLQ-Below Limit of Quantification, LOQ-Limit of Quantification

.....End of Report.....

Authorized Signature

E. Prithivirajan

Manager - Lab

GLens Innovation Labs Pvt Ltd.

NABL ACCREDITED AS PER ISO/IEC 17025 : 2017, CERTIFIED AS PER ISO 9001:2015 & ISO 45001 : 2018

TEST REPORT

Report No	:	**EN21030005-07 to 09**	**Report Date**	:	**15 Mar 2021**

SAMPLE DRAWN BY LABORATORY

Customer Name	:	**M/S. Oil and Natural Gas Corporation Limited C/O. Central Pollution Control Board**			
Customer Address	:	Odalaravu, Andhra Pradesh 533210			
Sample Name	:	Ambient-VOC			
Sample Code	:	EN21030005-07 to 09	**Sampling Date**	:	25 to 26 Feb 2021
Sampling Location	:	ONGC Odalarevu - Peddinti Narashima Phanikumar house Odalarevu,Near ramalayam Temple	**Sample Received on**	:	01 Mar 2021
Sample Condition	:	Fit for Analysis	**Test Started on**	:	01 Mar 2021
Instrument Used	:	Personal Sampler	**Test Completed on**	:	09 Mar 2021

Test Results

Latitude:16.4205198N,Longitude:81.9664497E					
Date & Time: 25.02.2021 [12:30 Hrs] - 26.02.2021 [12:30 Hrs]					
S.NO	Parameter	12.30- 20:30 Hrs	20.30- 04:30 Hrs	04:30 - 12:30 Hrs	24 hours Average
		Concentration (µg/m3)			
1	BENZENE	BLQ(LOQ:0.1)	BLQ(LOQ:0.1)	BLQ(LOQ:0.1)	BLQ(LOQ:0.1)

Note: BLQ-Below Limit of Quantification, LOQ-Limit of Quantification

.....End of Report.....

Authorized Signature
E. Prithivirajan
Manager - Lab

GLens Innovation Labs Pvt Ltd.

NABL ACCREDITED AS PER ISO/IEC 17025 : 2017, CERTIFIED AS PER ISO 9001:2015 & ISO 45001 : 2018

TEST REPORT

Report No	:	**EN21030005-10 to 12**	**Report Date**	:	**15 Mar 2021**

SAMPLE DRAWN BY LABORATORY

Customer Name	:	**M/S. Oil and Natural Gas Corporation Limited C/O. Central Pollution Control Board**			
Customer Address	:	Odalaravu, Andhra Pradesh 533210			
Sample Name	:	Ambient-VOC			
Sample Code	:	EN21030005-10 to 12	**Sampling Date**	:	25 to 26 Feb 2021
Sampling Location	:	ONGC Odalarevu - Marilamma center,Kandapalli Rambabu House	**Sample Received on**	:	01 Mar 2021
Sample Condition	:	Fit for Analysis	**Test Started on**	:	01 Mar 2021
Instrument Used	:	Personal Sampler	**Test Completed on**	:	09 Mar 2021

Test Results

Latitude:16.4262418N,Longitude:81.9694069E

Date & Time: 25.02.2021 [12:30 Hrs] - 26.02.2021 [12:30 Hrs]

S.NO	Parameter	12.45- 20:45 Hrs	20.45- 04:45 Hrs	04:45 - 12:45 Hrs	24 hours Average
		Concentration (µg/m3)			
1	BENZENE	BLQ(LOQ:0.1)	BLQ(LOQ:0.1)	BLQ(LOQ:0.1)	BLQ(LOQ:0.1)

Note:BLQ-Below Limit of Quantification, LOQ-Limit of Quantification

.....End of Report.....

Authorized Signature

E. Prithivirajan
Manager - Lab

BEFORE THE NATIONAL GREEN TRIBUNAL (SOUTHERN ZONE) CHENNAI

OA NO. 175 OF 2020

Venkatapathi Raja Yenumala

Versus

Union of India, Rep. by its Secretary Ministry of Environment, Forests and Climate Change, Indira Paryavaran Bhavan, Jorbagh Road, New Delhi 110 003 and 11 Others

RESPONDENTS

JOINT COMMITTEE REPORT FILED ON BEHALF OF RESPONDENT No.06, CENTRAL POLLUTION CONTROL BOARD (CPCB)

Advocate P. Jayalakshmi

COUNSEL FOR CPCB