इंडियन ऑयल कॉर्पोरेशन लिमिटेड
एओडि - डिगबोई रिफाइनरी
पो.ओ. डिगबोई, पिन-786171, असम

Indian Oil Corporation Limited
AOD - Digboi Refinery
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E-mail : aoddigboi@indianoil.in
Website : www.iocl.com

असम ऑयल डिवीजन
Assam Oil Division

Ref: HSE: 01 -714/23 **Dated: 01.06.2023**

To

The Regional Officer,
Ministry of Environment, Forest and Climate Change,
Integrated Regional Office,
Guwahati-781022

Sub: Submission of the Half-Yearly Compliance Report for the period (1st Oct'22 to 31st Mar'23) on Environmental Stipulations pertaining to various units of Digboi Refinery.

Dear Sir,

Please find enclosed herewith the six monthly compliance status of Digboi Refinery on the Environmental Clearance Stipulations of the Environmental Clearance letters referred to above for the period **(October 2022-March 2023)**.

Thanking you.

Yours sincerely,
For Indian Oil Corporation (AOD)

D. K. Barua
General Manager (TS & HSE)

Copy To:

1. The Member Secretary, Pollution Control Board, Assam, Guwahati-21.
2. The Environmental Engineer, North Eastern Zonal Office, CPCB, Shillong-14
3. The Regional Executive Engineer, PCBA Dibrugarh-786001

HALF YEARLY COMPLIANCE REPORT OF ENVIRONMENTAL CLEARANCE DIGBOI REFINERY (1St October 2022- 31st March 2023)

INDEX

REPORTS

ENVIRONMENTAL CLEARANCE (J-11011/12/87-1A, dated – 19-10-1987) FOR DIGBOI REFINERY MODERNISATION PROJECT

SL. NO	STIPULATIONS	COMPLIANCE STATUS AS ON 01.06.2023
1.0	The concentration levels of all the parameters of the effluent (gaseous & liquids) discharged must comply with MINAS and in the light of MINAS, the Assam oil, Digboi must review the entire effluent generation, routing, treatment and disposal system.	The concentration levels of all the parameters of effluent after treatment at ETP meets the MINAS specification. As per revised CPCB guideline, Digboi Refinery meets the stipulations for all 21 parameters of effluent. Six monthly compliance Report on Quantum Limit (Kg/1000 MT Crude processed) is attached in **Annexure-3.** Online effluent monitoring & connectivity to CPCB server was commissioned on 28th December 2015. WebSite: Online Emission and Effluent Monitoring System (cpcb.gov.in)
2. 0	Monitoring with respect to physical, chemical and biological parameters must be carried out for effluent discharged as well as for the samples of river waters where effluents are discharged.	These tests are carried out regularly and reports submitted to Pollution Control Board, Assam. Monitoring of receiving water bodies is also carried out every month. Average six monthly 21 MINAS parameter ETP effluent Reports (Polishing Pond outlet) and nearby River water body sample are enclosed as **Annexure-1 and Annexure-2 respectively.**
3.0	The sludge drains must be properly covered to avoid land and water pollution during incessant rains.	All OWS systems at DRMP are completely covered.
4.0	The sludge dumping area should be made impervious so that ground water is not affected due to leaching and seepage of associated water containing pollutants.	One HDPE lining concrete oily sludge storage tank of 400m^3 capacity was constructed in 2014 to prevent leaching and seepage of oil to ground water. Another storage pit bottom is made up of concrete to avoid leaching.
5.0	The ambient air around Refinery should be monitored at least at four monitoring stations for SPM, SOx, NOx, Hydrocarbons and H_2S.	Four nos. of Ambient Air quality monitoring stations have been installed around Digboi Refinery-(I)Bazar Gate (II)Wax Sector Cooling Tower (III)New Tank Farm (IV) Effluent treatment Plant.

		Ambient air quality monitoring is being carried out on monthly basis by external agency. One no. of Continuous Ambient Air Quality Monitoring Station installed and commissioned in September 2012 at Welfare centre which is connected with CPCB and PCBA server. Six month Ambient Air quality Monitoring Report by External Agency (M/S Mitra S.K. Private Limited)is attached as **Annexure-5**
6.0	The stack emission from processes, power generating units and Boilers must be regularly monitored and proper type of stack monitoring/instruments must be procured and installed.	Monitoring of stack emissions is carried out with the help of portable monitoring kit. Fixed on-line analyzers are also installed in AVU, DCU, CPP HRSG's, CRU, SDU, HDT, HGU and MSQU and monitoring through RTDBMS. Online connectivity established with CPCB Server and PCBA for Furnaces having heat capacity of more than 10mkcl/hr (HGU & HRSG's Stacks). Apart from own monitoring, external agencies (M/S Mitra S.K. Private Limited) is also employed to conduct stack emission analysis on regular basis. Six month Stack emission Report by External Agency (M/S Mitra S.K. Private Limited) is enclosed as **Annexure-4**
7.0	Fugitive emissions arising during handling and storage of low boiling petroleum fractions and from effluent treatment plant, leakage through valves and flanges must also be monitored regularly.	Regular monitoring of Hydrocarbons is done with GMI Gas surveyor and as well as with VOC detector in plant & offsite areas by an external CPCB approved agency. Leak detection and repair (LDAR) report for the Quarter 3 and Quarter 4 is attached as **Annexure-6 and Annexure-7.**
8.0	Land filling, if any, must be done with fill material only from within battery limits of the Refinery.	It is being followed accordingly.
9.0	The Assam Oil Division must take up development of green belt as proposed.	Digboi Refinery is surrounded by the Upper Dehing Reserve Forest on south and south west side, which acts as a natural Green Belt. Green belt is developed with regular tree plantation around Refinery premises and township area. Since 2002, Digboi Refinery has planted around 1,53,419 trees till March'23 in and around Digboi Refinery achieving a green belt coverage of 52.8% of the total IOCL area.

ENVIRONMENTAL CLEARANCE (J-13011/3/1987-1A dated - 18-06-1987) FOR CAPTIVE POWER PLANT

SL. NO	STIPULATIONS	COMPLIANCE STATUS AS ON 01.06.2023
1.0	Only sweet natural gas will be used as feed stock.	Digboi Refinery uses only sweet Natural Gas.
2.0	Under the envisaged modernization programme for the refinery, Sulphur recovery units to be provided to reduce emission of SO_2. Efforts should also be made to reduce the emissions of NOx. The existing sulphuric acid plant should be scrapped.	Digboi Refinery processes only sweet crude having average sulphur content of 2.48 ppm. A Sulphur Recovery Unit (SRU) has been installed and commissioned in 2004 as a part of Hydrotreater Project. Since the refinery is using natural gas, formation of NOx is very low and always remains within the prescribed limit. Further, low NOx burners are also fitted in all the new units viz. Solvent De-waxing Unit, Hydro-treater Unit, Delayed Coking Unit and MSQ Unit.
3.0	The liquid effluent emanating from the captive power plant and the existing refinery should be treated as per the standards prescribed by the State Pollution Control Board.	Liquid effluent generated from the power plant is negligible which is also routed to ETP for further treatment.
4.0	The height of the stack should not be less than 50 meters.	**Complied.**
5.0	Green belt around the power plant should be raised.	Digboi Refinery is surrounded by the Upper Dehing Reserve Forest on south and south west side, which acts as a natural Green Belt. Green belt is developed with regular tree plantation around Refinery premises and township area. Since 2002, Digboi Refinery has planted around 1,53,419 trees till March'23 in and around Digboi Refinery achieving a green belt coverage of 52.8% of the total IOCL area
6.0	Adequate precautionary measures for preventing and controlling fire and explosion hazards should be taken up specially in the gas storage area.	Natural gas used in the plants is transported through pipeline ex M/s OIL India Ltd. There is no storage of natural gas in the Refinery. Fire fighting facilities are provided at CPP, all process plants and tank farm area for controlling fire and explosion hazards.

ENVIRONMENTAL CLEARANCE (J-11011/8/89-1A dated 26-07-1989) FOR CATALYTIC REFORMER UNIT

<table>
<tr><th>SL. NO</th><th>STIPULATIONS</th><th>COMPLIANCE STATUS AS ON 01.06.2023</th></tr>
<tr><td>1.0</td><td>The project authority must strictly adhere to the stipulations made by State govt. and the State Pollution Control Board.</td><td>The stipulations made by the State Govt. and the State Pollution Control Board are strictly followed with regard to effluent and emission norms.
The existing CTO has been renewed till 31st March 2028.
Digboi Refinery meets all parameters of effluent as per revised CPCB guideline.</td></tr>
<tr><td>2.0</td><td>The project authority will not increase the throughput capacity of the refinery from the existing level.</td><td>Crude processing capacity of Digboi Refinery was based on neat Assam crude. The actual crude throughput is based on Govt MoU maintaining all the environmental parameters within the stipulated norm.</td></tr>
<tr><td>3.0</td><td>The project authority must submit a rapid EIA report within a month and a comprehensive EIA report within 15 months to the Ministry for review.</td><td>Complied.</td></tr>
<tr><td>4.0</td><td>Gaseous emissions of SO2, Hydrocarbons and oxides of Nitrogen should not exceed the prescribed standard stipulated by Central/State Pollution Control Board. At no time the emission level should be beyond the stipulated standard. In the event of failure of any pollution control system adopted by the unit, the respective unit should be put out of operation immediately and should not be restarted until the control systems are rectified to achieve the desired efficiency.</td><td>Complied.

The reported gaseous emission of SOx and NOx are :-

<table>
<tr><th></th><th>CRU-HDT(SOx) mg/Nm3</th><th>CRU-HDT(NOx) mg/Nm3</th><th>CRU-OBSG(SOx) mg/Nm3</th><th>CRU-OBSG(NOx) mg/Nm3</th></tr>
<tr><td>Oct'22</td><td>26.30</td><td>72.50</td><td>36.7</td><td>70.4</td></tr>
<tr><td>Nov'22</td><td>27.1</td><td>73.5</td><td>37.5</td><td>71.3</td></tr>
<tr><td>Feb'22</td><td>25.7</td><td>70.8</td><td>36.1</td><td>72.8</td></tr>
</table>
</td></tr>
<tr><td>5.0</td><td>The project authority must explore the possibility of maximum recycling of effluent either as process water or for aforestation.</td><td>Treated effluent from ETP is recycled to refinery as make up for Fire water tank, Coke Cutting water at delayed coking unit, Wax Sector Cooling Tower, cleaning and gardening purposes.
During Oct'22 – Mar'22,100 % of treated effluent was reused.</td></tr>
</table>

6.0	The entire quantity of liquid effluent coming out of the complex should strictly confirm to MINAS both in terms of quantity and quality before discharge in to the drainage system. The process plant effluent should be discharged through pipeline/closed channel.	Effluent is meeting MINAS specification both in quality and quantity before being discharged. Six monthly compliance Report on Quantum Limit (Kg/1000 MT Crude processed) is attached in **Annexure-3.**
7.0	The project authorities must set up minimum of four air quality monitoring stations at different location of the plant and in the nearby areas. The air quality will be monitored as per standard procedure. The monitoring of gaseous emissions should also include oxides of nitrogen and hydrocarbons. All the stacks of the plant must be provided with continuous automatic air quality monitoring equipment and stacks emission levels must be recorded. Reports should be submitted to Pollution Control Board once in three months and to this Ministry once in six months.	4 (Four) numbers of Ambient Air quality monitoring stations have been installed around Digboi Refinery-(i)Bazar Gate (ii)Wax Sector Cooling Tower (iii)New Tank Farm (iv) Effluent treatment Plant. Ambient air quality monitoring is being carried out on monthly basis. 1(One) number of Continuous Ambient Air Quality Monitoring Station installed and commissioned in September 2012 at Welfare centre. Online CAAQMS parameters are being monitored regularly d through https://aicpl.glensserver.com/#/login Six month Ambient Air quality Monitoring Report by External Agency (M/S Mitra S.K. Private Limited)is attached as **Annexure-5** Fixed on-line analyzers are also installed in AVU, DCU, CPP HRSG's, CRU, SDU, HDT, HGU and MSQU and being monitored regularly through RTDBMS. Online connectivity established with CPCB Server and PCBA server for Furnaces having heat capacity of more than 10mkcl/hr (HGU & HRSG's Stacks). Apart from own monitoring, external agencies are also employed to conduct stack emission analysis on regular basis. Online stack monitoring regularly done through Website http://www.envsaindia.com/cpcb/login.php
8.0	The liquid effluent quality must be ensured on daily basis. At least five water quality monitoring stations must be set up in consultation with the State Pollution Control Board. This should include the monitoring of oil content in the river. If the effluent quality exceeds the standard prescribed at any time, the corresponding units of the plant which are contributing to the excessive pollutant load shall be immediately stopped from operation till the quality of effluent discharged from the units are brought down to the required level.	Water quality monitoring stations were set up:- one near ETP, three at Digboi Nullah and one at oily sludge area. Liquid effluent quality from ETP outlet is monitored regularly on daily basis. 1. 8(eight) parameters daily basis by QC (AOD) 2. 21(twenty-one) parameters on monthly basis tested by SPCB approved outside agency. 3. In addition to above four parameters, BOD, COD, TSS & pH being monitored through online analyzers connected with CPCB Server, 4. Sample from Digboi River and Dihing River is being collected and analyzed by QC (AOD) on monthly basis.

9.0	The project authority must monitor the aquatic life(like fish, tortoise etc.) and report should be submitted to the Ministry once in six months.	Digboi Refinery has carried out study on **"Bio-monitoring of aquatic life in lotic and lentic water bodies in and around Digboi Refinery"** by M/S A.B.N Scientific Services, Guwahati on May '23. The report is Attached as **Annexure -9**
10.	The project must start construction only after the approval of the Chief Controller of Explosives and a copy of the consent letter should be made available to this Ministry.	**Complied.** Present PESO License is valid till December 2023.
11.	The project authority must provide oil separator in the nullah and the effluents should be discharged through covered drains.	At present oil separator is being provided and the effluents are discharged through covered drain.
12.	No change of stack should be made without the prior approval of the State Pollution Control Board. Alternate pollution control system and/or proper design (steam injection system) of the stacks should be made to minimize hydrocarbon emission due to failure in the flare system in the plant.	**Complied.**
13.	The project authority must submit the Disaster Management Plan incorporating worst accident scenario and its probable consequence duly approved by the nodal agency of the State Govt. within 3 months.	Disaster Management Plan duly certified by PNGRB empanelled party. Copy of plan submitted to CIF Guwahati & DC, Tinsukia. Offsite drills are carried out regularly, once in a year, along with District Administration, Mutual Aid Partners & NGOs. Onsite Disaster Mock drills are carried out once in a quarter with different scenarios. Emergency response & Disaster Management Plan (ERDMP) of Digboi refinery as per guidelines of PNGRB has been drawn up and certified by **M/S Sanmarg Engineering Validation and Assessment Private Ltd.** Last Offsite Disaster drill was carried out on 22nd November, 2022 on scenario of "Shear and rupture of 18" NG line between Kharsang Off-Take point to Refinery Fuel Gas Header inside and outside Refinery's East side boundary leading to profuse leakage of NG and resulting in unconfined vapour cloud explosion and fire". Last Odd hours onsite Disaster drill was carried out on 25th March, 2023 on scenario of "Heavy Naphtha leakage from 01-VV-002 bottom 6" vessel body flange joint of Reflux

		Pump suction line causing Vapour Cloud in the area and leading to Fire"
14.	The Project authority must ensure that the effluent plant fully operational within the next 3 months.	ETP is fully operational since its inception in 1989.
15.	The project authority must set up laboratory facilities in the existing premises for testing and analyzing gaseous emissions and water quality.	Digboi Refinery has set up its own state of art Quality Control Laboratories inside the Refinery premises with NABL Accreditation **ISO/IEC 17025:2017.**
16.	The project authority must provide necessary infrastructural facilities to the construction workers during construction.	**Complied.** Provided as per requirement.
17.	The project must submit a revised green belt design for the plant and township to this Ministry within three months for approval. The green belt should have minimum tree density of 1000 trees per acres.	Green Belt has been developed with regular tree plantation around Refinery premises and township area. Since 2002, Digboi Refinery has planted around 1,53,419 trees till March'23 achieving a green belt coverage of 52.8% of the total IOCL area.
18.	Additional area under the control of project which is not being used for the plant utilities should be afforested and fund for this should be suitably provided.	It is followed as part of IOCL's green belt development.

19.	A separate environmental management cell with suitably qualified people to carry out various functions related to environmental management should be set up under the control of a senior technical person who will directly report to the head of the organization.	Digboi Refinery has a full-fledged Health, Safety and Environment(HSE) unit functioning under Chief General Manager with direct reporting to Head of Organization. HSE Department team consists of General Manager, Chief Manager and Assistant Managers. The HSE team regularly monitors and review the effectiveness of the EMP implementation.
20.	Adequate fund provision (capital and recurring expenditure) so provided for environmental control measure should not be diverted to any other purpose. The implementation schedule for environmental measure must be strictly adhered to.	The HSE department is supported with budgetary Allocation. The allocation for the last three years are as follows: ➢ 2020-21: Rs 7.74 Cr. ➢ 2021-22: Rs 7.78 Cr. ➢ 2022-23: Rs 8.83 Cr.

ENVIRONMENTAL CLEARANCE (J-11011/41/97-1A.II(I) dated -05-3-1998)
FOR SOLVENT DEWAXING UNIT

SL. NO	STIPULATIONS	COMPLIANCE STATUS AS ON 01.06.2023
1.0	The project authority should submit a Risk Analysis Report within a period of six months and submit the same to the Ministry.	Risk analysis has been carried out by M/s KLG-TNO in 1999 covering all the new units and report submitted to Ministry. A fresh round of Quantitative Risk Analysis (QRA) was carried out by M/s Alfa Project Services Pvt. Ltd, Vadodara in 2005. All the recommendations have already been implemented. Another Quantitative Risk Analysis study for all the units, including MSQU, completed in March, 2012 and various recommendations for further risk reduction are under study for implementation. A fresh Quantitative Risk Assessment for Wax Palletisation Unit completed on August 2013 by ZEEPINE SYSTEM INDIA Pvt. Ltd

ENVIRONMENTAL CLEARANCE (J-11013/71/99-1A(II) dated - 13-05-1999)
FOR HYDROTREATER UNIT

SL. NO	STIPULATIONS	COMPLIANCE STATUS AS ON 01.06.2023
1.0	The project authority should submit a Risk Analysis Report within a period of six months and submit the same to the Ministry.	Risk analysis has been carried out by M/s KLG-TNO in 1999 covering all the new units and report submitted to Ministry. A fresh round of Quantitative Risk Analysis (QRA) was carried out by M/s Alfa Project Services Pvt. Ltd, Vadodara in 2005. All the recommendations already implemented. Another Quantitative Risk Analysis study for all the units, including MSQU, completed in March, 2012 and various recommendations for further risk reduction are under study for implementation.

ENVIRONMENTAL CLEARANCE (J-11011/482/2007-IA II (I), DATED – 18-03-2008) FOR M S QUALITY IMPROVEMENT PROJECT AT DIGBOI REFINERY.

A	Specific Conditions	
SL. NO	STIPULATIONS	COMPLIANCE STATUS AS ON 01.06.2023
1	The company shall comply with new standards/norms that are being proposed by the CPCB for petrochemical plants and refineries.	Digboi Refinery strictly complies with all the norms and parameters of effluent and gaseous emission as per revised CPCB guideline.
2	The process emissions (SO_2, NOx, HC, VOCs and Benzene) from various units shall conform to the standards prescribed by the Assam State Pollution Control Board from time to time. At no time, the emission levels shall go beyond the stipulated standards. In the event of failure of pollution control system(s) adopted by the unit the unit shall be immediately put out of operation and shall not be restarted until the desired efficiency has been achieved.	Emission standards meet the norms as prescribed by MOEF & PCBA. Emission from Refinery & HRSGs submitted to Assam State Pollution Control Board on regular basis. The emission standards are within prescribed limit.
3	Ambient air quality monitoring stations. [SPM, SO_2, NOx and NMHC, Benzene] shall be set up in the Refinery complex in consultation with SPCB based on occurrence of maximum ground level concentration and down-wind direction of wind. The monitoring network must be decided based on modeling exercise to represent short term GLCs Continuous on-line stack monitoring equipment should be installed for measurement of SO_2 and NOx.	5(Five) no's of Ambient Air Quality monitoring stations are already in operation in the Refinery premises as per direction of Pollution Control Board, Assam. Out of five stations one Continuous Ambient Air Quality Monitoring Station is connected with CPCB server. Furnaces having heat capacity of more than 10mkcl/hr (HGU & HRSG's Stacks) are continuously connected with CPCB Server and PCBA server. On line stack monitoring analyzers are already installed for monitoring stack emissions. Apart from own monitoring, external agencies are also employed to conduct stack emission analysis on regular basis as per CPCB guideline.

4	Quarterly monitoring of fugitive emissions shall be carried out as per the guidelines of CPCB by fugitive emission detectors and reports shall be submitted to the Ministry's regional office at Shillong. For control of fugitive emission all unsaturated hydro carbon will be routed to the flare system and the flare system shall be designed for smoke less burning.	Quarterly monitoring of fugitive emission (VOC) is being carried out regularly by external agency. Report is submitted regularly to the office of MoEF & CC with six monthly compliance reports. Leak detection and repair (LDAR) report for the Quarter 3 and Quarter 4 is attached as **Annexure-6 and Annexure-7.**
5	Fugitive emissions of HC from product storage tank yards etc must be regularly monitored. Sensors for detecting HC leakage shall also be provided at strategic locations. The company shall use low sulphur fuel to minimize S02 emission.	Digboi Refinery is using sweet natural gas with average sulphur content of 2.48 ppm. HC detectors are already provided at the strategic locations at plants and tank farm areas. HC detectors are maintained by the vendors on quarterly basis. HC detector also provided at MS Quality up gradation unit.
6	The company shall strictly follow all the recommendation mentioned In the charter on corporate responsibility for environmental protection (CREP).	The latest compliance status of the CREP is enclosed. **(Attached as Annexure -8).** Also, Digboi Refinery has carried out various CSR activities in and around Digboi with total CSR outgo of Rs 31.1 Cr during last three FYs. The activities include the provision of Drinking water facility in schools, water supply to non IOCL consumers in and around Digboi and several other initiatives.
7	The Company shall take necessary measures to prevent fire hazards, containing oil spill and soil remediation as needed. At place of ground flaring. The overhead flaring stack with knockout drums shall be installed to minimize gaseous emissions during flaring.	At Digboi Refinery, flaring is done at the height of 108 meters through flare stack. Knockout drums are provided in the flare system Further, modern fire fighting system and hydrant network system has been provided and it meets OISD – 116 standards. Fire fighting facility at MSQ project is as per OISD-116. Remote HVLR System has been commissioned in October 2013. Installation of Rim Seal Fire Protection System of Fire Water network commissioned for Tank nos. 001, 607, 560 & 452.

8.	To prevent fire and explosion at oil & gas facility, potential ignition should be kept to a minimum and adequate separation distance between potential ignition sources and flammable materials shall be in place.	Separation distance between potential ignition sources and flammable materials are maintained as per OISD – STD-118.
9.	Occupational Health surveillance of worker shall be done on a regular basis and records maintained as per the Factory Act.	Occupational Health surveillance for employees is being carried out as per Factory Act and records maintained at Occupational Health Centre of AOD hospital.
10.	Green belt shall be developed to mitigate the effect of fugitive emission all around the plant in a minimum 30 % plant area in consultation with DFO and as per CPCB guidelines.	Digboi Refinery is surrounded by the Upper Dehing Reserve Forest on south and south west side, which acts as a natural Green Belt. Green belt is developed with regular tree plantation around Refinery premises and township area. Since 2002, Digboi Refinery has planted around 1,53,419 trees till March'23 in and around Digboi Refinery achieving a green belt coverage of 52.8% of the total IOCL area
B.	**General Conditions**	
1	The project authorities must strictly adhere to the stipulations made by the concerned State Pollution Control Board (SPCB) and the State Government and any other statuary body.	The stipulations made by the State Govt. and the State Pollution Control Board are strictly followed with regard to effluent and emission norms. The existing CTO has been renewed till 31st March 2028. Digboi Refinery meets all parameters of effluent as per revised CPCB guideline.

2	No further expansion or modification in the project shall be carried without prior approval of the Ministry of Environment and Forests. In case of deviations or alterations in the project proposal from those submitted to the Ministry for clearance, a fresh reference shall be made to the Ministry.	**Complied.**
3	At no time, the emissions should go beyond the prescribed standards. In the event of failure of any pollution control system, the respective well site should be immediately put out of operation and should not be restarted until the desired efficiency has been achieved. Provision of adequate height of stack attached to DG sets & flare is to be done.	Stack emission quality data of SOx and NOx are regularly monitored. Apart from own monitoring, external agencies are also employed to conduct stack emission analysis on regular basis as per CPCB guideline.
4	Wastewater shall be properly collected and treated so as to conform to the standards prescribed under EP Act & Rules and mentioned in the Consents provided by the relevant SPCB.	Digboi Refinery had installed Effluent Treatment Plant (ETP) in the year 1989, for the treatment of process wastewater generated from various units of the refinery. Digboi Refinery meets all MINAS parameters related to effluent discharge as per revised CPCB guideline and CTO.
5	The overall noise levels in and around the premises shall be limited within the prescribed standards (75 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).	Acoustic hoods are available all over the refinery and silencers exist in all sensitive parts of the plant where noise is a major concern. Moreover, all vehicle/trucks speed is limited to 20 km/hr inside the refinery, which is also less than 75 DB. Quarterly Noise survey is also being carried out by OHC.

6	The project authorities must strictly comply with the provisions made in Manufacture, Storage and Import of Hazardous Chemicals Rules 1989 as amended in 2000 for handling of hazardous chemicals etc. Necessary approvals from Chief Controller of Explosives must be obtained before commission of the expansion project, if required, Requisite On-site and Off-site Disaster Management Plans will be prepared and implemented.	Digboi Refinery strictly follows the provisions made in the Manufacture, Storage and Import of Hazardous Chemicals Rules 1989 as amended in 2000 and later for handling of hazardous chemicals. PESO approval is in place and it is valid till December 2023. Disaster Management Plan duly certified by PNGRB empanelled party. Copy of plan submitted to CIF Guwahati & DC, Tinsukia. Offsite drills are carried out regularly, once in a year, along with District Administration, Mutual Aid Partners & NGOs. Onsite Disaster Mock drills are carried out once in a quarter with different scenarios. Emergency response & Disaster Management Plan (ERDMP) of Digboi refinery as per guidelines of PNGRB has been drawn up and certified by **M/S Sanmarg Engineering Validation and Assessment Private Ltd**
7	Disposal of hazardous wastes shall be as per the Hazardous Wastes. (Management and Handling) Rules, 2003 Authorization from the State Pollution Control Board must be obtained for collections/treatment/storage/disposal of hazardous wastes.	Digboi Refinery has been granted of Hazardous Waste Authorization **WB/T-311/21-22/115/101** valid till 31-Mar-2027. Digboi Refinery annually files Hazardous Wastes Return to PCBA.
8	The project authorities will provide adequate funds as nonrecurring and recurring expenditure to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided should not be diverted for any other purposes.	The HSE department is supported with budgetary Allocation. The allocation for the last three years are as follows: ➢ 2020-21: Rs 7.74 Cr. ➢ 2021-22: Rs 7.78 Cr. ➢ 20222-23: Rs 8.83 Cr.
9	The company shall develop rain water harvesting structures to harvest the runoff water for recharge of ground water.	Storage Cum Percolation Pond (SCP) was commissioned in 2018 utilizing run-off water of 9 interlinked natural catchment areas around Digboi, first of its type in eastern Asia. The usage of rainwater has proven a very cost effective and environment friendly to increase the water table in Digboi area. At present this harvested rain water is Meeting 43% the Industrial water requirement of Refinery as feed in Cooling Tower Make up, DM plant, Service water and fire water make up (as back-up in case of requirement)

10	The stipulated conditions will be monitored by the concerned Regional Office of this Ministry /Central Pollution Control Board/State Pollution Control Board. A six monthly compliance report and the monitored data should be submitted to them regularly. It will also be displayed on the Website of the Company	Six-monthly EC compliance reports are duly submitted to IRO Guwahati. Last Report Submitted on 8th December 2022. Last six-monthly EC compliance reports (Apr'22 to Sep'22) of Digboi Refinery is uploaded on Indian Oil website. Link to the website is below. https://iocl.com/statutory-notices
11	The Project Proponent should inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution Control Board/ Committee and may also be seen at Website of the Ministry of Environment and Forests at http://www.envfor.nic.in This should be advertised within seven days from the date of issue of the clearance letter at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the concerned Regional office of this Ministry	The advertisement in local newspapers was published. However, the records couldn't be traced out for submission to IRO. We are making all out effort to trace the same and submit to IRO. Refinery shall ensure submission of the advertisement for the upcoming DR expansion project and record of the same shall be maintained.
12	A separate environment management cell with full fledged laboratory facilities to carry out various management and monitoring functions shall be set up under the control of a Senior Executive.	Digboi Refinery has a full-fledged Health, Safety and Environment (HSE) unit functioning under Chief General Manager with direct reporting to Head of Organization. HSE Department team consists of General Manager, Chief Manager and Assistant Managers. The HSE team regularly monitors and review the effectiveness of the EMP implementation.
13	The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of the project.	All the formalities for closure of project have been completed and project capitalized on 28.12.2010

Annexure-1

Effluent Parameters Test Report
From October 2022 to March,2023

Parameters	Limits	October	November	December	January	February	March	Average
pH	6.0 - 8.5	**7.13**	**6.86**	**6.55**	**7.24**	**6.71**	**6.74**	6.872
Oil & Grease	5.0	**3.76**	**3.76**	**3.84**	**4.00**	**4.00**	**4.10**	3.910
BOD	15.0	**9.62**	**9.86**	**9.52**	**10.16**	**10.00**	**10.06**	9.870
COD	125.0	**71.52**	**68.03**	**71.45**	**70.29**	**69.18**	**70.03**	70.083
TSS	20.0	**16.07**	**15.83**	**15.97**	**14.42**	**15.32**	**17.35**	15.827
Phenols	0.35	**0.24**	**0.24**	**0.24**	**0.25**	**0.26**	**0.27**	0.250
Sulphides	0.5	**0.13**	**0.19**	**0.16**	**0.13**	**0.13**	**0.14**	0.147
CN	0.20	**0.010**	**0.010**	**0.010**	**0.010**	**0.01**	**0.01**	0.010

From October 2022, to March,2023(Source-External Agency)

Parameters	**Limits**	October	November	December	January	February	March	**Average**
pH	6.0 - 8.5	6.95	6.91	6.93	6.90	6.86	6.84	6.888
Oil & Grease	5.0	4.80	4.70	4.60	4.80	4.70	4.80	4.720
BOD	15.0	14.00	13.00	12.00	15.00	12.00	15.00	13.400
COD	125.0	69.00	57.00	53.00	61.00	58.00	60.00	57.800
TSS	20.0	12.00	11.00	11.00	13.00	13.00	11.00	11.800
Phenols	0.35	0.00	0.00	0.00	<0.001	<0.001	<0.001	0.001
Sulphides	0.5	0.10	0.10	0.10	0.10	<0.1	<0.1	0.100
CN	0.20	0.010	<0.01	<0.01	0.010	0.020	0.020	0.017
Ammonia as N	15.0	15.00	<0.1	<0.1	<0.1	13.00	<0.1	13.000
TKN	40.0	0.30	<0.3	0.30	0.30	<0.3	<0.3	0.300
P	3.0	0.45	0.45	0.45	0.45	0.44	0.43	0.444
Cr (Hexavalent)	0.1	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Cr (Total)	2.0	0.01	0.01	0.01	0.01	0.01	0.01	0.05
Pb	0.1	0.01	0.01	0.01	<0.005	<0.005	<0.005	0.005
Hg	0.01	0.00	<0.001	<0.001	<0.001	<0.001	<0.001	0.007
Zn	5.0	0.02	0.02	0.02	<0.02	<0.02	<0.02	0.020
Ni	1.0	<0.02	<0.02	<0.02	0.02	0.02	<0.02	0.020
Cu	1.0	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.050
V	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.100
Benzene	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.010
Benzo (a) - Pyrene	0.2	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.100

Checked by:-

Prepared by: AM (HSE)

इंडियन ऑयल कॉर्पोरेशन/INDIAN OIL CORPORATION LIMITED
(असम ऑयल डिवीजन/ASSAM OIL DIVISION)
गुणवत्ता नियंत्रण प्रयोगशाला/QUALITY CONTROL DEPARTMENT

ANALYSIS OF WATER SAMPLES

रिपोर्ट संख्या/ Report No.:DR/QC/126.2/30 दिनांक /Date: 21-10-2022

Sample Collection Details

Source: Dihing and Digboi Rivers
Date of Collection: 15-10-2022

Sl. No.	Sample Details	pH	Phenol NTU	Oil & mgL^{-1}	Sulfide mgL^{-1}	BOD mgL^{-1}	COD mgL^{-1}
1	Digboi River Water in Kenduguri Area	6.5	0.06	2.1	0.11	9	68
2	Digboi River Water (15 km away from Digboi Refinery on Digboi	6.7	0.07	1.7	0.1	7	56
3	Digboi River Water (26 km away from Digboi Refinery on Digboi	6.7	0.07	1.5	BDL	5	62
4	Dihing River water before confluence with Digboi river	7.3	0.03	1.5	BDL	5	58
5	Dihing River water after confluence with Digboi river	7	0.05	1.6	BDL	5	64
6	Specifications as per MINAS norms	6.0-8.5	≤0.35	≤5.0	≤0.5	≤15.0	≤125

***BDL = Below Detection Limit

Analysis & Reported by

Dipankar Rajkhowa

D Rajkhowa
JQCA

R Paul
AM(QC)

इंडियन ऑयल कॉर्पोरेशन/INDIAN OIL CORPORATION LIMITED
(असम ऑयल डिवीजन/ASSAM OIL DIVISION)
गुणवत्ता नियंत्रण प्रयोगशाला/QUALITY CONTROL DEPARTMENT

ANALYSIS OF WATER SAMPLES

रिपोर्ट संख्या/ Report No.:DR/QC/126.2/30 दिनांक /Date: 21-11-2022

Sample Collection Details

Source: Dihing and Digboi Rivers
Date of Collection: 11-11-2022

Sl. No.	Sample Details	pH	Phenol NTU	Oil & mgL^{-1}	Sulfide mgL^{-1}	BOD mgL^{-1}	COD mgL^{-1}
1	Digboi River Water in Kenduguri Area	7	0.08	2.3	0.12	8	64
2	Digboi River Water (15 km away from Digboi Refinery on Digboi	6.9	0.05	1.5	0.1	7	52
3	Digboi River Water (26 km away from Digboi Refinery on Digboi	7	0.06	1.6	BDL	7	53
4	Dihing River water before confluence with Digboi river	7.7	0.04	1.6	BDL	7	58
5	Dihing River water after confluence with Digboi river	7.5	0.05	1.6	BDL	6	61
6	Specifications as per MINAS norms	6.0-8.5	≤0.35	≤5.0	≤0.5	≤15.0	≤125

***BDL = Below Detection Limit

Analysis & Reported by

Dipankar Rajkhowa

D Rajkhowa
JQCA

R Paul
AM(QC)

इंडियन ऑयल कॉर्पोरेशन/INDIAN OIL CORPORATION LIMITED
(असम ऑयल डिवीजन/ASSAM OIL DIVISION)
गुणवत्ता नियंत्रण प्रयोगशाला/QUALITY CONTROL DEPARTMENT

ANALYSIS OF WATER SAMPLES

रिपोर्ट संख्या/ Report No.:DR/QC/126.2/30 दिनांक /Date: 24-12-2022

Sample Collection Details

Source: Dihing and Digboi Rivers
Date of Collection: 14-12-2022

Sl. No.	Sample Details	pH	Phenol NTU	Oil & mgL^{-1}	Sulfide mgL^{-1}	BOD mgL^{-1}	COD mgL^{-1}
1	Digboi River Water in Kenduguri Area	7.2	0.06	2.9	0.11	11	68
2	Digboi River Water (15 km away from Digboi Refinery on Digboi	7	0.08	2.1	0.1	10	63
3	Digboi River Water (26 km away from Digboi Refinery on Digboi	7.1	0.04	1.9	0.1	8	59
4	Dihing River water before confluence with Digboi river	7.9	0.03	1.4	BDL	9	61
5	Dihing River water after confluence with Digboi river	7.9	0.03	1.5	BDL	6	60
6	Specifications as per MINAS norms	6.0-8.5	≤0.35	≤5.0	8	≤15.0	≤125

***BDL = Below Detection Limit

Analysis & Reported by

Dipankar Rajkhowa

D Rajkhowa
JQCA

R Paul
AM(QC)

इंडियन ऑयल कॉर्पोरेशन/INDIAN OIL CORPORATION LIMITED
(असम ऑयल डिवीजन/ASSAM OIL DIVISION)
गुणवत्ता नियंत्रण प्रयोगशाला/QUALITY CONTROL DEPARTMENT

ANALYSIS OF WATER SAMPLES

रिपोर्ट संख्या/ Report No.:DR/QC/126.2/30 दिनांक /Date: 30-01-2023

Sample Collection Details

Source: Dihing and Digboi Rivers
Date of Collection: 11-01-2023

Sl. No.	Sample Details	pH	Phenol NTU	Oil & mgL^{-1}	Sulfide mgL^{-1}	BOD mgL^{-1}	COD mgL^{-1}
1	Digboi River Water in Kenduguri Area	7	0	2.9	0.11	11	68
2	Digboi River Water (15 km away from Digboi Refinery on Digboi	7	0.08	2.1	0.1	10	63
3	Digboi River Water (26 km away from Digboi Refinery on Digboi	7.1	0.04	1.9	0.1	8	59
4	Dihing River water before confluence with Digboi river	7.7	0.03	67	9	8	0.1
5	Dihing River water after confluence with Digboi river	7.8	0.03	1.5	BDL	6	60
6	Specifications as per MINAS norms	6.0-8.5	≤0.35	≤5.0	8	≤15.0	≤125

***BDL = Below Detection Limit

Analysis & Reported by

Dipankar Rajkhowa

D Rajkhowa
JQCA

R Paul
AM(QC)

इंडियन ऑयल कॉर्पोरेशन/INDIAN OIL CORPORATION LIMITED
(असम ऑयल डिवीजन/ASSAM OIL DIVISION)
गुणवत्ता नियंत्रण प्रयोगशाला/QUALITY CONTROL DEPARTMENT

ANALYSIS OF WATER SAMPLES

रिपोर्ट संख्या/ Report No.:DR/QC/126.2/30 दिनांक /Date: 20-03-2023

Sample Collection Details

Source: Dihing and Digboi Rivers
Date of Collection: 05-02-2023

Sl. No.	Sample Details	pH	Phenol NTU	Oil & mgL^{-1}	Sulfide mgL^{-1}	BOD mgL^{-1}	COD mgL^{-1}
1	Digboi River Water in Kenduguri Area	7.4	0.1	3.2	0.1	8	60
2	Digboi River Water (15 km away from Digboi Refinery on Digboi	7.2	0.06	2.5	BDL	8	56
3	Digboi River Water (26 km away from Digboi Refinery on Digboi	7.2	0.05	1.4	BDL	7	52
4	Dihing River water before confluence with Digboi river	8.1	BDL	1	BDL	6	46
5	Dihing River water after confluence with Digboi river	8.2	BDL	0.8	BDL	5	44
6	Specifications as per MINAS norms	6.0-8.5	≤0.35	≤5.0	8	≤15.0	≤125

***BDL = Below Detection Limit

Analysis & Reported by

Dipankar Rajkhowa

D Rajkhowa
JQCA

R Paul
AM(QC)

इंडियन ऑयल कॉर्पोरेशन/INDIAN OIL CORPORATION LIMITED
(असम ऑयल डिवीजन/ASSAM OIL DIVISION)
गुणवत्ता नियंत्रण प्रयोगशाला/QUALITY CONTROL DEPARTMENT

ANALYSIS OF WATER SAMPLES

रिपोर्ट संख्या/ Report No.:DR/QC/126.2/30 दिनांक /Date: 31-03-2023

Sample Collection Details

Source: Dihing and Digboi Rivers
Date of Collection: 15-03-2023

Sl. No.	Sample Details	pH	Phenol NTU	Oil & mgL^{-1}	Sulfide mgL^{-1}	BOD mgL^{-1}	COD mgL^{-1}
1	Digboi River Water in Kenduguri Area	6.8	0.15	2.8	0.1	6	48
2	Digboi River Water (15 km away from Digboi Refinery on Digboi	7.3	0.09	2	BDL	6	32
3	Digboi River Water (26 km away from Digboi Refinery on Digboi	7.3	0.07	1.2	BDL	5	30
4	Dihing River water before confluence with Digboi river	7.9	0.06	0.6	BDL	4	28
5	Dihing River water after confluence with Digboi river	7.9	0.05	0.9	BDL	6	30
6	Specifications as per MINAS norms	6.0-8.5	≤0.35	≤5.0	8	≤15.0	≤125

***BDL = Below Detection Limit

Analysis & Reported by

P Borgohain
Asst Chemist

R Paul
AM(QC)

ANNEXURE-3

COMPLIANCE OF EFFLUENT STANDARDS (In Kg/TMT of Crude)

(October 2022 to March 2023) Source-QC, AOD

PARAMETER	LIMIT	October	November	December	January	February	March	Average
pH	--							
Oil & Grease	2.0	0.00	0.00	0.00	0.00	0.00	0.00	0.000
BOD	6.0	0.00	0.00	0.00	0.00	0.00	0.00	0.000
COD	50	0.00	0.00	0.00	0.00	0.00	0.00	0.000
TSS	8.0	0.00	0.00	0.00	0.00	0.00	0.00	0.000
Phenols	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.000
Sulphides	0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.000
CN	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.000
	(April'22 -September'22) Source-External agency							
PARAMETER	LIMIT	October	November	December	January	February	March	Average
pH	--	-	-	-	-	-	-	-
Oil & Grease	2.0	0.00	0.00	0.00	0.00	0.00	0.00	0.000
BOD	6.0	0.00	0.00	0.00	0.00	0.00	0.00	0.000
COD	50	0.00	0.00	0.00	0.00	0.00	0.00	0.000
TSS	8.0	0.00	0.00	0.00	0.00	0.00	0.00	0.000
Phenols	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.000
Sulphides	0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.000
CN	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.000
Ammonia as N	6.0	0.00	0.00	0.00	0.00	0.00	0.00	0.000
TKN	16	0.00	0.00	0.00	0.00	0.00	0.00	0.000
P	1.2	0.00	0.00	0.00	0.00	0.00	0.00	0.000
Cr (Hexavalent)	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.000
Cr (Total)	0.8	0.00	0.00	0.00	0.00	0.00	0.00	0.000
Pb	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.000
Hg	0.004	0.00	0.00	0.00	0.00	0.00	0.00	0.000
Zn	2.0	0.00	0.00	0.00	0.00	0.00	0.00	0.000
Ni	0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.000
Cu	0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.000
V	0.8	0.00	0.00	0.00	0.00	0.00	0.00	0.000
Benzene	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.000
Benzo (a) -Pyrene	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.000

NB:- ND ; Not Done & BDL; Bellow Detection Level

Remarks **No effluent Discharged outside ETP**

Checked by:

Prepared by: AM(HSE)

TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1310
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 15.11.2022
	Sample No. : MSKGL/ED/2022-23/10/01483
	Sample Description : Stack Emission
	Date of Sampling : 22.10.2022
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :	
1.	Stack connected to	: SDU
2.	Emission due to	: Fuel Gas & Natural Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	Physical characteristics of stack :	
1.	Height of the Stack from ground level	: 40 m
2.	Diameter of the stack at sampling point	: 1.38 m
3.	Area of Stack	: 1.4963 m^2
C.	Analysis/Characteristic of stack: Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	185	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	17.92	....	IS 11255 Part-3, 2008 (RA2018)
4.	Quantity of Gas Flow (Nm3/hr.)	61469	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	33.5	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	79.2	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	7.8	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

Report Prepared By :

Dhrubajyoti Das.

For Mitra S. K. Private Limited

Authorised Signatory

- *The results relate only to the item(s) tested.*
- *This Test Report shall not be reproduced except in full, without the permission of Mitra S.K. Private Limit.*

TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1309
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 15.11.2022
	Sample No. : MSKGL/ED/2022-23/10/01482
	Sample Description : Stack Emission
	Date of Sampling : 22.10.2022
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :			
1.	Stack connected to	: MSQU		
2.	Emission due to	: Fuel Gas		
3.	Material of construction of Stack	: Carbon Steel (CS)		
4.	Shape of Stack	: Circular		
5.	Whether Stack is provided with permanent platform & ladder : Yes			
B.	Physical characteristics of stack :			
1.	Height of the Stack from ground level	: 40.0 m		
2.	Diameter of the stack at sampling point	: 1.10 m		
3.	Area of Stack	: 0.949 m^2		
C.	Analysis/Characteristic of stack: Fuel Used : Gas			
D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	220	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	20.84	....	IS 11255 Part-3, 2008 (RA2018)
4.	Quantity of Gas Flow (Nm3/hr.)	15535	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	25.7	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	68.1	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	4.3	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

Report Prepared By :

Dhrubajyoti Das.

For Mitra S. K. Private Limited

Authorised Signatory

- *The results relate only to the item(s) tested.*
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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1308
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 15.11.2022
	Sample No. : MSKGL/ED/2022-23/10/01481
	Sample Description : Stack Emission
	Date of Sampling : 20.10.2022
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :	
1.	Stack connected to	: HGU
2.	Emission due to	: Fuel Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	Physical characteristics of stack :	
1.	Height of the Stack from ground level	: 40.0 m
2.	Diameter of the stack at sampling point	: 1.0m
3.	Area of Stack	: 0.785 m^2
C.	Analysis/Characteristic of stack: Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	138	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	17.10	....	IS 11255 Part-3, 2008 (RA2018)
4.	Quantity of Gas Flow (Nm3/hr.)	34489	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	29.3	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	73.1	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	4.8	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

Report Prepared By :

Dhrubajyoti Das

For Mitra S. K. Private Limited

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1307
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 15.11.2022
	Sample No. : MSKGL/ED/2022-23/10/01480
	Sample Description : Stack Emission
	Date of Sampling : 20.10.2022
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :	
1.	Stack connected to	: HDTU
2.	Emission due to	: Fuel Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	Physical characteristics of stack :	
1.	Height of the Stack from ground level	: 40.0 m
2.	Diameter of the stack at sampling point	: 1.10 m
3.	Area of Stack	: 0.95 m^2
C.	Analysis/Characteristic of stack: Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	350	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	20.79	....	IS 11255 Part-3, 2008 (RA2018)
4.	Quantity of Gas Flow (Nm3/hr.)	37036	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	31.5	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	78.4	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	5.2	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

Report Prepared By :

Dhrubajyoti Das.

For Mitra S. K. Private Limited

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1306
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 15.11.2022
	Sample No. : MSKGL/ED/2022-23/10/01479
	Sample Description : Stack Emission
	Date of Sampling : 20.10.2022
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :	
1.	Stack connected to	: DCU
2.	Emission due to	: Fuel Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	Physical characteristics of stack :	
1.	Height of the Stack from ground level	: 58 m
2.	Diameter of the stack at sampling point	: 1.686 m
3.	Area of Stack	: 2.2314 m^2
C.	Analysis/Characteristic of stack: Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	180	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	13.81	....	IS 11255 Part-3, 2008 (RA2018)
4.	Quantity of Gas Flow (Nm3/hr.)	71450	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	34.2	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	85.1	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	5.7	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

Report Prepared By :

Dhrubajyoti Das.

For Mitra S. K. Private Limited

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1305
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 15.11.2022
	Sample No. : MSKGL/ED/2022-23/10/01478
	Sample Description : Stack Emission
	Date of Sampling : 22.10.2022
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :	
1.	Stack connected to	: CRU (OBSG)
2.	Emission due to	: Fuel Gas & Natural Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	Physical characteristics of stack :	
1.	Height of the Stack from ground level	: 45.0 m
2.	Diameter of the stack at sampling point	: 1.75 m
3.	Area of Stack	: 2.404 m^2
C.	Analysis/Characteristic of stack: Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	170	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	17.40	....	IS 11255 Part-3, 2008 (RA2018)
4.	Quantity of Gas Flow (Nm3/hr.)	99119	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	36.7	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	70.4	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	6.7	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

Report Prepared By :

Bhumbajyoti Das.

For Mitra S. K. Private Limited

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1304
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 15.11.2022
	Sample No. : MSKGL/ED/2022-23/10/01477
	Sample Description : Stack Emission
	Date of Sampling : 20.10.2022
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :			
1.	Stack connected to	: CRU (HDT)		
2.	Emission due to	: Fuel Gas & Natural Gas		
3.	Material of construction of Stack	: Carbon Steel (CS)		
4.	Shape of Stack	: Circular		
5.	Whether Stack is provided with permanent platform & ladder : Yes			
B.	Physical characteristics of stack :			
1.	Height of the Stack from ground level	: 42.0 m		
2.	Diameter of the stack at sampling point	: 0.8 m		
3.	Area of Stack	: 0.502 m^2		
C.	Analysis/Characteristic of stack: Fuel Used : Gas			
D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	185	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	20.88	....	IS 11255 Part-3, 2008 (RA2018)
4.	Quantity of Gas Flow (Nm3/hr.)	50610	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	26.3	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	72.5	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	5.1	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

Report Prepared By :
Shreebajyoti Das.

For Mitra S. K. Private Limited

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1303
	Report Date : 15.11.2022
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Sample No. : MSKGL/ED/2022-23/10/01476
	Sample Description : Stack Emission
	Date of Sampling : 21.10.2022
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :	
1	Stack connected to	: CPP (HRSG-4)
2	Emission due to	: Fuel Gas
3	Material of construction of Stack	: Carbon Steel (CS)
4	Shape of Stack	: Circular
5	Whether Stack is provided with permanent platform & ladder : Yes	
B.	Physical characteristics of stack :	
1	Height of the Stack from ground level	: 60.0 m
2	Diameter of the stack at sampling point	: 3.0 m
3	Area of Stack	: 7.065 m^2
C.	Analysis/Characteristic of stack: Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1	Temperature of emission (°C)	134	....	IS 14988 (P-1) : 2001 (RA 2012)
2	Barometric Pressure (mm of Hg)	750	....	USEPA Part-2, 25/09/1996
3	Velocity of gas (m/sec.)	18.05	....	IS 11255 Part-3, 2008 (RA2018)
4	Quantity of Gas Flow (Nm3/hr.)	329043	....	USEPA Part-2, 25/09/1996
5	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6	Concentration of Sulphur Dioxide (mg/Nm3)	42.7	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7	Concentration of Nitrogen Oxide (mg/Nm3)	85.1	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8	Concentration of Particulate Matters (mg/Nm3)	7.5	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks			

Report Prepared By :

Dhrubajyoti Das.

For Mitra S. K. Private Limited

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1302
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 15.11.2022 Sample No. : MSKGL/ED/2022-23/10/01475 Sample Description : Stack Emission Date of Sampling : 22.10.2022
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :	
1	Stack connected to	: CPP (HRSG-2)
2	Emission due to	: Fuel Gas
3	Material of construction of Stack	: Carbon Steel (CS)
4	Shape of Stack	: Circular
5	Whether Stack is provided with permanent platform & ladder : Yes	
B.	Physical characteristics of stack :	
1	Height of the Stack from ground level	: 50.0 m
2	Diameter of the stack at sampling point	: 2.0 m
3	Area of Stack	: 3.14 m^2
C.	Analysis/Characteristic of stack: Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1	Temperature of emission (°C)	145	....	IS 14988 (P-1) : 2001 (RA 2012)
2	Barometric Pressure (mm of Hg)	750	....	USEPA Part-2, 25/09/1996
3	Velocity of gas (m/sec.)	20.48	....	IS 11255 Part-3, 2008 (RA2018)
4	Quantity of Gas Flow (Nm3/hr.)	161733	....	USEPA Part-2, 25/09/1996
5	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6	Concentration of Sulphur Dioxide (mg/Nm3)	41.3	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7	Concentration of Nitrogen Oxide (mg/Nm3)	84.7	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8	Concentration of Particulate Matters (mg/Nm3)	7.2	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

Report Prepared By :

Bhaskarjyoti Das.

For Mitra S. K. Private Limited

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1301
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 15.11.2022
	Sample No. : MSKGL/ED/2022-23/10/01474
	Sample Description : Stack Emission
	Date of Sampling : 19.10.2022
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :	
1.	Stack connected to	: AVU (CDU/VDU)
2.	Emission due to	: Fuel Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	Physical characteristics of stack :	
1.	Height of the Stack from ground level	: 46.5 m
2.	Diameter of the stack at sampling point	: 1.59 m
3.	Area of Stack	: 1.9864 m^2
C.	Analysis/Characteristic of stack: Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	135	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	15.85	....	IS 11255 Part-3, 2008 (RA2018)
4.	Quantity of Gas Flow (Nm3/hr.)	80993	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	39.5	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	76.4	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	6.8	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

Report Prepared By :

Dhrubajyoti Das.

For Mitra S. K. Private Limited

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1431A
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 14.12.2022 Sample No. : MSKGL/ED/2022-23/11/01820 Sample Description : Stack Emission Date of Sampling : 25.11.2022
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	**General information about stack :**	
1.	Stack connected to	: AVU (CDU/VDU)
2.	Emission due to	: Fuel Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	**Physical characteristics of stack :**	
1.	Height of the Stack from ground level	: 46.5 m
2.	Diameter of the stack at sampling point	: 1.59 m
3.	Area of Stack	: 1.9864 m^2
C.	**Analysis/Characteristic of stack:** Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	134	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	15.04	....	IS 11255 Part-3, 2008 (RA2018)
4.	Quantity of Gas Flow (Nm3/hr.)	77057	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	38.7	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	74.2	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	6.7	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	**Pollution control device** Pollution control device attached with the stack : Yes			
F.	**Remarks:**			

Report Prepared By :

For Mitra S. K. Private Limited

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1431B
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 14.12.2022
	Sample No. : MSKGL/ED/2022-23/11/01826
	Sample Description : Stack Emission
	Date of Sampling : 26.11.2022
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	**General information about stack :**	
1.	Stack connected to	: CPP (HRSG-2)
2.	Emission due to	: Fuel Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	**Physical characteristics of stack :**	
1.	Height of the Stack from ground level	: 50.0 m
2.	Diameter of the stack at sampling point	: 2.0 m
3.	Area of Stack	: 3.14 m^2
C.	**Analysis/Characteristic of stack:** Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	147	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	16.95	....	IS 11255 Part-3, 2008 (RA2018)
4.	Quantity of Gas Flow (Nm3/hr.)	133240	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	42.5	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	87.1	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	7.6	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	**Pollution control device** Pollution control device attached with the stack : Yes			
F.	**Remarks:**			

Report Prepared By :

For Mitra S. K. Private Limited

Authorised Signatory

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TEST REPORT

Name & Address of the Customer : **'INDIAN OIL CORPORATION LIMITED'** **Assam Oil Division, Digboi,** **P.O.-Digboi, Assam-786171**	**Report No. : MSK/GHY/2022-23/14310** **Report Date : 14.12.2022** **Sample No. : MSKGL/ED/2022-23/11/01827** **Sample Description : Stack Emission** **Date of Sampling : 26.11.2022**

Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019

ANALYSIS RESULT

A.	**General information about stack :**	
1.	Stack connected to	: CPP (HRSG-4)
2.	Emission due to	: Fuel Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder	: Yes
B.	**Physical characteristics of stack :**	
1.	Height of the Stack from ground level	: 60.0 m
2.	Diameter of the stack at sampling point	: 3.0 m
3.	Area of Stack	: 7.065 m^2
C.	**Analysis/Characteristic of stack:** Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	135	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	21.06	....	IS 11255 Part-3, 2008 (RA2018)
4.	Quantity of Gas Flow (Nm3/hr.)	382800	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	43.1	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	88.4	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	7.9	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	**Pollution control device** Pollution control device attached with the stack : Yes			
F.	**Remarks:**			

Report Prepared By :

For Mitra S. K. Private Limited

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1431D
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 14.12.2022
	Sample No. : MSKGL/ED/2022-23/11/01825
	Sample Description : Stack Emission
	Date of Sampling : 23.11.2022
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	**General information about stack :**	
1.	Stack connected to	: CRU (HDT)
2.	Emission due to	: Fuel Gas & Natural Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	**Physical characteristics of stack :**	
1.	Height of the Stack from ground level	: 42.0 m
2.	Diameter of the stack at sampling point	: 0.8 m
3.	Area of Stack	: 0.502 m^2
C.	**Analysis/Characteristic of stack:** Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	186	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	21.03	....	IS 11255 Part-3, 2008 (RA2018)
4.	Quantity of Gas Flow (Nm3/hr.)	50874	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	27.1	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	73.5	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	5.4	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006

E.	**Pollution control device** Pollution control device attached with the stack : Yes
F.	**Remarks:**

Report Prepared By :

For Mitra S. K. Private Limited

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1431E
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 14.12.2022 Sample No. : MSKGL/ED/2022-23/11/01824 Sample Description : Stack Emission Date of Sampling : 24.11.2022

Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019

ANALYSIS RESULT

A.	General information about stack :	
1.	Stack connected to	: CRU (OBSG)
2.	Emission due to	: Fuel Gas & Natural Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder	: Yes
B.	Physical characteristics of stack :	
1.	Height of the Stack from ground level	: 45.0 m
2.	Diameter of the stack at sampling point	: 1.75 m
3.	Area of Stack	: 2.404 m^2
C.	Analysis/Characteristic of stack: Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	172	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	18.72	....	IS 11255 Part-3, 2008 (RA2018)
4.	Quantity of Gas Flow (Nm3/hr.)	106179	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	37.5	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	71.3	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	6.9	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006

E. **Pollution control device**
Pollution control device attached with the stack : Yes

F. **Remarks:**

Report Prepared By :

For Mitra S. K. Private Limited

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1431F
	Report Date : 14.12.2022
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Sample No. : MSKGL/ED/2022-23/11/01823
	Sample Description : Stack Emission
	Date of Sampling : 24.11.2022
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	**General information about stack :**	
1.	Stack connected to	: DCU
2.	Emission due to	: Fuel Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	**Physical characteristics of stack :**	
1.	Height of the Stack from ground level	: 58 m
2.	Diameter of the stack at sampling point	: 1.686 m
3.	Area of Stack	: 2.2314 m^2

C. **Analysis/Characteristic of stack:**
Fuel Used : Gas

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	182	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	17.29	....	IS 11255 Part-3, 2008 (RA2018)
4.	Quantity of Gas Flow (Nm3/hr.)	89089	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	35.1	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	86.4	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	5.8	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006

E. **Pollution control device**
Pollution control device attached with the stack : Yes

F. **Remarks:**

Report Prepared By :

For Mitra S. K. Private Limited

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1431G
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 14.12.2022
	Sample No. : MSKGL/ED/2022-23/11/01822
	Sample Description : Stack Emission
	Date of Sampling : 24.11.2022
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	**General information about stack :**	
1.	Stack connected to	: HDTU
2.	Emission due to	: Fuel Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	**Physical characteristics of stack :**	
1.	Height of the Stack from ground level	: 40.0 m
2.	Diameter of the stack at sampling point	: 1.10 m
3.	Area of Stack	: 0.95 m^2
C.	**Analysis/Characteristic of stack:** Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	349	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	19.62	....	IS 11255 Part-3, 2008 (RA2018)
4.	Quantity of Gas Flow (Nm3/hr.)	37152	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	32.7	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	79.3	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	5.5	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	**Pollution control device** Pollution control device attached with the stack : Yes			
F.	**Remarks:**			

Report Prepared By :

For Mitra S.K. Private Limited

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1431H
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 14.12.2022 Sample No. : MSKGL/ED/2022-23/11/01821 Sample Description : Stack Emission Date of Sampling : 23.11.2022
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	**General information about stack :**	
1.	Stack connected to	: HGU
2.	Emission due to	: Fuel Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	**Physical characteristics of stack :**	
1.	Height of the Stack from ground level	: 40.0 m
2.	Diameter of the stack at sampling point	: 1.0m
3.	Area of Stack	: 0.785 m^2
C.	**Analysis/Characteristic of stack:** Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	137	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	18.00	....	IS 11255 Part-3, 2008 (RA2018)
4.	Quantity of Gas Flow (Nm3/hr.)	36186	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	28.7	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	72.5	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	4.6	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	**Pollution control device** Pollution control device attached with the stack : Yes			
F.	**Remarks:**			

Report Prepared By :

For Mitra S. K. Private Limited

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/14311
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 14.12.2022
	Sample No. : MSKGL/ED/2022-23/11/01828
	Sample Description : Stack Emission
	Date of Sampling : 25.11.2022
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	**General information about stack :**	
1.	Stack connected to	: MSQU
2.	Emission due to	: Fuel Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder	: Yes
B.	**Physical characteristics of stack :**	
1.	Height of the Stack from ground level	: 40.0 m
2.	Diameter of the stack at sampling point	: 1.10 m
3.	Area of Stack	: 0.949 m^2
C.	**Analysis/Characteristic of stack:** Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	219		IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750		USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	18.74		IS 11255 Part-3, 2008 (RA2018)
4.	Quantity of Gas Flow (Nm3/hr.)	38015		USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2		IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	26.7	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	69.1	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	4.5	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	**Pollution control device** Pollution control device attached with the stack : Yes			
F.	**Remarks:**			

Report Prepared By :

For Mitra S. K. Private Limited

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1431J
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 14.12.2022
	Sample No. : MSKGL/ED/2022-23/11/01829
	Sample Description : Stack Emission
	Date of Sampling : 25.11.2022
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	**General information about stack :**	
1.	Stack connected to	: SDU
2.	Emission due to	: Fuel Gas & Natural Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	**Physical characteristics of stack :**	
1.	Height of the Stack from ground level	: 40 m
2.	Diameter of the stack at sampling point	: 1.38 m
3.	Area of Stack	: 1.4963 m^2
C.	**Analysis/Characteristic of stack:** Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	192	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	17.42	....	IS 11255 Part-3, 2008 (RA2018)
4.	Quantity of Gas Flow (Nm3/hr.)	58872	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	32.7	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	78.1	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	7.6	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	**Pollution control device** Pollution control device attached with the stack : Yes			
F.	**Remarks:**			

Report Prepared By :

For Mitra S. K. Private Limited

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1698
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 28.02.2023
	Sample No. : MSKGL/ED/2022-23/01/01581
	Sample Description : Stack Emission
	Date of Sampling : 06.01.2023
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :	
1.	Stack connected to	: CPP (HRSG-2)
2.	Emission due to	: Fuel Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	Physical characteristics of stack :	
1.	Height of the Stack from ground level	: 50.0 m
2.	Diameter of the stack at sampling point	: 2.0 m
3.	Area of Stack	: 3.14 m^2
C.	Analysis/Characteristic of stack: Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	147.0	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750.0	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	19.2	....	IS 14988 (P-1) : 2001 (RA 2012)
4.	Quantity of Gas Flow (Nm3/hr.)	150993	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	40.7	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	85.1	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	7.4	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

For Mitra S. K. Private Limited

Report Prepared By :

Authorised Signatory

TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1699
	Report Date : 28.02.2023
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Sample No. : MSKGL/ED/2022-23/01/01582
	Sample Description : Stack Emission
	Date of Sampling : 06.01.2023
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :	
1.	Stack connected to	: CPP (HRSG-4)
2.	Emission due to	: Fuel Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	Physical characteristics of stack :	
1.	Height of the Stack from ground level	: 60.0 m
2.	Diameter of the stack at sampling point	: 3.0 m
3.	Area of Stack	: 7.065 m^2
C.	Analysis/Characteristic of stack: Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	130.0	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750.0	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	18.8	....	IS 14988 (P-1) : 2001 (RA 2012)
4.	Quantity of Gas Flow (Nm3/hr.)	346.333	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	41.9	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	86.2	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	7.6	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006

E.	Pollution control device Pollution control device attached with the stack : Yes	
F.	Remarks:	

For Mitra S. K. Private Limited

Report Prepared By :

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1700
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 28.02.2023
	Sample No. : MSKGL/ED/2022-23/01/01583
	Sample Description : Stack Emission
	Date of Sampling : 06.01.2023
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :	
1.	Stack connected to	: HGU
2.	Emission due to	: Fuel Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	Physical characteristics of stack :	
1.	Height of the Stack from ground level	: 40.0 m
2.	Diameter of the stack at sampling point	: 1.0m
3.	Area of Stack	: 0.785 m^2
C.	Analysis/Characteristic of stack: Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	137.0	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750.0	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	20.7	....	IS 14988 (P-1) : 2001 (RA 2012)
4.	Quantity of Gas Flow (Nm3/hr.)	124488	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	28.7	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	74.2	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	5.1	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

For Mitra S. K. Private Limited

Report Prepared By :

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1716 B
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 14.03.2023
	Sample No. : MSKGL/ED/2022-23/02/01836
	Sample Description : Stack Emission
	Date of Sampling : 20.02.2023
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :			
1.	Stack connected to	: CRU (HDT)		
2.	Emission due to	: Fuel Gas & Natural Gas		
3.	Material of construction of Stack	: Carbon Steel (CS)		
4.	Shape of Stack	: Circular		
5.	Whether Stack is provided with permanent platform & ladder : Yes			
B.	Physical characteristics of stack :			
1.	Height of the Stack from ground level	: 42.0 m		
2.	Diameter of the stack at sampling point	: 1.10 m		
3.	Area of Stack	: 0.950 m^2		
C.	Analysis/Characteristic of stack: Fuel Used : Gas			
D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	212.0	....	IS 14988 (P-1) : 2001 (RA 2012)_(O)
2.	Barometric Pressure (mm of Hg)	750	....	USEPA Part 2 - 25/09/1996_(O)
3.	Velocity of gas (m/sec.)	11.8	....	IS 11255 (Part III),2008RA 2018_(O)
4.	Quantity of Gas Flow (Nm3/hr.)	24236	....	USEPA Part 2 - 25/09/1996_(O)
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992
6.	Concentration of Sulphur Dioxide (mg/Nm3)	25.7	50 (mg/Nm3)	USEPA (Part 6) 25/09/1996_(O)
7.	Concentration of Nitrogen Oxide (mg/Nm3)	70.8	350 (mg/Nm3)	USEPA (Part 7), Issue Dated.12/03/1996_(O)
8.	Concentration of Particulate Matters (mg/Nm3)	5.2	10 (mg/Nm3)	USEPA-17 16/08/1996_(O)
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (Part 4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

For Mitra S. K. Private Limited

Report Prepared By :

Barmah

MITRA S. K. PRIVATE LTD.

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1716 C
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 14.03.2023 Sample No. : MSKGL/ED/2022-23/03/01837 Sample Description : Stack Emission Date of Sampling : 20.02.2023
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :	
1.	Stack connected to	: HDTU
2.	Emission due to	: Fuel Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	Physical characteristics of stack :	
1.	Height of the Stack from ground level	: 40.0 m
2.	Diameter of the stack at sampling point	: 1.16 m
3.	Area of Stack	: 1.057 m^2
C.	Analysis/Characteristic of stack: Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	331.0	....	IS 14988 (P-1) : 2001 (RA 2012) (O)
2.	Barometric Pressure (mm of Hg)	750.0	....	USEPA Part 2 - 25/09/1996 (O)
3.	Velocity of gas (m/sec.)	18.5	....	IS 11255 (Part III),2008RA 2018 (O)
4.	Quantity of Gas Flow (Nm3/hr.)	33958	....	USEPA Part 2 - 25/09/1996 (O)
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992
6.	Concentration of Sulphur Dioxide (mg/Nm3)	30.5	50 (mg/Nm3)	USEPA (Part 6) 25/09/1996 (O)
7.	Concentration of Nitrogen Oxide (mg/Nm3)	79.1	350 (mg/Nm3)	USEPA (Part 7), Issue Dated.12/03/1996 (O)
8.	Concentration of Particulate Matters (mg/Nm3)	5.4	10 (mg/Nm3)	USEPA-17 16/08/1996 (O)
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (Part 4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

For Mitra S. K. Private Limited

Report Prepared By :

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1716 D
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 14.03.2023
	Sample No. : MSKGL/ED/2022-23/02/01838
	Sample Description : Stack Emission
	Date of Sampling : 20.02.2023
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :	
1.	Stack connected to	: OBSG (CRU)
2.	Emission due to	: Fuel Gas & Natural Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	Physical characteristics of stack :	
1.	Height of the Stack from ground level	: 45.0 m
2.	Diameter of the stack at sampling point	: 1.750 m
3.	Area of Stack	: 2.404 m^2
C.	Analysis/Characteristic of stack: Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	161.0	....	IS 14988 (P-1) : 2001 (RA 2012) (O)
2.	Barometric Pressure (mm of Hg)	750.0	....	USEPA Part 2 - 25/09/1996 (O)
3.	Velocity of gas (m/sec.)	16.1	....	IS 11255 (Part III),2008RA 2018 (O)
4.	Quantity of Gas Flow (Nm3/hr.)	93677	....	USEPA Part 2 - 25/09/1996 (O)
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992
6.	Concentration of Sulphur Dioxide (mg/Nm3)	36.1	50 (mg/Nm3)	USEPA (Part 6) 25/09/1996 (O)
7.	Concentration of Nitrogen Oxide (mg/Nm3)	72.8	350 (mg/Nm3)	USEPA (Part 7), Issue Dated.12/03/1996 (O)
8.	Concentration of Particulate Matters (mg/Nm3)	6.5	10 (mg/Nm3)	USEPA-17 16/08/1996 (O)
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (Part 4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

For Mitra S. K. Private Limited

Report Prepared By :

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1716 E
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 14.03.2023
	Sample No. : MSKGL/ED/2022-23/02/01839
	Sample Description : Stack Emission
	Date of Sampling : 20.02.2023
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :			
1.	Stack connected to	: AVU (CDU/VDU)		
2.	Emission due to	: Fuel Gas		
3.	Material of construction of Stack	: Carbon Steel (CS)		
4.	Shape of Stack	: Circular		
5.	Whether Stack is provided with permanent platform & ladder : Yes			
B.	Physical characteristics of stack :			
1.	Height of the Stack from ground level	: 46.5 m		
2.	Diameter of the stack at sampling point	: 1.59 m		
3.	Area of Stack	: 1.9864 m^2		
C.	Analysis/Characteristic of stack: Fuel Used : Gas			
D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	127.0	....	IS 14988 (P-1) : 2001 (RA 2012)_(O)
2.	Barometric Pressure (mm of Hg)	750.0	....	USEPA Part 2 - 25/09/1996_(O)
3.	Velocity of gas (m/sec.)	15.9	....	IS 11255 (Part III),2008RA 2018_(O)
4.	Quantity of Gas Flow (Nm3/hr.)	82880	....	USEPA Part 2 - 25/09/1996_(O)
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992
6.	Concentration of Sulphur Dioxide (mg/Nm3)	38.9	50 (mg/Nm3)	USEPA (Part 6) 25/09/1996_(O)
7.	Concentration of Nitrogen Oxide (mg/Nm3)	78.1	350 (mg/Nm3)	USEPA (Part 7), Issue Dated.12/03/1996_(O)
8.	Concentration of Particulate Matters (mg/Nm3)	6.9	10 (mg/Nm3)	USEPA-17 16/08/1996_(O)
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (Part 4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

For Mitra S. K. Private Limited

Report Prepared By :

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1716 F
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 14.03.2023
	Sample No. : MSKGL/ED/2022-23/02/01840
	Sample Description : Stack Emission
	Date of Sampling : 24.02.2023
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :			
1.	Stack connected to	: MSQU		
2.	Emission due to	: Fuel Gas		
3.	Material of construction of Stack	: Carbon Steel (CS)		
4.	Shape of Stack	: Circular		
5.	Whether Stack is provided with permanent platform & ladder : Yes			
B.	Physical characteristics of stack :			
1.	Height of the Stack from ground level	: 40.0 m		
2.	Diameter of the stack at sampling point	: 1.10 m		
3.	Area of Stack	: 0.95 m^2		
C.	Analysis/Characteristic of stack: Fuel Used : Gas			
D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	230 0	....	IS 14988 (P-1) : 2001 (RA 2012) (O)
2.	Barometric Pressure (mm of Hg)	750 0	....	USEPA Part 2 - 25/09/1996 (O)
3.	Velocity of gas (m/sec.)	18 4	....	IS 11255 (Part III),2008RA 2018 (O)
4.	Quantity of Gas Flow (Nm3/hr.)	34652	....	USEPA Part 2 - 25/09/1996 (O)
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992
6.	Concentration of Sulphur Dioxide (mg/Nm3)	25.1	50 (mg/Nm3)	USEPA (Part 6) 25/09/1996 (O)
7.	Concentration of Nitrogen Oxide (mg/Nm3)	69.2	350 (mg/Nm3)	USEPA (Part 7), Issue Dated.12/03/1996 (O)
8.	Concentration of Particulate Matters (mg/Nm3)	4.7	10 (mg/Nm3)	USEPA-17 16/08/1996 (O)
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (Part 4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

For Mitra S. K. Private Limited

Report Prepared By :

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1716 G
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 14.03.2023
	Sample No. : MSKGL/ED/2022-23/02/01841
	Sample Description : Stack Emission
	Date of Sampling : 24.02.2023
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :			
1.	Stack connected to	: DCU		
2.	Emission due to	: Fuel Gas		
3.	Material of construction of Stack	: Carbon Steel (CS)		
4.	Shape of Stack	: Circular		
5.	Whether Stack is provided with permanent platform & ladder : Yes			
B.	Physical characteristics of stack :			
1.	Height of the Stack from ground level	: 58 m		
2.	Diameter of the stack at sampling point	: 1.686 m		
3.	Area of Stack	: 2.2335 m^2		
C.	Analysis/Characteristic of stack: Fuel Used : Gas			
D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	189.0	....	IS 14988 (P-1) : 2001 (RA 2012)_(O)
2.	Barometric Pressure (mm of Hg)	750.0	....	USEPA Part 2 - 25/09/1996_(O)
3.	Velocity of gas (m/sec.)	15.7	....	IS 11255 (Part III),2008RA 2018_(O)
4.	Quantity of Gas Flow (Nm3/hr.)	79669	....	USEPA Part 2 - 25/09/1996_(O)
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992
6.	Concentration of Sulphur Dioxide (mg/Nm3)	33.8	50 (mg/Nm3)	USEPA (Part 6) 25/09/1996_(O)
7.	Concentration of Nitrogen Oxide (mg/Nm3)	84.7	350 (mg/Nm3)	USEPA (Part 7), Issue Dated.12/03/1996_(O)
8.	Concentration of Particulate Matters (mg/Nm3)	5.9	10 (mg/Nm3)	USEPA-17 16/08/1996_(O)
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (Part 4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

For Mitra S. K. Private Limited

Report Prepared By :

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1716 H
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Report Date : 14.03.2023
	Sample No. : MSKGL/ED/2022-23/02/01842
	Sample Description : Stack Emission
	Date of Sampling : 25.02.2023
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :			
1.	Stack connected to	: SDU		
2.	Emission due to	: Fuel Gas & Natural Gas		
3.	Material of construction of Stack	: Carbon Steel (CS)		
4.	Shape of Stack	: Circular		
5.	Whether Stack is provided with permanent platform & ladder : Yes			
B.	Physical characteristics of stack :			
1.	Height of the Stack from ground level	: 40 m		
2.	Diameter of the stack at sampling point	: 1.38 m		
3.	Area of Stack	: 1.4963 m^2		
C.	Analysis/Characteristic of stack: Fuel Used : Gas			
D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	182.0	....	IS 14988 (P-1) : 2001 (RA 2012)_(O)
2.	Barometric Pressure (mm of Hg)	750.0	....	USEPA Part 2 - 25/09/1996_(O)
3.	Velocity of gas (m/sec.)	16.2	....	IS 11255 (Part III),2008RA 2018_(O)
4.	Quantity of Gas Flow (Nm3/hr.)	56029	....	USEPA Part 2 - 25/09/1996_(O)
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992
6.	Concentration of Sulphur Dioxide (mg/Nm3)	32.7	50 (mg/Nm3)	USEPA (Part 6) 25/09/1996_(O)
7.	Concentration of Nitrogen Oxide (mg/Nm3)	80.5	350 (mg/Nm3)	USEPA (Part 7), Issue Dated.12/03/1996_(O)
8.	Concentration of Particulate Matters (mg/Nm3)	7.6	10 (mg/Nm3)	USEPA-17 16/08/1996_(O)
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (Part 4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

For Mitra S. K. Private Limited

Report Prepared By :

Barwal

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1784
	Report Date : 19.04.2023
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Sample No. : MSKGL/ED/2023-24/04/00449
	Sample Description : Stack Emission
	Date of Sampling : 30.03.2023

Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019

ANALYSIS RESULT

A.	General information about stack :	
1.	Stack connected to	: CPP (HRSG-4)
2.	Emission due to	: Fuel Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	Physical characteristics of stack :	
1.	Height of the Stack from ground level	: 60.0 m
2.	Diameter of the stack at sampling point	: 3.0 m
3.	Area of Stack	: 7.065 m^2

C. **Analysis/Characteristic of stack:**
Fuel Used : Gas

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	130.0	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750.0	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	19.4	....	IS 14988 (P-1) : 2001 (RA 2012)
4.	Quantity of Gas Flow (Nm3/hr.)	357976	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	40.7	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	82.5	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	7.3	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006

E. **Pollution control device**
Pollution control device attached with the stack : Yes

F. **Remarks:**

For Mitra S. K. Private Limited

Report Prepared By :

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1783
	Report Date : 19.04.2023
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Sample No. : MSKGL/ED/2023-24/04/00448
	Sample Description : Stack Emission
	Date of Sampling : 30.03.2023

Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019

ANALYSIS RESULT

A.	General information about stack :	
1.	Stack connected to	: CPP (HRSG-2)
2.	Emission due to	: Fuel Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	Physical characteristics of stack :	
1.	Height of the Stack from ground level	: 50.0 m
2.	Diameter of the stack at sampling point	: 2.0 m
3.	Area of Stack	: 3.14 m^2
C.	Analysis/Characteristic of stack: Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	147.0	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750.0	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	20.0	....	IS 14988 (P-1) : 2001 (RA 2012)
4.	Quantity of Gas Flow (Nm3/hr.)	157181	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	43.1	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	86.7	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	7.6	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

For Mitra S. K. Private Limited

Report Prepared By :

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1782
	Report Date : 19.04.2023
'INDIAN OIL CORPORATION LIMITED' Assam Oil Division, Digboi, P.O.-Digboi, Assam-786171	Sample No. : MSKGL/ED/2023-24/04/00447
	Sample Description : Stack Emission
	Date of Sampling : 30.03.2023
Ref. No. & Date : DRE2184081/25834730, Dtd.-20/02/2019	

ANALYSIS RESULT

A.	General information about stack :	
1.	Stack connected to	: HGU
2.	Emission due to	: Fuel Gas
3.	Material of construction of Stack	: Carbon Steel (CS)
4.	Shape of Stack	: Circular
5.	Whether Stack is provided with permanent platform & ladder : Yes	
B.	Physical characteristics of stack :	
1.	Height of the Stack from ground level	: 40.0 m
2.	Diameter of the stack at sampling point	: 1.0m
3.	Area of Stack	: 0.785 m^2
C.	Analysis/Characteristic of stack: Fuel Used : Gas	

D.	Test Parameters	Result	Perms. Limit as per MOEF notification, 2008	Method
1.	Temperature of emission (°C)	136.0	....	IS 14988 (P-1) : 2001 (RA 2012)
2.	Barometric Pressure (mm of Hg)	750.0	....	USEPA Part-2, 25/09/1996
3.	Velocity of gas (m/sec.)	20.6	....	IS 14988 (P-1) : 2001 (RA 2012)
4.	Quantity of Gas Flow (Nm3/hr.)	41632	....	USEPA Part-2, 25/09/1996
5.	Concentration of Carbon Monoxide (% v/v)	<0.2	....	IS 13270 : 1992 (RA 2014)
6.	Concentration of Sulphur Dioxide (mg/Nm3)	28.7	50 (mg/Nm3)	USEPA Part-6, 25/09/1996
7.	Concentration of Nitrogen Oxide (mg/Nm3)	74.2	350 (mg/Nm3)	USEPA Part-7, 12/03/1996
8.	Concentration of Particulate Matters (mg/Nm3)	5.1	10 (mg/Nm3)	USEPA Part-17, 16/08/1996
9.	Concentration of Hydrogen Sulphide (mg/Nm3)	<5.0	150 (mg/Nm3)	IS 11255 (P-4) : 2006
E.	Pollution control device Pollution control device attached with the stack : Yes			
F.	Remarks:			

For Mitra S. K. Private Limited

Report Prepared By :

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Mitra S. K. Private Limited

MSK TESTING • INSPECTION

TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1294
"Indian Oil Corporation Limited Digboi" Assam Oil Division, P.O.- Digboi, Assam - 786171	**Report Date : 15.11.2022** **Sample Description : Ambient Air** **Sample Number : MSKGL/ED/2022-23/10/01375-01382**
Reference No.& Date: 27371982 Dated : 19/11/2021	**Sampling Location : Bazaar Gate**

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	Benzo(a) pyrene (ng/m^3)
1.	06.10.2022	60	26	9.5	23	1.3	24	12	<0.01	<5.0	<1.0	<4.2	<0.5
2.	10.10.2022	55	28	<6.0	14	1.1	22	11	<0.01	<5.0	<1.0	<4.2	<0.5
3.	13.10.2022	59	26	9.1	22	1.2	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
4.	17.10.2022	62	30	10.3	25	1.4	26	13	<0.01	<5.0	<1.0	<4.2	<0.5
5.	20.10.2022	65	33	11.4	27	1.7	28	14	<0.01	<5.0	<1.0	<4.2	<0.5
6.	24.10.2022	51	23	<6.0	13	1.2	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
7.	27.10.2022	57	25	8.7	21	1.4	22	11	<0.01	<5.0	<1.0	<4.2	<0.5
8.	31.10.2022	53	28	<6.0	12	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		**100**	**60**	**80**	**80**	**2**	**180**	**400**	**1**	**20**	**6**	**5**	**1**
Sampling and Analysis done according to		**IS: 5182 (Part-23) -2006**	**IS: 5182 (Part-24) -2019**	**IS: 5182 (Part-2) -2001**	**IS: 5182 (Part- 6) -2006**	**IS 5182 : (Part-10) :1999**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-417)**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-401)**	**USEPA IO-3.2**	**USEPA IO-3.2**	**USEPA IO-3.2**	**IS 5182 : (Part 11) :2006**	**IS 5182 : (Part 12) :2004**

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :
Anwesha Jyoti Das.

For Mitra S.K. Pvt. Ltd.

Authorised Signatory

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Mitra S. K. Private Limited

MSK TESTING • INSPECTION

TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/0019
"Indian Oil Corporation Limited Digboi" Assam Oil Division, P.O.- Digboi, Assam - 786171	Report Date : 15.11.2022
	Sample Description : Ambient Air
	Sample Number : MSKGL/ED/2022-23/10/01383-01390
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : Cooling Tower - Wax Sector

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	Benzo(a) pyrene (ng/m^3)
1.	01.10.2022	55	24	8.3	21	1.3	22	11	<0.01	<5.0	<1.0	<4.2	<0.5
2.	05.10.2022	62	30	9.6	25	1.5	25	13	<0.01	<5.0	<1.0	<4.2	<0.5
3.	08.10.2022	52	29	<6.0	12	1.2	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
4.	12.10.2022	50	21	<6.0	11	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	15.10.2022	48	23	<6.0	13	1.0	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
6.	19.10.2022	63	27	10.2	27	1.7	26	13	<0.01	<5.0	<1.0	<4.2	<0.5
7.	26.10.2022	54	28	8.6	18	1.3	22	11	<0.01	<5.0	<1.0	<4.2	<0.5
8.	29.10.2022	58	26	9.1	20	1.5	24	12	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		**100**	**60**	**80**	**80**	**2**	**180**	**400**	**1**	**20**	**6**	**5**	**1**
Sampling and Analysis done according to		**IS: 5182 (Part-23) -2006**	**IS: 5182 (Part-24) -2019**	**IS: 5182 (Part-2) -2001**	**IS: 5182 (Part- 6) -2006**	**IS 5182 : (Part-10) :1999**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-417)**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-401)**	**USEPA IO-3.2**	**USEPA IO-3.2**	**USEPA IO-3.2**	**IS 5182 : (Part 11) :2006**	**IS 5182 : (Part 12) :2004**

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

Dhrubajyoti Das.

For Mitra S.K. Pvt. Ltd.

Authorized Signatory

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Mitra S. K. Private Limited

MSK TESTING • INSPECTION

TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1296
"Indian Oil Corporation Limited Digboi" Assam Oil Division, P.O.- Digboi, Assam - 786171	Report Date : 15.11.2022 Sample Description : Ambient Air Sample Number : : MSKGL/ED/2022-23/10/01391-01398
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : New Tank Farm

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO_2 (µg/m³)	CO (mg/m³)	O_3 (µg/m³)	NH_3 (µg/m³)	Pb (µg/m³)	Ni (ng/m³)	As (ng/m³)	Benzene (µg/m³)	Benzo(a) pyrene (ng/m³)
1.	01.10.2022	52	23	8.1	14	1.2	23	11	<0.01	<5.0	<1.0	<4.2	<0.5
2.	05.10.2022	49	23	<6.0	11	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
3.	08.10.2022	58	32	10.5	21	1.4	26	13	<0.01	<5.0	<1.0	<4.2	<0.5
4.	12.10.2022	50	21	<6.0	14	1.2	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	15.10.2022	62	33	11.6	26	1.6	27	14	<0.01	<5.0	<1.0	<4.2	<0.5
6.	19.10.2022	54	26	8.6	16	1.4	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
7.	26.10.2022	57	29	9.3	20	1.3	25	12	<0.01	<5.0	<1.0	<4.2	<0.5
8.	29.10.2022	65	28	11.8	27	1.8	28	14	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		**100**	**60**	**80**	**80**	**2**	**180**	**400**	**1**	**20**	**6**	**5**	**1**
Sampling and Analysis done according to		**IS: 5182 (Part-23) -2006**	**IS: 5182 (Part-24) -2019**	**IS: 5182 (Part-2) -2001**	**IS: 5182 (Part- 6) -2006**	**IS 5182 : (Part-10) :1999**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-417)**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-401)**	**USEPA IO-3.2**	**USEPA IO-3.2**	**USEPA IO-3.2**	**IS 5182 : (Part 11) :2006**	**IS 5182 : (Part 12) :2004**

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

Dhrubajyoti Das.

For Mitra S.K. Pvt. Ltd.

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1297
"Indian Oil Corporation Limited Digboi" Assam Oil Division, P.O.- Digboi, Assam - 786171	Report Date : 15.11.2022 Sample Description : Ambient Air Sample Number : : **MSKGL/ED/2022-23/10/01399-01406**
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : Effluent Treatment Plant

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM $_{10}$ (µg/m^3)	PM $_{2.5}$ (µg/m^3)	SO_2 (µg/m^3)	NO_2 (µg/m^3)	CO (mg/m^3)	O_3 (µg/m^3)	NH_3 (µg/m^3)	Pb (µg/m^3)	Ni (ng/m^3)	As (ng/m^3)	Benzene (µg/m^3)	Benzo(a) pyrene (ng/m^3)
1.	06.10.2022	63	27	11.5	25	1.6	27	14	<0.01	<5.0	<1.0	<4.2	<0.5
2.	10.10.2022	52	25	<6.0	12	1.2	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
3.	13.10.2022	56	29	9.6	20	1.4	24	12	<0.01	<5.0	<1.0	<4.2	<0.5
4.	17.10.2022	48	20	<6.0	11	1.0	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	20.10.2022	57	27	10.3	24	1.5	25	13	<0.01	<5.0	<1.0	<4.2	<0.5
6.	24.10.2022	64	30	11.6	26	1.8	28	14	<0.01	<5.0	<1.0	<4.2	<0.5
7.	27.10.2022	60	32	10.8	23	1.4	22	11	<0.01	<5.0	<1.0	<4.2	<0.5
8.	31.10.2022	52	23	<6.0	12	1.0	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		**100**	**60**	**80**	**80**	**2**	**180**	**400**	**1**	**20**	**6**	**5**	**1**
Sampling and Analysis done according to		**IS: 5182 (Part-23) -2006**	**IS: 5182 (Part-24) -2019**	**IS: 5182 (Part-2) -2001**	**IS: 5182 (Part- 6) -2006**	**IS 5182 : (Part-10) :1999**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-417)**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-401)**	**USEPA IO-3.2**	**USEPA IO-3.2**	**USEPA IO-3.2**	**IS 5182 : (Part 11) :2006**	**IS 5182 : (Part 12) :2004**
BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5													

Report Prepared By :

Shreebajyoti Das.

For Mitra S.K. Pvt. Ltd.

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1425
"Indian Oil Corporation Limited Digboi"	Report Date : 14.12.2022
Assam Oil Division,	Sample Description : Ambient Air
P.O.- Digboi, Assam - 786171	Sample Number : **MSKGL/ED/2022-23/12/00060-00067**
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : Bazaar Gate

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	Benzo(a) pyrene (ng/m^3)
1.	06.11.2022	65	31	9.7	25	1.5	26	13	<0.01	<5.0	<1.0	<4.2	<0.5
2.	10.11.2022	57	24	<6.0	12	0.9	20	10	<0.01	<5.0	<1.0	<4.2	<0.5
3.	13.11.2022	61	32	9.3	24	1.4	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
4.	17.11.2022	54	25	9.7	23	1.3	24	12	<0.01	<5.0	<1.0	<4.2	<0.5
5.	20.11.2022	67	39	11.6	29	1.9	32	16	<0.01	<5.0	<1.0	<4.2	<0.5
6.	24.11.2022	53	23	<6.0	11	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
7.	27.11.2022	63	33	9.3	24	1.7	28	14	<0.01	<5.0	<1.0	<4.2	<0.5
8.	30.11.2022	59	25	<6.0	14	1.3	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		**100**	**60**	**80**	**80**	**2**	**180**	**400**	**1**	**20**	**6**	**5**	**1**
Sampling and Analysis done according to		**IS: 5182 (Part-23) -2006**	**IS: 5182 (Part-24) -2019**	**IS: 5182 (Part-2) -2001**	**IS: 5182 (Part- 6) -2006**	**IS 5182 : (Part-10) :1999**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-417)**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-401)**	**USEPA IO-3.2**	**USEPA IO-3.2**	**USEPA IO-3.2**	**IS 5182 : (Part 11) :2006**	**IS 5182 : (Part 12) :2004**

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

For Mitra S.K. Pvt. Ltd.

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1426
"Indian Oil Corporation Limited Digboi" Assam Oil Division, P.O.- Digboi, Assam - 786171	**Report Date : 14.12.2022**
	Sample Description : Ambient Air
	Sample Number : MSKGL/ED/2022-23/12/00068-00075
Reference No.& Date: 27371982 Dated : 19/11/2021	**Sampling Location : Effluent Treatment Plant**

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	Benzo(a) pyrene (ng/m^3)
1.	06.11.2022	65	30	11.7	27	1.8	28	14	<0.01	<5.0	<1.0	<4.2	<0.5
2.	10.11.2022	54	28	<6.0	14	1.4	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
3.	13.11.2022	58	34	9.8	22	1.6	26	13	<0.01	<5.0	<1.0	<4.2	<0.5
4.	17.11.2022	46	30	<6.0	10	0.9	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	20.11.2022	59	25	10.7	26	1.7	26	13	<0.01	<5.0	<1.0	<4.2	<0.5
6.	24.11.2022	68	35	11.8	28	1.9	30	15	<0.01	<5.0	<1.0	<4.2	<0.5
7.	27.11.2022	62	29	11.3	25	1.8	25	13	<0.01	<5.0	<1.0	<4.2	<0.5
8.	30.11.2022	56	32	<6.0	13	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov. 2009. for Ambient air quality		**100**	**60**	**80**	**80**	**2**	**180**	**400**	**1**	**20**	**6**	**5**	**1**
Sampling and Analysis done according to		**IS: 5182 (Part-23) -2006**	**IS: 5182 (Part-24) -2019**	**IS: 5182 (Part-2) -2001**	**IS: 5182 (Part- 6) -2006**	**IS 5182 : (Part-10) :1999**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-417)**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-401)**	**USEPA IO-3.2**	**USEPA IO-3.2**	**USEPA IO-3.2**	**IS 5182 : (Part 11) :2006**	**IS 5182 : (Part 12) :2004**

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

For Mitra S.K. Pvt. Ltd.

Authorized Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1427
"Indian Oil Corporation Limited Digboi" Assam Oil Division, P.O.- Digboi, Assam - 786171	Report Date : 14.12.2022
	Sample Description : Ambient Air
	Sample Number MSKGL/ED/2022-23/12/00076-00083
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : Cooling Tower - Wax Sector

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM $_{10}$ (µg/m^3)	PM $_{2.5}$ (µg/m^3)	SO_2 (µg/m^3)	NO_2 (µg/m^3)	CO (mg/m^3)	O_3 (µg/m^3)	NH_3 (µg/m^3)	Pb (µg/m^3)	Ni (ng/m^3)	As (ng/m^3)	Benzene (µg/m^3)	Benzo(a) pyrene (ng/m^3)
1.	01.11.2022	57	33	8.9	23	1.5	24	12	<0.01	<5.0	<1.0	<4.2	<0.5
2.	05.11.2022	60	28	9.3	22	1.3	23	11	<0.01	<5.0	<1.0	<4.2	<0.5
3.	08.11.2022	58	34	<6.0	16	1.6	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
4.	12.11.2022	52	22	<6.0	13	1.3	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	15.11.2022	46	30	<6.0	11	0.8	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
6.	19.11.2022	61	29	10.4	29	1.9	28	14	<0.01	<5.0	<1.0	<4.2	<0.5
7.	26.11.2022	56	26	8.3	16	1.1	20	10	<0.01	<5.0	<1.0	<4.2	<0.5
8.	29.11.2022	62	32	9.5	23	1.8	26	13	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		100	60	80	80	2	180	400	1	20	6	5	1
Sampling and Analysis done according to		IS: 5182 (Part-23) -2006	IS: 5182 (Part-24) -2019	IS: 5182 (Part-2) -2001	IS: 5182 (Part- 6) -2006	IS 5182 : (Part-10) :1999	Air Sampling, 3rd Edn. By James P. Lodge (Method-417)	Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	USEPA IO-3.2	USEPA IO-3.2	USEPA IO-3.2	IS 5182 : (Part 11) :2006	IS 5182 : (Part 12) :2004

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

For Mitra S.K. Pvt. Ltd.

Authorized Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1428
"Indian Oil Corporation Limited Digboi"	Report Date : 14.12.2022
Assam Oil Division,	Sample Description : Ambient Air
P.O.- Digboi, Assam - 786171	Sample Number : MSKGL/ED/2022-23/12/00084-00091
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : New Tank Farm

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	Benzo(a) pyrene (ng/m^3)
1.	01.11.2022	54	24	8.3	16	1.4	25	13	<0.01	<5.0	<1.0	<4.2	<0.5
2.	05.11.2022	48	22	<6.0	10	0.9	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
3.	08.11.2022	56	29	10.3	19	1.2	24	12	<0.01	<5.0	<1.0	<4.2	<0.5
4.	12.11.2022	52	30	<6.0	15	1.4	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	15.11.2022	64	32	11.8	28	1.8	29	16	<0.01	<5.0	<1.0	<4.2	<0.5
6.	19.11.2022	58	27	8.9	18	1.6	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
7.	26.11.2022	57	33	9.1	19	1.3	25	13	<0.01	<5.0	<1.0	<4.2	<0.5
8.	29.11.2022	67	31	12.3	29	2.1	28	14	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		100	60	80	80	2	180	400	1	20	6	5	1
Sampling and Analysis done according to		IS: 5182 (Part-23) -2006	IS: 5182 (Part-24) -2019	IS: 5182 (Part-2) -2001	IS: 5182 (Part- 6) -2006	IS 5182 : (Part-10) :1999	Air Sampling, 3rd Edn. By James P. Lodge (Method-417)	Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	USEPA IO-3.2	USEPA IO-3.2	USEPA IO-3.2	IS 5182 : (Part 11) :2006	IS 5182 : (Part 12) :2004

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

For Mitra S.K. Pvt. Ltd.

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1500
"Indian Oil Corporation Limited Digboi" Assam Oil Division, P.O.- Digboi, Assam - 786171	Report Date : 15.01.2023
	Sample Description : Ambient Air
	Sample Number : MSKGL/ED/2022-23/12/01964-01972
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : Bazaar Gate

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	Benzo(a) pyrene (ng/m^3)
1.	01.12.2022	67	39	9.5	25	1.7	28	14	<0.01	<5.0	<1.0	<4.2	<0.5
2.	05.12.2022	55	36	<6.0	12	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
3.	08.12.2022	63	30	9.7	26	1.6	27	14	<0.01	<5.0	<1.0	<4.2	<0.5
4.	12.12.2022	56	33	9.3	22	1.5	23	11	<0.01	<5.0	<1.0	<4.2	<0.5
5.	15.12.2022	65	34	11.8	31	1.9	34	17	<0.01	<5.0	<1.0	<4.2	<0.5
6.	19.12.2022	51	32	<6.0	11	1.0	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
7.	22.12.2022	54	26	<6.0	14	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
8.	26.12.2022	65	34	9.5	26	1.9	30	15	<0.01	<5.0	<1.0	<4.2	<0.5
9.	29.12.2022	61	32	<6.0	12	1.4	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		100	60	80	80	2	180	400	1	20	6	5	1
Sampling and Analysis done according to		IS: 5182 (Part-23) -2006	IS: 5182 (Part-24) -2019	IS: 5182 (Part-2) -2001	IS: 5182 (Part- 6) -2006	IS 5182 : (Part-10) :1999	Air Sampling, 3rd Edn. By James P. Lodge (Method-417)	Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	USEPA IO-3.2	USEPA IO-3.2	USEPA IO-3.2	IS 5182 : (Part 11) :2006	IS 5182 : (Part 12) :2004

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

Sitas Ghosh

For Mitra S.K. Pvt. Ltd.

Authorized Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1501
"Indian Oil Corporation Limited Digboi"	Report Date : 15.01.2023
Assam Oil Division,	Sample Description : Ambient Air
P.O.- Digboi, Assam - 786171	Sample Number : MSKGL/ED/2022-23/12/01973-01981
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : Cooling Tower - Wax Sector

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	Benzo(a) pyrene (ng/m^3)
1.	01.12.2022	59	34	9.1	25	1.7	26	13	<0.01	<5.0	<1.0	<4.2	<0.5
2.	05.12.2022	62	32	9.5	24	1.5	25	12	<0.01	<5.0	<1.0	<4.2	<0.5
3.	08.12.2022	56	33	<6.0	14	1.4	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
4.	12.12.2022	54	32	<6.0	11	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	15.12.2022	48	28	<6.0	10	1.0	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
6.	19.12.2022	63	30	10.7	31	1.9	32	16	<0.01	<5.0	<1.0	<4.2	<0.5
7.	22.12.2022	58	34	8.9	18	1.3	22	11	<0.01	<5.0	<1.0	<4.2	<0.5
8.	26.12.2022	60	31	9.3	21	1.6	24	12	<0.01	<5.0	<1.0	<4.2	<0.5
9.	29.12.2022	55	32	<6.0	13	1.3	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		100	60	80	80	2	180	400	1	20	6	5	1
Sampling and Analysis done according to		IS: 5182 (Part-23) -2006	IS: 5182 (Part-24) -2019	IS: 5182 (Part-2) -2001	IS: 5182 (Part- 6) -2006	IS 5182 : (Part-10) :1999	Air Sampling, 3rd Edn. By James P. Lodge (Method-417)	Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	USEPA IO-3.2	USEPA IO-3.2	USEPA IO-3.2	IS 5182 : (Part 11) :2006	IS 5182 : (Part 12) :2004

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

For Mitra S.K. Pvt. Ltd.

Authorized Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1502
"Indian Oil Corporation Limited Digboi"	Report Date : 15.01.2023
Assam Oil Division,	Sample Description : Ambient Air
P.O.- Digboi, Assam - 786171	Sample Number : MSKGL/ED/2022-23/12/01982-01990
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : New Tank Farm

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	Benzo(a) pyrene (ng/m^3)
1.	01.12.2022	56	33	8.5	18	1.6	21	15	<0.01	<5.0	<1.0	<4.2	<0.5
2.	05.12.2022	50	29	<6.0	12	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
3.	08.12.2022	58	30	10.5	21	1.4	24	12	<0.01	<5.0	<1.0	<4.2	<0.5
4.	12.12.2022	54	31	<6.0	17	1.6	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	15.12.2022	62	36	11.5	26	1.5	28	14	<0.01	<5.0	<1.0	<4.2	<0.5
6.	19.12.2022	60	31	9.3	20	1.8	26	13	<0.01	<5.0	<1.0	<4.2	<0.5
7.	22.12.2022	59	28	<6.0	21	1.5	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
8.	26.12.2022	66	34	12.7	31	1.9	32	16	<0.01	<5.0	<1.0	<4.2	<0.5
9.	29.12.2022	52	30	<6.0	15	1.3	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		100	60	80	80	2	180	400	1	20	6	5	1
Sampling and Analysis done according to		IS: 5182 (Part-23) -2006	IS: 5182 (Part-24) -2019	IS: 5182 (Part-2) -2001	IS: 5182 (Part- 6) -2006	IS 5182 : (Part-10) :1999	Air Sampling, 3rd Edn. By James P. Lodge (Method-417)	Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	USEPA IO-3.2	USEPA IO-3.2	USEPA IO-3.2	IS 5182 : (Part 11) :2006	IS 5182 : (Part 12) :2004

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

For Mitra S.K. Pvt. Ltd.

Authorised Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1503
"Indian Oil Corporation Limited Digboi" Assam Oil Division, P.O.- Digboi, Assam - 786171	Report Date : 15.01.2023
	Sample Description : Ambient Air
	Sample Number : MSKGL/ED/2022-23/12/01991-01999
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : Effluent Treatment Plant

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	Benzo(a) pyrene (ng/m^3)
1.	01.12.2022	67	32	11.9	29	1.9	30	15	<0.01	<5.0	<1.0	<4.2	<0.5
2.	05.12.2022	52	36	<6.0	16	1.2	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
3.	08.12.2022	56	33	9.5	21	1.4	24	12	<0.01	<5.0	<1.0	<4.2	<0.5
4.	12.12.2022	50	29	<6.0	14	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	15.12.2022	61	32	11.3	27	1.9	28	14	<0.01	<5.0	<1.0	<4.2	<0.5
6.	19.12.2022	65	38	11.5	25	1.7	27	13	<0.01	<5.0	<1.0	<4.2	<0.5
7.	22.12.2022	61	36	10.9	22	1.5	23	12	<0.01	<5.0	<1.0	<4.2	<0.5
8.	26.12.2022	56	33	<6.0	15	1.9	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
9.	29.12.2022	54	36	8.5	19	1.3	22	11	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		**100**	**60**	**80**	**80**	**2**	**180**	**400**	**1**	**20**	**6**	**5**	**1**
Sampling and Analysis done according to		**IS: 5182 (Part-23) -2006**	**IS: 5182 (Part-24) -2019**	**IS: 5182 (Part-2) -2001**	**IS: 5182 (Part- 6) -2006**	**IS 5182 : (Part-10) :1999**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-417)**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-401)**	**USEPA IO-3.2**	**USEPA IO-3.2**	**USEPA IO-3.2**	**IS 5182 : (Part 11) :2006**	**IS 5182 : (Part 12) :2004**

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

Tirtha Ghosh

For Mitra S.K. Pvt. Ltd.

Authorized Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1621
"Indian Oil Corporation Limited Digboi" Assam Oil Division, P.O.- Digboi, Assam - 786171	Report Date : 17/02/2023
	Sample Description : Ambient Air
	Sample Number : MSKGL/ED/2022-23/01/01237-01245
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : COOLING TOWER-WAX SECTOR

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	Benzo(a) pyrene (ng/m^3)
1.	02.01.2023	58	32	9.2	26	1.4	25	13	<0.01	<5.0	<1.0	<4.2	<0.5
2.	05.01.2023	63	30	10.8	32	1.8	29	14	<0.01	<5.0	<1.0	<4.2	<0.5
3.	09.01.2023	55	29	<6.0	13	1.2	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
4.	12.01.2023	52	25	<6.0	11	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	16.01.2023	49	26	<6.0	10	1.0	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
6.	19.01.2023	62	34	10.4	28	1.7	27	13	<0.01	<5.0	<1.0	<4.2	<0.5
7.	23.01.2023	57	30	8.6	21	1.4	22	11	<0.01	<5.0	<1.0	<4.2	<0.5
8.	27.01.2023	59	32	9.7	25	1.5	24	12	<0.01	<5.0	<1.0	<4.2	<0.5
9.	30.01.2023	56	27	<6.0	16	1.3	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		100	60	80	80	2	180	400	1	20	6	5	1
Sampling and Analysis done according to		IS: 5182 (Part-23) -2006	IS: 5182 (Part-24) -2019	IS: 5182 (Part-2) -2001	IS: 5182 (Part- 6) -2006	IS 5182 : (Part-10) :1999	Air Sampling, 3rd Edn. By James P. Lodge (Method-417)	Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	USEPA IO-3.4	USEPA IO-3.4	USEPA IO-3.4	IS 5182 : (Part 11) :2006	IS 5182 : (Part 12) :2004

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

For Mitra S.K. Pvt. Ltd.

Authorized Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1622
"Indian Oil Corporation Limited Digboi" Assam Oil Division, P.O.- Digboi, Assam - 786171	Report Date : 17.02.2023
	Sample Description : Ambient Air
	Sample Number : MSKGL/ED/2022-23/01/01246-01254
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : BAZAAR GATE

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO_2 (µg/m³)	CO (mg/m³)	O_3 (µg/m³)	NH_3 (µg/m³)	Pb (µg/m³)	Ni (ng/m³)	As (ng/m³)	Benzene (µg/m³)	Benzo(a) pyrene (ng/m³)
1.	02.01.2023	68	38	11.3	26	1.8	29	14	<0.01	<5.0	<1.0	<4.2	<0.5
2.	05.01.2023	54	32	<6.0	13	1.2	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
3.	09.01.2023	62	33	9.8	24	1.6	26	13	<0.01	<5.0	<1.0	<4.2	<0.5
4.	12.01.2023	57	31	8.7	21	1.4	22	11	<0.01	<5.0	<1.0	<4.2	<0.5
5.	16.01.2023	66	35	10.7	28	1.6	28	14	<0.01	<5.0	<1.0	<4.2	<0.5
6.	19.01.2023	50	27	<6.0	12	1.0	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
7.	23.01.2023	55	32	<6.0	15	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
8	27.01.2023	64	34	9.9	27	1.8	28	14	<0.01	<5.0	<1.0	<4.2	<0.5
9	30.01.2023	60	33	8.8	23	1.5	26	13	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		**100**	**60**	**80**	**80**	**2**	**180**	**400**	**1**	**20**	**6**	**5**	**1**
Sampling and Analysis done according to		**IS: 5182 (Part-23) -2006**	**IS: 5182 (Part-24) -2019**	**IS: 5182 (Part-2) -2001**	**IS: 5182 (Part- 6) -2006**	**IS 5182 : (Part-10) :1999**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-417)**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-401)**	**USEPA IO-3.4**	**USEPA IO-3.4**	**USEPA IO-3.4**	**IS 5182 : (Part 11) :2006**	**IS 5182 : (Part 12) :2004**

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

For Mitra S.K. Pvt. Ltd.

Authorized Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1623
"Indian Oil Corporation Limited Digboi" Assam Oil Division, P.O.- Digboi, Assam - 786171	Report Date : 17.01.2023 Sample Description : Ambient Air Sample Number : MSKGL/ED/2022-23/01/01255-01263
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : NEW TANK FARM

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	Benzo(a) pyrene (ng/m^3)
1.	02.01.2023	55	29	8.7	23	1.5	22	11	<0.01	<5.0	<1.0	<4.2	<0.5
2.	05.01.2023	49	23	<6.0	11	1.2	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
3.	09.01.2023	57	31	10.3	22	1.6	21	10	<0.01	<5.0	<1.0	<4.2	<0.5
4.	12.01.2023	53	28	<6.0	18	1.4	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	16.01.2023	61	33	11.3	27	1.7	26	13	<0.01	<5.0	<1.0	<4.2	<0.5
6.	19.01.2023	59	28	10.7	23	1.6	22	11	<0.01	<5.0	<1.0	<4.2	<0.5
7.	23.01.2023	57	30	9.6	24	1.5	23	12	<0.01	<5.0	<1.0	<4.2	<0.5
8	27.01.2023	64	29	12.1	32	1.9	31	16	<0.01	<5.0	<1.0	<4.2	<0.5
9	30.01.2023	51	28	<6.0	14	1.2	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		100	60	80	80	2	180	400	1	20	6	5	1
Sampling and Analysis done according to		IS: 5182 (Part-23) -2006	IS: 5182 (Part-24) -2019	IS: 5182 (Part-2) -2001	IS: 5182 (Part- 6) -2006	IS 5182 : (Part-10) :1999	Air Sampling, 3rd Edn. By James P. Lodge (Method-417)	Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	USEPA IO-3.4	USEPA IO-3.4	USEPA IO-3.4	IS 5182 : (Part 11) :2006	IS 5182 : (Part 12) :2004

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

For Mitra S.K. Pvt. Ltd.

Authorized Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1624
"Indian Oil Corporation Limited Digboi" Assam Oil Division, P.O.- Digboi, Assam - 786171	Report Date : 17/02/2023
	Sample Description : Ambient Air
	Sample Number : MSKGL/ED/2022-23/01/01264-01272
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : EFFLUENT TREATMENT PLANT

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO_2 (µg/m³)	CO (mg/m³)	O_3 (µg/m³)	NH_3 (µg/m³)	Pb (µg/m³)	Ni (ng/m³)	As (ng/m³)	Benzene (µg/m³)	Benzo(a) pyrene (ng/m³)
1.	02.01.2023	66	37	11.5	28	1.8	29	15	<0.01	<5.0	<1.0	<4.2	<0.5
2.	05.01.2023	51	26	<6.0	14	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
3.	09.01.2023	57	27	9.3	22	1.4	23	12	<0.01	<5.0	<1.0	<4.2	<0.5
4.	12.01.2023	52	28	<6.0	16	1.0	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	16.01.2023	63	30	10.8	26	1.7	27	13	<0.01	<5.0	<1.0	<4.2	<0.5
6.	19.01.2023	67	38	11.3	29	1.9	28	14	<0.01	<5.0	<1.0	<4.2	<0.5
7.	23.01.2023	62	33	10.5	23	1.6	22	11	<0.01	<5.0	<1.0	<4.2	<0.5
8	27.01.2023	54	25	<6.0	14	1.2	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
9	30.01.2023	58	26	8.7	18	1.4	21	10	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		100	60	80	80	2	180	400	1	20	6	5	1
Sampling and Analysis done according to		IS: 5182 (Part-23) -2006	IS: 5182 (Part-24) -2019	IS: 5182 (Part-2) -2001	IS: 5182 (Part- 6) -2006	IS 5182 : (Part-10) :1999	Air Sampling, 3rd Edn. By James P. Lodge (Method-417)	Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	USEPA IO-3.4	USEPA IO-3.4	USEPA IO-3.4	IS 5182 : (Part 11) :2006	IS 5182 : (Part 12) :2004

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

Kamala

For Mitra S.K. Pvt. Ltd.

Authorized Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1712
"Indian Oil Corporation Limited Digboi"	Report Date : 14.03.2023
Assam Oil Division,	Sample Description : Ambient Air
P.O.- Digboi, Assam - 786171	Sample Number : MSKGL/ED/2022-23/03/00326-00333
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : ETP

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM $_{10}$ (µg/m^3)	PM $_{2.5}$ (µg/m^3)	SO_2 (µg/m^3)	NO_2 (µg/m^3)	CO (mg/m^3)	O_3 (µg/m^3)	NH_3 (µg/m^3)	Pb (µg/m^3)	Ni (ng/m^3)	As (ng/m^3)	Benzene (µg/m^3)	Benzo(a) pyrene (ng/m^3)
1.	02.02.2023	70	37	11.5	25	1.7	27	14	<0.01	<5.0	<1.0	<4.2	<0.5
2.	06.02.2023	52	29	<6.0	12	1.3	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
3.	09.02.2023	64	30	9.6	23	1.5	24	12	<0.01	<5.0	<1.0	<4.2	<0.5
4.	13.02.2023	59	31	8.5	20	1.4	21	10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	16.02.2023	65	36	10.3	27	1.7	28	14	<0.01	<5.0	<1.0	<4.2	<0.5
6.	20.02.2023	52	27	<6.0	11	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
7.	23.02.2023	56	31	<6.0	16	1.2	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
8.	27.02.2023	66	39	9.6	23	1.6	24	12	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		100	60	80	80	2	180	400	1	20	6	5	1
Sampling and Analysis done according to		IS: 5182 (Part-23) -2006	IS: 5182 (Part-24) -2019	IS: 5182 (Part-2) -2001	IS: 5182 (Part- 6) -2006	IS 5182 : (Part-10) :1999	Air Sampling, 3rd Edn. By James P. Lodge (Method-417)	Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	USEPA IO-3.4	USEPA IO-3.4	USEPA IO-3.4	IS 5182 : (Part 11) :2006	IS 5182 : (Part 12) :2004

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

For Mitra S.K. Pvt. Ltd.

Authorized Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1713
"Indian Oil Corporation Limited Digboi"	Report Date : 14.03.2023
Assam Oil Division,	Sample Description : Ambient Air
P.O.- Digboi, Assam - 786171	Sample Number : MSKGL/ED/2022-23/03/00334-00341
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : COOLING TOWER

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM_{10} (µg/m³)	$PM_{2.5}$ (µg/m³)	SO_2 (µg/m³)	NO_2 (µg/m³)	CO (mg/m³)	O_3 (µg/m³)	NH_3 (µg/m³)	Pb (µg/m³)	Ni (ng/m³)	As (ng/m³)	Benzene (µg/m³)	Benzo(a) pyrene (ng/m³)
1.	02.02.2023	34	36	11.3	26	1.6	27	14	<0.01	<5.0	<1.0	<4.2	<0.5
2.	06.02.2023	49	26	<6.0	12	1.0	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
3.	09.02.2023	58	34	9.1	20	1.3	21	10	<0.01	<5.0	<1.0	<4.2	<0.5
4.	13.02.2023	51	28	<6.0	14	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	16.02.2023	62	33	10.6	25	1.5	26	13	<0.01	<5.0	<1.0	<4.2	<0.5
6.	20.02.2023	65	31	11.0	27	1.7	28	14	<0.01	<5.0	<1.0	<4.2	<0.5
7.	23.02.2023	60	33	10.2	22	1.3	24	12	<0.01	<5.0	<1.0	<4.2	<0.5
8	27.02.2023	52	27	<6.0	13	1.0	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		**100**	**60**	**80**	**80**	**2**	**180**	**400**	**1**	**20**	**6**	**5**	**1**
Sampling and Analysis done according to		**IS: 5182 (Part-23) -2006**	**IS: 5182 (Part-24) -2019**	**IS: 5182 (Part-2) -2001**	**IS: 5182 (Part- 6) -2006**	**IS 5182 : (Part-10) :1999**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-417)**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-401)**	**USEPA IO-3.4**	**USEPA IO-3.4**	**USEPA IO-3.4**	**IS 5182 : (Part 11) :2006**	**IS 5182 : (Part 12) :2004**

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

For Mitra S.K. Pvt. Ltd.

Authorized Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1714
"Indian Oil Corporation Limited Digboi"	Report Date : 14.03.2023
Assam Oil Division,	Sample Description : Ambient Air
P.O.- Digboi, Assam - 786171	Sample Number : MSKGL/ED/2022-23/03/00342-00349
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : NEW TANK FARM

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	Benzo(a) pyrene (ng/m^3)
1.	02.02.2023	57	30	9.0	25	1.5	26	13	<0.01	<5.0	<1.0	<4.2	<0.5
2.	06.02.2023	60	33	10.6	31	1.8	30	15	<0.01	<5.0	<1.0	<4.2	<0.5
3.	09.02.2023	54	28	<6.0	13	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
4.	13.02.2023	51	24	<6.0	<20	1.0	11	<10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	16.02.2023	48	25	<6.0	10	1.0	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
6.	20.02.2023	60	33	10.2	27	1.6	28	14	<0.01	<5.0	<1.0	<4.2	<0.5
7.	23.02.2023	56	29	8.3	22	1.2	24	12	<0.01	<5.0	<1.0	<4.2	<0.5
8	27.02.2023	62	36	9.5	24	1.4	25	13	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		**100**	**60**	**80**	**80**	**2**	**180**	**400**	**1**	**20**	**6**	**5**	**1**
Sampling and Analysis done according to		**IS: 5182 (Part-23) -2006**	**IS: 5182 (Part-24) -2019**	**IS: 5182 (Part-2) -2001**	**IS: 5182 (Part- 6) -2006**	**IS 5182 : (Part-10) :1999**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-417)**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-401)**	**USEPA IO-3.4**	**USEPA IO-3.4**	**USEPA IO-3.4**	**IS 5182 : (Part 11) :2006**	**IS 5182 : (Part 12) :2004**

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

For Mitra S.K. Pvt. Ltd.

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1715
"Indian Oil Corporation Limited Digboi"	Report Date : 14.03.2023
Assam Oil Division,	Sample Description : Ambient Air
P.O.- Digboi, Assam - 786171	Sample Number : MSKGL/ED/2022-23/03/00350-00357
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : BAZAAR GATE

ANALYSIS RESULT

Sl. No.	Date of Monitoring	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	Benzo(a) pyrene (ng/m^3)
1.	02.02.2023	53	28	8.5	21	1.4	23	11	<0.01	<5.0	<1.0	<4.2	<0.5
2.	06.02.2023	48	27	<6.0	11	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
3.	09.02.2023	59	28	10.2	24	1.7	25	12	<0.01	<5.0	<1.0	<4.2	<0.5
4.	13.02.2023	51	27	<6.0	17	1.3	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	16.02.2023	62	34	11.5	26	1.6	27	13	<0.01	<5.0	<1.0	<4.2	<0.5
6.	20.02.2023	60	32	10.4	24	1.5	25	12	<0.01	<5.0	<1.0	<4.2	<0.5
7.	23.02.2023	56	33	9.3	22	1.3	24	12	<0.01	<5.0	<1.0	<4.2	<0.5
8	27.02.2023	65	34	12	30	1.8	32	16	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		100	60	80	80	2	180	400	1	20	6	5	1
Sampling and Analysis done according to		IS: 5182 (Part-23) -2006	IS: 5182 (Part-24) -2019	IS: 5182 (Part-2) -2001	IS: 5182 (Part- 6) -2006	IS 5182 : (Part-10) :1999	Air Sampling, 3rd Edn. By James P. Lodge (Method-417)	Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	USEPA IO-3.4	USEPA IO-3.4	USEPA IO-3.4	IS 5182 : (Part 11) :2006	IS 5182 : (Part 12) :2004

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

For Mitra S.K. Pvt. Ltd.

Authorized Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1778
"Indian Oil Corporation Limited Digboi" Assam Oil Division, P.O.- Digboi, Assam - 786171	Report Date : 19.04.23
	Sample Description : Ambient Air
	Sample Number : MSKGL/ED/2023-24/04/00415-00422
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : BAZAAR GATE

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	Benzo(a) pyrene (ng/m^3)
1.	02.03.2023	71	37	11.6	24	1.8	26	13	<0.01	<5.0	<1.0	<4.2	<0.5
2.	06.03.2023	54	30	<6.0	13	1.4	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
3.	09.03.2023	66	31	9.4	24	1.6	23	11	<0.01	<5.0	<1.0	<4.2	<0.5
4.	13.03.2023	57	30	8.7	21	1.3	20	10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	20.03.2023	63	35	10.5	28	1.6	27	14	<0.01	<5.0	<1.0	<4.2	<0.5
6.	23.03.2023	55	29	<6.0	12	1.2	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
7.	27.03.2023	57	32	<6.0	15	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
8.	30.03.2023	65	38	9.3	22	1.5	23	12	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		**100**	**60**	**80**	**80**	**2**	**180**	**400**	**1**	**20**	**6**	**5**	**1**
Sampling and Analysis done according to		**IS: 5182 (Part-23) -2006**	**IS: 5182 (Part-24) -2019**	**IS: 5182 (Part-2) -2001**	**IS: 5182 (Part- 6) -2006**	**IS 5182 : (Part-10) :1999**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-417)**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-401)**	**USEPA IO-3.4**	**USEPA IO-3.4**	**USEPA IO-3.4**	**IS 5182 : (Part 11) :2006**	**IS 5182 : (Part 12) :2004**

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

For Mitra S.K. Pvt. Ltd.

Authorized Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1779
"Indian Oil Corporation Limited Digboi" Assam Oil Division, P.O.- Digboi, Assam - 786171	Report Date : 19.04.23
	Sample Description : Ambient Air
	Sample Number : MSKGL/ED/2023-24/04/00423-00430
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : EFFLUENT TREATMENT PLANT

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM $_{10}$ (µg/m^3)	PM $_{2.5}$ (µg/m^3)	SO_2 (µg/m^3)	NO_2 (µg/m^3)	CO (mg/m^3)	O_3 (µg/m^3)	NH_3 (µg/m^3)	Pb (µg/m^3)	Ni (ng/m^3)	As (ng/m^3)	Benzene (µg/m^3)	Benzo(a) pyrene (ng/m^3)
1.	02.03.2023	66	37	11.2	25	1.5	26	13	<0.01	<5.0	<1.0	<4.2	<0.5
2.	06.03.2023	48	25	<6.0	11	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
3.	09.03.2023	56	33	9.3	19	1.2	20	10	<0.01	<5.0	<1.0	<4.2	<0.5
4.	13.03.2023	53	29	<6.0	13	1.0	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	20.03.2023	64	34	10.4	26	1.6	25	12	<0.01	<5.0	<1.0	<4.2	<0.5
6.	23.03.2023	67	32	11.2	28	1.8	27	13	<0.01	<5.0	<1.0	<4.2	<0.5
7.	27.03.2023	58	32	10.1	21	1.2	23	11	<0.01	<5.0	<1.0	<4.2	<0.5
8	30.03.2023	50	26	<6.0	12	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		100	60	80	80	2	180	400	1	20	6	5	1
Sampling and Analysis done according to		IS: 5182 (Part-23) -2006	IS: 5182 (Part-24) -2019	IS: 5182 (Part-2) -2001	IS: 5182 (Part- 6) -2006	IS 5182 : (Part-10) :1999	Air Sampling, 3rd Edn. By James P. Lodge (Method-417)	Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	USEPA IO-3.4	USEPA IO-3.4	USEPA IO-3.4	IS 5182 : (Part 11) :2006	IS 5182 : (Part 12) :2004

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

For Mitra S.K. Pvt. Ltd.

Authorized Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1780
"Indian Oil Corporation Limited Digboi" Assam Oil Division, P.O.- Digboi, Assam - 786171	Report Date : 19.04.23
	Sample Description : Ambient Air
	Sample Number : MSKGL/ED/2023-24/04/00431-00438
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : COOLING TOWER - WAX SECTOR

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM $_{10}$ (µg/m^3)	PM $_{2.5}$ (µg/m^3)	SO_2 (µg/m^3)	NO_2 (µg/m^3)	CO (mg/m^3)	O_3 (µg/m^3)	NH_3 (µg/m^3)	Pb (µg/m^3)	Ni (ng/m^3)	As (ng/m^3)	Benzene (µg/m^3)	Benzo(a) pyrene (ng/m^3)
1.	02.03.2023	56	29	9.2	26	1.4	25	12	<0.01	<5.0	<1.0	<4.2	<0.5
2.	06.03.2023	62	34	10.4	30	1.7	29	14	<0.01	<5.0	<1.0	<4.2	<0.5
3.	09.03.2023	51	27	<6.0	12	1.0	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
4.	13.03.2023	53	25	<6.0	11	1.1	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	20.03.2023	49	26	<6.0	10	1.0	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
6.	23.03.2023	63	35	10.3	27	1.5	27	13	<0.01	<5.0	<1.0	<4.2	<0.5
7.	27.03.2023	54	28	8.5	21	1.3	23	11	<0.01	<5.0	<1.0	<4.2	<0.5
8	30.03.2023	64	38	9.7	23	1.4	26	13	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		100	60	80	80	2	180	400	1	20	6	5	1
Sampling and Analysis done according to		IS: 5182 (Part-23) -2006	IS: 5182 (Part-24) -2019	IS: 5182 (Part-2) -2001	IS: 5182 (Part- 6) -2006	IS 5182 : (Part-10) :1999	Air Sampling, 3rd Edn. By James P. Lodge (Method-417)	Air Sampling, 3rd Edn. By James P. Lodge (Method-401)	USEPA IO-3.4	USEPA IO-3.4	USEPA IO-3.4	IS 5182 : (Part 11) :2006	IS 5182 : (Part 12) :2004

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

For Mitra S.K. Pvt. Ltd.

Authorized Signatory

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TEST REPORT

Name & Address of the Customer :	Report No. : MSK/GHY/2022-23/1781
"Indian Oil Corporation Limited Digboi"	Report Date : 19.04.23
Assam Oil Division,	Sample Description : Ambient Air
P.O.- Digboi, Assam - 786171	Sample Number : MSKGL/ED/2022-23/03/00439-00446
Reference No.& Date: 27371982 Dated : 19/11/2021	Sampling Location : NEW TANK FARM

ANALYSIS RESULT

SL. N0.	Date of Monitoring	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NO_2 ($\mu g/m^3$)	CO (mg/m^3)	O_3 ($\mu g/m^3$)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	Benzo(a) pyrene (ng/m^3)
1.	02.03.2023	51	27	8.7	22	1.3	22	11	<0.01	<5.0	<1.0	<4.2	<0.5
2.	06.03.2023	47	26	<6.0	12	1.0	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
3.	09.03.2023	56	27	10.3	25	1.6	24	12	<0.01	<5.0	<1.0	<4.2	<0.5
4.	13.03.2023	53	28	<6.0	18	1.2	<20	<10	<0.01	<5.0	<1.0	<4.2	<0.5
5.	20.03.2023	64	36	11.8	27	1.5	26	13	<0.01	<5.0	<1.0	<4.2	<0.5
6.	23.03.2023	59	31	10.3	23	1.4	24	12	<0.01	<5.0	<1.0	<4.2	<0.5
7.	27.03.2023	58	34	9.5	21	1.2	23	11	<0.01	<5.0	<1.0	<4.2	<0.5
8	30.03.2023	69	36	12.3	29	1.7	31	15	<0.01	<5.0	<1.0	<4.2	<0.5
Limit as per CPCB notification, New Delhi, 18th Nov, 2009. for Ambient air quality		**100**	**60**	**80**	**80**	**2**	**180**	**400**	**1**	**20**	**6**	**5**	**1**
Sampling and Analysis done according to		**IS: 5182 (Part-23) -2006**	**IS: 5182 (Part-24) -2019**	**IS: 5182 (Part-2) -2001**	**IS: 5182 (Part- 6) -2006**	**IS 5182 : (Part-10) :1999**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-417)**	**Air Sampling, 3rd Edn. By James P. Lodge (Method-401)**	**USEPA IO-3.4**	**USEPA IO-3.4**	**USEPA IO-3.4**	**IS 5182 : (Part 11) :2006**	**IS 5182 : (Part 12) :2004**

BDL VALUES : SO2- <6.0, OZONE- <20.0, NH3- <10.0, Pb-<0.01, Ni- <5.0, As- <1.0, BENZENE- <4.2, BENZO(a)PYRENE- <0.5

Report Prepared By :

For Mitra S.K. Pvt. Ltd.

Authorized Signatory

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MSK TESTING • INSPECTION

LDAR PROGRAM at Digboi Refinery	
Leak points Detected in Phase = 7(F) UNIT: HDTU	
SUMMARY SHEET FOR HDTU AREA	
Total number of points covered	**120**
Date of Monitoring/Rechecking	**10.12.2022 to 11.12.2022**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-0001	09-PA-CF-004B	Pump Seal	0	0	0	0
F-0002	09-PA-CF-004B IN LET LINE	V.GLAND	0	0	0	0
F-0003		F.JOINT	0	0	0	0
F-0004		P.GLAND	0	0	0	0
F-0005		F.JOINT	0	0	0	0
F-0006		F.JOINT	0	0	0	0
F-0007	09-PA-CF-004B OUT LET LINE	V.GLAND	0	0	0	0
F-0008		F.JOINT	0	0	0	0
F-0009		F.JOINT	495	236.3	0.00006	0.000526
F-0010		F.JOINT	0	0	0	0
F-0011	09-PA-CF-004A IN LET LINE	V.GLAND	0	0	0	0
F-0012		F.JOINT	0	0	0	0
F-0013		P.GLAND	0	0	0	0
F-0014		V.GLAND	0	0	0	0
F-0015		F.JOINT	0	0	0	0
F-0016	09-PA-CF-004A OUT LET LINE	V.GLAND	0	0	0	0
F-0017		F.JOINT	0	0	0	0
F-0018		P.GLAND	137	39.3	0.0017	0.014892
F-0019		F.JOINT	0	0	0	0
F-0020		F.JOINT	0	0	0	0
F-0021		F.JOINT	0	0	0	0
F-0022		V.GLAND	0	0	0	0
F-0023		F.JOINT	0	0	0	0
F-0024	09-PA-CF-003A IN LET LINE	V.GLAND	0	0	0	0
F-0025		F.JOINT	0	0	0	0
F-0026		P.GLAND	0	0	0	0
F-0027		F.JOINT	0	0	0	0
F-0028	09-PA-CF-003A OUT LET LINE	V.GLAND	0	0	0	0
F-0029		F.JOINT	0	0	0	0
F-0030		F.JOINT	0	0	0	0
F-0031		F.JOINT	0	0	0	0
F-0032		F.JOINT	0	0	0	0
F-0033		V.GLAND	0	0	0	0
F-0034		F.JOINT	0	0	0	0
F-0035		F.JOINT	0	0	0	0
F-0036		P.GLAND	0	0	0	0
F-0037		F.JOINT	0	0	0	0
F-0038	09-PA-CF-003B OUT LET LINE	V.GLAND	0	0	0	0
F-0039		F.JOINT	0	0	0	0
F-0040		F.JOINT	0	0	0	0

F-0041		F.JOINT	0	0	0	0
F-0042		F.JOINT	0	0	0	0
F-0043		V.GLAND	0	0	0	0
F-0044		F.JOINT	0	0	0	0
F-0045	09-PA-CF-002A IN LET LINE	V.GLAND	0	0	0	0
F-0046	FROM VV-002	F.JOINT	0	0	0	0
F-0047		P.GLAND	56	9.6	0.0017	0.014892
F-0048		F.JOINT	0	0	0	0
F-0049	09-PA-CF-002A OUT LET LINE	V.GLAND	0	0	0	0
F-0050	TO EE-003 A/B	F.JOINT	0	0	0	0
F-0051		F.JOINT	0	0	0	0
F-0052		F.JOINT	0	0	0	0
F-0053		F.JOINT	0	0	0	0
F-0054		V.GLAND	0	0	0	0
F-0055		F.JOINT	0	0	0	0
F-0056	09-PA-CF-002B IN LET LINE	V.GLAND	0	0	0	0
F-0057	FROM VV-002	F.JOINT	0	0	0	0
F-0058		P.GLAND	0	0	0	0
F-0059		F.JOINT	0	0	0	0
F-0060	09-PA-CF-002B OUT LET LINE	V.GLAND	0	0	0	0
F-0061	TO EE-003 A/B	F.JOINT	0	0	0	0
F-0062		F.JOINT	0	0	0	0
F-0063		F.JOINT	0	0	0	0
F-0064		V.GLAND	0	0	0	0
F-0065	**FUEL GAS KOD (09-VV-009)IN LET FG FROM HEADER**	V.GLAND	0	0	0	0
F-0066		F.JOINT	0	0	0	0
F-0067		F.JOINT	0	0	0	0
F-0068	**FUEL GAS KOD (09-VV-009)OUT LET LINE**	F.JOINT	0	0	0	0
F-0069		V.GLAND	0	0	0	0
F-0070		F.JOINT	0	0	0	0
F-0071		F.JOINT	0	0	0	0
F-0072		F.JOINT	0	0	0	0
F-0073		V.GLAND	0	0	0	0
F-0074		F.JOINT	0	0	0	0
F-0075	**FUEL GAS KOD (09-VV-009)**	F.JOINT	0	0	0	0
F-0076	LINE TO FLARE	V.GLAND	282	132.5	0.0017	0.014892
F-0077		F.JOINT	0	0	0	0
F-0078		F.JOINT	0	0	0	0
F-0079	LINE TO OWS	F.JOINT	0	0	0	0
F-0080		V.GLAND	0	0	0	0
F-0081		F.JOINT	0	0	0	0
F-0082	**1st STAGE DISCH COLLER(09-EE-00-004)**	F.JOINT	0	0	0	0
F-0083	LINE FROM MUGC-002A 1st STAGE	F.JOINT	61	47.9	0.00006	0.000526
F-0084	**1st STAGE DISCH COLLER(09-EE-00-004)OUT LET TO VV-009**	F.JOINT	0	0	0	0
F-0085	st STAGE SUCTOIN DRUM (09-VV-00-007)H2 FROM HGU IN LE	F.JOINT	0	0	0	0
F-0086	**1st STAGE SUCTOIN DRUM (09-VV-00-007)OUT LET LINE**	F.JOINT	0	0	0	0
F-0087	LINE TO OWS	F.JOINT	0	0	0	0
F-0088		V.GLAND	0	0	0	0
F-0089		F.JOINT	0	0	0	0
F-0090		F.JOINT	0	0	0	0
F-0091		V.GLAND	0	0	0	0
F-0092		F.JOINT	0	0	0	0
F-0093	LINE TO AD	F.JOINT	0	0	0	0
F-0094		V.GLAND	0	0	0	0
F-0095		F.JOINT	0	0	0	0
F-0096	**2nd STAGE SUCTOIN DRUM (09-VV-00-007)IN LET LINE**	F.JOINT	0	0	0	0
F-0097	**2nd STAGE SUCTOIN DRUM (09-VV-00-007)OUT LET LINE**	F.JOINT	0	0	0	0
F-0098	LINE TO OWS	F.JOINT	0	0	0	0
F-0099		V.GLAND	0	0	0	0
F-0100		F.JOINT	0	0	0	0
F-0101		F.JOINT	0	0	0	0
F-0102		V.GLAND	0	0	0	0
F-0103		F.JOINT	0	0	0	0
F-0104	LINE TO AD	F.JOINT	0	0	0	0
F-0105		V.GLAND	0	0	0	0
F-0106		F.JOINT	0	0	0	0
F-0107	STRIPPER GAS KOD (09-VV-00-016)IN LET LINE	F.JOINT	186	0	0	0

F-0108	STRIPPER GAS KOD (09-VV-00-016)OUT LET LINE	F.JOINT	0	0	0	0
F-0109	FG HEADER LINE	F.JOINT	0	0	0	0
F-0110		V.GLAND	0	0	0	0
F-0111		F.JOINT	0	0	0	0
F-0112	CONTRL VALVE 09-PV-2707	F.JOINT	0	0	0	0
F-0113		V.GLAND	0	0	0	0
F-0114		F.JOINT	0	0	0	0
F-0115		F.JOINT	0	0	0	0
F-0116		V.GLAND	0	0	0	0
F-0117		F.JOINT	0	0	0	0
F-0118	CONTRL VALVE 09-PV-2707 BY PASS LINE	F.JOINT	0	0	0	0
F-0119		V.GLAND	6.3	3.4	0.0017	0.014892
F-0120		F.JOINT	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 7(F) UNIT: HGU

SUMMARY SHEET FOR HGU AREA

Total number of points covered	**165**
Date of Monitoring/Rechecking	**07.12.2022**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-0121	10-KAM-101B COMPRESSOR SUCTION LINE	F.JOINT	0	0	0	0
F-0122		F.JOINT	0	0	0	0
F-0123	10-KAM-101B Compressor Discharge to 10EE-00-113	F.JOINT	0	0	0	0
F-0124		F.JOINT	0	0	0	0
F-0125		F.JOINT	0	0	0	0
F-0126		V.GLAND	0	0	0	0
F-0127		F.JOINT	0	0	0	0
F-0128		F.JOINT	0	0	0	0
F-0129		V.GLAND	0	0	0	0
F-0130		F.JOINT	0	0	0	0
F-0131	10-KAM-101B COMPRESSOR 1st STAGE SUCTION	F.JOINT	0	0	0	0
F-0132		V.GLAND	0	0	0	0
F-0133		F.JOINT	0	0	0	0
F-0134	10-KAM-101B COMPRESSOR 1st STAGE DISCHARGE	F.JOINT	0	0	0	0
F-0135	MUP DISCHARGE	F.JOINT	0	0	0	0
F-0136		F.JOINT	0	0	0	0
F-0137	AOP DISCHARGE LINE	F.JOINT	0	0	0	0
F-0138		F.JOINT	0	0	0	0
F-0139		V.GLAND	0	0	0	0
F-0140		F.JOINT	0	0	0	0
F-0141	1st STAGE DISCHARGE TO FLARE	F.JOINT	0	0	0	0
F-0142	LINE TO PSV 1542 B	F.JOINT	0	0	0	0
F-0143	LINE TO PSV 1541 B	F.JOINT	0	0	0	0
F-0144	1st STAGE SUCTION KOD	F.JOINT	0	0	0	0
F-0145		V.GLAND	0	0	0	0
F-0146		F.JOINT	0	0	0	0
F-0147		F.JOINT	0	0	0	0
F-0148		V.GLAND	0	0	0	0
F-0149		F.JOINT	0	0	0	0
F-0150	PURGE GAS TO 16-VV-00-116	F.JOINT	0	0	0	0

F-0151	PRODUCT HYDROGEN LINE	F.JOINT	0	0	0	0
F-0152		V.GLAND	0	0	0	0
F-0153		F.JOINT	0	0	0	0
F-0154		F.JOINT	0	0	0	0
F-0155		V.GLAND	0	0	0	0
F-0156		F.JOINT	0	0	0	0
F-0157		F.JOINT	0	0	0	0
F-0158		F.JOINT	0	0	0	0
F-0159		F.JOINT	0	0	0	0
F-0160		V.GLAND	0	0	0	0
F-0161		F.JOINT	0	0	0	0
F-0162		F.JOINT	0	0	0	0
F-0163		V.GLAND	0	0	0	0
F-0164		F.JOINT	0	0	0	0
F-0165	PRODUCT HYDROGEN BYPASS LINE	F.JOINT	0	0	0	0
F-0166		V.GLAND	0	0	0	0
F-0167		F.JOINT	0	0	0	0
F-0168	ABSORBER INLET LINE TO 10-VV-00-111	F.JOINT	0	0	0	0
F-0169		F.JOINT	0	0	0	0
F-0170		V.GLAND	0	0	0	0
F-0171		F.JOINT	0	0	0	0
F-0172		F.JOINT	0	0	0	0
F-0173		F.JOINT	0	0	0	0
F-0174	OUTLET LINE FROM 10-VV-00-111	F.JOINT	0	0	0	0
F-0175		F.JOINT	0	0	0	0
F-0176		F.JOINT	0	0	0	0
F-0177		F.JOINT	0	0	0	0
F-0178		F.JOINT	0	0	0	0
F-0179	ABSORBER INLET LINE TO 10-VV-00-112	F.JOINT	0	0	0	0
F-0180		F.JOINT	0	0	0	0
F-0181		V.GLAND	0	0	0	0
F-0182		F.JOINT	0	0	0	0
F-0183		F.JOINT	0	0	0	0
F-0184	OUTLET LINE FROM 10-VV-00-112	F.JOINT	53	17.1	0.00006	0.000526
F-0185		F.JOINT	0	0	0	0
F-0186		F.JOINT	0	0	0	0
F-0187		F.JOINT	0	0	0	0
F-0188		F.JOINT	0	0	0	0
F-0189	ABSORBER INLET LINE TO 10-VV-00-113	F.JOINT	0	0	0	0
F-0190		F.JOINT	0	0	0	0
F-0191		V.GLAND	0	0	0	0
F-0192		F.JOINT	0	0	0	0
F-0193		F.JOINT	0	0	0	0
F-0194		F.JOINT	0	0	0	0
F-0195	OUTLET LINE FROM 10-VV-00-113	F.JOINT	0	0	0	0
F-0196		F.JOINT	0	0	0	0
F-0197		F.JOINT	0	0	0	0
F-0198		F.JOINT	0	0	0	0
F-0199		F.JOINT	0	0	0	0
F-0200	ABSORBER INLET LINE TO 10-VV-00-114	F.JOINT	0	0	0	0
F-0201		F.JOINT	0	0	0	0
F-0202		V.GLAND	0	0	0	0
F-0203		F.JOINT	0	0	0	0
F-0204		F.JOINT	0	0	0	0
F-0205		F.JOINT	0	0	0	0
F-0206	OUTLET LINE FROM 10-VV-00-114	F.JOINT	0	0	0	0
F-0207		F.JOINT	0	0	0	0
F-0208		F.JOINT	0	0	0	0
F-0209		F.JOINT	0	0	0	0
F-0210		F.JOINT	0	0	0	0
F-0211	ABSORBER INLET LINE TO 10-VV-00-115	F.JOINT	0	0	0	0
F-0212		F.JOINT	0	0	0	0
F-0213		V.GLAND	0	0	0	0
F-0214		F.JOINT	0	0	0	0
F-0215		F.JOINT	0	0	0	0
F-0216		F.JOINT	0	0	0	0
F-0217	OUTLET LINE FROM 10-VV-00-115	F.JOINT	0	0	0	0

F-0218		F.JOINT	0	0	0	0
F-0219		F.JOINT	0	0	0	0
F-0220		F.JOINT	0	0	0	0
F-0221		F.JOINT	0	0	0	0
F-0222	INLET LINE TO PSV-8111	F.JOINT	0	0	0	0
F-0223		F.JOINT	0	0	0	0
F-0224		V.GLAND	362	182.7	0.0017	0.014892
F-0225		F.JOINT	0	0	0	0
F-0226	10-PSV-8111 BY PASS LINE	F.JOINT	0	0	0	0
F-0227		F.JOINT	0	0	0	0
F-0228	INLET LINE TO PSV-8112	F.JOINT	0	0	0	0
F-0229		F.JOINT	0	0	0	0
F-0230		V.GLAND	0	0	0	0
F-0231		F.JOINT	0	0	0	0
F-0232	10-PSV-8112 BY PASS LINE	F.JOINT	0	0	0	0
F-0233		F.JOINT	0	0	0	0
F-0234	INLET LINE TO PSV-8113	F.JOINT	0	0	0	0
F-0235		F.JOINT	0	0	0	0
F-0236		V.GLAND	0	0	0	0
F-0237		F.JOINT	0	0	0	0
F-0238	10-PSV-8113 BY PASS LINE	F.JOINT	0	0	0	0
F-0239		F.JOINT	0	0	0	0
F-0240	INLET LINE TO PSV-8114	F.JOINT	0	0	0	0
F-0241		F.JOINT	0	0	0	0
F-0242		V.GLAND	0	0	0	0
F-0243		F.JOINT	0	0	0	0
F-0244	10-PSV-8114 BY PASS LINE	F.JOINT	0	0	0	0
F-0245		F.JOINT	0	0	0	0
F-0246	INLET LINE TO PSV-8115	F.JOINT	0	0	0	0
F-0247		F.JOINT	0	0	0	0
F-0248		V.GLAND	0	0	0	0
F-0249		F.JOINT	0	0	0	0
F-0250	10-PSV-8115 BY PASS LINE	F.JOINT	0	0	0	0
F-0251		F.JOINT	0	0	0	0
F-0252	FG COMPRESSOR A FEED GAS TO RECYCLE COOLER	F.JOINT	0	0	0	0
F-0253	10-EE-00-107	V.GLAND	0	0	0	0
F-0254		F.JOINT	0	0	0	0
F-0255	CONTROL VALVE 10-PV-1506 A	V.GLAND	0	0	0	0
F-0256	CONTROL VALVE 10-PV-1506 A BYPASS LINE	F.JOINT	0	0	0	0
F-0257		V.GLAND	0	0	0	0
F-0258		F.JOINT	0	0	0	0
F-0259	FG COMPRESSOR B FEED GAS TO RECYCLE COOLER	F.JOINT	0	0	0	0
F-0260	10-EE-00-107	V.GLAND	0	0	0	0
F-0261		F.JOINT	0	0	0	0
F-0262	CONTRO LVALVE 10-PV-1506 B	V.GLAND	288	151.5	0.0017	0.014892
F-0263	CONTROL VALVE 10-PV-1506 B BYPASS LINE	F.JOINT	0	0	0	0
F-0264		V.GLAND	0	0	0	0
F-0265		F.JOINT	0	0	0	0
F-0266	PRODUCT HYDROGEN LINE 1st GATE VALVE	F.JOINT	0	0	0	0
F-0267		V.GLAND	0	0	0	0
F-0268		F.JOINT	0	0	0	0
F-0269	CONTROL VALVE10-PV-2404	V.GLAND	0	0	0	0
F-0270	PRODUCT HYDROGEN LINE 2nd GATE VALVE	F.JOINT	0	0	0	0
F-0271		V.GLAND	0	0	0	0
F-0272		F.JOINT	0	0	0	0
F-0273	CONTROL VALVE10-PV-2404 BY PASS LINE	F.JOINT	0	0	0	0
F-0274		V.GLAND	0	0	0	0
F-0275		F.JOINT	0	0	0	0
F-0276	PRODUCT HYDROGEN LINE TO MSQU 1st GATE VALVE	F.JOINT	0	0	0	0
F-0277		V.GLAND	0	0	0	0
F-0278		F.JOINT	0	0	0	0
F-0279	CONTROL VALVE37-FV-3302	V.GLAND	0	0	0	0
F-0280	PRODUCT HYDROGEN LINE TO MSQU 2nd GATE VALVE	F.JOINT	0	0	0	0
F-0281		V.GLAND	0	0	0	0
F-0282		F.JOINT	0	0	0	0
F-0283	CONTROL VALVE37-FV-3302 BY PASS LINE	F.JOINT	246	112	0.00006	0.000526
F-0284		V.GLAND	0	0	0	0

F-0285		F.JOINT	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 7(F) UNIT:CRU

SUMMARY SHEET FOR CRU AREA

Total number of points covered	**262**
Date of Monitoring/Rechecking	**12.12.2022 to 13.12.2022**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-0286	05PDT-1369 (F.O Return to ex 05 -FF-00-003) Valve	Gland	0	0	0	0
F-0287	05PDT-1341 (F.O Return to ex 05 -FF-00-002 Valve	Gland	16.4	6.0	0.0017	0.014892
F-0288	05UV-1362(F.O Return to ex 05 -FF-00-003) Valve	Gland	0	0	0	0
F-0289	05UV-1332(F.O Return to ex 05 -FF-00-002) Valve	Gland	0	0	0	0
F-0290	05UV-1302(F.O Return to ex 05 -FF-00-001) Valve	Gland	0	0	0	0
F-0291	04FT-1501(FG to o4FF-00-002)	Flange	0	0	0	0
F-0292	04UV-1501(FG to 04FF-00-002) Valve	Gland	0	0	0	0
F-0293	04UV-1501(FG to 04FF-00-002) Valve	Flange(North)	0	0	0	0
F-0294	04UV-1501(FG to 04FF-00-002) Valve	Flange(South)	0	0	0	0
F-0295	04PCV-1501(FG to 04FF-00-002) Valve	Gland	0	0	0	0
F-0296	04PCV-1501(FG to 04FF-00-002) Valve	Bonet	0	0	0	0
F-0297	04PCV-1501(FG to 04FF-00-002) Valve	Flange(North)	0	0	0	0
F-0298	04PCV-1501(FG to 04FF-00-002) Valve	Flange(South)	0	0	0	0
F-0299	04PCV-1501(FG to 04FF-00-002) I/L Valve	Gland	0	0	0	0
F-0300	04PCV-1501(FG to 04FF-00-002) I/L Valve	Bonet	0	0	0	0
F-0301	04PCV-1501(FG to 04FF-00-002) I/L Valve	Flange(North)	0	0	0	0
F-0302	04PCV-1501(FG to 04FF-00-002) I/L Valve	Flange(South)	0	0	0	0
F-0303	04PCV-1501(FG to 04FF-00-002) O/L Valve	Gland	0	0	0	0
F-0304	04PCV-1501(FG to 04FF-00-002) O/L Valve	Bonet	0	0	0	0
F-0305	04PCV-1501(FG to 04FF-00-002) O/L Valve	Flange(Upper)	0	0	0	0
F-0306	04PCV-1501(FG to 04FF-00-002) O/L Valve	Flange(Lower)	0	0	0	0
F-0307	04PCV-1501(FG to 04FF-00-002) By pass Valve	Gland	0	0	0	0
F-0308	04PCV-1501(FG to 04FF-00-002) By pass Valve	Bonet	0	0	0	0
F-0309	04PCV-1501(FG to 04FF-00-002) By pass Valve	Flange(Upper)	0	0	0	0
F-0310	04PCV-1501(FG to 04FF-00-002) By pass Valve	Flange(Lower)	0	0	0	0
F-0311	04UV-1502(FG to 04FF-00-002)	Gland	0	0	0	0
F-0312	04UV-1502(FG to 04FF-00-002)	Bonet	0	0	0	0
F-0313	04UV-1502(FG to 04FF-00-002)	Flange(North)	0	0	0	0
F-0314	04UV-1502(FG to 04FF-00-002)	Flange(South)	0	0	0	0
F-0315	04UV-1502(FG to 04FF-00-002) O/L Valve	Gland	0	0	0	0
F-0316	04PCV-1201.	Gland	0	0	0	0
F-0317	04PCV-1201.	Bonet	0	0	0	0
F-0318	04PCV-1201.	Flange(North)	84	21.7	0.00006	0.000526
F-0319	04PCV-1201.	Flange(South)	0	0	0	0
F-0320	04PCV-1201. O/L Valve	Gland	0	0	0	0
F-0321	04PCV-1201. O/L Valve	Bonet	0	0	0	0
F-0322	04PCV-1201. I/L Valve	Gland	0	0	0	0
F-0323	04PCV-1201. I/L Valve	Bonet	0	0	0	0
F-0324	04PCV-1201. I/L Valve	Flange(Upper)	0	0	0	0
F-0325	04PCV-1201. I/L Valve	Flange(Lower)	0	0	0	0
F-0326	04PCV-1201. By pass Valve	Flange(Upper)	0	0	0	0
F-0327	04PCV-1201. By pass Valve	Gland	0	0	0	0

F-0328	04PCV-1201. By pass Valve	Bonet	0	0	0	0
F-0329	04PCV-1201. By pass Valve	Flange(Lower)	0	0	0	0
F-0330	03-PA-00-002B	Pump Seal	0	0	0	0
F-0331	03-PA-00-002B Discharge line	Joint Flange	0	0	0	0
F-0332	03-PA-00-002B Discharge line	NRV	0	0	0	0
F-0333	03-PA-00-002B Discharge line NRV	Flange(South)	0	0	0	0
F-0334	03-PA-00-002B Discharge line Valve	Gland	0	0	0	0
F-0335	03-PA-00-002B Discharge line Valve	Bonet	0	0	0	0
F-0336	03-PA-00-002B Discharge line Valve	Flange(North)	0	0	0	0
F-0337	03-PA-00-002B Discharge line Valve	Flange(South)	0	0	0	0
F-0338	03-PA-00-002B Suction line	Joint Flange	0	0	0	0
F-0339	03-PA-00-002B Suction line Valve	Gland	0	0	0	0
F-0340	03-PA-00-002B Suction line Valve	Bonet	0	0	0	0
F-0341	03-PA-00-002B Suction line Valve	Flange(North)	0	0	0	0
F-0342	03-PA-00-002B Suction line Valve	Flange(South)	0	0	0	0
F-0343	03-PA-00-002A	Pump Seal	0	0	0	0
F-0344	03-PA-00-002A Discharge line	Joint Flange	85	38.1	0.00006	0.000526
F-0345	03-PA-00-002A Discharge line Valve	Gland	0	0	0	0
F-0346	03-PA-00-002A Suction line	Joint Flange	0	0	0	0
F-0347	03-PA-00-002A Suction line Valve	Gland	0	0	0	0
F-0348	03-PA-00-002A Suction line Valve	Flange(North)	0	0	0	0
F-0349	03-PA-00-002A Suction line Valve	Flange(South)	0	0	0	0
F-0350	05-PA-00-002B	Pump Seal	0	0	0	0
F-0351	05-PA-00-002B Discharge line	Joint Flange	0	0	0	0
F-0352	05-PA-00-002B Discharge line	NRV	0	0	0	0
F-0353	05-PA-00-002B Discharge line NRV	Flange(North)	0	0	0	0
F-0354	05-PA-00-002B Discharge line NRV	Flange(South)	0	0	0	0
F-0355	05-PA-00-002B Discharge line Valve	Gland	0	0	0	0
F-0356	05-PA-00-002B Discharge line Valve	Bonet	0	0	0	0
F-0357	05-PA-00-002B Discharge line Valve	Flange(Upper)	0	0	0	0
F-0358	05-PA-00-002B Discharge line Valve	Flange(Lower)	0	0	0	0
F-0359	05-PA-00-002B Suction line	Joint Flange	0	0	0	0
F-0360	05-PA-00-002B Suction line Valve	Flange(Upper)	0	0	0	0
F-0361	05-PA-00-002B Suction line Valve	Flange(Lower)	0	0	0	0
F-0362	05-PA-00-002B Suction line Valve	Gland	0	0	0	0
F-0363	05-PA-00-002B Suction line Valve	Bonet	0	0	0	0
F-0364	05-PA-00-002A	Pump Seal	0	0	0	0
F-0365	05-PA-00-002A Discharge line	Joint Flange	0	0	0	0
F-0366	05-PA-00-002A Discharge line	NRV	0	0	0	0
F-0367	05-PA-00-002A Discharge line NRV	Flange(North)	0	0	0	0
F-0368	05-PA-00-002A Discharge line NRV	Flange(South)	0	0	0	0
F-0369	05-PA-00-002A Discharge line Valve	Gland	381	202.7	0.0017	0.014892
F-0370	05-PA-00-002A Discharge line Valve	Bonet	0	0	0	0
F-0371	05-PA-00-002A Discharge line Valve	Flange(Upper)	0	0	0	0
F-0372	05-PA-00-002A Discharge line Valve	Flange(Lower)	0	0	0	0
F-0373	05-PA-00-002A Suction line	Joint Flange	0	0	0	0
F-0374	05-PA-00-002A Suction line Valve	Gland	0	0	0	0
F-0375	05-PA-00-002A Suction line Valve	Bonet	0	0	0	0
F-0376	05-PA-00-002A Suction line Valve	Flange(Lower)	0	0	0	0
F-0377	05-PA-00-002A Suction line Valve	Flange(Upper)	0	0	0	0
F-0378	05LCV-1401(HP absorber cooler)	Gland	0	0	0	0
F-0379	05LCV-1401(HP absorber cooler)	Bonet	0	0	0	0
F-0380	05LCV-1401(HP absorber cooler)	Flange(North)	0	0	0	0
F-0381	05LCV-1401(HP absorber cooler)	Flange(South)	0	0	0	0
F-0382	05LCV-1401(HP absorber cooler)I/L Valve	Flange(Lower)	0	0	0	0
F-0383	05LCV-1401(HP absorber cooler)I/L Valve	Flange(Upper)	0	0	0	0
F-0384	05LCV-1401(HP absorber cooler)I/L Valve	Gland	0	0	0	0
F-0385	05LCV-1401(HP absorber cooler)I/L Valve	Bonet	0	0	0	0
F-0386	05LCV-1401(HP absorber cooler)O/L Valve	Flange(Upper)	0	0	0	0
F-0387	05LCV-1401(HP absorber cooler)O/L Valve	Flange(Lower)	0	0	0	0
F-0388	05LCV-1401(HP absorber cooler)O/L Valve	Gland	0	0	0	0
F-0389	05LCV-1401(HP absorber cooler)O/L Valve	Bonet	0	0	0	0
F-0390	05LCV-1401(HP absorber cooler)By pass Valve	Gland	0	0	0	0
F-0391	05LCV-1401(HP absorber cooler)By pass Valve	Bonet	0	0	0	0
F-0392	05LCV-1401(HP absorber cooler)By pass Valve	Flange(North)	0	0	0	0
F-0393	05LCV-1401(HP absorber cooler)By pass Valve	Flange(South)	0	0	0	0
F-0394	05-EE-004 S/S Suction line	Joint Flange	0	0	0	0

F-0395	05-EE-004 S/S Discharge line	Joint Flange	0	0	0	0
F-0396	05FCV-1101.	Gland	558	294.7	0.0017	0.014892
F-0397	05FCV-1101.	Flange(North)	0	0	0	0
F-0398	05FCV-1101.	Flange(South)	0	0	0	0
F-0399	05FCV-1101. O/L Valve	Gland	0	0	0	0
F-0400	05FCV-1101. O/L Valve	Gland	0	0	0	0
F-0401	05FCV-1101. O/L By Pass Valve	Gland	0	0	0	0
F-0402	05FCV-1101. O/L By Pass Valve	Flange(Upper)	0	0	0	0
F-0403	05FCV-1101. O/L By Pass Valve	Flange(Lower)	0	0	0	0
F-0404	Start up line(05FCV-1101) Upper Valve	Gland	0	0	0	0
F-0405	Start up line(05FCV-1101) Upper Valve	Bonet	0	0	0	0
F-0406	Start up line(05FCV-1101) Upper Valve	Flange(Upper)	0	0	0	0
F-0407	Start up line(05FCV-1101) Upper Valve	Flange(Lower)	0	0	0	0
F-0408	Start up line(05FCV-1101) Lower Valve	Gland	0	0	0	0
F-0409	Start up line(05FCV-1101) Lower Valve	Bonet	0	0	0	0
F-0410	Start up line(05FCV-1101) Lower Valve	Flange(Lower)	0	0	0	0
F-0411	04-PA-00-003B	Pump Seal	0	0	0	0
F-0412	04-PA-00-003B Discharge line	Joint Flange	0	0	0	0
F-0413	04-PA-00-003B Discharge line Valve	Gland	0	0	0	0
F-0414	04-PA-00-003B Discharge line	Flange	0	0	0	0
F-0415	04-PA-00-003B Suction line	Joint Flange	0	0	0	0
F-0416	04-PA-00-003B Suction line Valve	Gland	0	0	0	0
F-0417	04-PA-00-001B	Pump Seal	0	0	0	0
F-0418	04-PA-00-001B Discharge line	Joint Flange	0	0	0	0
F-0419	04-PA-00-001B Discharge line	NRV	0	0	0	0
F-0420	04-PA-00-001B Discharge line NRV	Flange(North)	0	0	0	0
F-0421	04-PA-00-001B Discharge line NRV	Flange(South)	0	0	0	0
F-0422	04-PA-00-001B Discharge line Valve	Gland	0	0	0	0
F-0423	04-PA-00-001B Discharge line Valve	Bonet	0	0	0	0
F-0424	04-PA-00-001B Discharge line Valve	Flange(Upper)	0	0	0	0
F-0425	04-PA-00-001B Discharge line Valve	Flange(Lower)	0	0	0	0
F-0426	04-PA-00-001B Suction line	Joint Flange	0	0	0	0
F-0427	04-PA-00-001B Suction line Valve	Gland	0	0	0	0
F-0428	04-PA-00-001B Suction line Valve	Bonet	0	0	0	0
F-0429	04-PA-00-001B Suction line Valve	Flange(Upper)	0	0	0	0
F-0430	04-PA-00-001B Suction line Valve	Flange(Lower)	0	0	0	0
F-0431	04-PA-00-001A	Pump Seal	0	0	0	0
F-0432	04-PA-00-001A Discharge line	Joint Flange	0	0	0	0
F-0433	04-PA-00-001A Discharge line	NRV	0	0	0	0
F-0434	04-PA-00-001A Discharge line NRV	Flange(North)	0	0	0	0
F-0435	04-PA-00-001A Discharge line NRV	Flange(South)	0	0	0	0
F-0436	04-PA-00-001A Discharge line Valve	Gland	0	0	0	0
F-0437	04-PA-00-001A Discharge line Valve	Bonet	0	0	0	0
F-0438	04-PA-00-001A Discharge line Valve	Flange(North)	0	0	0	0
F-0439	04-PA-00-001A Discharge line Valve	Flange(South)	0	0	0	0
F-0440	04-PA-00-001A Suction line	Joint Flange	0	0	0	0
F-0441	04-PA-00-001A Suction line Valve	Gland	0	0	0	0
F-0442	04-PA-00-001A Suction line Valve	Bonet	0	0	0	0
F-0443	04-PA-00-001A Suction line Valve	Flange(Upper)	0	0	0	0
F-0444	04-PA-00-001A Suction line Valve	Flange(Lower)	0	0	0	0
F-0445	05-PA-001B	Pump Seal	0	0	0	0
F-0446	05-PA-00-001B Discharge line	Joint Flange	0	0	0	0
F-0447	05-PA-00-001B Discharge line	Flange	0	0	0	0
F-0448	05-PA-00-001B Discharge line Valve	Gland	0	0	0	0
F-0449	05-PA-00-001B Suction line	Joint Flange	0	0	0	0
F-0450	05-PA-00-001B Suction line Valve	Gland	0	0	0	0
F-0451	05-PA-001A	Pump Seal	0	0	0	0
F-0452	05-PA-00-001A Discharge line	Joint Flange	0	0	0	0
F-0453	05-PA-00-001A Discharge line	Flange	0	0	0	0
F-0454	05-PA-00-001A Discharge line Valve	Gland	0	0	0	0
F-0455	05-PA-00-001A Suction line	Joint Flange	0	0	0	0
F-0456	05-PA-00-001A Suction line Valve	Gland	0	0	0	0
F-0457	04-PA-00-002B	Pump Seal	0	0	0	0
F-0458	04-PA-00-002B Discharge line	Joint Flange	0	0	0	0
F-0459	04-PA-00-002B Discharge line	NRV	0	0	0	0
F-0460	04-PA-00-002B Discharge line NRV	Flange(North)	0	0	0	0
F-0461	04-PA-00-002B Discharge line NRV	Flange(South)	0	0	0	0

F-0462	04-PA-00-002B Discharge line Valve	Flange(Upper)	0	0	0	0
F-0463	04-PA-00-002B Discharge line Valve	Flange(Lower)	0	0	0	0
F-0464	04-PA-00-002B Discharge line Valve	Gland	0	0	0	0
F-0465	04-PA-00-002B Discharge line Valve	Bonet	0	0	0	0
F-0466	04-PA-00-002B Suction line	Joint Flange	0	0	0	0
F-0467	04-PA-00-002B Suction line Valve	Gland	0	0	0	0
F-0468	04-PA-00-002B Suction line Valve	Bonet	0	0	0	0
F-0469	04-PA-00-002B Suction line Valve	Flange(Upper)	0	0	0	0
F-0470	04-PA-00-002B Suction line Valve	Flange(Lower)	0	0	0	0
F-0471	04-PA-00-002A	Pump Seal	752	398.1	0.012	0.10512
F-0472	04-PA-00-002A Discharge line	Joint Flange	0	0	0	0
F-0473	04-PA-00-002A Discharge line Valve	Gland	0	0	0	0
F-0474	04-PA-00-002A Discharge line Valve	Bonet	0	0	0	0
F-0475	04-PA-00-002A Discharge line Valve	Flange(Upper)	0	0	0	0
F-0476	04-PA-00-002A Discharge line Valve	Flange(Lower)	0	0	0	0
F-0477	04-PA-00-002A Discharge line	NRV	0	0	0	0
F-0478	04-PA-00-002A Discharge line NRV	Flange(North)	0	0	0	0
F-0479	04-PA-00-002A Discharge line NRV	Flange(South)	0	0	0	0
F-0480	04-PA-00-002A Suction line	Joint Flange	0	0	0	0
F-0481	04-PA-00-002A Suction line Valve	Gland	0	0	0	0
F-0482	04-PA-00-002A Suction line Valve	Bonet	0	0	0	0
F-0483	04-PA-00-002A Suction line Valve	Flange(Upper)	0	0	0	0
F-0484	04-PA-00-002A Suction line Valve	Flange(Lower)	0	0	0	0
F-0485	05-FCV-1601.	Gland	0	0	0	0
F-0486	05-FCV-1601.	Bonet	0	0	0	0
F-0487	05-FCV-1601.	Flange(West)	0	0	0	0
F-0488	05-FCV-1601.	Flange(East)	0	0	0	0
F-0489	05-FCV-1601. I/L line Valve	Gland	0	0	0	0
F-0490	05-FCV-1601. I/L line Valve	Bonet	0	0	0	0
F-0491	05-FCV-1601. I/L line Valve	Flange(Upper)	0	0	0	0
F-0492	05-FCV-1601. I/L line Valve	Flange(Lower)	0	0	0	0
F-0493	05-FCV-1601. O/L line Valve	Gland	0	0	0	0
F-0494	05-FCV-1601. O/L line Valve	Bonet	0	0	0	0
F-0495	05-FCV-1601. O/L line Valve	Flange(West)	0	0	0	0
F-0496	05-FCV-1601. O/L line Valve	Flange(East)	0	0	0	0
F-0497	05-FCV-1601. By pass line Valve	Gland	0	0	0	0
F-0498	05-FCV-1601. By pass line Valve	Bonet	0	0	0	0
F-0499	05-FCV-1601. By pass line Valve	Flange(East)	0	0	0	0
F-0500	05-FCV-1601. By pass line Valve	Flange(West)	0	0	0	0
F-0501	Stabilyzer Feed by pass line Valve	Gland	0	0	0	0
F-0502	Stabilyzer Feed by pass line Valve	Bonet	0	0	0	0
F-0503	Stabilyzer Feed by pass line Valve	Flange(Upper)	0	0	0	0
F-0504	Stabilyzer Feed by pass line Valve	Flange(Lower)	0	0	0	0
F-0505	05-PA-00-603A	Pump Seal	0	0	0	0
F-0506	05-PA-00-003A Discharge line	Joint Flange	0	0	0	0
F-0507	05-PA-00-003A Discharge line	NRV	0	0	0	0
F-0508	05-PA-00-003A Discharge line NRV	Flange(North)	0	0	0	0
F-0509	05-PA-00-003A Discharge line NRV	Flange(South)	0	0	0	0
F-0510	05-PA-00-003A Discharge line Valve	Flange(Upper)	0	0	0	0
F-0511	05-PA-00-003A Discharge line Valve	Flange(Lower)	0	0	0	0
F-0512	05-PA-00-003A Discharge line Valve	Gland	0	0	0	0
F-0513	05-PA-00-003A Discharge line Valve	Bonet	0	0	0	0
F-0514	05-PA-00-003A Suction line	Joint Flange	0	0	0	0
F-0515	05-PA-00-003A Suction line Valve	Gland	0	0	0	0
F-0516	05-PA-00-003A Suction line Valve	Bonet	0	0	0	0
F-0517	05-PA-00-003A Suction line Valve	Flange(Upper)	0	0	0	0
F-0518	05-PA-00-003A Suction line Valve	Flange(Lower)	0	0	0	0
F-0519	05-PA-00-603B	Pump Seal	0	0	0	0
F-0520	05-PA-00-003B Discharge line	Joint Flange	0	0	0	0
F-0521	05-PA-00-003B Discharge line	NRV	0	0	0	0
F-0522	05-PA-00-003B Discharge line NRV	Flange(North)	0	0	0	0
F-0523	05-PA-00-003B Discharge line NRV	Flange(South)	0	0	0	0
F-0524	05-PA-00-003B Discharge line Valve	Gland	0	0	0	0
F-0525	05-PA-00-003B Discharge line Valve	Bonet	0	0	0	0
F-0526	05-PA-00-003B Discharge line Valve	Flange(North)	0	0	0	0
F-0527	05-PA-00-003B Discharge line Valve	Flange(South)	0	0	0	0
F-0528	05-PA-00-003B Suction line	Joint Flange	0	0	0	0

F-0529	05-PA-00-003B Suction line Valve	Gland	0	0	0	0
F-0530	05-PA-00-003B Suction line Valve	Bonet	0	0	0	0
F-0531	05-PA-00-003B Suction line Valve	Flange(Upper)	0	0	0	0
F-0532	05-PA-00-003B Suction line Valve	Flange(Lower)	0	0	0	0
F-0533	04 EE-00-03B-STRIPPER FEED BOTTOM EXCHANGER	VALVE	0	0	0	0
F-0534	5 EE-00-03B-STRIPPER FEED BOTTOM EXCHANGER	FLANGE	0	0	0	0
F-0535	6 EE-00-03B-STRIPPER FEED BOTTOM EXCHANGER	VALVE	0	0	0	0
F-0536	7 EE-00-03B-STRIPPER FEED BOTTOM EXCHANGER	FLANGE	0	0	0	0
F-0537	03 LV-1201.LN TO STORAGE SUCTION	VALVE	0	0	0	0
F-0538	4 LV-1201.LN TO STORAGE SUCTION	FLANGE	0	0	0	0
F-0539	5 LV-1201.LN TO STORAGE SUCTION	FLANGE	0	0	0	0
F-0540	6 LV-1201.LN TO STORAGE SUCTION DISCHARGE	VALVE	355	174.1	0.0017	0.014892
F-0541	7 LV-1201.LN TO STORAGE SUCTION DISCHARGE	FLANGE	0	0	0	0
F-0542	8 LV-1201.LN TO STORAGE SUCTION DISCHARGE	FLANGE	0	0	0	0
F-0543	05KA-00-001B COMPRESOR SUCTION	FLANGE	0	0	0	0
F-0544	05KA-00-001B COMPRESOR SUCTION	VALVE	0	0	0	0
F-0545	05KA-00-001B COMPRESOR SUCTION	FLANGE	0	0	0	0
F-0546	05KA-00-001B COMPRESOR DISCHARGE	VALVE	0	0	0	0
F-0547	05KA-00-001B COMPRESOR DISCHARGE	FLANGE	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 7(F) UNIT : O M & S (Crude Oil Pump House)

SUMMARY SHEET FOR O M & S (Crude Oil Pump House) AREA

Total number of points covered	**10**
Date of Monitoring/Rechecking	**22.12.2022**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-0548	P-1	Pump Seal	0	0	0	0
F-0549	P-1. Discharge line Valve	Gland	0	0	0	0
F-0550	P-1. Discharge line Valve	Flange(East)	0	0	0	0
F-0551	P-1. Discharge line Valve	Flange(West)	0	0	0	0
F-0552	P-1. Suction line Valve	Gland	0	0	0	0
F-0553	P-1. Suction line Valve	Flange(Upper)	0	0	0	0
F-0554	P-1. Suction line Valve	Flange(Lower)	0	0	0	0
F-0555	P-2.	Pump Seal	27	5.6	0.012	0.10512
F-0556	P-2. Discharge line Valve	Gland	0	0	0	0
F-0557	P-2. Suction line Valve	Gland	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 7(F) UNIT:O M & S (Production pump house)

SUMMARY SHEET FOR O M & S (Production Pump House) AREA

Total number of points covered	**192**
Date of Monitoring/Rechecking	**22.12.2022**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	

Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

Flange/Joint

Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-626	043-PA-018	Pump Seal	0	0	0	0
F-627	043-PA-018 Discharge line Valve	Joint Flange	0	0	0	0
F-628	043-PA-018 Discharge line Valve	Gland	0	0	0	0
F-629	043-PA-018 Discharge line Valve	Bonet	0	0	0	0
F-630	043-PA-018 Discharge line Valve	Flange(Upper)	0	0	0	0
F-631	043-PA-018 Discharge line Valve	Flange(Lower)	0	0	0	0
F-632	043-PA-018 Suction line	Joint Flange	0	0	0	0
F-633	043-PA-018 Suction line Valve-I	Gland	28.7	14.1	0.0017	0.014892
F-634	043-PA-018 Suction line Valve-I	Bonet	0	0	0	0
F-635	043-PA-018 Suction line Valve-I	Flange(Upper)	0	0	0	0
F-636	043-PA-018 Suction line Valve-I	Flange(Lower)	0	0	0	0
F-637	043-PA-018 Suction line Valve-II	Gland	0	0	0	0
F-638	043-PA-018 Suction line Valve-II	Bonet	0	0	0	0
F-639	043-PA-018 Suction line Valve-II	Flange(North)	0	0	0	0
F-640	043-PA-018 Suction line Valve-II	Flange(South)	0	0	0	0
F-641	043-PA-018 Suction line Valve-III	Gland	0	0	0	0
F-642	043-PA-018 Suction line Valve-III	Bonet	0	0	0	0
F-643	043-PA-018 Suction line Valve-III	Flange(East)	0	0	0	0
F-644	043-PA-018 Suction line Valve-III	Flange(West)	0	0	0	0
F-645	043-PA-017	Pump Seal	0	0	0	0
F-646	043-PA-017 Discharge line	Joint Flange	0	0	0	0
F-647	043-PA-017 Discharge line Valve	Flange(Upper)	0	0	0	0
F-648	043-PA-017 Discharge line Valve	Flange(Lower)	0	0	0	0
F-649	043-PA-017 Discharge line Valve	Gland	0	0	0	0
F-650	043-PA-017 Discharge line Valve	Bonet	0	0	0	0
F-651	043-PA-017 Suction line	Joint Flange	0	0	0	0
F-652	043-PA-017 Suction line Valve	Flange(Upper)	0	0	0	0
F-653	043-PA-017 Suction line Valve	Flange(Lower)	0	0	0	0
F-654	043-PA-017 Suction line Valve	Gland	0	0	0	0
F-655	043-PA-017 Suction line Valve	Bonet	0	0	0	0
F-656	043-PA-005	Pump Seal	0	0	0	0
F-657	043-PA-005 Discharge line Valve	Joint Flange	0	0	0	0
F-658	043-PA-005 Discharge line Valve-I	Flange(Upper)	0	0	0	0
F-659	043-PA-005 Discharge line Valve-I	Flange(Lower)	0	0	0	0
F-660	043-PA-005 Discharge line Valve-I	Gland	0	0	0	0
F-661	043-PA-005 Discharge line Valve-I	Bonet	0	0	0	0
F-662	043-PA-005 Discharge line Valve-II	Flange(Upper)	0	0	0	0
F-663	043-PA-005 Discharge line Valve-II	Flange(Lower)	0	0	0	0
F-664	043-PA-005 Discharge line Valve-II	Gland	18.0	8.1	0.0017	0.014892
F-665	043-PA-005 Discharge line Valve-II	Bonet	0	0	0	0
F-666	043-PA-005 Suction line	Joint Flange	0	0	0	0
F-667	043-PA-005 Suction line Valve-I	Gland	0	0	0	0
F-668	043-PA-005 Suction line Valve-I	Bonet	0	0	0	0
F-669	043-PA-005 Suction line Valve-I	Flange(East)	0	0	0	0
F-670	043-PA-005 Suction line Valve-I	Flange(West)	0	0	0	0
F-671	043-PA-005 Suction line Valve-II	Gland	0	0	0	0
F-672	043-PA-005 Suction line Valve-II	Bonet	0	0	0	0
F-673	043-PA-005 Suction line Valve-II	Flange(North)	0	0	0	0
F-674	043-PA-005 Suction line Valve-II	Flange(South)	0	0	0	0
F-675	043-PA-005 Suction line Valve-III	Gland	0	0	0	0
F-676	043-PA-005 Suction line Valve-III	Bonet	0	0	0	0
F-677	043-PA-005 Suction line Valve-III	Flange(East)	0	0	0	0
F-678	043-PA-005 Suction line Valve-III	Flange(West)	0	0	0	0
F-679	043-PA-016	Pump Seal	0	0	0	0
F-680	043-PA-016 Discharge line	Joint Flange	0	0	0	0
F-681	043-PA-016 Discharge line Valve	Gland	0	0	0	0
F-682	043-PA-016 Discharge line Valve	Bonet	0	0	0	0
F-683	043-PA-016 Discharge line Valve	Flange(East)	0	0	0	0

F-684	043-PA-016 Discharge line Valve	Flange(West)	0	0	0	0
F-685	043-PA-016 Discharge line	Flange	0	0	0	0
F-686	043-PA-016 Discharge line NRV	Flange(East)	0	0	0	0
F-687	043-PA-016 Discharge line NRV	Flange(West)	0	0	0	0
F-688	043-PA-016 Discharge line	NRV	0	0	0	0
F-689	043-PA-016 Suction line	Joint Flange	0	0	0	0
F-690	043-PA-016 Suction line	Flange-I	0	0	0	0
F-691	043-PA-016 Suction line	Flange-II	0	0	0	0
F-692	043-PA-016 Suction line	Flange-II	0	0	0	0
F-693	043-PA-016 Suction line Valve	Gland	0	0	0	0
F-694	043-PA-016 Suction line Valve	Bonet	0	0	0	0
F-695	043-PA-016 Suction line Valve	Flange(East)	0	0	0	0
F-696	043-PA-016 Suction line Valve	Flange(West)	0	0	0	0
F-697	043-PA-006.	Pump Seal	7.0	1.5	0.012	0.10512
F-698	043-PA-006. Discharge line	Joint Flange	0	0	0	0
F-699	043-PA-006. Discharge line Valve-I	Flange(Upper)	0	0	0	0
F-700	043-PA-006. Discharge line Valve-I	Flange(Lower)	0	0	0	0
F-701	043-PA-006. Discharge line Valve-I	Gland	0	0	0	0
F-702	043-PA-006. Discharge line Valve-I	Bonet	0	0	0	0
F-703	043-PA-006. Discharge line Valve-II	Gland	0	0	0	0
F-704	043-PA-006. Discharge line Valve-II	Bonet	0	0	0	0
F-705	043-PA-006. Discharge line Valve-II	Flange(Upper)	0	0	0	0
F-706	043-PA-006. Discharge line Valve-II	Flange(Lower)	0	0	0	0
F-707	043-PA-006. Suction line	Joint Flange	0	0	0	0
F-708	043-PA-006. Suction line Valve-I	Gland	0	0	0	0
F-709	043-PA-006. Suction line Valve-I	bonet	0	0	0	0
F-710	043-PA-006. Suction line Valve-I	Flange(East)	0	0	0	0
F-711	043-PA-006. Suction line Valve-I	Flange(West)	0	0	0	0
F-712	043-PA-006. Suction line Valve-II	Gland	0	0	0	0
F-713	043-PA-006. Suction line Valve-II	Bonet	0	0	0	0
F-714	043-PA-006. Suction line Valve-II	Flange(North)	0	0	0	0
F-715	043-PA-006. Suction line Valve-II	Flange(South)	0	0	0	0
F-716	043-PA-008.	Pump Seal	0	0	0	0
F-717	043-PA-008. Discharge line	Joint Flange	0	0	0	0
F-718	043-PA-008. Discharge line Valve-I	Gland	0	0	0	0
F-719	043-PA-008. Discharge line Valve-I	Bonet	0	0	0	0
F-720	043-PA-008. Discharge line Valve-I	Flange(Upper)	0	0	0	0
F-721	043-PA-008. Discharge line Valve-I	Flange(Lower)	0	0	0	0
F-722	043-PA-008. Discharge line Valve-II	Gland	0	0	0	0
F-723	043-PA-008. Discharge line Valve-II	Bonet	0	0	0	0
F-724	043-PA-008. Discharge line Valve-II	Flange(Upper)	0	0	0	0
F-725	043-PA-008. Discharge line Valve-II	Flange(Lower)	0	0	0	0
F-726	043-PA-008. Discharge line Valve-III	Gland	0	0	0	0
F-727	043-PA-008. Discharge line Valve-III	Bonet	0	0	0	0
F-728	043-PA-008. Discharge line Valve-III	Flange(East)	0	0	0	0
F-729	043-PA-008. Discharge line Valve-III	Flange(West)	0	0	0	0
F-730	043-PA-008. Discharge line Valve-IV	Gland	0	0	0	0
F-731	043-PA-008. Discharge line Valve-IV	Bonet	0	0	0	0
F-732	043-PA-008. Discharge line Valve-IV	Flange(North)	0	0	0	0
F-733	043-PA-008. Discharge line Valve-IV	Flange(South)	0	0	0	0
F-734	043-PA-008. Suction line	Joint Flange	0	0	0	0
F-735	043-PA-008. Suction line Valve	Gland	0	0	0	0
F-736	043-PA-008. Suction line Valve	Bonet	0	0	0	0
F-737	034-PA-CF-006A.	Pump Seal	0	0	0	0
F-738	034-PA-CF-006A. Discharge line	Joint Flange	0	0	0	0
F-739	034-PA-CF-006A. Discharge line Valve-I	Flange(Upper)	0	0	0	0
F-740	034-PA-CF-006A. Discharge line Valve-I	Flange(Lower)	0	0	0	0
F-741	034-PA-CF-006A. Discharge line Valve-I	Gland	0	0	0	0
F-742	034-PA-CF-006A. Discharge line Valve-I	Bonet	0	0	0	0
F-743	034-PA-CF-006A. Discharge line Valve-II	Gland	0	0	0	0
F-744	034-PA-CF-006A. Discharge line Valve-II	Bonet	0	0	0	0
F-745	034-PA-CF-006A. Discharge line Valve-II	Flange(Upper)	0	0	0	0
F-746	034-PA-CF-006A. Discharge line Valve-II	Flange(Lower)	0	0	0	0
F-747	034-PA-CF-006A. Discharge line Valve-III	Flange(Upper)	0	0	0	0
F-748	034-PA-CF-006A. Discharge line Valve-III	Flange(Lower)	0	0	0	0
F-749	034-PA-CF-006A. Discharge line Valve-III	Gland	0	0	0	0
F-750	034-PA-CF-006A. Discharge line Valve-III	Bonet	0	0	0	0

F-751	034-PA-CF-006A. Suction line	Joint Flange	0	0	0	0
F-752	034-PA-CF-006A. Suction line Valve-I	Gland	0	0	0	0
F-753	034-PA-CF-006A. Suction line Valve-I	Bonet	0	0	0	0
F-754	034-PA-CF-006A. Suction line Valve-I	Flange(East)	0	0	0	0
F-755	034-PA-CF-006A. Suction line Valve-I	Flange(West)	0	0	0	0
F-756	034-PA-CF-006A. Suction line Valve-II	Gland	0	0	0	0
F-757	034-PA-CF-006A. Suction line Valve-II	Bonet	0	0	0	0
F-758	034-PA-CF-006A. Suction line Valve-II	Flange(East)	0	0	0	0
F-759	034-PA-CF-006A. Suction line Valve-II	Flange(West)	0	0	0	0
F-760	034-PA-CF-006A. Suction line Valve-III	Gland	0	0	0	0
F-761	034-PA-CF-006A. Suction line Valve-III	Bonet	0	0	0	0
F-762	034-PA-CF-006A. Suction line Valve-III	Flange(East)	0	0	0	0
F-763	034-PA-CF-006A. Suction line Valve-III	Flange(West)	0	0	0	0
F-764	034-PA-CF-006B.	Pump Seal	0	0	0	0
F-765	034-PA-CF-006B. Discharge line	Joint Flange	0	0	0	0
F-766	034-PA-CF-006B. Discharge line Valve-I	Flange(Upper)	0	0	0	0
F-767	034-PA-CF-006B. Discharge line Valve-I	Flange(Lower)	0	0	0	0
F-768	034-PA-CF-006B. Discharge line Valve-I	Gland	0	0	0	0
F-769	034-PA-CF-006B. Discharge line Valve-I	Bonet	0	0	0	0
F-770	034-PA-CF-006B. Discharge line Valve-II	Flange(Upper)	0	0	0	0
F-771	034-PA-CF-006B. Discharge line Valve-II	Flange(Lower)	0	0	0	0
F-772	034-PA-CF-006B. Discharge line Valve-II	Gland	0	0	0	0
F-773	034-PA-CF-006B. Discharge line Valve-II	Bonet	0	0	0	0
F-774	034-PA-CF-006B. Discharge line Valve-III	Flange(Upper)	0	0	0	0
F-775	034-PA-CF-006B. Discharge line Valve-III	Flange(Lower)	0	0	0	0
F-776	034-PA-CF-006B. Discharge line Valve-III	Gland	0	0	0	0
F-777	034-PA-CF-006B. Discharge line Valve-III	Bonet	0	0	0	0
F-778	034-PA-CF-006B. Suction line	Joint Flange	0	0	0	0
F-779	034-PA-CF-006B. Suction line Valve-I	Gland	0	0	0	0
F-780	034-PA-CF-006B. Suction line Valve-I	Bonet	0	0	0	0
F-781	034-PA-CF-006B. Suction line Valve-I	Flange(East)	0	0	0	0
F-782	034-PA-CF-006B. Suction line Valve-I	Flange(West)	0	0	0	0
F-783	034-PA-CF-006B. Suction line Valve-II	Gland	0	0	0	0
F-784	034-PA-CF-006B. Suction line Valve-II	Bonet	0	0	0	0
F-785	034-PA-CF-006B. Suction line Valve-II	Flange(East)	0	0	0	0
F-786	034-PA-CF-006B. Suction line Valve-II	Flange(West)	0	0	0	0
F-787	034-PA-CF-006B. Suction line Valve-III	Gland	0	0	0	0
F-788	034-PA-CF-006B. Suction line Valve-III	Bonet	0	0	0	0
F-789	034-PA-CF-006B. Suction line Valve-III	Flange(East)	0	0	0	0
F-790	034-PA-CF-006B. Suction line Valve-III	Flange(West)	0	0	0	0
F-791	034-PA-CF-006C.	Pump Seal	0	0	0	0
F-792	034-PA-CF-006C. Suction line	Joint Flange	0	0	0	0
F-793	034-PA-CF-006C. Suction line Valve-I	Gland	0	0	0	0
F-794	034-PA-CF-006C. Suction line Valve-I	Bonet	0	0	0	0
F-795	034-PA-CF-006C. Suction line Valve-I	Flange(East)	0	0	0	0
F-796	034-PA-CF-006C. Suction line Valve-I	Flange(West)	0	0	0	0
F-797	034-PA-CF-006C. Suction line Valve-II	Gland	0	0	0	0
F-798	034-PA-CF-006C. Suction line Valve-II	Bonet	0	0	0	0
F-799	034-PA-CF-006C. Suction line Valve-II	Flange(East)	0	0	0	0
F-800	034-PA-CF-006C. Suction line Valve-II	Flange(West)	0	0	0	0
F-801	034-PA-CF-006C. Suction line Valve-III	Gland	0	0	0	0
F-802	034-PA-CF-006C. Suction line Valve-III	Bonet	0	0	0	0
F-803	034-PA-CF-006C. Suction line Valve-III	Flange(East)	0	0	0	0
F-804	034-PA-CF-006C. Suction line Valve-III	Flange(West)	0	0	0	0
F-805	034-PA-CF-006C. Discharge line	Joint Flange	8.7	3.1	0.00006	0.000526
F-806	034-PA-CF-006C. Discharge line Valve-I	Gland	0	0	0	0
F-807	034-PA-CF-006C. Discharge line Valve-I	Bonet	0	0	0	0
F-808	034-PA-CF-006C. Discharge line Valve-I	Flange(Upper)	0	0	0	0
F-809	034-PA-CF-006C. Discharge line Valve-I	Flange(Lower)	0	0	0	0
F-810	034-PA-CF-006C. Discharge line Valve-II	Gland	0	0	0	0
F-811	034-PA-CF-006C. Discharge line Valve-II	Bonet	0	0	0	0
F-812	034-PA-CF-006C. Discharge line Valve-II	Flange(Upper)	0	0	0	0
F-813	034-PA-CF-006C. Discharge line Valve-II	Flange(Lower)	0	0	0	0
F-814	034-PA-CF-006C. Discharge line Valve-III	Gland	0	0	0	0
F-815	034-PA-CF-006C. Discharge line Valve-III	Bonet	0	0	0	0
F-816	034-PA-CF-006C. Discharge line Valve-III	Flange(Upper)	0	0	0	0
F-817	034-PA-CF-006C. Discharge line Valve-III	Flange(Lower)	0	0	0	0

LDAR PROGRAM at Digboi Refinery	
Leak points Detected in Phase=7(F) UNIT: O M & S (Circulation pump house)	
SUMMARY SHEET FOR O M & S (Circulation Pump house) AREA	
Total number of points covered	**98**
Date of Monitoring/Rechecking	**22.12.2022**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-818	043-PA-001.	Pump Seal	0	0	0	0
F-819	043-PA-001. Discharge line	Joint Flange	0	0	0	0
F-820	043-PA-001. Discharge line Valve	Flange(Upper)	0	0	0	0
F-821	043-PA-001. Discharge line Valve	Flange(Lower)	0	0	0	0
F-822	043-PA-001. Discharge line Valve	Gland	0	0	0	0
F-823	043-PA-001. Discharge line Valve	Bonet	0	0	0	0
F-824	043-PA-001. Discharge line NRV	Flange(Upper)	0	0	0	0
F-825	043-PA-001. Discharge line	NRV	0	0	0	0
F-826	043-PA-001. Discharge line	Flange-I	0	0	0	0
F-827	043-PA-001. Suction Line	Joint Flange	0	0	0	0
F-828	043-PA-001. Suction Line Valve	Gland	0	0	0	0
F-829	043-PA-001. Suction Line Valve	Bonet	0	0	0	0
F-830	043-PA-001. Suction Line Valve	Flange(West)	0	0	0	0
F-831	043-PA-001. Suction Line Valve	Flange(East)	0	0	0	0
F-832	043-PA-002.	Pump Seal	0	0	0	0
F-833	043-PA-002. Discharge line	Joint Flange	0	0	0	0
F-834	043-PA-002. Discharge line Valve	Gland	0	0	0	0
F-835	043-PA-002. Discharge line Valve	Bonet	0	0	0	0
F-836	043-PA-002. Discharge line Valve	Flange(Upper)	0	0	0	0
F-837	043-PA-002. Discharge line Valve	Flange(Lower)	0	0	0	0
F-838	043-PA-002. Suction Line	Joint Flange	0	0	0	0
F-839	043-PA-002. Suction Line	Flange	0	0	0	0
F-840	043-PA-002. Suction Line Valve	Gland	0	0	0	0
F-841	043-PA-002. Suction Line Valve	Bonet	0	0	0	0
F-842	043-PA-002. Suction Line Valve	Flange(East)	0	0	0	0
F-843	043-PA-002. Suction Line Valve	Flange(West)	0	0	0	0
F-844	043-PA-003.	Pump Seal	0	0	0	0
F-845	043-PA-003. Suction Line	Joint Flange	0	0	0	0
F-846	043-PA-003. Suction Line Valve	Gland	0	0	0	0
F-847	043-PA-003. Suction Line Valve	Bonet	0	0	0	0
F-848	043-PA-003. Suction Line Valve	Flange(West)	0	0	0	0
F-849	043-PA-003. Discharge line	Joint Flange	0	0	0	0
F-850	043-PA-003. Discharge line Valve	Gland	0	0	0	0
F-851	043-PA-003. Discharge line Valve	Bonet	0	0	0	0
F-852	043-PA-003. Discharge line Valve	Flange(Upper)	0	0	0	0
F-853	043-PA-003. Discharge line Valve	Flange(Lower)	0	0	0	0
F-854	043-PA-004.	Pump Seal	0	0	0	0
F-855	043-PA-004. Discharge line	Joint Flange	0	0	0	0
F-856	043-PA-004. Discharge line Valve	Flange(Upper)	0	0	0	0
F-857	043-PA-004. Discharge line Valve	Flange(Lower)	0	0	0	0
F-858	043-PA-004. Discharge line Valve	Gland	0	0	0	0
F-859	043-PA-004. Discharge line Valve	Bonet	0	0	0	0
F-860	043-PA-004. Suction line	Joint Flange	0	0	0	0

F-861	043-PA-004. Suction line	Flange-I	0	0	0	0
F-862	043-PA-004. Suction line	Flange-II	0	0	0	0
F-863	043-PA-004. Suction line Valve	Gland	0	0	0	0
F-864	043-PA-004. Suction line Valve	Bonet	0	0	0	0
F-865	043-PA-004. Suction line Valve	Flange(North)	0	0	0	0
F-866	043-PA-004. Suction line Valve	Flange(South)	0	0	0	0
F-867	043-PA-005	Pump Seal	0	0	0	0
F-868	043-PA-005 Discharge line Valve	Gland	0	0	0	0
F-869	043-PA-005 Discharge line Valve	Bonet	0	0	0	0
F-870	043-PA-005 Discharge line Valve	Flange(Upper)	0	0	0	0
F-871	043-PA-005 Discharge line Valve	Flange(Lower)	0	0	0	0
F-872	043-PA-005 Suction line	Flange-I	0	0	0	0
F-873	043-PA-005 Suction line	Flange-II	0	0	0	0
F-874	043-PA-005 Suction line Valve	Gland	0	0	0	0
F-875	043-PA-005 Suction line Valve	Bonet	0	0	0	0
F-876	043-PA-005 Suction line Valve	Flange(East)	0	0	0	0
F-877	043-PA-005 Suction line Valve	Flange(West)	0	0	0	0
F-878	043-PA-011	Pump Seal	0	0	0	0
F-879	043-PA-011 Discharge line	Joint Flange	0	0	0	0
F-880	043-PA-011 Discharge line	Flange	0	0	0	0
F-881	043-PA-011 Discharge line Valve	Gland	0	0	0	0
F-882	043-PA-011 Discharge line Valve	Bonet	0	0	0	0
F-883	043-PA-011 Discharge line Valve	Flange(Upper)	0	0	0	0
F-884	043-PA-011 Discharge line Valve	Flange(Lower)	0	0	0	0
F-885	043-PA-011 Suction line	Joint Flange	0	0	0	0
F-886	043-PA-011 Suction line Valve	Gland	0	0	0	0
F-887	043-PA-011 Suction line Valve	Bonet	0	0	0	0
F-888	043-PA-011 Suction line Valve	Flange(East)	0	0	0	0
F-889	043-PA-011 Suction line Valve	Flange(West)	0	0	0	0
F-890	043-PA-010	Pump Seal	8.6	5.2	0.012	0.10512
F-891	043-PA-010 Discharge line Valve	Gland	0	0	0	0
F-892	043-PA-010 Discharge line Valve	Bonet	0	0	0	0
F-893	043-PA-010 Discharge line Valve	Flange(Upper)	0	0	0	0
F-894	043-PA-010 Discharge line Valve	Flange(Lower)	0	0	0	0
F-895	043-PA-010 Suction line	Joint Flange	0	0	0	0
F-896	043-PA-010 Suctionline Valve-I	Gland	0	0	0	0
F-897	043-PA-010 Suctionline Valve-I	bonet	0	0	0	0
F-898	043-PA-010 Suctionline Valve-I	Flange(East)	0	0	0	0
F-899	043-PA-010 Suctionline Valve-I	Flange(West)	0	0	0	0
F-900	043-PA-010 Suctionline Valve-II	Gland	0	0	0	0
F-901	043-PA-010 Suctionline Valve-II	Bonet	0	0	0	0
F-902	043-PA-010 Suctionline Valve-II	Flange(North)	0	0	0	0
F-903	043-PA-010 Suctionline Valve-II	Flange(South)	0	0	0	0
F-904	043-PA-007	Pump Seal	0	0	0	0
F-905	043-PA-007 Discharge line	Joint Flange	0	0	0	0
F-906	043-PA-007 Discharge line	Flange	0	0	0	0
F-907	043-PA-007 Discharge line Valve	Gland	0	0	0	0
F-908	043-PA-007 Discharge line Valve	Bonet	0	0	0	0
F-909	043-PA-007 Discharge line Valve	Flange(Upper)	0	0	0	0
F-910	043-PA-007 Discharge line Valve	Flange(Lower)	0	0	0	0
F-911	043-PA-007 Suction line	Joint Flange	0	0	0	0
F-912	043-PA-007 Suction line valve	Gland	0	0	0	0
F-913	043-PA-007 Suction line valve	Bonet	0	0	0	0
F-914	043-PA-007 Suction line valve	Flange(East)	0	0	0	0
F-915	043-PA-007 Suction line valve	Flange(West)	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 7(F) UNIT : O M & S (SDU off Side Pump House)

SUMMARY SHEET FOR O M & S (SDU off Side Pump House) AREA

Total number of points covered	**33**
Date of Monitoring/Rechecking	**22.12.2022**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**

Pump/Compressor

Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-916	08-PA-001	Pump Seal	0	0	0	0
F-917	08-PA-001	Joint Flange	0	0	0	0
F-918	08-PA-001	Gland	0	0	0	0
F-919	08-PA-CF-002B. Suction line	Joint Flange	28	8	0.00006	0.000526
F-920	08-PA-CF-002B. Suction line Valve	Gland	0	0	0	0
F-921	08-PA-CF-002A.	Pump Seal	0	0	0	0
F-922	08-PA-CF-002A. Suction line	Joint Flange	0	0	0	0
F-923	08-PA-CF-002A. Suction line Valve	Gland	0	0	0	0
F-924	08-PA-CF-002A. Discharge line	Joint Flange	0	0	0	0
F-925	08-PA-CF-002A. Discharge line Valve	Gland	0	0	0	0
F-926	08-PA-CF-001B.	Pump Seal	0	0	0	0
F-927	08-PA-CF-001B. Suction line	Joint Flange	0	0	0	0
F-928	08-PA-CF-001B. Suction line Valve	Gland	0	0	0	0
F-929	08-PA-CF-001B. Discharge line	Joint Flange	0	0	0	0
F-930	08-PA-CF-001B. Discharge line Valve	Gland	0	0	0	0
F-931	08-PA-CF-001A.	Pump Seal	0	0	0	0
F-932	08-PA-CF-001A. Suction line	Joint Flange	0	0	0	0
F-933	08-PA-CF-001A. Suction line Valve	Gland	0	0	0	0
F-934	08-PA-CF-001A. Discharge line	Joint Flange	0	0	0	0
F-935	08-PA-CF-001A. Discharge line Valve	Gland	0	0	0	0
F-936	08-PA-CF-100B.	Pump Seal	0	0	0	0
F-937	08-PA-CF-100B. Suction line	Joint Flange	0	0	0	0
F-938	08-PA-CF-100B. Suction line Valve-I	Gland	0	0	0	0
F-939	08-PA-CF-100B. Suction line Valve-II	Gland	0	0	0	0
F-940	08-PA-CF-100B. Discharge line	Joint Flange	0	0	0	0
F-941	08-PA-CF-100B. Discharge line Valve-I	Gland	0	0	0	0
F-942	08-PA-CF-100A.	Pump Seal	0	0	0	0
F-943	08-PA-CF-100A. Suction line	Joint Flange	0	0	0	0
F-944	08-PA-CF-100A. Suction line Valve-I	Gland	0	0	0	0
F-945	08-PA-CF-100A. Suction line Valve-II	Gland	0	0	0	0
F-946	08-PA-CF-100A. Discharge line	Joint Flange	0	0	0	0
F-947	08-PA-CF-100A. Discharge line Valve-I	Gland	25	11.3	0.0017	0.014892
F-948	08-PA-CF-100A. Discharge line Valve-II	Gland	0	0	0	0
F-949	40PA-CF-802B	Pump Seal	0	0	0	0
F-950	40PA-CF-802B Suction line	Joint Flange	0	0	0	0
F-951	40PA-CF-802B Suction line Valve-I	Gland	0	0	0	0
F-952	40PA-CF-802B Suction line Valve-I	Bonet	0	0	0	0
F-953	40PA-CF-802B Suction line Valve-I	Flange(Upper)	0	0	0	0
F-954	40PA-CF-802B Suction line Valve-I	Flange(Lower)	0	0	0	0
F-955	40PA-CF-802B Suction line Valve-II	Gland	0	0	0	0
F-956	40PA-CF-802B Suction line Valve-II	Bonet	0	0	0	0
F-957	40PA-CF-802B Suction line Valve-II	Flange(North)	0	0	0	0
F-958	40PA-CF-802B Suction line Valve-II	Flange(South)	0	0	0	0
F-959	40PA-CF-802B Discharge line	Joint Flange	0	0	0	0
F-960	40PA-CF-802B Discharge line	NRV	0	0	0	0
F-961	40PA-CF-802B Discharge line NRV	Flange(East)	0	0	0	0
F-962	40PA-CF-802B Discharge line NRV	Flange(West)	0	0	0	0
F-963	40PA-CF-802B Discharge lineValve	Gland	0	0	0	0
F-964	40PA-CF-802B Discharge lineValve	Bonet	0	0	0	0
F-965	40PA-CF-802B Discharge lineValve	Flange(East)	0	0	0	0
F-966	40PA-CF-802B Discharge lineValve	Flange(West)	0	0	0	0
F-967	40PA-CF-802A	Pump Seal	0	0	0	0
F-968	40PA-CF-802A Discharge line	Joint Flange	0	0	0	0
F-969	40PA-CF-802A Discharge line	NRV	0	0	0	0

F-970	40PA-CF-802A Discharge line NRV	Flange(East)	0	0	0	0
F-971	40PA-CF-802A Discharge line NRV	Flange(West)	0	0	0	0
F-972	40PA-CF-802A Discharge lineValve	Gland	0	0	0	0
F-973	40PA-CF-802A Discharge lineValve	Bonet	0	0	0	0
F-974	40PA-CF-802A Discharge lineValve	Flange(East)	0	0	0	0
F-975	40PA-CF-802A Discharge lineValve	Flange(West)	0	0	0	0
F-976	40PA-CF-802A Suction line	Joint Flange	0	0	0	0
F-977	40PA-CF-802A Suction line Valve-I	Gland	0	0	0	0
F-978	40PA-CF-802A Suction line Valve-I	Bonet	0	0	0	0
F-979	40PA-CF-802A Suction line Valve-I	Flange(Upper)	0	0	0	0
F-980	40PA-CF-802A Suction line Valve-I	Flange(Lower)	0	0	0	0
F-981	40PA-CF-802A Suction line Valve-II	Gland	0	0	0	0
F-982	40PA-CF-802A Suction line Valve-II	Bonet	0	0	0	0
F-983	40PA-CF-802A Suction line Valve-II	Flange(East)	0	0	0	0
F-984	40PA-CF-802A Suction line Valve-II	Flange(West)	0	0	0	0
F-985	40-PA-003B	Pump Seal	92	38.1	0.012	0.10512
F-986	40-PA-003B Discharge line	Joint Flange	0	0	0	0
F-987	40-PA-003B Discharge line	Flange-I	0	0	0	0
F-988	40-PA-003B Discharge line	Flange-II	0	0	0	0
F-989	40-PA-003B Discharge line Valve	Gland	0	0	0	0
F-990	40-PA-003B Discharge line Valve	Bonet	0	0	0	0
F-991	40-PA-003B Discharge line Valve	Flange(North)	0	0	0	0
F-992	40-PA-003B Discharge line Valve	Flange(South)	0	0	0	0
F-993	40-PA-003B Suction line	Joint Flange	0	0	0	0
F-994	40-PA-003B Suction line Valve	Gland	0	0	0	0
F-995	40-PA-003B Suction line Valve	Bonet	0	0	0	0
F-996	40-PA-003B Suction line Valve	Flange(North)	0	0	0	0
F-997	40-PA-003B Suction line Valve	Flange(South)	0	0	0	0
F-998	40-PA-003A	Pump Seal	0	0	0	0
F-999	40-PA-003A Suction line	Joint Flange	0	0	0	0
F-1000	40-PA-003A Suction line Valve	Gland	0	0	0	0
F-1001	40-PA-003A Discharge line	Joint Flange	0	0	0	0
F-1002	40-PA-003A Discharge line	NRV	0	0	0	0
F-1003	40-PA-003A Discharge line NRV	Flange(North)	0	0	0	0
F-1004	40-PA-003A Discharge line NRV	Flange(South)	0	0	0	0
F-1005	40-PA-003A Discharge line Valve	Gland	0	0	0	0
F-1006	40-PA-003A Discharge line Valve	Bonet	0	0	0	0
F-1007	40-PA-003A Discharge line Valve	Flange(North)	0	0	0	0
F-1008	40-PA-003A Discharge line Valve	Flange(South)	0	0	0	0
F-1009	40-PA-001A	Pump Seal	0	0	0	0
F-1010	40-PA-001A Suction line	Joint Flange	0	0	0	0
F-1011	40-PA-001A Suction line Valve-I	Gland	0	0	0	0
F-1012	40-PA-001A Suction line Valve-I	Bonet	0	0	0	0
F-1013	40-PA-001A Suction line Valve-I	Flange(East)	0	0	0	0
F-1014	40-PA-001A Suction line Valve-I	Flange(West)	0	0	0	0
F-1015	40-PA-001A Suction line Valve-II	Gland	0	0	0	0
F-1016	40-PA-001A Suction line Valve-II	Bonet	0	0	0	0
F-1017	40-PA-001A Suction line Valve-II	Flange(East)	0	0	0	0
F-1018	40-PA-001A Suction line Valve-II	Flange(West)	0	0	0	0
F-1019	40-PA-001A Discharge line	Joint Flange	0	0	0	0
F-1020	40-PA-001A Discharge line Valve-I	Gland	0	0	0	0
F-1021	40-PA-001A Discharge line Valve-I	Bonet	0	0	0	0
F-1022	40-PA-001A Discharge line Valve-I	Flange(East)	0	0	0	0
F-1023	40-PA-001A Discharge line Valve-I	Flange(West)	0	0	0	0
F-1024	40-PA-001A Discharge line Valve-II	Gland	0	0	0	0
F-1025	40-PA-001A Discharge line Valve-III	Gland	0	0	0	0
F-1026	40-PA-001A Discharge line Valve-III	Flange(East)	0	0	0	0
F-1027	40-PA-001A Discharge line Valve-III	Flange(West)	0	0	0	0
F-1028	40-PA-001B	Pump Seal	0	0	0	0
F-1029	40-PA-001B Suction line	Joint Flange	0	0	0	0
F-1030	40-PA-001B Suction line Valve-I	Gland	0	0	0	0
F-1031	40-PA-001B Suction line Valve-I	Flange(East)	0	0	0	0
F-1032	40-PA-001B Suction line Valve-I	Flange(West)	0	0	0	0
F-1033	40-PA-001B Suction line Valve-II	Gland	0	0	0	0
F-1034	40-PA-001B Suction line Valve-II	Flange(North)	0	0	0	0
F-1035	40-PA-001B Suction line Valve-II	Flange(South)	0	0	0	0
F-1036	40-PA-001B Discharge line	Joint Flange	0	0	0	0

F-1037	40-PA-001B Discharge line Valve	Flange(East)	0	0	0	0
F-1038	40-PA-001B Discharge line Valve	Flange(West)	0	0	0	0
F-1039	40-PA-001B Discharge line Valve	Gland	0	0	0	0
F-1040	40-PA-001C	Pump Seal	0	0	0	0
F-1041	40-PA-001C Suction line	Joint Flange	0	0	0	0
F-1042	40-PA-001C Suction line Valve	Gland	0	0	0	0
F-1043	40-PA-001C Suction line Valve	Flange(East)	0	0	0	0
F-1044	40-PA-001C Suction line Valve	Flange(West)	0	0	0	0
F-1045	40-PA-001C Discharge line	Joint Flange	0	0	0	0
F-1046	40-PA-001C Discharge line Valve	Gland	0	0	0	0
F-1047	40-PA-001C Discharge line Valve	Flange(East)	0	0	0	0
F-1048	40-PA-001C Discharge line Valve	Flange(West)	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase=7(F) UNIT:O M & S (Liquid Transfer Pump House)

SUMMARY SHEET FOR O M & S (Liquid Transfer Pump House) AREA

Total number of points covered	**26**
Date of Monitoring/Rechecking	**22.12.2022**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-1049	09PA-CF-001.	Pump Seal	0	0	0	0
F-1050	09PA-CF-001. Discharge line	Joint Flange	0	0	0	0
F-1051	09PA-CF-001. Discharge line	NRV	0	0	0	0
F-1052	09PA-CF-001. Discharge line NRV	Flange(North)	0	0	0	0
F-1053	09PA-CF-001. Discharge line NRV	Flange(South)	0	0	0	0
F-1054	09PA-CF-001. Discharge line Valve	Gland	0	0	0	0
F-1055	09PA-CF-001. Discharge line Valve	Bonet	0	0	0	0
F-1056	09PA-CF-001. Discharge line Valve	Flange(North)	0	0	0	0
F-1057	09PA-CF-001. Suction line	Joint Flange	0	0	0	0
F-1058	09PA-CF-001. Suction line Valve	Gland	0	0	0	0
F-1059	09PA-CF-001. Suction line Valve	Bonet	0	0	0	0
F-1060	09PA-CF-001. Suction line Valve	Flange(North)	0	0	0	0
F-1061	09PA-CF-001. Suction line Valve	Flange(South)	0	0	0	0
F-1062	09PA-CF-001B	Pump Seal	0	0	0	0
F-1063	09PA-CF-001B Discharge line	Joint Flange	0	0	0	0
F-1064	09PA-CF-001B Discharge line	NRV	0	0	0	0
F-1065	09PA-CF-00B Discharge line NRV	Flange(North)	0	0	0	0
F-1066	09PA-CF-00B Discharge line NRV	Flange(South)	0	0	0	0
F-1067	09PA-CF-00B Discharge line Valve	Gland	0	0	0	0
F-1068	09PA-CF-00B Discharge line Valve	Bonet	0	0	0	0
F-1069	09PA-CF-00B Discharge line Valve	Flange(North)	0	0	0	0
F-1070	09PA-CF-00B Suction line	Joint Flange	0	0	0	0
F-1071	09PA-CF-00B Suction line Valve	Gland	0	0	0	0
F-1072	09PA-CF-00B Suction line Valve	Bonet	0	0	0	0
F-1073	09PA-CF-00B Suction line Valve	Flange(North)	0	0	0	0
F-1074	09PA-CF-00B Suction line Valve	Flange(South)	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 7(F) UNIT : O M & S (CRU Off Side Pump House)

SUMMARY SHEET FOR O M & S (CRU Off Side Pump House) AREA

Total number of points covered	**126**
Date of Monitoring/Rechecking	**13.12.2022**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-1075	41PA-CF-003B	Pump Seal	0	0	0	0
F-1076	41PA-CF-003B Suction line NRV	Flange(North)	0	0	0	0
F-1077	41PA-CF-003B Suction line NRV	Flange(South)	0	0	0	0
F-1078	41PA-CF-003B Suction line	NRV	0	0	0	0
F-1079	41PA-CF-003B Suction line Valve	Flange(North)	0	0	0	0
F-1080	41PA-CF-003B Suction line Valve	Flange(South)	0	0	0	0
F-1081	41PA-CF-003B Suction line Valve	Gland	48	25.1	0.0017	0.014892
F-1082	41PA-CF-003B Suction line Valve	Bonet	0	0	0	0
F-1083	41PA-CF-003B Discharge(PPH) line Valve	Gland	0	0	0	0
F-1084	41PA-CF-003B Discharge(PPH) line Valve	Bonet	0	0	0	0
F-1085	41PA-CF-003B Discharge(PPH) line Valve	Flange(North)	0	0	0	0
F-1086	41PA-CF-003B Discharge(PPH) line Valve	Flange(South)	0	0	0	0
F-1087	41PA-CF-003B Discharge to Nozzle line Valve	Gland	0	0	0	0
F-1088	41PA-CF-003B Discharge to Nozzle line Valve	Bonet	0	0	0	0
F-1089	41PA-CF-003B Discharge to Nozzle line Valve	Flange(North)	0	0	0	0
F-1090	41PA-CF-003B Discharge to Nozzle line Valve	Flange(South)	0	0	0	0
F-1091	41PA-CF-003B Discharge to NTF line Valve	Gland	0	0	0	0
F-1092	41PA-CF-003B Discharge to NTF line Valve	Bonet	0	0	0	0
F-1093	41PA-CF-003B Discharge to NTF line Valve	Flange(North)	0	0	0	0
F-1094	41PA-CF-003B Discharge to NTF line Valve	Flange(South)	0	0	0	0
F-1095	41PA-CF-003A	Pump Seal	0	0	0	0
F-1096	41PA-CF-003A Suction line Valve	Gland	0	0	0	0
F-1097	41PA-CF-003A Suction line Valve	Bonet	0	0	0	0
F-1098	41PA-CF-003A Suction line Valve	Flange(North)	0	0	0	0
F-1099	41PA-CF-003A Suction line Valve	Flange(South)	0	0	0	0
F-1100	41PA-CF-003A Discharge line	Joint Flange	0	0	0	0
F-1101	41PA-CF-003A Discharge line	NRV	0	0	0	0
F-1102	41PA-CF-003A Discharge line NRV	Flange(North)	0	0	0	0
F-1103	41PA-CF-003A Discharge line NRV	Flange(South)	0	0	0	0
F-1104	41PA-CF-003A Discharge to PPH line Valve	Gland	0	0	0	0
F-1105	41PA-CF-003A Discharge to PPH line Valve	Bonet	0	0	0	0
F-1106	41PA-CF-003A Discharge to PPH line Valve	Flange(North)	0	0	0	0
F-1107	41PA-CF-003A Discharge to PPH line Valve	Flange(South)	0	0	0	0
F-1108	41PA-CF-003A Discharge to Nozzle line Valve	Gland	18.3	6.5	0.0017	0.014892
F-1109	41PA-CF-003A Discharge to Nozzle line Valve	Bonet	0	0	0	0
F-1110	41PA-CF-003A Discharge to Nozzle line Valve	Flange(North)	0	0	0	0
F-1111	41PA-CF-003A Discharge to Nozzle line Valve	Flange(South)	0	0	0	0
F-1112	41PA-CF-003A Discharge to NTF line Valve	Gland	0	0	0	0
F-1113	41PA-CF-003A Discharge to NTF line Valve	Bonet	0	0	0	0
F-1114	41PA-CF-003A Discharge to NTF line Valve	Flange(North)	0	0	0	0
F-1115	41PA-CF-003A Discharge to NTF line Valve	Flange(South)	0	0	0	0
F-1116	41PA-CF-002B	Pump Seal	0	0	0	0
F-1117	41PA-CF-002B Suction line	Joint Flange	0	0	0	0
F-1118	41PA-CF-002B Suction line Valve	Gland	0	0	0	0
F-1119	41PA-CF-002B Suction line Valve	Bonet	0	0	0	0
F-1120	41PA-CF-002B Suction line Valve	Flange(North)	0	0	0	0
F-1121	41PA-CF-002B Suction line Valve	Flange(South)	0	0	0	0
F-1122	41PA-CF-002B Discharge line	Joint Flange	0	0	0	0

F-1123	41PA-CF-002B Discharge line	NRV	0	0	0	0
F-1124	41PA-CF-002B Discharge line NRV	Flange(North)	0	0	0	0
F-1125	41PA-CF-002B Discharge line NRV	Flange(South)	0	0	0	0
F-1126	41PA-CF-002B Discharge to Nozzle line Valve	Gland	0	0	0	0
F-1127	41PA-CF-002B Discharge to Nozzle line Valve	Bonet	0	0	0	0
F-1128	41PA-CF-002B Discharge to Nozzle line Valve	Flange(North)	0	0	0	0
F-1129	41PA-CF-002B Discharge to Nozzle line Valve	Flange(South)	0	0	0	0
F-1130	41PA-CF-002B Discharge to NTF line Valve	Gland	0	0	0	0
F-1131	41PA-CF-002B Discharge to NTF line Valve	Bonet	0	0	0	0
F-1132	41PA-CF-002B Discharge to NTF line Valve	Flange(North)	0	0	0	0
F-1133	41PA-CF-002B Discharge to NTF line Valve	Flange(South)	0	0	0	0
F-1134	41PA-CF-002A Suction line	Joint Flange	0	0	0	0
F-1135	41PA-CF-002A Suction line Valve	Gland	0	0	0	0
F-1136	41PA-CF-002A Suction line Valve	Bonet	0	0	0	0
F-1137	41PA-CF-002A Suction line Valve	Flange(North)	0	0	0	0
F-1138	41PA-CF-002A Suction line Valve	Flange(South)	0	0	0	0
F-1139	41PA-CF-002A Discharge line	Joint Flange	0	0	0	0
F-1140	41PA-CF-002A Discharge line	NRV	0	0	0	0
F-1141	41PA-CF-002A Discharge line NRV	Flange(North)	0	0	0	0
F-1142	41PA-CF-002A Discharge line NRV	Flange(South)	0	0	0	0
F-1143	41PA-CF-002A Discharge to Nozzle line Valve	Gland	0	0	0	0
F-1144	41PA-CF-002A Discharge to Nozzle line Valve	Bonet	0	0	0	0
F-1145	41PA-CF-002A Discharge to Nozzle line Valve	Flange(North)	0	0	0	0
F-1146	41PA-CF-002A Discharge to Nozzle line Valve	Flange(South)	0	0	0	0
F-1147	41PA-CF-002A Discharge to NTF line Valve	Gland	0	0	0	0
F-1148	41PA-CF-002A Discharge to NTF line Valve	Bonet	0	0	0	0
F-1149	41PA-CF-002A Discharge to NTF line Valve	Flange(North)	0	0	0	0
F-1150	41PA-CF-002A Discharge to NTF line Valve	Flange(South)	0	0	0	0
F-1151	41PA-CF-001B Suction line	Joint Flange	0	0	0	0
F-1152	41PA-CF-001B Suction from T-568 line Valve	Gland	0	0	0	0
F-1153	41PA-CF-001B Suction from T-568 line Valve	Bonet	0	0	0	0
F-1154	41PA-CF-001B Suction from T-568 line Valve	Flange(North)	0	0	0	0
F-1155	41PA-CF-001B Suction from T-568 line Valve	Flange(South)	0	0	0	0
F-1156	41PA-CF-001B Suction from T-569 line Valve	Gland	0	0	0	0
F-1157	41PA-CF-001B Suction from T-569 line Valve	Bonet	0	0	0	0
F-1158	41PA-CF-001B Suction from T-569 line Valve	Flange(North)	0	0	0	0
F-1159	41PA-CF-001B Suction from T-569 line Valve	Flange(South)	0	0	0	0
F-1160	41PA-CF-001B Suction from T-570 line Valve	Gland	0	0	0	0
F-1161	41PA-CF-001B Suction from T-570 line Valve	Bonet	0	0	0	0
F-1162	41PA-CF-001B Suction from T-570 line Valve	Flange(North)	0	0	0	0
F-1163	41PA-CF-001B Suction from T-570 line Valve	Flange(South)	0	0	0	0
F-1164	41PA-CF-001B Discharge line	Joint Flange	0	0	0	0
F-1165	41PA-CF-001B Discharge line	NRV	0	0	0	0
F-1166	41PA-CF-001B Discharge line NRV	Flange(North)	0	0	0	0
F-1167	41PA-CF-001B Discharge line NRV	Flange(South)	0	0	0	0
F-1168	41PA-CF-001B Discharge Circulation line Valve	Gland	0	0	0	0
F-1169	41PA-CF-001B Discharge Circulation line Valve	Bonet	0	0	0	0
F-1170	41PA-CF-001B Discharge Circulation line Valve	Flange(North)	0	0	0	0
F-1171	41PA-CF-001B Discharge Circulation line Valve	Flange(South)	0	0	0	0
F-1172	41PA-CF-001B Discharge to NTF line Valve	Gland	0	0	0	0
F-1173	41PA-CF-001B Discharge to NTF line Valve	Bonet	0	0	0	0
F-1174	41PA-CF-001B Discharge to NTF line Valve	Flange(North)	0	0	0	0
F-1175	41PA-CF-001B Discharge to NTF line Valve	Flange(South)	0	0	0	0
F-1176	41PA-CF-001A Discharge line	Joint Flange	0	0	0	0
F-1177	41PA-CF-001A Discharge line	NRV	0	0	0	0
F-1178	41PA-CF-001A Discharge line NRV	Flange(North)	0	0	0	0
F-1179	41PA-CF-001A Discharge line NRV	Flange(South)	0	0	0	0
F-1180	41PA-CF-001A Discharge Circulation line Valve	Gland	0	0	0	0
F-1181	41PA-CF-001A Discharge Circulation line Valve	Bonet	0	0	0	0
F-1182	41PA-CF-001A Discharge Circulation line Valve	Flange(North)	0	0	0	0
F-1183	41PA-CF-001A Discharge Circulation line Valve	Flange(South)	0	0	0	0
F-1184	41PA-CF-001A Discharge to Plant line Valve	Gland	0	0	0	0
F-1185	41PA-CF-001A Discharge to Plant line Valve	Bonet	0	0	0	0
F-1186	41PA-CF-001A Discharge to Plant line Valve	Flange(North)	0	0	0	0
F-1187	41PA-CF-001A Discharge to Plant line Valve	Flange(South)	0	0	0	0
F-1188	41PA-CF-001A Suction line	Joint Flange	0	0	0	0
F-1189	41PA-CF-001A Suction from T-568 line Valve	Gland	0	0	0	0

F-1190	41PA-CF-001A Suction from T-568 line Valve	Bonet	0	0	0	0
F-1191	41PA-CF-001A Suction from T-568 line Valve	Flange(North)	0	0	0	0
F-1192	41PA-CF-001A Suction from T-568 line Valve	Flange(South)	0	0	0	0
F-1193	41PA-CF-001A Suction from T-569 line Valve	Gland	0	0	0	0
F-1194	41PA-CF-001A Suction from T-569 line Valve	Bonet	0	0	0	0
F-1195	41PA-CF-001A Suction from T-569 line Valve	Flange(South)	0	0	0	0
F-1196	41PA-CF-001A Suction from T-569 line Valve	Flange(North)	0	0	0	0
F-1197	41PA-CF-001A Suction from T-570 line Valve	Gland	0	0	0	0
F-1198	41PA-CF-001A Suction from T-570 line Valve	Bonet	0	0	0	0
F-1199	41PA-CF-001A Suction from T-570 line Valve	Flange(North)	0	0	0	0
F-1200	41PA-CF-001A Suction from T-570 line Valve	Flange(South)	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase=7(F) UNIT:O M & S (New TANK Firm)

SUMMARY SHEET FOR O M & S (New TANK Firm) AREA

Total number of points covered	**778**
Date of Monitoring/Rechecking	**26.12.2022**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-1201	TK-23 Suction line Valve	Gland	0	0	0	0
F-1202	TK-23 Discharge line Valve	Gland	0	0	0	0
F-1203	TK-113 Suction line Valve	Gland	0	0	0	0
F-1204	TK-113 Discharge line Valve	Gland	0	0	0	0
F-1205	TK-595 Suction/Discharge line Valve	Gland	0	0	0	0
F-1206	TK-596 Suction/Discharge line Valve	Gland	0	0	0	0
F-1207	TK-596 Suction/Discharge line Valve	Bonet	0	0	0	0
F-1208	TK-596 Suction/Discharge line Valve	Flange(North)	0	0	0	0
F-1209	TK-596 Suction/Discharge line Valve	Flange(South)	0	0	0	0
F-1210	TK-590 Suction/Discharge line Valve	Gland	0	0	0	0
F-1211	TK-590 Suction/Discharge line Valve	Bonet	0	0	0	0
F-1212	TK-590 Suction/Discharge line Valve	Flange(North)	0	0	0	0
F-1213	TK-590 Suction/Discharge line Valve	Flange(South)	0	0	0	0
F-1214	TK-594 Suction/Discharge line Valve	Gland	0	0	0	0
F-1215	TK-594 Suction/Discharge line Valve	Bonet	0	0	0	0
F-1216	TK-594 Suction/Discharge line Valve	Flange(North)	0	0	0	0
F-1217	TK-594 Suction/Discharge line Valve	Flange(South)	0	0	0	0
F-1218	TK-592 Suction/Discharge line Valve	Gland	0	0	0	0
F-1219	TK-591 Suction/Discharge line Valve	Gland	0	0	0	0
F-1220	TK-593 Suction/Discharge line Valve	Gland	0	0	0	0
F-1221	TK-593 Suction/Discharge line Valve	Bonet	0	0	0	0
F-1222	TK-593 Suction/Discharge line Valve	Flange(North)	0	0	0	0
F-1223	TK-593 Suction/Discharge line Valve	Flange(South)	0	0	0	0
F-1224	TK-589 Suction/Discharge line Valve	Gland	0	0	0	0
F-1225	TK-585 Suction line Valve	Gland	0	0	0	0
F-1226	TK-585 Suction line Valve	Bonet	0	0	0	0
F-1227	TK-585 Suction line Valve	Flange(North)	0	0	0	0
F-1228	TK-585 Suction line Valve	Flange(South)	0	0	0	0
F-1229	TK-585 Discharge line Valve	Gland	0	0	0	0
F-1230	TK-585 Discharge line Valve	Bonet	0	0	0	0
F-1231	TK-586 Suction line Valve	Gland	0	0	0	0
F-1232	TK-586 Suction line Valve	Bonet	0	0	0	0
F-1233	TK-586 Discharge line Valve	Gland	0	0	0	0

F-1234	TK-586 Discharge line Valve	Bonet	0	0	0	0
F-1235	TK-588 Discharge line Valve	Gland	0	0	0	0
F-1236	TK-588 Suction line Valve	Gland	0	0	0	0
F-1237	TK-587 Discharge line Valve	Gland	0	0	0	0
F-1238	TK-587 Suction line Valve	Gland	0	0	0	0
F-1239	TK-606 Discharge line Valve	Gland	0	0	0	0
F-1240	TK-606 Suction line Valve	Gland	327	142.8	0.0017	0.014892
F-1241	TK-606 Receiving line Valve	Gland	0	0	0	0
F-1242	TK-606 Receiving line Valve	Flange(North)	0	0	0	0
F-1243	TK-606 Receiving line Valve	Flange(South)	0	0	0	0
F-1244	TK-606 Drain line Valve	Gland	0	0	0	0
F-1245	TK-606 Drain line Valve	Flange(North)	0	0	0	0
F-1246	TK-606 Drain line Valve	Flange(South)	0	0	0	0
F-1247	TK-605 Discharge line Valve	Gland	215	107.3	0.0017	0.014892
F-1248	TK-605 Discharge line Valve	Flange(North)	0	0	0	0
F-1249	TK-605 Discharge line Valve	Flange(South)	0	0	0	0
F-1250	TK-605 Receiving line Valve	Gland	0	0	0	0
F-1251	TK-605 Receiving line Valve	Flange(North)	0	0	0	0
F-1252	TK-605 Receiving line Valve	Flange(South)	0	0	0	0
F-1253	TK-605 Drain line Valve	Gland	0	0	0	0
F-1254	TK-605 Drain line Valve	Bonet	0	0	0	0
F-1255	TK-605 Drain line Valve	Flange(North)	0	0	0	0
F-1256	TK-605 Drain line Valve	Flange(South)	0	0	0	0
F-1257	TK-536 line Valve-I	Gland	0	0	0	0
F-1258	TK-536 line Valve-I	Bonet	0	0	0	0
F-1259	TK-536 line Valve-I	Flange(North)	0	0	0	0
F-1260	TK-536 line Valve-I	Flange(South)	0	0	0	0
F-1261	TK-536 line Valve-II	Gland	0	0	0	0
F-1262	TK-536 line Valve-II	Bonet	0	0	0	0
F-1263	TK-536 line Valve-II	Flange(South)	0	0	0	0
F-1264	TK-536 line Valve-III	Gland	0	0	0	0
F-1265	TK-536 line Valve-III	Bonet	0	0	0	0
F-1266	TK-536 line Valve-III	Flange(North)	0	0	0	0
F-1267	TK-536 line Valve-III	Flange(South)	0	0	0	0
F-1268	TK-536 line Valve-IV	Gland	0	0	0	0
F-1269	TK-536 line Valve-IV	Bonet	0	0	0	0
F-1270	TK-536 line Valve-IV	Flange(East)	0	0	0	0
F-1271	TK-536 line Valve-IV	Flange(West)	0	0	0	0
F-1272	TK-536 line Valve-V	Gland	0	0	0	0
F-1273	TK-536 line Valve-V	Flange(North)	0	0	0	0
F-1274	TK-536 line Valve-V	Flange(South)	0	0	0	0
F-1275	TK-260 HSD Receiving line Valve	Gland	0	0	0	0
F-1276	TK-260 HSD Receiving line Valve	Bonet	0	0	0	0
F-1277	TK-260 HSD Receiving line Valve	Flange(East)	0	0	0	0
F-1278	TK-260 HSD Receiving line Valve	Flange(West)	0	0	0	0
F-1279	TK-260Suction line Valve-I	Gland	0	0	0	0
F-1280	TK-260 Suction line Valve-I	Bonet	0	0	0	0
F-1281	TK-260 Suction line Valve-I	Flange(North)	0	0	0	0
F-1282	TK-260 Suction line Valve-I	Flange(South)	0	0	0	0
F-1283	TK-260 Suction line Valve-II	Gland	0	0	0	0
F-1284	TK-260 Suction line Valve-II	Bonet	0	0	0	0
F-1285	TK-260 Suction line Valve-II	Flange(North)	0	0	0	0
F-1286	TK-260 Suction line Valve-II	Flange(South)	0	0	0	0
F-1287	TK-260 BL Ending Suction line Valve-I	Flange(Upper)	0	0	0	0
F-1288	TK-260 BL Ending Suction line Valve-I	Flange(Lower)	0	0	0	0
F-1289	TK-260 BL Ending Suction line Valve-I	Gland	0	0	0	0
F-1290	TK-260 BL Ending Suction line Valve-I	Bonet	0	0	0	0
F-1291	TK-260 BL Ending Suction line Valve-II	Flange(North)	0	0	0	0
F-1292	TK-260 BL Ending Suction line Valve-II	Flange(South)	0	0	0	0
F-1293	TK-260 BL Ending Suction line Valve-II	Gland	0	0	0	0
F-1294	TK-260 Nozzle line Valve	Gland	0	0	0	0
F-1295	TK-260 Nozzle line Valve	Flange(East)	0	0	0	0
F-1296	TK-260 Nozzle line Valve	Flange(West)	0	0	0	0
F-1297	TK-260 Pump Suction line Valve	Gland	0	0	0	0
F-1298	TK-260 Pump Suction line Valve	Bonet	0	0	0	0
F-1299	TK-260 Pump Suction line Valve	Flange(East)	0	0	0	0
F-1300	TK-260 Pump Suction line Valve	Flange(West)	0	0	0	0

F-1301	TK-178 Suction line Valve	Gland	0	0	0	0
F-1302	TK-178 Suction line Valve	Bonet	0	0	0	0
F-1303	TK-178 Suction line Valve	Flange(East)	0	0	0	0
F-1304	TK-178 Suction line Valve	Flange(West)	0	0	0	0
F-1305	TK-178 CLDO line Valve	Gland	0	0	0	0
F-1306	TK-178 CLDO line Valve	Bonet	0	0	0	0
F-1307	TK-178 CLDO line Valve	Flange(North)	0	0	0	0
F-1308	TK-178 CLDO line Valve	Flange(South)	0	0	0	0
F-1309	TK-178 FO/CR line Valve	Gland	0	0	0	0
F-1310	TK-178 FO/CR line Valve	Bonet	0	0	0	0
F-1311	TK-178 FO/CR line Valve	Flange(North)	0	0	0	0
F-1312	TK-178 FO/CR line Valve	Flange(South)	0	0	0	0
F-1313	TK-178 FO receiving line Valve	Gland	0	0	0	0
F-1314	TK-178 FO receiving line Valve	Bonet	0	0	0	0
F-1315	TK-178 FO receiving line Valve	Flange(East)	0	0	0	0
F-1316	TK-178 FO receiving line Valve	Flange(West)	0	0	0	0
F-1317	TK-178 Delivery line Valve	Gland	0	0	0	0
F-1318	TK-178 Delivery line Valve	Bonet	0	0	0	0
F-1319	TK-178 Delivery line Valve	Flange(East)	0	0	0	0
F-1320	TK-178 Delivery line Valve	Flange(West)	0	0	0	0
F-1321	TK-239 Nozzle line Valve	Gland	0	0	0	0
F-1322	TK-239 Nozzle line Valve	Flange(North)	0	0	0	0
F-1323	TK-239 Nozzle line Valve	Flange(South)	0	0	0	0
F-1324	TK-239 CFO/CR line Valve	Gland	0	0	0	0
F-1325	TK-239 CFO/CR line Valve	Bonet	0	0	0	0
F-1326	TK-239 CFO/CR line Valve	Flange(North)	0	0	0	0
F-1327	TK-239 CFO/CR line Valve	Flange(South)	0	0	0	0
F-1328	TK-239 Suction line Valve-I	Gland	0	0	0	0
F-1329	TK-239 Suction line Valve-I	Bonet	0	0	0	0
F-1330	TK-239 Suction line Valve-I	Flange(East)	0	0	0	0
F-1331	TK-239 Suction line Valve-I	Flange(West)	0	0	0	0
F-1332	TK-239 Suction line Valve-II	Gland	0	0	0	0
F-1333	TK-239 Suction line Valve-II	Flange(East)	0	0	0	0
F-1334	TK-239 Suction line Valve-II	Flange(West)	0	0	0	0
F-1335	TK-239 Suction line Valve-III	Gland	0	0	0	0
F-1336	TK-239 Suction line Valve-III	Bonet	0	0	0	0
F-1337	TK-239 Suction line Valve-III	Flange(East)	0	0	0	0
F-1338	TK-239 Suction line Valve-III	Flange(West)	0	0	0	0
F-1339	TK-239 receiving line Valve-I	Gland	0	0	0	0
F-1340	TK-239 receiving line Valve-I	Bonet	0	0	0	0
F-1341	TK-239 receiving line Valve-I	Flange(East)	0	0	0	0
F-1342	TK-239 receiving line Valve-I	Flange(West)	0	0	0	0
F-1343	TK-239 receiving line Valve-II	Gland	0	0	0	0
F-1344	TK-239 receiving line Valve-II	Flange(East)	0	0	0	0
F-1345	TK-239 receiving line Valve-II	Flange(West)	0	0	0	0
F-1346	TK-239 receiving line Valve-III	Gland	0	0	0	0
F-1347	TK-239 receiving line Valve-III	Bonet	0	0	0	0
F-1348	TK-239 receiving line Valve-III	Flange(East)	0	0	0	0
F-1349	TK-239 receiving line Valve-III	Flange(West)	0	0	0	0
F-1350	TK-239 Blending Section line Valve	Gland	0	0	0	0
F-1351	TK-239 Blending Section line Valve	Flange(Lower)	0	0	0	0
F-1352	TK-239 Blending Section line Valve	Flange(Upper)	0	0	0	0
F-1353	TK-599 Receiving line Valve-I	Gland	0	0	0	0
F-1354	TK-599 Receiving line Valve-I	Bonet	0	0	0	0
F-1355	TK-599 Receiving line Valve-I	Flange(South)	0	0	0	0
F-1356	TK-599 Receiving line NRV	Flange(North)	0	0	0	0
F-1357	TK-599 Receiving line NRV	Flange(South)	686	338.1	0.00006	0.000526
F-1358	TK-599 Receiving line	NRV	0	0	0	0
F-1359	TK-599 Receiving line Valve-II	Gland	0	0	0	0
F-1360	TK-599 Receiving line Valve-II	Bonet	0	0	0	0
F-1361	TK-599 Receiving line Valve-II	Flange(East)	0	0	0	0
F-1362	TK-599 Receiving line Valve-II	Flange(West)	0	0	0	0
F-1363	TK-599 Suction line Valve-I	Gland	0	0	0	0
F-1364	TK-599 Suction line Valve-I	Bonet	0	0	0	0
F-1365	TK-599 Suction line Valve-I	Flange(North)	0	0	0	0
F-1366	TK-599 Suction line Valve-I	Flange(South)	0	0	0	0
F-1367	TK-599 Suction line Valve-II	Gland	0	0	0	0

F-1368	TK-599 Suction line Valve-II	Bonet	0	0	0	0
F-1369	TK-599 Suction line Valve-II	Flange(East)	0	0	0	0
F-1370	TK-599 Suction line Valve-II	Flange(West)	0	0	0	0
F-1371	TK-600 Receiving line	NRV	0	0	0	0
F-1372	TK-600 Receiving line NRV	Flange(North)	0	0	0	0
F-1373	TK-600 Receiving lineValve	Gland	0	0	0	0
F-1374	TK-600 Receiving lineValve	Bonet	0	0	0	0
F-1375	TK-600 Receiving lineValve	Flange(South)	0	0	0	0
F-1376	TK-600 Suction line Valve	Gland	174	103.5	0.0017	0.014892
F-1377	TK-600 Suction line Valve	Bonet	0	0	0	0
F-1378	TK-600 Suction line Valve	Flange(North)	0	0	0	0
F-1379	TK-600 Suction line Valve	Flange(South)	0	0	0	0
F-1380	TK-574 Suction line	Joint Flange	0	0	0	0
F-1381	TK-574 Suction line Valve	Gland	0	0	0	0
F-1382	TK-574 Suction line Valve	Bonet	0	0	0	0
F-1383	TK-574 Suction line Valve	Flange(East)	0	0	0	0
F-1384	TK-574 Suction line Valve	Flange(West)	0	0	0	0
F-1385	TK-574 Receiving line Valve	Gland	0	0	0	0
F-1386	TK-574 Receiving line Valve	Bonet	0	0	0	0
F-1387	TK-574 Receiving line Valve	Flange(East)	0	0	0	0
F-1388	TK-574 Receiving line Valve	Flange(West)	0	0	0	0
F-1389	TK-575 Suction line Valve	Gland	0	0	0	0
F-1390	TK-575 Suction line Valve	Bonet	0	0	0	0
F-1391	TK-575 Suction line Valve	Flange(East)	0	0	0	0
F-1392	TK-575 Suction line Valve	Flange(West)	0	0	0	0
F-1393	TK-575 Receiving line Valve	Gland	0	0	0	0
F-1394	TK-575 Receiving line Valve	Bonet	0	0	0	0
F-1395	TK-575 Receiving line Valve	Flange(East)	0	0	0	0
F-1396	TK-575 Receiving line Valve	Flange(West)	0	0	0	0
F-1397	TK-597 Suction line Valve-I	Gland	267	136.3	0.0017	0.014892
F-1398	TK-597 Suction line Valve-I	Bonet	0	0	0	0
F-1399	TK-597 Suction line Valve-I	Flange(North)	0	0	0	0
F-1400	TK-597 Suction line Valve-I	Flange(South)	0	0	0	0
F-1401	TK-597 Suction line Valve-II	Gland	362	204.7	0.0017	0.014892
F-1402	TK-597 Suction line Valve-II	Bonet	0	0	0	0
F-1403	TK-597 Suction line Valve-II	Flange(North)	0	0	0	0
F-1404	TK-597 Suction line Valve-II	Flange(South)	0	0	0	0
F-1405	TK-597 Receiving line Valve	Gland	0	0	0	0
F-1406	TK-597 Receiving line Valve	Bonet	0	0	0	0
F-1407	TK-597 Receiving line Valve	Flange(North)	0	0	0	0
F-1408	TK-597 Receiving line Valve	Flange(South)	0	0	0	0
F-1409	TK-597 Receiving line	NRV	0	0	0	0
F-1410	TK-597 Receiving line NRV	Flange(South)	0	0	0	0
F-1411	TK-597 Drain line Valve-I	Gland	0	0	0	0
F-1412	TK-597 Drain line Valve-I	Bonet	0	0	0	0
F-1413	TK-597 Drain line Valve-I	Flange(East)	0	0	0	0
F-1414	TK-597 Drain line Valve-I	Flange(West)	0	0	0	0
F-1415	TK-597 Drain line Valve-II	Gland	0	0	0	0
F-1416	TK-597 Drain line Valve-II	Bonet	0	0	0	0
F-1417	TK-597 Drain line Valve-II	Flange(East)	0	0	0	0
F-1418	TK-597 Drain line Valve-II	Flange(West)	0	0	0	0
F-1419	TK-597 Drain line Valve-III	Flange(Upper)	0	0	0	0
F-1420	TK-597 Drain line Valve-III	Flange(Lower)	0	0	0	0
F-1421	TK-597 Drain line Valve-III	Gland	0	0	0	0
F-1422	TK-597 Drain line Valve-III	Bonet	0	0	0	0
F-1423	TK-597 Drain line Valve-IV	Gland	0	0	0	0
F-1424	TK-597 Drain line Valve-IV	Bonet	0	0	0	0
F-1425	TK-597 Drain line Valve-IV	Flange(East)	0	0	0	0
F-1426	TK-597 Drain line Valve-IV	Flange(West)	0	0	0	0
F-1427	TK-597 Drain line Valve-V	Gland	0	0	0	0
F-1428	TK-597 Drain line Valve-V	Bonet	0	0	0	0
F-1429	TK-597 Drain line Valve-V	Flange(West)	0	0	0	0
F-1430	TK-597 Drain line Valve-VI	Gland	0	0	0	0
F-1431	TK-597 Drain line Valve-VI	Bonet	0	0	0	0
F-1432	TK-597 Drain line Valve-VI	Flange(East)	0	0	0	0
F-1433	TK-597 Drain line Valve-VI	Flange(West)	0	0	0	0
F-1434	TK-598 Drain line Valve-I	Gland	0	0	0	0

F-1435	TK-598 Drain line Valve-I	Flange(East)	0	0	0	0
F-1436	TK-598 Drain line Valve-I	Flange(West)	0	0	0	0
F-1437	TK-598 Drain line Valve-II	Gland	0	0	0	0
F-1438	TK-598 Drain line Valve-II	Bonet	0	0	0	0
F-1439	TK-598 Drain line Valve-II	Flange(West)	0	0	0	0
F-1440	TK-598 Drain line Valve-III	Flange(Upper)	0	0	0	0
F-1441	TK-598 Drain line Valve-III	Flange(Lower)	0	0	0	0
F-1442	TK-598 Drain line Valve-III	Gland	0	0	0	0
F-1443	TK-598 Drain line Valve-III	Bonet	0	0	0	0
F-1444	TK-598 Drain line Valve-IV	Gland	0	0	0	0
F-1445	TK-598 Drain line Valve-IV	Flange(East)	0	0	0	0
F-1446	TK-598 Drain line Valve-V	Gland	0	0	0	0
F-1447	TK-598 Drain line Valve-V	Flange(East)	0	0	0	0
F-1448	TK-598 Drain line Valve-V	Flange(West)	0	0	0	0
F-1449	TK-598 Drain line Valve-VI	Gland	0	0	0	0
F-1450	TK-598 Drain line Valve-VI	Flange(East)	0	0	0	0
F-1451	TK-598 Drain line Valve-VI	Flange(West)	0	0	0	0
F-1452	TK-598 Suction line Valve-I	Gland	0	0	0	0
F-1453	TK-598 Suction line Valve-I	Bonet	0	0	0	0
F-1454	TK-598 Suction line Valve-I	Flange(North)	0	0	0	0
F-1455	TK-598 Suction line Valve-II	Gland	0	0	0	0
F-1456	TK-598 Suction line Valve-II	Bonet	0	0	0	0
F-1457	TK-598 Suction line Valve-II	Flange(North)	0	0	0	0
F-1458	TK-598 Suction line Valve-II	Flange(South)	0	0	0	0
F-1459	TK-598 Receiving line Valve	Gland	0	0	0	0
F-1460	TK-598 Receiving line Valve	Bonet	0	0	0	0
F-1461	TK-598 Receiving line Valve	Flange(North)	0	0	0	0
F-1462	TK-598 Receiving line Valve	Flange(South)	0	0	0	0
F-1463	TK-598 Receiving line	NRV	0	0	0	0
F-1464	TK-598 Receiving line NRV	Flange(North)	0	0	0	0
F-1465	TK-598 Receiving line NRV	Flange(South)	0	0	0	0
F-1466	TK-573 Suction line Valve-I	Gland	0	0	0	0
F-1467	TK-573 Suction line Valve-I	Bonet	0	0	0	0
F-1468	TK-573 Suction line Valve-I	Flange(North)	0	0	0	0
F-1469	TK-573 Suction line Valve-I	Flange(South)	0	0	0	0
F-1470	TK-573 Suction line Valve-II	Gland	0	0	0	0
F-1471	TK-573 Suction line Valve-II	Bonet	0	0	0	0
F-1472	TK-573 Suction line Valve-II	Flange(North)	0	0	0	0
F-1473	TK-573 Suction line Valve-II	Flange(South)	0	0	0	0
F-1474	TK-573 Receiving line Valve	NRV	0	0	0	0
F-1475	TK-573 Receiving line NRV	Flange(South)	0	0	0	0
F-1476	TK-573 Discharge line Valve-I	Gland	0	0	0	0
F-1477	TK-573 Discharge line Valve-I	Flange(North)	0	0	0	0
F-1478	TK-573 Discharge line Valve-II	Gland	0	0	0	0
F-1479	TK-573 Discharge line Valve-II	Flange(South)	0	0	0	0
F-1480	TK-573 Discharge line Valve-III	Gland	0	0	0	0
F-1481	TK-573 Discharge line Valve-III	Flange(North)	0	0	0	0
F-1482	TK-573 Discharge line Valve-IV	Gland	0	0	0	0
F-1483	TK-573 Discharge line Valve-IV	Flange(South)	0	0	0	0
F-1484	TK-540 Suction line Valve-I	Gland	0	0	0	0
F-1485	TK-540 Suction line Valve-I	Bonet	0	0	0	0
F-1486	TK-540 Suction line Valve-I	Flange(East)	0	0	0	0
F-1487	TK-540 Suction line Valve-I	Flange(West)	0	0	0	0
F-1488	TK-540 Suction line Valve-II	Gland	0	0	0	0
F-1489	TK-540 Suction line Valve-II	Bonet	0	0	0	0
F-1490	TK-540 Suction line Valve-II	Flange(East)	0	0	0	0
F-1491	TK-540 Suction line Valve-II	Flange(West)	0	0	0	0
F-1492	TK-540 Receiving line Valve-I	Gland	0	0	0	0
F-1493	TK-540 Receiving line Valve-I	Bonet	0	0	0	0
F-1494	TK-540 Receiving line Valve-I	Flange(East)	0	0	0	0
F-1495	TK-540 Receiving line Valve-I	Flange(West)	0	0	0	0
F-1496	TK-540 Receiving line Valve-II	Gland	0	0	0	0
F-1497	TK-540 Receiving line Valve-II	Bonet	0	0	0	0
F-1498	TK-540 Receiving line Valve-II	Flange(East)	0	0	0	0
F-1499	TK-540 Receiving line Valve-II	Flange(West)	0	0	0	0
F-1500	TK-540 Drain line Valve-I	Gland	0	0	0	0
F-1501	TK-540 Drain line Valve-I	Bonet	0	0	0	0

F-1502	TK-540 Drain line Valve-I	Flange(North)	0	0	0	0
F-1503	TK-540 Drain line Valve-I	Flange(South)	0	0	0	0
F-1504	TK-540 Drain line Valve-II	Gland	0	0	0	0
F-1505	TK-540 Drain line Valve-II	Bonet	0	0	0	0
F-1506	TK-540 Drain line Valve-II	Flange(Upper)	0	0	0	0
F-1507	TK-540 Drain line Valve-II	Flange(Lower)	0	0	0	0
F-1508	TK-540 Drain line Valve-III	Gland	0	0	0	0
F-1509	TK-540 Drain line Valve-III	Bonet	0	0	0	0
F-1510	TK-540 Drain line Valve-III	Flange(Upper)	0	0	0	0
F-1511	TK-540 Drain line Valve-III	Flange(Lower)	0	0	0	0
F-1512	TK-540 Drain line Valve-IV	Flange(North)	0	0	0	0
F-1513	TK-540 Drain line Valve-IV	Flange(South)	0	0	0	0
F-1514	TK-540 Drain line Valve-V	Gland	0	0	0	0
F-1515	TK-540 Drain line Valve-V	Bonet	0	0	0	0
F-1516	TK-540 Drain line Valve-V	Flange(South)	0	0	0	0
F-1517	TK-603 Minimum Flow line Valve-I	Gland	0	0	0	0
F-1518	TK-603 Minimum Flow line Valve-I	Bonet	0	0	0	0
F-1519	TK-603 Minimum Flow line Valve-I	Flange(East)	0	0	0	0
F-1520	TK-603 Minimum Flow line Valve-I	Flange(West)	0	0	0	0
F-1521	TK-603 Minimum Flow line Valve-II	Gland	0	0	0	0
F-1522	TK-603 Minimum Flow line Valve-II	Bonet	0	0	0	0
F-1523	TK-603 Minimum Flow line Valve-II	Flange(East)	0	0	0	0
F-1524	TK-603 Minimum Flow line Valve-II	Flange(West)	0	0	0	0
F-1525	TK-603 Receiving line Valve-I	Gland	0	0	0	0
F-1526	TK-603 Receiving line Valve-I	Bonet	0	0	0	0
F-1527	TK-603 Receiving line Valve-I	Flange(East)	0	0	0	0
F-1528	TK-603 Receiving line Valve-I	Flange(West)	0	0	0	0
F-1529	TK-603 Receiving line Valve-II	Gland	0	0	0	0
F-1530	TK-603 Receiving line Valve-II	Bonet	0	0	0	0
F-1531	TK-603 Receiving line Valve-II	Flange(East)	0	0	0	0
F-1532	TK-603 Receiving line Valve-II	Flange(West)	0	0	0	0
F-1533	TK-603 Circulation Mixing line Valve-I	Gland	0	0	0	0
F-1534	TK-603 Circulation Mixing line Valve-I	Bonet	0	0	0	0
F-1535	TK-603 Circulation Mixing line Valve-I	Flange(East)	0	0	0	0
F-1536	TK-603 Circulation Mixing line Valve-I	Flange(West)	0	0	0	0
F-1537	TK-603 Circulation Mixing line Valve-II	Gland	0	0	0	0
F-1538	TK-603 Circulation Mixing line Valve-II	Bonet	0	0	0	0
F-1539	TK-603 Circulation Mixing line Valve-II	Flange(East)	0	0	0	0
F-1540	TK-603 Circulation Mixing line Valve-II	Flange(West)	0	0	0	0
F-1541	TK-603 Circulation Suction line Valve-I	Gland	0	0	0	0
F-1542	TK-603 Circulation Suction line Valve-I	Bonet	0	0	0	0
F-1543	TK-603 Circulation Suction line Valve-I	Flange(East)	0	0	0	0
F-1544	TK-603 Circulation Suction line Valve-I	Flange(West)	0	0	0	0
F-1545	TK-603 Circulation Suction line Valve-II	Gland	0	0	0	0
F-1546	TK-603 Circulation Suction line Valve-II	Bonet	0	0	0	0
F-1547	TK-603 Circulation Suction line Valve-II	Flange(East)	0	0	0	0
F-1548	TK-603 Circulation Suction line Valve-II	Flange(West)	0	0	0	0
F-1549	TK-603 Charging Suction line Valve-I	Gland	0	0	0	0
F-1550	TK-603 Charging Suction line Valve-I	Bonet	0	0	0	0
F-1551	TK-603 Charging Suction line Valve-I	Flange(East)	0	0	0	0
F-1552	TK-603 Charging Suction line Valve-I	Flange(West)	0	0	0	0
F-1553	TK-603 Charging Suction line Valve-II	Gland	0	0	0	0
F-1554	TK-603 Charging Suction line Valve-II	Bonet	0	0	0	0
F-1555	TK-603 Charging Suction line Valve-II	Flange(East)	0	0	0	0
F-1556	TK-603 Charging Suction line Valve-II	Flange(West)	0	0	0	0
F-1557	TK-602 Circulation Mixing line Valve-I	Gland	0	0	0	0
F-1558	TK-602 Circulation Mixing line Valve-I	Bonet	0	0	0	0
F-1559	TK-602 Circulation Mixing line Valve-I	Flange(East)	0	0	0	0
F-1560	TK-602 Circulation Mixing line Valve-I	Flange(West)	0	0	0	0
F-1561	TK-602 Circulation Mixing line Valve-II	Flange(West)	0	0	0	0
F-1562	TK-602 Circulation Mixing line Valve-II	Gland	0	0	0	0
F-1563	TK-602 Circulation Mixing line Valve-II	Bonet	0	0	0	0
F-1564	TK-602 Circulation Mixing line Valve-II	Flange(East)	0	0	0	0
F-1565	TK-602 Receiving line Valve-I	Gland	0	0	0	0
F-1566	TK-602 Receiving line Valve-I	Bonet	0	0	0	0
F-1567	TK-602 Receiving line Valve-I	Flange(East)	0	0	0	0
F-1568	TK-602 Receiving line Valve-I	Flange(West)	0	0	0	0

F-1569	TK-602 Receiving line Valve-II	Gland	0	0	0	0
F-1570	TK-602 Receiving line Valve-II	Bonet	0	0	0	0
F-1571	TK-602 Receiving line Valve-II	Flange(East)	0	0	0	0
F-1572	TK-602 Receiving line Valve-II	Flange(West)	0	0	0	0
F-1573	TK-602 Minimum Flow line Valve-I	Gland	291	134.2	0.0017	0.014892
F-1574	TK-602 Minimum Flow line Valve-I	Bonet	0	0	0	0
F-1575	TK-602 Minimum Flow line Valve-I	Flange(East)	0	0	0	0
F-1576	TK-602 Minimum Flow line Valve-I	Flange(West)	0	0	0	0
F-1577	TK-602 Minimum Flow line Valve-II	Gland	0	0	0	0
F-1578	TK-602 Minimum Flow line Valve-II	Bonet	0	0	0	0
F-1579	TK-602 Minimum Flow line Valve-II	Flange(East)	0	0	0	0
F-1580	TK-602 Minimum Flow line Valve-II	Flange(West)	0	0	0	0
F-1581	TK-604 Minimum Flow line Valve-I	Gland	0	0	0	0
F-1582	TK-604 Minimum Flow line Valve-I	Bonet	0	0	0	0
F-1583	TK-604 Minimum Flow line Valve-I	Flange(East)	0	0	0	0
F-1584	TK-604 Minimum Flow line Valve-I	Flange(West)	0	0	0	0
F-1585	TK-604 Minimum Flow line Valve-II	Gland	0	0	0	0
F-1586	TK-604 Minimum Flow line Valve-II	Bonet	0	0	0	0
F-1587	TK-604 Minimum Flow line Valve-II	Flange(East)	0	0	0	0
F-1588	TK-604 Minimum Flow line Valve-II	Flange(West)	0	0	0	0
F-1589	TK-604 Receiving line Valve-I	Gland	0	0	0	0
F-1590	TK-604 Receiving line Valve-I	Bonet	0	0	0	0
F-1591	TK-604 Receiving line Valve-I	Flange(East)	0	0	0	0
F-1592	TK-604 Receiving line Valve-I	Flange(West)	0	0	0	0
F-1593	TK-604 Receiving line Valve-II	Gland	0	0	0	0
F-1594	TK-604 Receiving line Valve-II	Bonet	0	0	0	0
F-1595	TK-604 Receiving line Valve-II	Flange(East)	0	0	0	0
F-1596	TK-604 Receiving line Valve-II	Flange(West)	0	0	0	0
F-1597	TK-604 Circulation Mixing line Valve-I	Gland	0	0	0	0
F-1598	TK-604 Circulation Mixing line Valve-I	Bonet	0	0	0	0
F-1599	TK-604 Circulation Mixing line Valve-I	Flange(East)	0	0	0	0
F-1600	TK-604 Circulation Mixing line Valve-I	Flange(West)	0	0	0	0
F-1601	TK-604 Circulation Mixing line Valve-II	Gland	0	0	0	0
F-1602	TK-604 Circulation Mixing line Valve-II	Bonet	0	0	0	0
F-1603	TK-604 Circulation Mixing line Valve-II	Flange(East)	0	0	0	0
F-1604	TK-604 Circulation Mixing line Valve-II	Flange(West)	0	0	0	0
F-1605	TK-604 Circulation Suction line Valve-I	Gland	742	385.1	0.0017	0.014892
F-1606	TK-604 Circulation Suction line Valve-I	Bonet	0	0	0	0
F-1607	TK-604 Circulation Suction line Valve-I	Flange(East)	0	0	0	0
F-1608	TK-604 Circulation Suction line Valve-I	Flange(West)	0	0	0	0
F-1609	TK-604 Circulation Suction line Valve-II	Gland	0	0	0	0
F-1610	TK-604 Circulation Suction line Valve-II	Bonet	0	0	0	0
F-1611	TK-604 Circulation Suction line Valve-II	Flange(East)	0	0	0	0
F-1612	TK-604 Circulation Suction line Valve-II	Flange(West)	0	0	0	0
F-1613	TK-604 Charging Suction line Valve-I	Gland	0	0	0	0
F-1614	TK-604 Charging Suction line Valve-I	Bonet	0	0	0	0
F-1615	TK-604 Charging Suction line Valve-I	Flange(East)	0	0	0	0
F-1616	TK-604 Charging Suction line Valve-I	Flange(West)	0	0	0	0
F-1617	TK-604 Charging Suction line Valve-II	Gland	0	0	0	0
F-1618	TK-604 Charging Suction line Valve-II	Bonet	0	0	0	0
F-1619	TK-604 Charging Suction line Valve-II	Flange(East)	0	0	0	0
F-1620	TK-604 Charging Suction line Valve-II	Flange(West)	0	0	0	0
F-1621	TK-177 Suction line Valve-I	Gland	0	0	0	0
F-1622	TK-177 Suction line Valve-I	Bonet	0	0	0	0
F-1623	TK-177 Suction line Valve-I	Flange(North)	0	0	0	0
F-1624	TK-177 Suction line Valve-I	Flange(South)	0	0	0	0
F-1625	TK-177 Suction line Valve-II	Gland	0	0	0	0
F-1626	TK-177 Suction line Valve-II	Flange(North)	0	0	0	0
F-1627	TK-177 Suction line Valve-II	Flange(South)	0	0	0	0
F-1628	TK-177 Suction line Valve-III	Gland	0	0	0	0
F-1629	TK-177 Suction line Valve-III	Bonet	0	0	0	0
F-1630	TK-177 Suction line Valve-III	Flange(North)	0	0	0	0
F-1631	TK-177 Suction line Valve-III	Flange(South)	0	0	0	0
F-1632	TK-177 Blending line Valve-I	Gland	0	0	0	0
F-1633	TK-177 Blending line Valve-I	Bonet	0	0	0	0
F-1634	TK-177 Blending line Valve-I	Flange(East)	0	0	0	0
F-1635	TK-177 Blending line Valve-I	Flange(West)	0	0	0	0

F-1636	TK-177 Blending line Valve-II	Gland	0	0	0	0
F-1637	TK-177 Blending line Valve-II	Flange(East)	0	0	0	0
F-1638	TK-177 Blending line Valve-II	Flange(West)	0	0	0	0
F-1639	TK-177 Blending line Valve-III	Gland	0	0	0	0
F-1640	TK-177 Blending line Valve-III	Bonet	0	0	0	0
F-1641	TK-177 Blending line Valve-III	Flange(East)	0	0	0	0
F-1642	TK-177 Blending line Valve-III	Flange(West)	0	0	0	0
F-1643	TK-001 Drain line Valve-I	Gland	0	0	0	0
F-1644	TK-001 Drain line Valve-I	Bonet	0	0	0	0
F-1645	TK-001 Drain line Valve-I	Flange(North)	0	0	0	0
F-1646	TK-001 Drain line Valve-I	Flange(South)	0	0	0	0
F-1647	TK-001 Drain line Valve-II	Gland	0	0	0	0
F-1648	TK-001 Drain line Valve-II	Bonet	0	0	0	0
F-1649	TK-001 Drain line Valve-II	Flange(North)	0	0	0	0
F-1650	TK-001 Suction line Valve-I	Gland	0	0	0	0
F-1651	TK-001 Suction line Valve-I	Bonet	0	0	0	0
F-1652	TK-001 Suction line Valve-I	Flange(East)	0	0	0	0
F-1653	TK-001 Suction line Valve-I	Flange(West)	0	0	0	0
F-1654	TK-001 Suction line Valve-II	Gland	0	0	0	0
F-1655	TK-001 Suction line Valve-II	Bonet	0	0	0	0
F-1656	TK-001 Suction line Valve-II	Flange(West)	0	0	0	0
F-1657	TK-001 Discharge line	Joint Flange	0	0	0	0
F-1658	TK-001 Discharge line	NRV	0	0	0	0
F-1659	TK-001 Discharge line NRV	Flange(East)	0	0	0	0
F-1660	TK-001 Discharge line NRV	Flange(West)	0	0	0	0
F-1661	TK-001 Discharge line Valve-I	Gland	0	0	0	0
F-1662	TK-001 Discharge line Valve-I	Bonet	0	0	0	0
F-1663	TK-001 Discharge line Valve-I	Flange(West)	0	0	0	0
F-1664	TK-001 Discharge line Valve-II	Gland	0	0	0	0
F-1665	TK-001 Discharge line Valve-II	Flange(North)	0	0	0	0
F-1666	TK-001 Discharge line Valve-II	Flange(South)	0	0	0	0
F-1667	TK-001 Discharge line Valve-III	Gland	0	0	0	0
F-1668	TK-001 Discharge line Valve-III	Flange(East)	0	0	0	0
F-1669	TK-001 Discharge line Valve-III	Flange(West)	0	0	0	0
F-1670	TK-607 Suction line	Joint Flange	0	0	0	0
F-1671	TK-607 Suction line Valve-I	Gland	0	0	0	0
F-1672	TK-607 Suction line Valve-I	Bonet	0	0	0	0
F-1673	TK-607 Suction line Valve-I	Flange(West)	0	0	0	0
F-1674	TK-607 Suction line Valve-II	Gland	0	0	0	0
F-1675	TK-607 Suction line Valve-II	Bonet	0	0	0	0
F-1676	TK-607 Suction line Valve-II	Flange(East)	0	0	0	0
F-1677	TK-607 Suction line Valve-II	Flange(West)	0	0	0	0
F-1678	TK-A -452 Crude Suction line	Joint Flange	0	0	0	0
F-1679	TK-A -452 Crude Suction line	NRV	0	0	0	0
F-1680	TK-A -452 Crude Suction line NRV	Flange(North)	0	0	0	0
F-1681	TK-A -452 Crude Suction line Valve-I	Gland	0	0	0	0
F-1682	TK-A -452 Crude Suction line Valve-I	Bonet	0	0	0	0
F-1683	TK-A -452 Crude Suction line Valve-I	Flange(North)	0	0	0	0
F-1684	TK-A -452 Crude Suction line Valve-I	Flange(South)	0	0	0	0
F-1685	TK-A -452 Crude Suction line Valve-II	Gland	0	0	0	0
F-1686	TK-A -452 Crude Suction line Valve-II	Flange(North)	0	0	0	0
F-1687	TK-A -452 Crude Suction line Valve-II	Flange(South)	0	0	0	0
F-1688	TK-A -452 Crude Suction line Valve-III	Gland	0	0	0	0
F-1689	TK-A -452 Crude Suction line Valve-III	Flange(North)	0	0	0	0
F-1690	TK-A -452 Crude Suction line Valve-III	Flange(South)	0	0	0	0
F-1691	TK-A -452 Crude Suction line Valve-IV	Gland	0	0	0	0
F-1692	TK-A -452 Crude Suction line Valve-IV	Flange(East)	0	0	0	0
F-1693	TK-A -452 Crude Suction line Valve-IV	Flange(West)	0	0	0	0
F-1694	TK-A -452 Changing line Valve-I	Gland	0	0	0	0
F-1695	TK-A -452 Changing line Valve-I	Bonet	0	0	0	0
F-1696	TK-A -452 Changing line Valve-I	Flange(East)	0	0	0	0
F-1697	TK-A -452 Changing line Valve-I	Flange(West)	0	0	0	0
F-1698	TK-A -452 Changing line Valve-II	Gland	0	0	0	0
F-1699	TK-A -452 Changing line Valve-II	Bonet	0	0	0	0
F-1700	TK-A -452 Changing line Valve-II	Flange(North)	0	0	0	0
F-1701	TK-A -452 Changing line Valve-II	Flange(South)	0	0	0	0
F-1702	TK-A -452 Changing line Valve-III	Gland	0	0	0	0

F-1703	TK-A -452 Changing line Valve-III	Flange(North)	0	0	0	0
F-1704	TK-A -452 Changing line Valve-III	Flange(South)	0	0	0	0
F-1705	TK-A -452 Drain line Valve-I	Gland	0	0	0	0
F-1706	TK-A -452 Drain line Valve-II	Flange(Upper)	0	0	0	0
F-1707	TK-A -452 Drain line Valve-II	Flange(Lower)	0	0	0	0
F-1708	TK-A -452 Drain line Valve-II	Gland	0	0	0	0
F-1709	TK-A -452 Drain line Valve-III	Gland	0	0	0	0
F-1710	TK-A -452 Drain line Valve-III	Flange(East)	0	0	0	0
F-1711	TK-A -452 Drain line Valve-III	Flange(West)	0	0	0	0
F-1712	TK-A -452 Drain line Valve-IV	Gland	0	0	0	0
F-1713	TK-A -452 Drain line Valve-IV	Flange(West)	0	0	0	0
F-1714	TK-004 Suction line Valve-I	Gland	0	0	0	0
F-1715	TK-004 Suction line Valve-I	Bonet	0	0	0	0
F-1716	TK-004 Suction line Valve-I	Flange(North)	0	0	0	0
F-1717	TK-004 Suction line Valve-I	Flange(South)	0	0	0	0
F-1718	TK-004 Suction line Valve-II	Gland	0	0	0	0
F-1719	TK-004 Suction line Valve-II	Flange(East)	0	0	0	0
F-1720	TK-004 Suction line Valve-II	Flange(West)	0	0	0	0
F-1721	TK-004 Suction line Valve-III	Gland	0	0	0	0
F-1722	TK-004 Suction line Valve-III	Bonet	0	0	0	0
F-1723	TK-004 Suction line Valve-III	Flange(East)	0	0	0	0
F-1724	TK-004 Suction line Valve-III	Flange(West)	0	0	0	0
F-1725	TK-004 Suction line Valve-IV	gland	0	0	0	0
F-1726	TK-004 Suction line Valve-IV	Flange(East)	0	0	0	0
F-1727	TK-004 Suction line Valve-IV	Flange(West)	0	0	0	0
F-1728	TK-004 Discharge line Valve	Gland	0	0	0	0
F-1729	TK-004 Discharge line Valve	Flange(West)	0	0	0	0
F-1730	TK-A-305 Suction line Valve	Flange(North)	0	0	0	0
F-1731	TK-A-305 Suction line Valve	Flange(South)	0	0	0	0
F-1732	TK-A-305 Suction line Valve	Gland	0	0	0	0
F-1733	TK-A-305 Discharge line Valve	Gland	0	0	0	0
F-1734	TK-A-305 Discharge line Valve	Flange(North)	0	0	0	0
F-1735	TK-A-305 Discharge line Valve	Flange(South)	0	0	0	0
F-1736	TK-A-305 Circulation line Valve	Gland	0	0	0	0
F-1737	TK-A-305 Circulation line Valve	Flange(North)	0	0	0	0
F-1738	TK-A-305 Circulation line Valve	Flange(South)	0	0	0	0
F-1739	TK-A-305 Drain line Valve-I	Gland	0	0	0	0
F-1740	TK-A-305 Drain line Valve-I	Flange(Upper)	0	0	0	0
F-1741	TK-A-305 Drain line Valve-I	Flange(Lower)	0	0	0	0
F-1742	TK-A-305 Drain line Valve-II	Gland	0	0	0	0
F-1743	TK-A-305 Drain line Valve-II	Flange(Upper)	0	0	0	0
F-1744	TK-A-305 Drain line Valve-II	Flange(Lower)	0	0	0	0
F-1745	TK-A-305 Drain line Valve-III	Gland	0	0	0	0
F-1746	TK-A-305 Drain line Valve-III	Flange(East)	0	0	0	0
F-1747	TK-A-305 Drain line Valve-III	Flange(West)	0	0	0	0
F-1748	TK-A-305 Drain line Valve-IV	Gland	0	0	0	0
F-1749	TK-A-305 Drain line Valve-IV	Flange(West)	0	0	0	0
F-1750	TK-A-005 Drain line Valve-I	Gland	0	0	0	0
F-1751	TK-A-005 Drain line Valve-I	Flange(North)	0	0	0	0
F-1752	TK-A-005 Drain line Valve-I	Flange(South)	0	0	0	0
F-1753	TK-A-005 Drain line Valve-II	Gland	0	0	0	0
F-1754	TK-A-005 Drain line Valve-II	Flange(North)	0	0	0	0
F-1755	TK-A-005 Suction line Valve	Gland	0	0	0	0
F-1756	TK-A-005 Suction line Valve	Bonet	0	0	0	0
F-1757	TK-A-005 Suction line Valve	Flange(East)	0	0	0	0
F-1758	TK-A-005 Suction line Valve	Flange(West)	0	0	0	0
F-1759	TK-A-005 Discharge line Valve-I	Gland	0	0	0	0
F-1760	TK-A-005 Discharge line Valve-I	Bonet	0	0	0	0
F-1761	TK-A-005 Discharge line Valve-I	Flange(East)	0	0	0	0
F-1762	TK-A-005 Discharge line Valve-I	Flange(West)	0	0	0	0
F-1763	TK-A-005 Discharge line Valve-II	Gland	0	0	0	0
F-1764	TK-A-005 Discharge line Valve-II	Flange(East)	0	0	0	0
F-1765	TK-A-005 Discharge line Valve-II	Flange(West)	0	0	0	0
F-1766	TK-A-005 Discharge line Valve-III	Gland	0	0	0	0
F-1767	TK-A-005 Discharge line Valve-III	Flange(North)	0	0	0	0
F-1768	TK-A-005 Discharge line Valve-III	Flange(South)	0	0	0	0
F-1769	TK-538 Suction line Valve-I	Gland	0	0	0	0

F-1770	TK-538 Suction line Valve-I	Bonet	0	0	0	0
F-1771	TK-538 Suction line Valve-I	Flange(North)	0	0	0	0
F-1772	TK-538 Suction line Valve-I	Flange(South)	0	0	0	0
F-1773	TK-538 Suction line Valve-II	Gland	0	0	0	0
F-1774	TK-538 Suction line Valve-II	Bonet	0	0	0	0
F-1775	TK-538 Suction line Valve-II	Flange(North)	0	0	0	0
F-1776	TK-538 Suction line Valve-II	Flange(South)	0	0	0	0
F-1777	TK-538 Drain line Valve-I	Gland	0	0	0	0
F-1778	TK-538 Drain line Valve-I	Flange(North)	0	0	0	0
F-1779	TK-538 Drain line Valve-I	Flange(South)	0	0	0	0
F-1780	TK-538 Drain line Valve-II	Gland	0	0	0	0
F-1781	TK-538 Drain line Valve-II	Flange(North)	0	0	0	0
F-1782	TK-538 Drain line Valve-III	Flange(Upper)	0	0	0	0
F-1783	TK-538 Drain line Valve-III	Flange(Lower)	0	0	0	0
F-1784	TK-538 Drain line Valve-III	Gland	0	0	0	0
F-1785	TK-538 Drain line Valve-IV	Flange(North)	0	0	0	0
F-1786	TK-538 Drain line Valve-IV	Flange(South)	0	0	0	0
F-1787	TK-538 Drain line Valve-IV	Gland	0	0	0	0
F-1788	TK-538 Drain line Valve-V	Gland	0	0	0	0
F-1789	TK-538 Drain line Valve-V	Flange(North)	0	0	0	0
F-1790	TK-538 Drain line Valve-V	Flange(South)	0	0	0	0
F-1791	TK-583 Receiving/Suction line Valve	Gland	0	0	0	0
F-1792	TK-583 Receiving/Suction line Valve	Bonet	0	0	0	0
F-1793	TK-583 Receiving/Suction line Valve	Flange(East)	0	0	0	0
F-1794	TK-583 Receiving/Suction line Valve	Flange(West)	0	0	0	0
F-1795	TK-583 Drain line Valve-I	Gland	0	0	0	0
F-1796	TK-583 Drain line Valve-I	Bonet	0	0	0	0
F-1797	TK-583 Drain line Valve-I	Flange(East)	0	0	0	0
F-1798	TK-583 Drain line Valve-I	Flange(West)	0	0	0	0
F-1799	TK-583 Drain line Valve-II	Gland	0	0	0	0
F-1800	TK-583 Drain line Valve-II	Bonet	0	0	0	0
F-1801	TK-583 Drain line Valve-II	Flange(West)	0	0	0	0
F-1802	TK-584 Drain line Valve-I	Gland	0	0	0	0
F-1803	TK-584 Drain line Valve-I	Bonet	0	0	0	0
F-1804	TK-584 Drain line Valve-I	Flange(North)	0	0	0	0
F-1805	TK-584 Drain line Valve-I	Flange(South)	0	0	0	0
F-1806	TK-584 Drain line Valve-II	Gland	0	0	0	0
F-1807	TK-584 Drain line Valve-II	Bonet	0	0	0	0
F-1808	TK-584 Drain line Valve-II	Flange(North)	0	0	0	0
F-1809	TK-584 Drain line Valve-II	Flange(South)	0	0	0	0
F-1810	TK-584 Drain line Valve-III	Gland	0	0	0	0
F-1811	TK-584 Drain line Valve-III	Flange(Upper)	0	0	0	0
F-1812	TK-584 Drain line Valve-III	Flange(Lower)	0	0	0	0
F-1813	TK-584 Receiving/Suction line Valve	Gland	262	157.2	0.0017	0.014892
F-1814	TK-584 Receiving/Suction line Valve	Bonet	0	0	0	0
F-1815	TK-584 Receiving/Suction line Valve	Flange(North)	0	0	0	0
F-1816	TK-584 Receiving/Suction line Valve	Flange(South)	0	0	0	0
F-1817	TK-582 Receiving/Suction line Valve	Gland	0	0	0	0
F-1818	TK-582 Receiving/Suction line Valve	Bonet	0	0	0	0
F-1819	TK-582 Receiving/Suction line Valve	Flange(North)	0	0	0	0
F-1820	TK-582 Receiving/Suction line Valve	Flange(South)	0	0	0	0
F-1821	TK-582 Drain line Valve-I	Gland	0	0	0	0
F-1822	TK-582 Drain line Valve-I	Bonet	0	0	0	0
F-1823	TK-582 Drain line Valve-I	Flange(East)	0	0	0	0
F-1824	TK-582 Drain line Valve-I	Flange(West)	0	0	0	0
F-1825	TK-582 Drain line Valve-II	gland	0	0	0	0
F-1826	TK-582 Drain line Valve-II	Bonet	0	0	0	0
F-1827	TK-582 Drain line Valve-II	Flange(West)	0	0	0	0
F-1828	TK-562 Suction line Valve	Gland	0	0	0	0
F-1829	TK-562 Suction line Valve	Bonet	0	0	0	0
F-1830	TK-562 Suction line Valve	Flange(North)	0	0	0	0
F-1831	TK-562 Suction line Valve	Flange(South)	0	0	0	0
F-1832	TK-562 Discharge line Valve	Gland	0	0	0	0
F-1833	TK-562 Discharge line Valve	Bonet	0	0	0	0
F-1834	TK-562 Discharge line Valve	Flange(North)	0	0	0	0
F-1835	TK-562 Discharge line Valve	Flange(South)	0	0	0	0
F-1836	TK-565 Suction line Valve	Gland	0	0	0	0

F-1837	TK-565 Suction line Valve	Bonet	0	0	0	0
F-1838	TK-565 Suction line Valve	Flange(East)	0	0	0	0
F-1839	TK-565 Suction line Valve	Flange(West)	0	0	0	0
F-1840	TK-565 Discharge line Valve	Gland	0	0	0	0
F-1841	TK-563 Suction line Valve	Gland	0	0	0	0
F-1842	TK-563 Discharge line Valve	Gland	57.2	40	0.0017	0.014892
F-1843	TK-564 Suction line Valve	Gland	0	0	0	0
F-1844	TK-564 Suction line Valve	Bonet	0	0	0	0
F-1845	TK-564 Suction line Valve	Flange(East)	0	0	0	0
F-1846	TK-564 Suction line Valve	Flange(West)	0	0	0	0
F-1847	TK-564 Discharge line	Gland	0	0	0	0
F-1848	TK-572 Drain line Valve-I	Gland	0	0	0	0
F-1849	TK-572 Drain line Valve-I	Bonet	0	0	0	0
F-1850	TK-572 Drain line Valve-I	Flange(North)	0	0	0	0
F-1851	TK-572 Drain line Valve-I	Flange(South)	0	0	0	0
F-1852	TK-572 Drain line Valve-II	Gland	0	0	0	0
F-1853	TK-572 Drain line Valve-II	Bonet	0	0	0	0
F-1854	TK-572 Drain line Valve-II	Flange(North)	0	0	0	0
F-1855	TK-572 Drain line Valve-III	Gland	0	0	0	0
F-1856	TK-572 Drain line Valve-III	Flange(Lower)	0	0	0	0
F-1857	TK-572 Drain line Valve-IV	Gland	0	0	0	0
F-1858	TK-572 Drain line Valve-IV	Flange(North)	0	0	0	0
F-1859	TK-572 Drain line Valve-IV	Flange(South)	0	0	0	0
F-1860	TK-572 Drain line Valve-V	Gland	0	0	0	0
F-1861	TK-572 Drain line Valve-V	Flange(North)	0	0	0	0
F-1862	TK-572 Drain line Valve-V	Flange(South)	0	0	0	0
F-1863	TK-572 Circulation line Valve	Gland	0	0	0	0
F-1864	TK-572 Circulation line Valve	Bonet	0	0	0	0
F-1865	TK-572 Circulation line Valve	Flange(East)	0	0	0	0
F-1866	TK-572 Circulation line Valve	Flange(West)	0	0	0	0
F-1867	TK-572 Suction/Receiving line Valve	Gland	0	0	0	0
F-1868	TK-572 Suction/Receiving line Valve	Bonet	0	0	0	0
F-1869	TK-572 Suction/Receiving line Valve	Flange(East)	0	0	0	0
F-1870	TK-572 Suction/Receiving line Valve	Flange(West)	0	0	0	0
F-1871	TK-571 Drain line Valve-I	Gland	0	0	0	0
F-1872	TK-571 Drain line Valve-I	Flange(North)	0	0	0	0
F-1873	TK-571 Drain line Valve-I	Flange(South)	0	0	0	0
F-1874	TK-571 Drain line Valve-II	Gland	0	0	0	0
F-1875	TK-571 Drain line Valve-II	Flange(North)	0	0	0	0
F-1876	TK-571 Drain line Valve-II	Flange(South)	0	0	0	0
F-1877	TK-571 Drain line Valve-III	Gland	0	0	0	0
F-1878	TK-571 Drain line Valve-IV	Gland	0	0	0	0
F-1879	TK-571 Drain line Valve-IV	Flange(North)	0	0	0	0
F-1880	TK-571 Drain line Valve-IV	Flange(South)	0	0	0	0
F-1881	TK-571 Suction/Receiving line Valve	Gland	147.3	68.1	0.0017	0.014892
F-1882	TK-571 Suction/Receiving line Valve	Bonet	0	0	0	0
F-1883	TK-571 Suction/Receiving line Valve	Flange(North)	0	0	0	0
F-1884	TK-571 Suction/Receiving line Valve	Flange(South)	0	0	0	0
F-1885	TK-571 Circulation line Valve	Gland	0	0	0	0
F-1886	TK-571 Circulation line Valve	Bonet	0	0	0	0
F-1887	TK-571 Circulation line Valve	Flange(North)	0	0	0	0
F-1888	TK-571 Circulation line Valve	Flange(South)	526	305.7	0.00006	0.000526
F-1889	TK-568 Drain line Valve-I	Gland	0	0	0	0
F-1890	TK-568 Drain line Valve-I	Bonet	0	0	0	0
F-1891	TK-568 Drain line Valve-I	Flange(South)	0	0	0	0
F-1892	TK-568 Drain line Valve-II	Gland	0	0	0	0
F-1893	TK-568 Drain line Valve-II	Bonet	0	0	0	0
F-1894	TK-568 Drain line Valve-II	Flange(North)	0	0	0	0
F-1895	TK-568 Drain line Valve-III	Gland	0	0	0	0
F-1896	TK-568 Drain line Valve-III	Bonet	0	0	0	0
F-1897	TK-568 Drain line Valve-III	Flange(Lower)	0	0	0	0
F-1898	TK-568 Drain line Valve-III	Flange(Upper)	112	58.1	0.00006	0.000526
F-1899	TK-568 Drain line Valve-IV	Gland	0	0	0	0
F-1900	TK-568 Drain line Valve-IV	Flange(North)	0	0	0	0
F-1901	TK-568 Drain line Valve-IV	Flange(South)	0	0	0	0
F-1902	TK-568 Drain line Valve-V	Gland	0	0	0	0
F-1903	TK-568 Drain line Valve-V	Bonet	0	0	0	0

F-1904	TK-568 Drain line Valve-V	Flange(North)	0	0	0	0
F-1905	TK-568 Drain line Valve-V	Flange(South)	0	0	0	0
F-1906	TK-568 Suction line Valve	Gland	183	103.7	0.0017	0.014892
F-1907	TK-568 Suction line Valve	Bonet	0	0	0	0
F-1908	TK-568 Suction line Valve	Flange(South)	0	0	0	0
F-1909	TK-568 Suction line Valve	Flange(North)	0	0	0	0
F-1910	TK-568 Circulation line Valve	Gland	0	0	0	0
F-1911	TK-568 Circulation line Valve	Bonet	0	0	0	0
F-1912	TK-568 Circulation line Valve	Flange(South)	0	0	0	0
F-1913	TK-568 Circulation line Valve	Flange(North)	0	0	0	0
F-1914	TK-568 Receiving line Valve	Flange(South)	0	0	0	0
F-1915	TK-568 Receiving line Valve	Flange(North)	0	0	0	0
F-1916	TK-568 Receiving line Valve	Gland	0	0	0	0
F-1917	TK-568 Receiving line Valve	Bonet	0	0	0	0
F-1918	TK-569 Drain line Valve-I	Gland	0	0	0	0
F-1919	TK-569 Drain line Valve-I	Bonet	0	0	0	0
F-1920	TK-569 Drain line Valve-I	Flange(North)	0	0	0	0
F-1921	TK-569 Drain line Valve-I	Flange(South)	0	0	0	0
F-1922	TK-569 Drain line Valve-II	Gland	0	0	0	0
F-1923	TK-569 Drain line Valve-II	Bonet	0	0	0	0
F-1924	TK-569 Drain line Valve-II	Flange(North)	0	0	0	0
F-1925	TK-569 Drain line Valve-III	gland	0	0	0	0
F-1926	TK-569 Drain line Valve-III	Flange(Lower)	0	0	0	0
F-1927	TK-569 Drain line Valve-IV	Gland	0	0	0	0
F-1928	TK-569 Drain line Valve-IV	Bonet	0	0	0	0
F-1929	TK-569 Drain line Valve-IV	Flange(North)	0	0	0	0
F-1930	TK-569 Drain line Valve-IV	Flange(South)	0	0	0	0
F-1931	TK-569 Drain line Valve-V	Gland	0	0	0	0
F-1932	TK-569 Drain line Valve-V	Bonet	0	0	0	0
F-1933	TK-569 Drain line Valve-V	Flange(North)	0	0	0	0
F-1934	TK-569 Suction line Valve	Gland	0	0	0	0
F-1935	TK-569 Suction line Valve	Bonet	0	0	0	0
F-1936	TK-569 Suction line Valve	Flange(North)	0	0	0	0
F-1937	TK-569 Suction line Valve	Flange(South)	0	0	0	0
F-1938	TK-569 Circulation line Valve	Gland	0	0	0	0
F-1939	TK-569 Circulation line Valve	Bonet	0	0	0	0
F-1940	TK-569 Circulation line Valve	Flange(North)	0	0	0	0
F-1941	TK-569 Circulation line Valve	Flange(South)	0	0	0	0
F-1942	TK-569 Receiving line Valve	Gland	0	0	0	0
F-1943	TK-569 Receiving line Valve	Bonet	0	0	0	0
F-1944	TK-569 Receiving line Valve	Flange(North)	0	0	0	0
F-1945	TK-569 Receiving line Valve	Flange(South)	0	0	0	0
F-1946	TK-570 Drain line Valve-I	Gland	0	0	0	0
F-1947	TK-570 Drain line Valve-I	Bonet	0	0	0	0
F-1948	TK-570 Drain line Valve-I	Flange(East)	0	0	0	0
F-1949	TK-570 Drain line Valve-I	Flange(West)	0	0	0	0
F-1950	TK-570 Drain line Valve-II	Gland	0	0	0	0
F-1951	TK-570 Drain line Valve-II	Bonet	0	0	0	0
F-1952	TK-570 Drain line Valve-II	Flange(West)	0	0	0	0
F-1953	TK-570 Drain line Valve-III	Gland	0	0	0	0
F-1954	TK-570 Drain line Valve-III	Flange(Upper)	0	0	0	0
F-1955	TK-570 Drain line Valve-III	Flange(Lower)	0	0	0	0
F-1956	TK-570 Drain line Valve-IV	Gland	0	0	0	0
F-1957	TK-570 Drain line Valve-IV	Bonet	0	0	0	0
F-1958	TK-570 Drain line Valve-IV	Flange(East)	0	0	0	0
F-1959	TK-570 Drain line Valve-IV	Flange(West)	0	0	0	0
F-1960	TK-570 Drain line Valve-V	Gland	0	0	0	0
F-1961	TK-570 Drain line Valve-V	Bonet	0	0	0	0
F-1962	TK-570 Drain line Valve-V	Flange(West)	0	0	0	0
F-1963	TK-570 Suction line Valve	Gland	413	214.5	0.0017	0.014892
F-1964	TK-570 Suction line Valve	Bonet	0	0	0	0
F-1965	TK-570 Suction line Valve	Flange(East)	0	0	0	0
F-1966	TK-570 Suction line Valve	Flange(West)	0	0	0	0
F-1967	TK-570 Circulation line Valve	Gland	0	0	0	0
F-1968	TK-570 Circulation line Valve	Bonet	0	0	0	0
F-1969	TK-570 Circulation line Valve	Flange(East)	0	0	0	0
F-1970	TK-570 Circulation line Valve	Flange(West)	0	0	0	0

F-1971	TK-570 Receiving line Valve-I	Gland	0	0	0	0
F-1972	TK-570 Receiving line Valve-I	Bonet	0	0	0	0
F-1973	TK-570 Receiving line Valve-I	Flange(East)	0	0	0	0
F-1974	TK-570 Receiving line Valve-I	Flange(West)	0	0	0	0
F-1975	TK-570 Receiving line Valve-II	Gland	0	0	0	0
F-1976	TK-570 Receiving line Valve-II	Bonet	0	0	0	0
F-1977	TK-570 Receiving line Valve-II	Flange(North)	0	0	0	0
F-1978	TK-570 Receiving line Valve-II	Flange(South)	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 7(F) UNIT: DCU

SUMMARY SHEET FOR DCU AREA

Total number of points covered	**1043**
Date of Monitoring/Rechecking	**16.12.2022 to 17.12.2022**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-1979	EQP NO-07PA-001B IN LET	V.GLAND	65	37.5	0.0017	0.014892
F-1980		F.JOINT	0	0	0	0
F-1981		P.GLAND	0	0	0	0
F-1982	EQP NO-07PA-001B OUTLET	F.JOINT	0	0	0	0
F-1983		P.GLAND	0	0	0	0
F-1984	EQP NO-07-PA-041B INLET	V.GLAND	0	0	0	0
F-1985		F.JOINT	0	0	0	0
F-1986		P.GLAND	0	0	0	0
F-1987	EQP NO-07-PA-041B OUTLET	F.JOINT	0	0	0	0
F-1988		P.GLAND	0	0	0	0
F-1989	Bypass line to OWS 2nd Valve	V.GLAND	0	0	0	0
F-1990	EQP NO-07-PA-042 B INLET	V.GLAND	0	0	0	0
F-1991		F.JOINT	0	0	0	0
F-1992		P.GLAND	0	0	0	0
F-1993	EQP NO-07-PA-042B OUTLET	F.JOINT	0	0	0	0
F-1994		P.GLAND	0	0	0	0
F-1995	EQP NO-07-PA-005B INLET	V.GLAND	0	0	0	0
F-1996		F.JOINT	23.7	13.1	0.00006	0.000526
F-1997		P.GLAND	0	0	0	0
F-1998	EQP NO-07-PA-005B OUTLET	F.JOINT	0	0	0	0
F-1999		P.GLAND	0	0	0	0
F-2000	EQP NO-07-PA-007A INLET	V.GLAND	0	0	0	0
F-2001		F.JOINT	0	0	0	0
F-2002		P.GLAND	0	0	0	0
F-2003	EQP NO-07-PA-007A OUT	F.JOINT	0	0	0	0
F-2004		P.GLAND	0	0	0	0
F-2005	EQP NO-07-PA-004A IN	V.GLAND	0	0	0	0
F-2006		F.JOINT	0	0	0	0
F-2007		P.GLAND	0	0	0	0
F-2008	EQP NO-07-PA-004A OUT	F.JOINT	0	0	0	0
F-2009		P.GLAND	0	0	0	0
F-2010	EQP NO-07-PA-001 IN B	V.GLAND	0	0	0	0
F-2011		F.JOINT	0	0	0	0
F-2012		P.GLAND	0	0	0	0
F-2013	EQP NO-07-PA-001 B OUT	F.JOINT	0	0	0	0

F-2014		P.GLAND	0	0	0	0
F-2015	EQP NO-07-PA-043B IN	V.GLAND	0	0	0	0
F-2016		F.JOINT	0	0	0	0
F-2017		P.GLAND	0	0	0	0
F-2018	EQP NO-07-PA-043B OUT	F.JOINT	0	0	0	0
F-2019		V.GLAND	0	0	0	0
F-2020		F.JOINT	0	0	0	0
F-2021	Circulation line Pump 43 A/B 1st isolating valve	V.GLAND	0	0	0	0
F-2022		F.JOINT	0	0	0	0
F-2023		F.JOINT	0	0	0	0
F-2024	Control Valvve 07-FV-3403	V.GLAND	0	0	0	0
F-2025		F.JOINT	0	0	0	0
F-2026		F.JOINT	0	0	0	0
F-2027	Circulation line Pump 43 A/B 2nd isolating valve	V.GLAND	0	0	0	0
F-2028		F.JOINT	0	0	0	0
F-2029	EQP NO-07-PA-048 A IN	V.GLAND	0	0	0	0
F-2030		F.JOINT	0	0	0	0
F-2031		P.GLAND	0	0	0	0
F-2032	EQP NO-07-PA-048 A OUT	F.JOINT	0	0	0	0
F-2033		P.GLAND	0	0	0	0
F-2034	EQP NO-07-PA-012 B IN	V.GLAND	0	0	0	0
F-2035		F.JOINT	0	0	0	0
F-2036		P.GLAND	0	0	0	0
F-2037	EQP NO-07-PA-012 B OUT	F.JOINT	0	0	0	0
F-2038		P.GLAND	0	0	0	0
F-2039	EQP NO-07-PA-004 A IN	V.GLAND	0	0	0	0
F-2040		F.JOINT	0	0	0	0
F-2041		P.GLAND	0	0	0	0
F-2042	EQP NO-07-PA-004 A OUT	F.JOINT	0	0	0	0
F-2043		P.GLAND	0	0	0	0
F-2044	EQP NO-07-PA-002A IN	V.GLAND	0	0	0	0
F-2045		F.JOINT	0	0	0	0
F-2046		P.GLAND	0	0	0	0
F-2047	EQP NO-07-PA-002 A OUT	F.JOINT	0	0	0	0
F-2048		P.GLAND	0	0	0	0
F-2049		V.GLAND	0	0	0	0
F-2050	EQP NO-07-PA-006 B IN	V.GLAND	0	0	0	0
F-2051		F.JOINT	0	0	0	0
F-2052		P.GLAND	36.2	20.5	0.0017	0.014892
F-2053	EQP NO-07-PA-006 B OUT	F.JOINT	0	0	0	0
F-2054		P.GLAND	0	0	0	0
F-2055		V.GLAND	0	0	0	0
F-2056	EQP NO-07-PA-003 A IN	V.GLAND	0	0	0	0
F-2057		F.JOINT	0	0	0	0
F-2058		P.GLAND	0	0	0	0
F-2059	EQP NO-07-PA-003 A OUT	F.JOINT	0	0	0	0
F-2060		P.GLAND	0	0	0	0
F-2061	EQP NO-07-PA-009A IN	V.GLAND	0	0	0	0
F-2062		F.JOINT	0	0	0	0
F-2063		P.GLAND	0	0	0	0
F-2064	EQP NO-07-PA-009A OUT	F.JOINT	0	0	0	0
F-2065		P.GLAND	0	0	0	0
F-2066	LINE CFO FORCED REFLUX	VALVE	0	0	0	0
F-2067		VALVE	0	0	0	0
F-2068		VALVE	0	0	0	0
F-2069	FEED SAMPLE POINT	VALVE	0	0	0	0
F-2070		VALVE	11.5	5.4	0.0017	0.014892
F-2071		VALVE	0	0	0	0
F-2072		VALVE	0	0	0	0
F-2073		FLANGE	0	0	0	0
F-2074		FLANGE	0	0	0	0
F-2075	EQP NO-07-PA-014 B IN	V.GLAND	0	0	0	0
F-2076		F.JOINT	0	0	0	0
F-2077		P.GLAND	0	0	0	0
F-2078	EQP NO-07-PA-014 B OUT	F.JOINT	0	0	0	0
F-2079		P.GLAND	0	0	0	0
F-2080	EQP NO-07-PA-044 A IN	V.GLAND	0	0	0	0

F-2081		F.JOINT	0	0	0	0
F-2082		P.GLAND	0	0	0	0
F-2083	EQP NO-07-PA-044 A OUT	F.JOINT	0	0	0	0
F-2084		P.GLAND	0	0	0	0
F-2085	FEED SAMPLE POINT	FLANGE	0	0	0	0
F-2086	DOWN LINE	VALVE	0	0	0	0
F-2087		FLANGE	0	0	0	0
F-2088		FLANGE	0	0	0	0
F-2089		VALVE	0	0	0	0
F-2090		FLANGE	0	0	0	0
F-2091		VALVE	0	0	0	0
F-2092		FLANGE	0	0	0	0
F-2093		FLANGE	0	0	0	0
F-2094		VALVE	0	0	0	0
F-2095		FLANGE	0	0	0	0
F-2096		VALVE	0	0	0	0
F-2097		VALVE	0	0	0	0
F-2098		FLANGE	0	0	0	0
F-2099		FLANGE	0	0	0	0
F-2100	LINE LDO OUT	FLANGE	0	0	0	0
F-2101	BACK SIDE OF SAMPLE POINT	FLANGE	0	0	0	0
F-2102		VALVE	0	0	0	0
F-2103		FLANGE	0	0	0	0
F-2104		FLANGE	0	0	0	0
F-2105	LINE 2-P-07,115	VALVE	0	0	0	0
F-2106		FLANGE	0	0	0	0
F-2107		FLANGE	0	0	0	0
F-2108	LINE P/1107	VALVE	0	0	0	0
F-2109		VALVE	0	0	0	0
F-2110		FLANGE	0	0	0	0
F-2111		FLANGE	0	0	0	0
F-2112		FLANGE	0	0	0	0
F-2113		FLANGE	0	0	0	0
F-2114		VALVE	0	0	0	0
F-2115		FLANGE	0	0	0	0
F-2116		VALVE	0	0	0	0
F-2117		FLANGE	0	0	0	0
F-2118	LINE 4-P-07-1101	VALVE	0	0	0	0
F-2119		FLANGE	0	0	0	0
F-2120		VALVE	0	0	0	0
F-2121		FLANGE	0	0	0	0
F-2122		FLANGE	0	0	0	0
F-2123		VALVE	0	0	0	0
F-2124		FLANGE	0	0	0	0
F-2125	SIDE OF	FLANGE	0	0	0	0
F-2126	LINE 4-P-07-1101	VALVE	0	0	0	0
F-2127		FLANGE	0	0	0	0
F-2128		FLANGE	0	0	0	0
F-2129		VALVE	0	0	0	0
F-2130		FLANGE	0	0	0	0
F-2131		VALVE	0	0	0	0
F-2132		VALVE	0	0	0	0
F-2133	LINE LDO TO STORAGE/SLOP	FLANGE	7.6	4.6	0.00006	0.00526
F-2134		VALVE	0	0	0	0
F-2135		FLANGE	0	0	0	0
F-2136		FLANGE	0	0	0	0
F-2137		VALVE	0	0	0	0
F-2138		FLANGE	0	0	0	0
F-2139		VALVE	0	0	0	0
F-2140		VALVE	0	0	0	0
F-2141	LDO TO SLOP LINE	VALVE	0	0	0	0
F-2142		VALVE	0	0	0	0
F-2143		FLANGE	0	0	0	0
F-2144		VALVE	0	0	0	0
F-2145		FLANGE	0	0	0	0
F-2146		VALVE	0	0	0	0
F-2147		VALVE	0	0	0	0

F-2148		FLANGE	0	0	0	0
F-2149		VALVE	0	0	0	0
F-2150		FLANGE	0	0	0	0
F-2151		VALVE	0	0	0	0
F-2152	LINE WCR -2301	FLANGE	0	0	0	0
F-2153		VALVE	0	0	0	0
F-2154		FLANGE	0	0	0	0
F-2155	RIGHT SIDE OF	VALVE	0	0	0	0
F-2156	LINE WCR -2301	VALVE	0	0	0	0
F-2157		VALVE	0	0	0	0
F-2158		VALVE	0	0	0	0
F-2159		FLANGE	0	0	0	0
F-2160		VALVE	0	0	0	0
F-2161		FLANGE	0	0	0	0
F-2162	LINE WCR-2302	FLANGE	0	0	0	0
F-2163		VALVE	0	0	0	0
F-2164		FLANGE	0	0	0	0
F-2165	RIGHT SIDE OF	VALVE	0	0	0	0
F-2166	LINE WCR -2302	VALVE	0	0	0	0
F-2167		VALVE	0	0	0	0
F-2168		VALVE	0	0	0	0
F-2169		VALVE	0	0	0	0
F-2170	LINE TO FPJ 1701	FLANGE	0	0	0	0
F-2171		VALVE	0	0	0	0
F-2172		FLANGE	0	0	0	0
F-2173		FLANGE	0	0	0	0
F-2174		VALVE	0	0	0	0
F-2175		FLANGE	0	0	0	0
F-2176		FLANGE	0	0	0	0
F-2177		VALVE	0	0	0	0
F-2178		FLANGE	0	0	0	0
F-2179	LINE TO P-1702	FLANGE	0	0	0	0
F-2180		VALVE	0	0	0	0
F-2181		FLANGE	0	0	0	0
F-2182		FLANGE	0	0	0	0
F-2183		VALVE	0	0	0	0
F-2184		FLANGE	0	0	0	0
F-2185		FLANGE	0	0	0	0
F-2186		VALVE	0	0	0	0
F-2187		FLANGE	0	0	0	0
F-2188		FLANGE	0	0	0	0
F-2189		FLANGE	0	0	0	0
F-2190		FLANGE	0	0	0	0
F-2191		VALVE	0	0	0	0
F-2192	LINE TO EX SLOP HEADER	FLANGE	0	0	0	0
F-2193		VALVE	0	0	0	0
F-2194		FLANGE	0	0	0	0
F-2195		FLANGE	0	0	0	0
F-2196		VALVE	0	0	0	0
F-2197		FLANGE	0	0	0	0
F-2198		FLANGE	0	0	0	0
F-2199		VALVE	0	0	0	0
F-2200		FLANGE	0	0	0	0
F-2201		FLANGE	0	0	0	0
F-2202		VALVE	0	0	0	0
F-2203		FLANGE	0	0	0	0
F-2204		VALVE	0	0	0	0
F-2205		VALVE	0	0	0	0
F-2206	LINE TO P/1104	FLANGE	0	0	0	0
F-2207		VALVE	0	0	0	0
F-2208		FLANGE	0	0	0	0
F-2209	LINE TO CC-002	FLANGE	0	0	0	0
F-2210		VALVE	0	0	0	0
F-2211		FLANGE	0	0	0	0
F-2212	LINE CV-FV-1601	FLANGE	0	0	0	0
F-2213		VALVE	0	0	0	0
F-2214		FLANGE	0	0	0	0

F-2215		FLANGE	0	0	0	0
F-2216		VALVE	0	0	0	0
F-2217		FLANGE	0	0	0	0
F-2218	BY PASS LINE	FLANGE	0	0	0	0
F-2219		VALVE	0	0	0	0
F-2220		FLANGE	0	0	0	0
F-2221		FLANGE	0	0	0	0
F-2222		VALVE	0	0	0	0
F-2223		FLANGE	0	0	0	0
F-2224	RECYCLE NAPTHA TO EX-PA-044 A/B	FLANGE	0	0	0	0
F-2225	1st Isolating valve	VALVE	0	0	0	0
F-2226		FLANGE	0	0	0	0
F-2227	Control Valve 07-FV-3401	FLANGE	618	324.7	0.00006	0.000526
F-2228		VALVE	0	0	0	0
F-2229		FLANGE	0	0	0	0
F-2230		FLANGE	0	0	0	0
F-2231	2 nd Isolating valve	VALVE	0	0	0	0
F-2232		FLANGE	0	0	0	0
F-2233	BY PASS LINE TO EE-22	FLANGE	0	0	0	0
F-2234		VALVE	0	0	0	0
F-2235		FLANGE	0	0	0	0
F-2236	LINE LPG EX PA-12 A/B PUMP	FLANGE	0	0	0	0
F-2237		VALVE	0	0	0	0
F-2238		FLANGE	0	0	0	0
F-2239	Control Valve 07-FV-3501	FLANGE	0	0	0	0
F-2240		VALVE	0	0	0	0
F-2241		FLANGE	0	0	0	0
F-2242		FLANGE	0	0	0	0
F-2243		VALVE	0	0	0	0
F-2244		FLANGE	0	0	0	0
F-2245	BY PASS LINE	FLANGE	0	0	0	0
F-2246		VALVE	0	0	0	0
F-2247		FLANGE	0	0	0	0
F-2248		FLANGE	0	0	0	0
F-2249		VALVE	0	0	0	0
F-2250		FLANGE	0	0	0	0
F-2251		FLANGE	0	0	0	0
F-2252		VALVE	0	0	0	0
F-2253		FLANGE	0	0	0	0
F-2254	CIRCULATION LINE 043 A/B	FLANGE	0	0	0	0
F-2255		VALVE	0	0	0	0
F-2256		FLANGE	0	0	0	0
F-2257	07-FV-3403	FLANGE	44.6	22.8	0.00006	0.000526
F-2258		VALVE	0	0	0	0
F-2259		FLANGE	0	0	0	0
F-2260	BY PASS LINE	FLANGE	0	0	0	0
F-2261		VALVE	0	0	0	0
F-2262		FLANGE	0	0	0	0
F-2263		VALVE	0	0	0	0
F-2264		VALVE	0	0	0	0
F-2265	DEBUTANIZER REFLUX LINE	FLANGE	0	0	0	0
F-2266		VALVE	0	0	0	0
F-2267		FLANGE	0	0	0	0
F-2268		FLANGE	0	0	0	0
F-2269		VALVE	0	0	0	0
F-2270		FLANGE	0	0	0	0
F-2271		FLANGE	0	0	0	0
F-2272		VALVE	0	0	0	0
F-2273		FLANGE	0	0	0	0
F-2274		FLANGE	0	0	0	0
F-2275		FLANGE	0	0	0	0
F-2276		FLANGE	0	0	0	0
F-2277	LINE CR -01-GBF	VALVE	0	0	0	0
F-2278		VALVE	0	0	0	0
F-2279		VALVE	0	0	0	0
F-2280		FLANGE	0	0	0	0
F-2281		FLANGE	0	0	0	0

F-2282		FLANGE	0	0	0	0
F-2283	LEFT SIDE OF LINE	FLANGE	0	0	0	0
F-2284	LINE CR -01-GBF	VALVE	0	0	0	0
F-2285		FLANGE	0	0	0	0
F-2286		FLANGE	0	0	0	0
F-2287		VALVE	0	0	0	0
F-2288		FLANGE	0	0	0	0
F-2289		FLANGE	0	0	0	0
F-2290		VALVE	0	0	0	0
F-2291		FLANGE	0	0	0	0
F-2292	LINE 2P-07-1505	FLANGE	0	0	0	0
F-2293		VALVE	0	0	0	0
F-2294		FLANGE	0	0	0	0
F-2295	BACK SIDE OF	FLANGE	16.4	8.9	0.00006	0.000526
F-2296	LINE 2P-07-1505	VALVE	0	0	0	0
F-2297		FLANGE	0	0	0	0
F-2298		FLANGE	0	0	0	0
F-2299		VALVE	0	0	0	0
F-2300		FLANGE	0	0	0	0
F-2301		VALVE	0	0	0	0
F-2302		VALVE	0	0	0	0
F-2303		VALVE	0	0	0	0
F-2304		VALVE	0	0	0	0
F-2305		VALVE	0	0	0	0
F-2306		VALVE	0	0	0	0
F-2307	LINE 3 P -07 -1406-31A	VALVE	0	0	0	0
F-2308		VALVE	0	0	0	0
F-2309	STABILIZED NAPTHA COOLER	FLANGE	0	0	0	0
F-2310		VALVE	0	0	0	0
F-2311		FLANGE	0	0	0	0
F-2312		FLANGE	0	0	0	0
F-2313		VALVE	0	0	0	0
F-2314		FLANGE	0	0	0	0
F-2315		FLANGE	0	0	0	0
F-2316		VALVE	0	0	0	0
F-2317		FLANGE	0	0	0	0
F-2318		FLANGE	0	0	0	0
F-2319		VALVE	0	0	0	0
F-2320		FLANGE	0	0	0	0
F-2321		FLANGE	0	0	0	0
F-2322		VALVE	0	0	0	0
F-2323		FLANGE	0	0	0	0
F-2324		FLANGE	0	0	0	0
F-2325		VALVE	0	0	0	0
F-2326		FLANGE	0	0	0	0
F-2327	LINE TO EE - 024	FLANGE	0	0	0	0
F-2328		VALVE	0	0	0	0
F-2329		FLANGE	0	0	0	0
F-2330		VALVE	0	0	0	0
F-2331	LINE EX EE - 024	FLANGE	0	0	0	0
F-2332		VALVE	0	0	0	0
F-2333		FLANGE	0	0	0	0
F-2334		VALVE	0	0	0	0
F-2335	DEBUTANISER CONDENSER	FLANGE	0	0	0	0
F-2336		VALVE	0	0	0	0
F-2337		FLANGE	0	0	0	0
F-2338		FLANGE	0	0	0	0
F-2339		VALVE	0	0	0	0
F-2340		FLANGE	0	0	0	0
F-2341		FLANGE	0	0	0	0
F-2342		VALVE	0	0	0	0
F-2343		FLANGE	0	0	0	0
F-2344		FLANGE	0	0	0	0
F-2345		VALVE	0	0	0	0
F-2346		FLANGE	0	0	0	0
F-2347		FLANGE	0	0	0	0
F-2348		VALVE	0	0	0	0

F-2349		FLANGE	0	0	0	0
F-2350	LPG Ex _12A/B Line 1st Isolating valve	FLANGE	575	317.3	0.00006	0.000526
F-2351		VALVE	0	0	0	0
F-2352		FLANGE	0	0	0	0
F-2353	Contrl Valve 07-FV-3501	FLANGE	0	0	0	0
F-2354		VALVE	0	0	0	0
F-2355		FLANGE	0	0	0	0
F-2356		FLANGE	0	0	0	0
F-2357	LPG Ex _12A/B Line 2nd Isolating valve	VALVE	0	0	0	0
F-2358		FLANGE	0	0	0	0
F-2359		FLANGE	0	0	0	0
F-2360	NEAR NAPTHA SAMPLE POINT	VALVE	0	0	0	0
F-2361		VALVE	0	0	0	0
F-2362		FLANGE	0	0	0	0
F-2363		FLANGE	0	0	0	0
F-2364		VALVE	0	0	0	0
F-2365		FLANGE	0	0	0	0
F-2366		FLANGE	0	0	0	0
F-2367		VALVE	0	0	0	0
F-2368		FLANGE	0	0	0	0
F-2369		FLANGE	0	0	0	0
F-2370		FLANGE	0	0	0	0
F-2371		VALVE	0	0	0	0
F-2372		FLANGE	0	0	0	0
F-2373		FLANGE	0	0	0	0
F-2374		VALVE	0	0	0	0
F-2375		FLANGE	0	0	0	0
F-2376		FLANGE	0	0	0	0
F-2377		VALVE	0	0	0	0
F-2378		FLANGE	0	0	0	0
F-2379		VALVE	0	0	0	0
F-2380		FLANGE	0	0	0	0
F-2381		FLANGE	0	0	0	0
F-2382		VALVE	0	0	0	0
F-2383		FLANGE	0	0	0	0
F-2384	DE-GASSER LINE	FLANGE	0	0	0	0
F-2385		VALVE	0	0	0	0
F-2386		FLANGE	0	0	0	0
F-2387		FLANGE	0	0	0	0
F-2388		VALVE	0	0	0	0
F-2389		FLANGE	0	0	0	0
F-2390		FLANGE	0	0	0	0
F-2391		VALVE	0	0	0	0
F-2392		FLANGE	0	0	0	0
F-2393		VALVE	0	0	0	0
F-2394		FLANGE	0	0	0	0
F-2395		VALVE	0	0	0	0
F-2396	LINE EX-PA -002 A/B	VALVE	0	0	0	0
F-2397		VALVE	0	0	0	0
F-2398		VALVE	0	0	0	0
F-2399	LINE COMPRESSOR SUCTION KOD	FLANGE	0	0	0	0
F-2400		FLANGE	0	0	0	0
F-2401		VALVE	0	0	0	0
F-2402		FLANGE	0	0	0	0
F-2403		FLANGE	0	0	0	0
F-2404		FLANGE	0	0	0	0
F-2405		FLANGE	0	0	0	0
F-2406		VALVE	0	0	0	0
F-2407		FLANGE	0	0	0	0
F-2408		FLANGE	0	0	0	0
F-2409		VALVE	0	0	0	0
F-2410		FLANGE	0	0	0	0
F-2411		FLANGE	0	0	0	0
F-2412		VALVE	0	0	0	0
F-2413		FLANGE	0	0	0	0
F-2414		FLANGE	0	0	0	0
F-2415		VALVE	0	0	0	0

F-2416		FLANGE	0	0	0	0
F-2417		VALVE	0	0	0	0
F-2418		VALVE	0	0	0	0
F-2419		FLANGE	0	0	0	0
F-2420		VALVE	0	0	0	0
F-2421		FLANGE	0	0	0	0
F-2422		FLANGE	0	0	0	0
F-2423		VALVE	0	0	0	0
F-2424		FLANGE	0	0	0	0
F-2425		FLANGE	0	0	0	0
F-2426		VALVE	0	0	0	0
F-2427		FLANGE	0	0	0	0
F-2428		FLANGE	0	0	0	0
F-2429		VALVE	0	0	0	0
F-2430		FLANGE	0	0	0	0
F-2431	LINE TO VV -031-BOOT	FLANGE	0	0	0	0
F-2432		VALVE	0	0	0	0
F-2433		FLANGE	0	0	0	0
F-2434		FLANGE	0	0	0	0
F-2435		VALVE	0	0	0	0
F-2436		FLANGE	0	0	0	0
F-2437		FLANGE	0	0	0	0
F-2438		VALVE	0	0	0	0
F-2439		FLANGE	0	0	0	0
F-2440	LINE TO CBD 07-3202	FLANGE	0	0	0	0
F-2441		VALVE	0	0	0	0
F-2442		FLANGE	0	0	0	0
F-2443		FLANGE	0	0	0	0
F-2444		VALVE	0	0	0	0
F-2445		FLANGE	0	0	0	0
F-2446		FLANGE	0	0	0	0
F-2447		VALVE	0	0	0	0
F-2448		FLANGE	0	0	0	0
F-2449	LINE TO '07-GN-00-007B	FLANGE	0	0	0	0
F-2450		FLANGE	0	0	0	0
F-2451		VALVE	0	0	0	0
F-2452		FLANGE	0	0	0	0
F-2453		VALVE	0	0	0	0
F-2454	LINE TO '07-GN-00-007A	FLANGE	0	0	0	0
F-2455		FLANGE	0	0	0	0
F-2456		VALVE	0	0	0	0
F-2457		FLANGE	0	0	0	0
F-2458		VALVE	0	0	0	0
F-2459	LINE -19 Control Valve	FLANGE	0	0	0	0
F-2460		VALVE	0	0	0	0
F-2461		FLANGE	0	0	0	0
F-2462		FLANGE	0	0	0	0
F-2463		VALVE	0	0	0	0
F-2464		FLANGE	0	0	0	0
F-2465		VALVE	0	0	0	0
F-2466		FLANGE	0	0	0	0
F-2467		VALVE	0	0	0	0
F-2468		FLANGE	0	0	0	0
F-2469		VALVE	0	0	0	0
F-2470		FLANGE	0	0	0	0
F-2471		FLANGE	0	0	0	0
F-2472		VALVE	0	0	0	0
F-2473		FLANGE	0	0	0	0
F-2474	ABSORBER REFLUX LINE 1 st isolating valve	FLANGE	0	0	0	0
F-2475		VALVE	0	0	0	0
F-2476		FLANGE	0	0	0	0
F-2477		FLANGE	0	0	0	0
F-2478	CONTRL VALVE 07-FV-3402	VALVE	0	0	0	0
F-2479		FLANGE	0	0	0	0
F-2480	ABSORBER REFLUX LINE 2 nd isolating valve	FLANGE	0	0	0	0
F-2481		VALVE	0	0	0	0
F-2482		FLANGE	0	0	0	0

F-2483	Bypass line	FLANGE	37.3	19.5	0.00006	0.000526
F-2484		VALVE	0	0	0	0
F-2485		FLANGE	0	0	0	0
F-2486		FLANGE	0	0	0	0
F-2487		FLANGE	0	0	0	0
F-2488	NEAR LINE 21 CV	VALVE	0	0	0	0
F-2489	LINE 1 (A)	VALVE	0	0	0	0
F-2490		FLANGE	0	0	0	0
F-2491		FLANGE	0	0	0	0
F-2492		VALVE	0	0	0	0
F-2493	LINE 2 (A)	VALVE	0	0	0	0
F-2494		VALVE	0	0	0	0
F-2495		FLANGE	0	0	0	0
F-2496		FLANGE	0	0	0	0
F-2497	LINE 3 (A)	VALVE	0	0	0	0
F-2498		VALVE	0	0	0	0
F-2499		FLANGE	0	0	0	0
F-2500		VALVE	0	0	0	0
F-2501		VALVE	0	0	0	0
F-2502	LINE 4 (A)	VALVE	0	0	0	0
F-2503		VALVE	0	0	0	0
F-2504		FLANGE	0	0	0	0
F-2505		FLANGE	0	0	0	0
F-2506		VALVE	0	0	0	0
F-2507		VALVE	0	0	0	0
F-2508	LINE 5 (A)	VALVE	0	0	0	0
F-2509		VALVE	0	0	0	0
F-2510		FLANGE	0	0	0	0
F-2511		FLANGE	0	0	0	0
F-2512		VALVE	0	0	0	0
F-2513		VALVE	0	0	0	0
F-2514	NEAR LINE 21 CV LINE 1 (B)	VALVE	0	0	0	0
F-2515		VALVE	0	0	0	0
F-2516		FLANGE	0	0	0	0
F-2517		FLANGE	0	0	0	0
F-2518		VALVE	0	0	0	0
F-2519		VALVE	0	0	0	0
F-2520	LINE 2 (B)	VALVE	0	0	0	0
F-2521		VALVE	0	0	0	0
F-2522		FLANGE	0	0	0	0
F-2523		FLANGE	0	0	0	0
F-2524		VALVE	0	0	0	0
F-2525		VALVE	0	0	0	0
F-2526	LINE 3 (B)	VALVE	0	0	0	0
F-2527		VALVE	0	0	0	0
F-2528		FLANGE	0	0	0	0
F-2529		FLANGE	0	0	0	0
F-2530		VALVE	0	0	0	0
F-2531		VALVE	0	0	0	0
F-2532	LINE 4 (B)	VALVE	0	0	0	0
F-2533		VALVE	0	0	0	0
F-2534		FLANGE	0	0	0	0
F-2535		FLANGE	0	0	0	0
F-2536		VALVE	0	0	0	0
F-2537		VALVE	0	0	0	0
F-2538	LINE 5 (B)	VALVE	0	0	0	0
F-2539		VALVE	0	0	0	0
F-2540		FLANGE	0	0	0	0
F-2541		FLANGE	0	0	0	0
F-2542		VALVE	0	0	0	0
F-2543	LINE 2 P-07-240 (20 CV)	FLANGE	0	0	0	0
F-2544		VALVE	0	0	0	0
F-2545		FLANGE	0	0	0	0
F-2546		FLANGE	0	0	0	0
F-2547		FLANGE	0	0	0	0
F-2548		VALVE	0	0	0	0
F-2549		FLANGE	0	0	0	0

F-2550		VALVE	0	0	0	0
F-2551		VALVE	0	0	0	0
F-2552		FLANGE	0	0	0	0
F-2553		VALVE	0	0	0	0
F-2554		FLANGE	0	0	0	0
F-2555		FLANGE	0	0	0	0
F-2556	LINE 2 CBD -07 -1402A 1A	FLANGE	0	0	0	0
F-2557	**(N.S)**	VALVE	0	0	0	0
F-2558		FLANGE	0	0	0	0
F-2559		FLANGE	0	0	0	0
F-2560		VALVE	0	0	0	0
F-2561		FLANGE	0	0	0	0
F-2562		FLANGE	0	0	0	0
F-2563		VALVE	0	0	0	0
F-2564		FLANGE	0	0	0	0
F-2565		FLANGE	0	0	0	0
F-2566		FLANGE	0	0	0	0
F-2567		VALVE	0	0	0	0
F-2568		FLANGE	0	0	0	0
F-2569		FLANGE	0	0	0	0
F-2570		VALVE	0	0	0	0
F-2571		VALVE	0	0	0	0
F-2572		FLANGE	0	0	0	0
F-2573		VALVE	0	0	0	0
F-2574		FLANGE	0	0	0	0
F-2575		FLANGE	0	0	0	0
F-2576		VALVE	0	0	0	0
F-2577		FLANGE	0	0	0	0
F-2578		FLANGE	0	0	0	0
F-2579		VALVE	0	0	0	0
F-2580		FLANGE	0	0	0	0
F-2581		FLANGE	0	0	0	0
F-2582		VALVE	0	0	0	0
F-2583		FLANGE	0	0	0	0
F-2584		VALVE	0	0	0	0
F-2585		FLANGE	0	0	0	0
F-2586		FLANGE	0	0	0	0
F-2587		VALVE	0	0	0	0
F-2588		FLANGE	0	0	0	0
F-2589		FLANGE	0	0	0	0
F-2590		FLANGE	0	0	0	0
F-2591		VALVE	0	0	0	0
F-2592		FLANGE	0	0	0	0
F-2593		FLANGE	0	0	0	0
F-2594		FLANGE	0	0	0	0
F-2595	LINE EX- PA-016-B	FLANGE	0	0	0	0
F-2596		VALVE	0	0	0	0
F-2597		FLANGE	0	0	0	0
F-2598		FLANGE	0	0	0	0
F-2599		VALVE	0	0	0	0
F-2600		FLANGE	0	0	0	0
F-2601		FLANGE	0	0	0	0
F-2602		VALVE	0	0	0	0
F-2603		FLANGE	0	0	0	0
F-2604		FLANGE	0	0	0	0
F-2605		VALVE	0	0	0	0
F-2606		FLANGE	0	0	0	0
F-2607		FLANGE	0	0	0	0
F-2608		VALVE	0	0	0	0
F-2609		FLANGE	0	0	0	0
F-2610		FLANGE	0	0	0	0
F-2611		VALVE	0	0	0	0
F-2612		FLANGE	0	0	0	0
F-2613	LINE 4P -07-2510 A1A	FLANGE	0	0	0	0
F-2614		VALVE	0	0	0	0
F-2615		FLANGE	0	0	0	0
F-2616		FLANGE	0	0	0	0

F-2617		VALVE	0	0	0	0
F-2618		FLANGE	0	0	0	0
F-2619		FLANGE	0	0	0	0
F-2620		FLANGE	0	0	0	0
F-2621		VALVE	0	0	0	0
F-2622		FLANGE	0	0	0	0
F-2623		VALVE	0	0	0	0
F-2624		FLANGE	0	0	0	0
F-2625		FLANGE	0	0	0	0
F-2626		VALVE	0	0	0	0
F-2627		FLANGE	0	0	0	0
F-2628		FLANGE	0	0	0	0
F-2629		VALVE	0	0	0	0
F-2630		FLANGE	0	0	0	0
F-2631		FLANGE	0	0	0	0
F-2632		VALVE	0	0	0	0
F-2633		FLANGE	0	0	0	0
F-2634		FLANGE	0	0	0	0
F-2635		FLANGE	0	0	0	0
F-2636		FLANGE	0	0	0	0
F-2637		VALVE	0	0	0	0
F-2638		FLANGE	0	0	0	0
F-2639		FLANGE	0	0	0	0
F-2640		VALVE	0	0	0	0
F-2641		FLANGE	0	0	0	0
F-2642		VALVE	0	0	0	0
F-2643	LINE PA-EX-002A/B	FLANGE	0	0	0	0
F-2644		VALVE	0	0	0	0
F-2645		FLANGE	0	0	0	0
F-2646		FLANGE	0	0	0	0
F-2647		VALVE	0	0	0	0
F-2648		FLANGE	0	0	0	0
F-2649		FLANGE	0	0	0	0
F-2650		VALVE	0	0	0	0
F-2651		FLANGE	0	0	0	0
F-2652		VALVE	0	0	0	0
F-2653		FLANGE	0	0	0	0
F-2654	LPG SAMPLING POINT LINE	VALVE	0	0	0	0
F-2655	LPG RD 4th VALVE	FLANGE	0	0	0	0
F-2656		VALVE	0	0	0	0
F-2657		VALVE	0	0	0	0
F-2658		VALVE	0	0	0	0
F-2659		FLANGE	0	0	0	0
F-2660		FLANGE	0	0	0	0
F-2661		FLANGE	0	0	0	0
F-2662		VALVE	0	0	0	0
F-2663		FLANGE	0	0	0	0
F-2664		VALVE	0	0	0	0
F-2665		VALVE	0	0	0	0
F-2666		FLANGE	0	0	0	0
F-2667		VALVE	0	0	0	0
F-2668		FLANGE	0	0	0	0
F-2669		VALVE	0	0	0	0
F-2670		FLANGE	0	0	0	0
F-2671		VALVE	0	0	0	0
F-2672		VALVE	0	0	0	0
F-2673	BELOW FLARE KNOCK OUT DRUM	FLANGE	0	0	0	0
F-2674	LINE 07-VV-00-019	VALVE	0	0	0	0
F-2675		FLANGE	0	0	0	0
F-2676		FLANGE	0	0	0	0
F-2677		VALVE	0	0	0	0
F-2678		FLANGE	0	0	0	0
F-2679		FLANGE	0	0	0	0
F-2680		VALVE	0	0	0	0
F-2681		FLANGE	0	0	0	0
F-2682		FLANGE	0	0	0	0
F-2683		VALVE	0	0	0	0

F-2684		FLANGE	0	0	0	0
F-2685		VALVE	0	0	0	0
F-2686		FLANGE	0	0	0	0
F-2687		VALVE	0	0	0	0
F-2688		FLANGE	0	0	0	0
F-2689		VALVE	0	0	0	0
F-2690		FLANGE	0	0	0	0
F-2691		FLANGE	0	0	0	0
F-2692		FLANGE	0	0	0	0
F-2693		FLANGE	0	0	0	0
F-2694	DRAIN EX PA-42 A/B LINE 1st VALVE	FLANGE	0	0	0	0
F-2695		VALVE	0	0	0	0
F-2696		FLANGE	0	0	0	0
F-2697	DRAIN EX PA-42 A/B LINE 2 nd VALVE	FLANGE	0	0	0	0
F-2698		VALVE	0	0	0	0
F-2699		FLANGE	0	0	0	0
F-2700		FLANGE	0	0	0	0
F-2701		VALVE	0	0	0	0
F-2702		FLANGE	0	0	0	0
F-2703		FLANGE	0	0	0	0
F-2704		VALVE	0	0	0	0
F-2705		FLANGE	0	0	0	0
F-2706		FLANGE	0	0	0	0
F-2707		VALVE	0	0	0	0
F-2708		FLANGE	0	0	0	0
F-2709		VALVE	0	0	0	0
F-2710		FLANGE	0	0	0	0
F-2711		VALVE	0	0	0	0
F-2712		FLANGE	0	0	0	0
F-2713		FLANGE	0	0	0	0
F-2714		FLANGE	0	0	0	0
F-2715	LINE 2 CL -07-2401	FLANGE	0	0	0	0
F-2716		VALVE	0	0	0	0
F-2717		FLANGE	0	0	0	0
F-2718		FLANGE	0	0	0	0
F-2719		FLANGE	0	0	0	0
F-2720		FLANGE	0	0	0	0
F-2721		VALVE	0	0	0	0
F-2722		FLANGE	0	0	0	0
F-2723		VALVE	0	0	0	0
F-2724	BELOW FLUSHING DRUM	FLANGE	0	0	0	0
F-2725	LINE 07 -VV -02 -020	VALVE	0	0	0	0
F-2726		FLANGE	0	0	0	0
F-2727		FLANGE	0	0	0	0
F-2728		VALVE	0	0	0	0
F-2729		FLANGE	0	0	0	0
F-2730		FLANGE	0	0	0	0
F-2731		VALVE	0	0	0	0
F-2732		FLANGE	0	0	0	0
F-2733		FLANGE	0	0	0	0
F-2734		VALVE	0	0	0	0
F-2735		FLANGE	0	0	0	0
F-2736		FLANGE	0	0	0	0
F-2737		VALVE	0	0	0	0
F-2738		FLANGE	0	0	0	0
F-2739	LINE EX -PA -015 A/B	FLANGE	0	0	0	0
F-2740		VALVE	0	0	0	0
F-2741		FLANGE	0	0	0	0
F-2742		FLANGE	0	0	0	0
F-2743		VALVE	0	0	0	0
F-2744		FLANGE	0	0	0	0
F-2745		FLANGE	0	0	0	0
F-2746		VALVE	0	0	0	0
F-2747		FLANGE	0	0	0	0
F-2748		FLANGE	0	0	0	0
F-2749		VALVE	0	0	0	0
F-2750		FLANGE	0	0	0	0

F-2751		FLANGE	0	0	0	0
F-2752		VALVE	0	0	0	0
F-2753		FLANGE	0	0	0	0
F-2754		FLANGE	0	0	0	0
F-2755		VALVE	0	0	0	0
F-2756		FLANGE	0	0	0	0
F-2757		FLANGE	0	0	0	0
F-2758		VALVE	0	0	0	0
F-2759		FLANGE	0	0	0	0
F-2760		FLANGE	0	0	0	0
F-2761		VALVE	0	0	0	0
F-2762		FLANGE	0	0	0	0
F-2763	LINE 4P-07-2510 -A 1A	VALVE	0	0	0	0
F-2764		VALVE	0	0	0	0
F-2765		FLANGE	0	0	0	0
F-2766		VALVE	0	0	0	0
F-2767		FLANGE	0	0	0	0
F-2768		FLANGE	0	0	0	0
F-2769		VALVE	0	0	0	0
F-2770		FLANGE	0	0	0	0
F-2771		FLANGE	0	0	0	0
F-2772		FLANGE	0	0	0	0
F-2773		FLANGE	0	0	0	0
F-2774		VALVE	0	0	0	0
F-2775		FLANGE	0	0	0	0
F-2776		FLANGE	0	0	0	0
F-2777		FLANGE	0	0	0	0
F-2778		VALVE	0	0	0	0
F-2779		VALVE	0	0	0	0
F-2780		FLANGE	0	0	0	0
F-2781		FLANGE	0	0	0	0
F-2782		VALVE	0	0	0	0
F-2783		FLANGE	0	0	0	0
F-2784		FLANGE	0	0	0	0
F-2785		VALVE	0	0	0	0
F-2786		FLANGE	0	0	0	0
F-2787		FLANGE	0	0	0	0
F-2788		VALVE	0	0	0	0
F-2789		FLANGE	0	0	0	0
F-2790		FLANGE	0	0	0	0
F-2791		VALVE	0	0	0	0
F-2792		FLANGE	0	0	0	0
F-2793		FLANGE	0	0	0	0
F-2794		VALVE	0	0	0	0
F-2795		FLANGE	0	0	0	0
F-2796		VALVE	0	0	0	0
F-2797		VALVE	0	0	0	0
F-2798		VALVE	0	0	0	0
F-2799		VALVE	0	0	0	0
F-2800		VALVE	0	0	0	0
F-2801		VALVE	0	0	0	0
F-2802	LINE 3P- -07 -2401 -A1A	FLANGE	32	14.5	0.00006	0.000526
F-2803		VALVE	0	0	0	0
F-2804		FLANGE	0	0	0	0
F-2805		VALVE	0	0	0	0
F-2806		FLANGE	0	0	0	0
F-2807		VALVE	0	0	0	0
F-2808		FLANGE	0	0	0	0
F-2809		FLANGE	0	0	0	0
F-2810		FLANGE	0	0	0	0
F-2811		FLANGE	0	0	0	0
F-2812		FLANGE	0	0	0	0
F-2813		VALVE	179	101.8	0.0017	0.014892
F-2814		FLANGE	0	0	0	0
F-2815		FLANGE	0	0	0	0
F-2816		FLANGE	0	0	0	0
F-2817		FLANGE	0	0	0	0

F-2818	LINE 3P -07 -2402 - A1A	FLANGE	0	0	0	0
F-2819		VALVE	0	0	0	0
F-2820		FLANGE	0	0	0	0
F-2821		FLANGE	0	0	0	0
F-2822		VALVE	0	0	0	0
F-2823		FLANGE	0	0	0	0
F-2824		VALVE	0	0	0	0
F-2825		VALVE	0	0	0	0
F-2826		FLANGE	0	0	0	0
F-2827		VALVE	0	0	0	0
F-2828		FLANGE	0	0	0	0
F-2829		VALVE	0	0	0	0
F-2830		VALVE	0	0	0	0
F-2831		FLANGE	0	0	0	0
F-2832		VALVE	0	0	0	0
F-2833		FLANGE	0	0	0	0
F-2834		VALVE	0	0	0	0
F-2835		FLANGE	0	0	0	0
F-2836		VALVE	0	0	0	0
F-2837		FLANGE	0	0	0	0
F-2838		FLANGE	0	0	0	0
F-2839		VALVE	0	0	0	0
F-2840		FLANGE	0	0	0	0
F-2841		FLANGE	0	0	0	0
F-2842		VALVE	0	0	0	0
F-2843		FLANGE	0	0	0	0
F-2844		FLANGE	0	0	0	0
F-2845		VALVE	0	0	0	0
F-2846		FLANGE	0	0	0	0
F-2847	LINE BELOW LDO VESSEL	VALVE	0	0	0	0
F-2848		VALVE	0	0	0	0
F-2849		FLANGE	0	0	0	0
F-2850		VALVE	0	0	0	0
F-2851		FLANGE	0	0	0	0
F-2852		FLANGE	0	0	0	0
F-2853		VALVE	0	0	0	0
F-2854		FLANGE	0	0	0	0
F-2855		FLANGE	0	0	0	0
F-2856		VALVE	0	0	0	0
F-2857		FLANGE	0	0	0	0
F-2858		FLANGE	0	0	0	0
F-2859		VALVE	0	0	0	0
F-2860		FLANGE	0	0	0	0
F-2861		VALVE	0	0	0	0
F-2862		FLANGE	0	0	0	0
F-2863		FLANGE	0	0	0	0
F-2864		FLANGE	0	0	0	0
F-2865		FLANGE	0	0	0	0
F-2866	LPG Ex 12 A/B LINE	FLANGE	0	0	0	0
F-2867		VALVE	0	0	0	0
F-2868		FLANGE	0	0	0	0
F-2869	CONTROL VALVE 07-FV 3501	FLANGE	0	0	0	0
F-2870		VALVE	0	0	0	0
F-2871		FLANGE	0	0	0	0
F-2872		FLANGE	0	0	0	0
F-2873		VALVE	0	0	0	0
F-2874		FLANGE	0	0	0	0
F-2875		FLANGE	0	0	0	0
F-2876		VALVE	0	0	0	0
F-2877		FLANGE	0	0	0	0
F-2878	BY PASS LINE VALVE	FLANGE	0	0	0	0
F-2879		VALVE	0	0	0	0
F-2880		FLANGE	0	0	0	0
F-2881		FLANGE	0	0	0	0
F-2882		VALVE	0	0	0	0
F-2883		FLANGE	0	0	0	0
F-2884	ABSORBER REFLUX LINE	FLANGE	0	0	0	0

F-2885		VALVE	0	0	0	0
F-2886		FLANGE	0	0	0	0
F-2887	CONTROL VALVE 07-FV-3402	FLANGE	0	0	0	0
F-2888		VALVE	0	0	0	0
F-2889		FLANGE	0	0	0	0
F-2890		FLANGE	0	0	0	0
F-2891		VALVE	0	0	0	0
F-2892		FLANGE	0	0	0	0
F-2893	BY PASS LINE VALVE	FLANGE	0	0	0	0
F-2894		VALVE	0	0	0	0
F-2895		FLANGE	0	0	0	0
F-2896	LPG SAMPLING POINT,	FLANGE	0	0	0	0
F-2897	LINE LPG R/D	FLANGE	0	0	0	0
F-2898		FLANGE	0	0	0	0
F-2899		VALVE	0	0	0	0
F-2900		FLANGE	0	0	0	0
F-2901		FLANGE	0	0	0	0
F-2902		VALVE	0	0	0	0
F-2903		FLANGE	0	0	0	0
F-2904	CONTROL VALVE 07-PV-3502	FLANGE	0	0	0	0
F-2905		VALVE	0	0	0	0
F-2906		FLANGE	0	0	0	0
F-2907		FLANGE	0	0	0	0
F-2908		VALVE	0	0	0	0
F-2909		FLANGE	0	0	0	0
F-2910		FLANGE	0	0	0	0
F-2911		VALVE	0	0	0	0
F-2912		FLANGE	0	0	0	0
F-2913	BY PASS LINE VALVE	FLANGE	0	0	0	0
F-2914		VALVE	0	0	0	0
F-2915		FLANGE	0	0	0	0
F-2916		FLANGE	0	0	0	0
F-2917	LINE PA-Ex-002 A/B	VALVE	0	0	0	0
F-2918	07-FV-1801	FLANGE	0	0	0	0
F-2919	BY PASS LINE VALVE	VALVE GLAND	0	0	0	0
F-2920	EQP NO07-VV036 DEGASSER	FLANGE	0	0	0	0
F-2921	OUT LET LINE CONTROL VALVE	VALVE	0	0	0	0
F-2922		FLANGE	0	0	0	0
F-2923		VALVE GLAND	0	0	0	0
F-2924		VALVE GLAND	0	0	0	0
F-2925		VALVE GLAND	0	0	0	0
F-2926	VV-31 1st DRAIN VALVE	FLANGE	0	0	0	0
F-2927		VALVE GLAND	0	0	0	0
F-2928		FLANGE	0	0	0	0
F-2929	07-VV-021, NAPTHA COALESER	VALVE GLAND	162	83.1	0.0017	0.014892
F-2930		VALVE GLAND	0	0	0	0
F-2931	OUT LET LINE C/NAPTHA	VALVE GLAND	0	0	0	0
F-2932		VALVE GLAND	0	0	0	0
F-2933	DRAIN EX -PA-002 SUCTION 1st VALVE	VALVE GLAND	0	0	0	0
F-2934	2nd VALVE	VALVE GLAND	0	0	0	0
F-2935	VV-31 1st STAGE DRAIN VALVE	VALVE GLAND	0	0	0	0
F-2936		VALVE GLAND	0	0	0	0
F-2937	07-VV-00-008 COMPRESSOR 1st STAGE SUCTION KOD	VALVE GLAND	0	0	0	0
F-2938		VALVE GLAND	0	0	0	0
F-2939	CBD LINE	VALVE GLAND	0	0	0	0
F-2940		VALVE GLAND	0	0	0	0
F-2941	LINE EX -EE - 011 -A/B	FLANGE	0	0	0	0
F-2942		VALVE	0	0	0	0
F-2943		FLANGE	0	0	0	0
F-2944		FLANGE	0	0	0	0
F-2945		VALVE	0	0	0	0
F-2946		FLANGE	0	0	0	0
F-2947		FLANGE	0	0	0	0
F-2948		VALVE	0	0	0	0
F-2949		FLANGE	0	0	0	0
F-2950		FLANGE	0	0	0	0
F-2951		FLANGE	0	0	0	0

F-2952		FLANGE	0	0	0	0
F-2953		VALVE	0	0	0	0
F-2954		FLANGE	0	0	0	0
F-2955		FLANGE	0	0	0	0
F-2956		FLANGE	0	0	0	0
F-2957	NEAR LINE	VALVE	0	0	0	0
F-2958	EX -EE - 011 -A/B	VALVE	0	0	0	0
F-2959	B-1	FLANGE	0	0	0	0
F-2960		FLANGE	0	0	0	0
F-2961		VALVE	0	0	0	0
F-2962	NEAR LINE	VALVE	0	0	0	0
F-2963	EX -EE - 011 -A/B	VALVE	0	0	0	0
F-2964	B-2	FLANGE	0	0	0	0
F-2965		FLANGE	0	0	0	0
F-2966		VALVE	0	0	0	0
F-2967	NEAR LINE	VALVE	0	0	0	0
F-2968	EX -EE - 011 -A/B B-3	FLANGE	0	0	0	0
F-2969		FLANGE	0	0	0	0
F-2970		VALVE	0	0	0	0
F-2971	NEAR LINE	VALVE	0	0	0	0
F-2972	B-4 EX -EE - 011 -A/B	FLANGE	0	0	0	0
F-2973		FLANGE	0	0	0	0
F-2974		VALVE	0	0	0	0
F-2975	LINE -VV -00 -024	VALVE	0	0	0	0
F-2976		VALVE	0	0	0	0
F-2977		VALVE	0	0	0	0
F-2978		VALVE	0	0	0	0
F-2979		VALVE	0	0	0	0
F-2980		VALVE	0	0	0	0
F-2981		VALVE	0	0	0	0
F-2982		FLANGE	0	0	0	0
F-2983		VALVE	0	0	0	0
F-2984		FLANGE	0	0	0	0
F-2985	NEAR START UP LINE TO	FLANGE	0	0	0	0
F-2986	CC-002	VALVE	0	0	0	0
F-2987		FLANGE	0	0	0	0
F-2988		FLANGE	0	0	0	0
F-2989		VALVE	0	0	0	0
F-2990		FLANGE	0	0	0	0
F-2991		FLANGE	0	0	0	0
F-2992		FLANGE	0	0	0	0
F-2993	OIL OUT LINE FROM PRIMERY CRUDE	FLANGE	0	0	0	0
F-2994		FLANGE	0	0	0	0
F-2995		VALVE	0	0	0	0
F-2996		FLANGE	0	0	0	0
F-2997		FLANGE	0	0	0	0
F-2998		VALVE	0	0	0	0
F-2999		FLANGE	0	0	0	0
F-3000		FLANGE	0	0	0	0
F-3001		FLANGE	0	0	0	0
F-3002		VALVE	0	0	0	0
F-3003		FLANGE	0	0	0	0
F-3004		FLANGE	0	0	0	0
F-3005		VALVE	0	0	0	0
F-3006		FLANGE	0	0	0	0
F-3007		FLANGE	0	0	0	0
F-3008		VALVE	0	0	0	0
F-3009		FLANGE	0	0	0	0
F-3010		FLANGE	24.6	11.7	0.00006	0.00526
F-3011		VALVE	0	0	0	0
F-3012		FLANGE	0	0	0	0
F-3013	LINE CFO FORCED REFLUX	VALVE	0	0	0	0
F-3014		VALVE	0	0	0	0
F-3015		VALVE	0	0	0	0
F-3016	FEED SAMPLE POINT	VALVE	0	0	0	0
F-3017		VALVE	0	0	0	0
F-3018		VALVE	0	0	0	0

F-3019		VALVE	0	0	0	0
F-3020		FLANGE	0	0	0	0
F-3021		FLANGE	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 7(F) UNIT: MSQU

SUMMARY SHEET FOR MSQU AREA

Total number of points covered	**970**
Date of Monitoring/Rechecking	**.19.12.2022 to 20.12.2022**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-3022	LINE P-037-1001A1A	F.JOINT	0	0	0	0
F-3023		V.GLAND	0	0	0	0
F-3024		F.JOINT	0	0	0	0
F-3025		F.JOINT	0	0	0	0
F-3026		V.GLAND	0	0	0	0
F-3027		F.JOINT	0	0	0	0
F-3028	VAPORISER INLET LINE CONTROL VALVE	F.JOINT	0	0	0	0
F-3029	037-PV-1002	V.GLAND	0	0	0	0
F-3030		F.JOINT	0	0	0	0
F-3031		F.JOINT	0	0	0	0
F-3032		V.GLAND	0	0	0	0
F-3033		F.JOINT	0	0	0	0
F-3034		F.JOINT	0	0	0	0
F-3035		F.JOINT	0	0	0	0
F-3036	BY PASS LINE	V.GLAND	0	0	0	0
F-3037		F.JOINT	0	0	0	0
F-3038		V.GLAND	0	0	0	0
F-3039		V.GLAND	0	0	0	0
F-3040		F.JOINT	0	0	0	0
F-3041		V.GLAND	0	0	0	0
F-3042	FEED DRYER LINE 037-EE-014	F.JOINT	0	0	0	0
F-3043	LINE NAPTHA FROM FEED DRYER	F.JOINT	0	0	0	0
F-3044		V.GLAND	0	0	0	0
F-3045		F.JOINT	0	0	0	0
F-3046		F.JOINT	0	0	0	0
F-3047		V.GLAND	0	0	0	0
F-3048		F.JOINT	0	0	0	0
F-3049	LINE P-037-0408 C1AN (MIXING POINT)	F.JOINT	0	0	0	0
F-3050		F.JOINT	0	0	0	0
F-3051		F.JOINT	0	0	0	0
F-3052		V.GLAND	0	0	0	0
F-3053		F.JOINT	0	0	0	0
F-3054	NRB	F.JOINT	0	0	0	0
F-3055		F.JOINT	0	0	0	0
F-3056		F.JOINT	0	0	0	0
F-3057		V.GLAND	0	0	0	0
F-3058		F.JOINT	0	0	0	0
F-3059		F.JOINT	0	0	0	0
F-3060		F.JOINT	0	0	0	0
F-3061		F.JOINT	0	0	0	0

F-3062		F.JOINT	0	0	0	0
F-3063	BY PASS LINE	F.JOINT	0	0	0	0
F-3064		V.GLAND	0	0	0	0
F-3065		F.JOINT	0	0	0	0
F-3066		F.JOINT	0	0	0	0
F-3067		V.GLAND	0	0	0	0
F-3068		F.JOINT	0	0	0	0
F-3069	LINE 2" P-0309 B1A, CONTROL VALVE	F.JOINT	0	0	0	0
F-3070	037-PV-304	V.GLAND	0	0	0	0
F-3071		F.JOINT	0	0	0	0
F-3072		F.JOINT	0	0	0	0
F-3073		V.GLAND	0	0	0	0
F-3074		F.JOINT	0	0	0	0
F-3075	BY PASS LINE	F.JOINT	0	0	0	0
F-3076		V.GLAND	0	0	0	0
F-3077		F.JOINT	0	0	0	0
F-3078	INLET LINE 037-0114-A1L	F.JOINT	0	0	0	0
F-3079		V.GLAND	0	0	0	0
F-3080		F.JOINT	0	0	0	0
F-3081	CONTROL VALVE 037-PV-101 B	F.JOINT	0	0	0	0
F-3082		V.GLAND	0	0	0	0
F-3083		F.JOINT	0	0	0	0
F-3084	BY PASS LINE	F.JOINT	0	0	0	0
F-3085		V.GLAND	0	0	0	0
F-3086		F.JOINT	0	0	0	0
F-3087	LINE P4 TO FLARE	F.JOINT	0	0	0	0
F-3088		V.GLAND	0	0	0	0
F-3089		F.JOINT	0	0	0	0
F-3090		F.JOINT	0	0	0	0
F-3091		F.JOINT	0	0	0	0
F-3092		V.GLAND	0	0	0	0
F-3093		F.JOINT	0	0	0	0
F-3094		F.JOINT	0	0	0	0
F-3095		V.GLAND	0	0	0	0
F-3096		F.JOINT	0	0	0	0
F-3097		F.JOINT	0	0	0	0
F-3098		V.GLAND	0	0	0	0
F-3099		F.JOINT	0	0	0	0
F-3100	DIH RECYCLE LINE TO 037-VV-001	F.JOINT	0	0	0	0
F-3101		V.GLAND	0	0	0	0
F-3102		F.JOINT	0	0	0	0
F-3103	CONTROL VALVE 037-FV 101	F.JOINT	0	0	0	0
F-3104		V.GLAND	0	0	0	0
F-3105		F.JOINT	0	0	0	0
F-3106		F.JOINT	0	0	0	0
F-3107		V.GLAND	0	0	0	0
F-3108		F.JOINT	0	0	0	0
F-3109	BY PASS LINE	F.JOINT	0	0	0	0
F-3110		V.GLAND	0	0	0	0
F-3111		F.JOINT	0	0	0	0
F-3112	CIR TO 037-VV-001	F.JOINT	0	0	0	0
F-3113		V.GLAND	0	0	0	0
F-3114		F.JOINT	0	0	0	0
F-3115	CONTROL VALVE 037-FV-102	F.JOINT	0	0	0	0
F-3116		V.GLAND	0	0	0	0
F-3117		F.JOINT	0	0	0	0
F-3118		F.JOINT	0	0	0	0
F-3119		V.GLAND	0	0	0	0
F-3120		F.JOINT	0	0	0	0
F-3121	FEED FLOW TO FEED DRYER	F.JOINT	0	0	0	0
F-3122		V.GLAND	0	0	0	0
F-3123		F.JOINT	0	0	0	0
F-3124	CONTROL VALVE 037-FV -103	F.JOINT	0	0	0	0
F-3125		V.GLAND	0	0	0	0
F-3126		FLANGE	0	0	0	0
F-3127		FLANGE	0	0	0	0
F-3128		VALVE	0	0	0	0

F-3129		FLANGE	0	0	0	0
F-3130		FLANGE	0	0	0	0
F-3131		FLANGE	0	0	0	0
F-3132	BY PASS LINE	FLANGE	0	0	0	0
F-3133		VALVE	0	0	0	0
F-3134		FLANGE	0	0	0	0
F-3135	FEED DRYER LINE 037-0205-B1A-IH60	FLANGE	0	0	0	0
F-3136		VALVE	0	0	0	0
F-3137		FLANGE	0	0	0	0
F-3138	FEED DRYER LINE 037-020-B1A-LP40	FLANGE	0	0	0	0
F-3139		VALVE	0	0	0	0
F-3140		FLANGE	0	0	0	0
F-3141		VALVE	0	0	0	0
F-3142	FEED DRYER LINE 037-0202-B1A-IH100	FLANGE	0	0	0	0
F-3143		VALVE	0	0	0	0
F-3144		FLANGE	0	0	0	0
F-3145	TOTAL SPIL BACK LINE	FLANGE	0	0	0	0
F-3146		VALVE	0	0	0	0
F-3147		FLANGE	0	0	0	0
F-3148	CONTROL VALVE 037-PV- 304	FLANGE	0	0	0	0
F-3149		VALVE	0	0	0	0
F-3150		FLANGE	0	0	0	0
F-3151		FLANGE	0	0	0	0
F-3152		VALVE	0	0	0	0
F-3153		FLANGE	0	0	0	0
F-3154	BY PASS LINE	FLANGE	0	0	0	0
F-3155		VALVE	116.2	58.1	0.0017	0.014892
F-3156		FLANGE	0	0	0	0
F-3157	LINE H2 MAKE TO NHDT	FLANGE	0	0	0	0
F-3158		VALVE	0	0	0	0
F-3159		FLANGE	0	0	0	0
F-3160		FLANGE	0	0	0	0
F-3161		FLANGE	0	0	0	0
F-3162		FLANGE	0	0	0	0
F-3163		VALVE	0	0	0	0
F-3164		FLANGE	0	0	0	0
F-3165	INLET LINE 037-VV-001 1ST ISOLATING VALVE	FLANGE	0	0	0	0
F-3166		VALVE	0	0	0	0
F-3167		FLANGE	0	0	0	0
F-3168	CONTROL VALVE 037-PV- 101A	FLANGE	0	0	0	0
F-3169		VALVE	0	0	0	0
F-3170		FLANGE	0	0	0	0
F-3171		FLANGE	0	0	0	0
F-3172		VALVE	0	0	0	0
F-3173		FLANGE	0	0	0	0
F-3174	BY PASS LINE	FLANGE	0	0	0	0
F-3175		VALVE	0	0	0	0
F-3176		FLANGE	0	0	0	0
F-3177	OUT LET LINE 037-VV-001 1ST	FLANGE	0	0	0	0
F-3178		FLANGE	0	0	0	0
F-3179		FLANGE	0	0	0	0
F-3180	037-PA-CF-001A IN LET LINE	V.GLAND	0	0	0	0
F-3181	(REFLUX)	F.JOINT	0	0	0	0
F-3182		P.GLAND	0	0	0	0
F-3183		F.JOINT	0	0	0	0
F-3184	037-PA-CF-001A OUT LET LINE	V.GLAND	0	0	0	0
F-3185	(REFLUX)	F.JOINT	0	0	0	0
F-3186		P.GLAND	0	0	0	0
F-3187	NRB	FLANGE	0	0	0	0
F-3188		FLANGE	0	0	0	0
F-3189		FLANGE	0	0	0	0
F-3190	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3191		VALVE	0	0	0	0
F-3192		FLANGE	0	0	0	0
F-3193	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3194		VALVE	0	0	0	0
F-3195		FLANGE	0	0	0	0

F-3196	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3197		VALVE	0	0	0	0
F-3198		FLANGE	0	0	0	0
F-3199	037-PA-CF-001B IN LET LINE	V.GLAND	0	0	0	0
F-3200	(REFLUX)	F.JOINT	0	0	0	0
F-3201		P.GLAND	0	0	0	0
F-3202		F.JOINT	0	0	0	0
F-3203	037-PA-CF-001B OUT LET LINE	V.GLAND	0	0	0	0
F-3204	(REFLUX)	F.JOINT	0	0	0	0
F-3205		P.GLAND	0	0	0	0
F-3206		FLANGE	0	0	0	0
F-3207		FLANGE	0	0	0	0
F-3208		FLANGE	0	0	0	0
F-3209	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3210		VALVE	0	0	0	0
F-3211		FLANGE	0	0	0	0
F-3212	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3213		VALVE	0	0	0	0
F-3214		FLANGE	0	0	0	0
F-3215	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3216		VALVE	0	0	0	0
F-3217		FLANGE	0	0	0	0
F-3218	037-PA-CF-002A IN LET LINE	V.GLAND	0	0	0	0
F-3219	(REFLUX)	F.JOINT	0	0	0	0
F-3220		P.GLAND	0	0	0	0
F-3221		F.JOINT	0	0	0	0
F-3222	037-PA-CF-002 A OUT LET LINE	V.GLAND	0	0	0	0
F-3223	(REFLUX)	F.JOINT	0	0	0	0
F-3224		P.GLAND	0	0	0	0
F-3225	NRB	FLANGE	0	0	0	0
F-3226		FLANGE	0	0	0	0
F-3227		FLANGE	0	0	0	0
F-3228	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3229		VALVE	0	0	0	0
F-3230		FLANGE	0	0	0	0
F-3231	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3232		VALVE	0	0	0	0
F-3233		FLANGE	0	0	0	0
F-3234	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3235		VALVE	0	0	0	0
F-3236		FLANGE	0	0	0	0
F-3237	037-PA-CF-002B IN LET LINE	V.GLAND	0	0	0	0
F-3238	(REFLUX)	F.JOINT	0	0	0	0
F-3239		P.GLAND	0	0	0	0
F-3240		F.JOINT	0	0	0	0
F-3241	037-PA-CF-002B OUT LET LINE	V.GLAND	0	0	0	0
F-3242	(REFLUX)	F.JOINT	0	0	0	0
F-3243		P.GLAND	0	0	0	0
F-3244		FLANGE	0	0	0	0
F-3245		FLANGE	0	0	0	0
F-3246		FLANGE	0	0	0	0
F-3247	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3248		VALVE	0	0	0	0
F-3249		FLANGE	0	0	0	0
F-3250	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3251		VALVE	0	0	0	0
F-3252		FLANGE	0	0	0	0
F-3253	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3254		VALVE	0	0	0	0
F-3255		FLANGE	0	0	0	0
F-3256	037-PA-CF-003A IN LET LINE	V.GLAND	0	0	0	0
F-3257	(REFLUX)	F.JOINT	0	0	0	0
F-3258		P.GLAND	0	0	0	0
F-3259		F.JOINT	0	0	0	0
F-3260	037-PA-CF-003A OUT LET LINE	V.GLAND	0	0	0	0
F-3261	(REFLUX)	F.JOINT	0	0	0	0
F-3262		P.GLAND	0	0	0	0

F-3263	NRB	FLANGE	0	0	0	0
F-3264		FLANGE	0	0	0	0
F-3265		FLANGE	0	0	0	0
F-3266	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3267		VALVE	0	0	0	0
F-3268		FLANGE	0	0	0	0
F-3269	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3270		VALVE	0	0	0	0
F-3271		FLANGE	0	0	0	0
F-3272	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3273		VALVE	0	0	0	0
F-3274		FLANGE	0	0	0	0
F-3275	037-PA-CF-003B IN LET LINE	V.GLAND	0	0	0	0
F-3276	(REFLUX)	F.JOINT	0	0	0	0
F-3277		P.GLAND	0	0	0	0
F-3278		F.JOINT	0	0	0	0
F-3279	037-PA-CF-003B OUT LET LINE	V.GLAND	0	0	0	0
F-3280	(REFLUX)	F.JOINT	0	0	0	0
F-3281		P.GLAND	0	0	0	0
F-3282		FLANGE	0	0	0	0
F-3283		FLANGE	0	0	0	0
F-3284		FLANGE	0	0	0	0
F-3285	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3286		VALVE	0	0	0	0
F-3287		FLANGE	0	0	0	0
F-3288	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3289		VALVE	0	0	0	0
F-3290		FLANGE	0	0	0	0
F-3291	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3292		VALVE	0	0	0	0
F-3293		FLANGE	0	0	0	0
F-3294	037-PA-CF-004A IN LET LINE	V.GLAND	0	0	0	0
F-3295	(REFLUX)	F.JOINT	0	0	0	0
F-3296		P.GLAND	0	0	0	0
F-3297		F.JOINT	0	0	0	0
F-3298	037-PA-CF-004 A OUT LET LINE	V.GLAND	0	0	0	0
F-3299	(REFLUX)	F.JOINT	0	0	0	0
F-3300		P.GLAND	0	0	0	0
F-3301	NRB	FLANGE	0	0	0	0
F-3302		FLANGE	0	0	0	0
F-3303		FLANGE	0	0	0	0
F-3304	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3305		VALVE	0	0	0	0
F-3306		FLANGE	0	0	0	0
F-3307	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3308		VALVE	0	0	0	0
F-3309		FLANGE	0	0	0	0
F-3310	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3311		VALVE	0	0	0	0
F-3312		FLANGE	0	0	0	0
F-3313	037-PA-CF-004B IN LET LINE	V.GLAND	0	0	0	0
F-3314	(REFLUX)	F.JOINT	0	0	0	0
F-3315		P.GLAND	0	0	0	0
F-3316		F.JOINT	0	0	0	0
F-3317	037-PA-CF-004B OUT LET LINE	V.GLAND	0	0	0	0
F-3318	(REFLUX)	F.JOINT	0	0	0	0
F-3319		P.GLAND	0	0	0	0
F-3320		FLANGE	0	0	0	0
F-3321		FLANGE	0	0	0	0
F-3322		FLANGE	0	0	0	0
F-3323	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3324		VALVE	0	0	0	0
F-3325		FLANGE	0	0	0	0
F-3326	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3327		VALVE	0	0	0	0
F-3328		FLANGE	0	0	0	0
F-3329	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0

F-3330		VALVE	0	0	0	0
F-3331		FLANGE	0	0	0	0
F-3332	037-PA-CF-005 A IN LET LINE	V.GLAND	0	0	0	0
F-3333	(REFLUX)	F.JOINT	0	0	0	0
F-3334		P.GLAND	0	0	0	0
F-3335		F.JOINT	0	0	0	0
F-3336	037-PA-CF-005 A OUT LET LINE	V.GLAND	0	0	0	0
F-3337	(REFLUX)	F.JOINT	0	0	0	0
F-3338		P.GLAND	0	0	0	0
F-3339	NRB	FLANGE	0	0	0	0
F-3340		FLANGE	0	0	0	0
F-3341		FLANGE	0	0	0	0
F-3342	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3343		VALVE	0	0	0	0
F-3344		FLANGE	0	0	0	0
F-3345	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3346		VALVE	0	0	0	0
F-3347		FLANGE	0	0	0	0
F-3348	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3349		VALVE	0	0	0	0
F-3350		FLANGE	0	0	0	0
F-3351	037-PA-CF-005B IN LET LINE	V.GLAND	0	0	0	0
F-3352	(REFLUX)	F.JOINT	0	0	0	0
F-3353		P.GLAND	0	0	0	0
F-3354		F.JOINT	0	0	0	0
F-3355	037-PA-CF-005 B OUT LET LINE	V.GLAND	0	0	0	0
F-3356	(REFLUX)	F.JOINT	0	0	0	0
F-3357		P.GLAND	0	0	0	0
F-3358		FLANGE	0	0	0	0
F-3359		FLANGE	0	0	0	0
F-3360		FLANGE	0	0	0	0
F-3361	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3362		VALVE	0	0	0	0
F-3363		FLANGE	0	0	0	0
F-3364	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3365		VALVE	0	0	0	0
F-3366		FLANGE	0	0	0	0
F-3367	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3368		VALVE	0	0	0	0
F-3369		FLANGE	0	0	0	0
F-3370	PRODUCT RUNDOWN LINE(037-EE-10)	FLANGE	0	0	0	0
F-3371		VALVE	0	0	0	0
F-3372		FLANGE	0	0	0	0
F-3373		FLANGE	0	0	0	0
F-3374		VALVE	0	0	0	0
F-3375		FLANGE	0	0	0	0
F-3376		FLANGE	0	0	0	0
F-3377		VALVE	0	0	0	0
F-3378		FLANGE	0	0	0	0
F-3379		FLANGE	0	0	0	0
F-3380		VALVE	0	0	0	0
F-3381		FLANGE	0	0	0	0
F-3382	LINE TO 37-VV-001	FLANGE	0	0	0	0
F-3383		VALVE	0	0	0	0
F-3384		FLANGE	0	0	0	0
F-3385		FLANGE	0	0	0	0
F-3386		VALVE	0	0	0	0
F-3387		FLANGE	0	0	0	0
F-3388	LINE TO 037--0803-A1A	FLANGE	0	0	0	0
F-3389		VALVE	0	0	0	0
F-3390		FLANGE	0	0	0	0
F-3391		FLANGE	0	0	0	0
F-3392		VALVE	0	0	0	0
F-3393		FLANGE	0	0	0	0
F-3394	LINE TO P- 037--0825-A1A	FLANGE	0	0	0	0
F-3395		VALVE	0	0	0	0
F-3396		FLANGE	0	0	0	0

F-3397		FLANGE	0	0	0	0
F-3398		VALVE	0	0	0	0
F-3399		FLANGE	0	0	0	0
F-3400	LINE TO 037-EE-002	FLANGE	0	0	0	0
F-3401		VALVE	0	0	0	0
F-3402		FLANGE	0	0	0	0
F-3403		FLANGE	0	0	0	0
F-3404		VALVE	0	0	0	0
F-3405		FLANGE	0	0	0	0
F-3406	LINE TO P- 037--0825-A1A	FLANGE	0	0	0	0
F-3407		VALVE	0	0	0	0
F-3408		FLANGE	0	0	0	0
F-3409		FLANGE	0	0	0	0
F-3410		VALVE	0	0	0	0
F-3411		FLANGE	0	0	0	0
F-3412	LINE TO NHDT OFF SPEC	FLANGE	0	0	0	0
F-3413		VALVE	0	0	0	0
F-3414		FLANGE	0	0	0	0
F-3415	037-EE-11 PRODUCT R/D LINE	FLANGE	0	0	0	0
F-3416		VALVE	0	0	0	0
F-3417		FLANGE	0	0	0	0
F-3418		FLANGE	0	0	0	0
F-3419		FLANGE	0	0	0	0
F-3420	BY PASS LINE 1st VALVE	FLANGE	0	0	0	0
F-3421		VALVE	0	0	0	0
F-3422		FLANGE	0	0	0	0
F-3423	BY PASS LINE 2nd VALVE	FLANGE	0	0	0	0
F-3424		VALVE	0	0	0	0
F-3425		FLANGE	0	0	0	0
F-3426		FLANGE	0	0	0	0
F-3427	BY PASS LINE 3rd VALVE	FLANGE	0	0	0	0
F-3428		VALVE	0	0	0	0
F-3429		FLANGE	0	0	0	0
F-3430	CONTROL VALVE 37-FV-801	FLANGE	0	0	0	0
F-3431		VALVE	0	0	0	0
F-3432		FLANGE	0	0	0	0
F-3433	BY PASS LINE 4th VALVE	FLANGE	0	0	0	0
F-3434		VALVE	0	0	0	0
F-3435		FLANGE	0	0	0	0
F-3436	LINE TO P-037-0812 A1H	FLANGE	0	0	0	0
F-3437		VALVE	0	0	0	0
F-3438		FLANGE	0	0	0	0
F-3439		FLANGE	0	0	0	0
F-3440		VALVE	0	0	0	0
F-3441		FLANGE	0	0	0	0
F-3442	LINE TO 37-RB-001-O/L	FLANGE	0	0	0	0
F-3443		VALVE	0	0	0	0
F-3444		FLANGE	0	0	0	0
F-3445		FLANGE	0	0	0	0
F-3446		VALVE	0	0	0	0
F-3447		FLANGE	0	0	0	0
F-3448	LINE TO 37-RB-002-O/L	FLANGE	0	0	0	0
F-3449		VALVE	0	0	0	0
F-3450		FLANGE	0	0	0	0
F-3451		FLANGE	0	0	0	0
F-3452		VALVE	0	0	0	0
F-3453		FLANGE	0	0	0	0
F-3454	LINE TO 37-0226-B1AH 1st VALVE	FLANGE	0	0	0	0
F-3455		VALVE	0	0	0	0
F-3456		FLANGE	0	0	0	0
F-3457	LINE TO 37-0226-B1AH 2nd VALVE	FLANGE	0	0	0	0
F-3458		VALVE	0	0	0	0
F-3459		FLANGE	0	0	0	0
F-3460	LINE TO 37-0226-B1AH 3rd VALVE	FLANGE	0	0	0	0
F-3461		VALVE	0	0	0	0
F-3462		FLANGE	0	0	0	0
F-3463	LINE TO 37-0226-B1AH 4th VALVE	FLANGE	0	0	0	0

F-3464		VALVE	0	0	0	0
F-3465		FLANGE	0	0	0	0
F-3466	LINE TO 37-0226-B1AH 5th VALVE	FLANGE	0	0	0	0
F-3467		VALVE	0	0	0	0
F-3468		FLANGE	0	0	0	0
F-3469	LINE TO 37-0226-B1AH 6th VALVE	FLANGE	0	0	0	0
F-3470		VALVE	0	0	0	0
F-3471		FLANGE	0	0	0	0
F-3472	LINE MUGC DISCHARGE TO DRYER	FLANGE	0	0	0	0
F-3473	(2"-P-037-0301-C1AHY)	VALVE	0	0	0	0
F-3474		FLANGE	0	0	0	0
F-3475		FLANGE	0	0	0	0
F-3476		VALVE	0	0	0	0
F-3477		FLANGE	0	0	0	0
F-3478		FLANGE	0	0	0	0
F-3479		VALVE	0	0	0	0
F-3480		FLANGE	0	0	0	0
F-3481	LINE PT-401	FLANGE	0	0	0	0
F-3482		FLANGE	0	0	0	0
F-3483		FLANGE	0	0	0	0
F-3484		VALVE	0	0	0	0
F-3485		FLANGE	0	0	0	0
F-3486		FLANGE	0	0	0	0
F-3487		VALVE	0	0	0	0
F-3488		FLANGE	0	0	0	0
F-3489	CONTROL VALVE 037-FV-401 1st isolating valve	FLANGE	0	0	0	0
F-3490		VALVE	0	0	0	0
F-3491		FLANGE	0	0	0	0
F-3492	CONTROL VALVE 037-FV-401	FLANGE	0	0	0	0
F-3493		VALVE	0	0	0	0
F-3494		FLANGE	0	0	0	0
F-3495	BY PASS LINE	FLANGE	0	0	0	0
F-3496		VALVE	0	0	0	0
F-3497		FLANGE	0	0	0	0
F-3498	LINE TO KOD	FLANGE	0	0	0	0
F-3499		VALVE	0	0	0	0
F-3500		FLANGE	0	0	0	0
F-3501		FLANGE	0	0	0	0
F-3502		VALVE	0	0	0	0
F-3503		FLANGE	0	0	0	0
F-3504		FLANGE	0	0	0	0
F-3505		VALVE	0	0	0	0
F-3506		FLANGE	0	0	0	0
F-3507		FLANGE	0	0	0	0
F-3508		VALVE	0	0	0	0
F-3509		FLANGE	0	0	0	0
F-3510	037-PA-CF-016 A IN LET LINE	V.GLAND	0	0	0	0
F-3511		F.JOINT	0	0	0	0
F-3512		P.GLAND	0	0	0	0
F-3513		F.JOINT	0	0	0	0
F-3514	037-PA-CF-016 A OUT LET LINE	V.GLAND	0	0	0	0
F-3515		F.JOINT	0	0	0	0
F-3516		P.GLAND	0	0	0	0
F-3517	NRB	FLANGE	0	0	0	0
F-3518		FLANGE	0	0	0	0
F-3519		FLANGE	0	0	0	0
F-3520	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3521		VALVE	0	0	0	0
F-3522		FLANGE	0	0	0	0
F-3523	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3524		VALVE	0	0	0	0
F-3525		FLANGE	0	0	0	0
F-3526	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3527		VALVE	0	0	0	0
F-3528		FLANGE	0	0	0	0
F-3529		P.GLAND	0	0	0	0
F-3530		F.JOINT	0	0	0	0

F-3531	037-PA-CF-016 B OUT LET LINE	V.GLAND	0	0	0	0
F-3532		F.JOINT	0	0	0	0
F-3533		P.GLAND	0	0	0	0
F-3534		FLANGE	0	0	0	0
F-3535		FLANGE	0	0	0	0
F-3536		FLANGE	0	0	0	0
F-3537	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3538		VALVE	0	0	0	0
F-3539		FLANGE	0	0	0	0
F-3540	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3541		VALVE	0	0	0	0
F-3542		FLANGE	0	0	0	0
F-3543	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3544		VALVE	0	0	0	0
F-3545		FLANGE	0	0	0	0
F-3546	036-PA-CF-002 A IN LET LINE	V.GLAND	0	0	0	0
F-3547		F.JOINT	56.2	32.5	0.00006	0.00053
F-3548		P.GLAND	0	0	0	0
F-3549		F.JOINT	0	0	0	0
F-3550	036-PA-CF-002 A OUT LET LINE	V.GLAND	0	0	0	0
F-3551		F.JOINT	0	0	0	0
F-3552		P.GLAND	0	0	0	0
F-3553		FLANGE	0	0	0	0
F-3554		FLANGE	0	0	0	0
F-3555		FLANGE	0	0	0	0
F-3556	LINE TO OWS 1 st VALVE	FLANGE	0	0	0	0
F-3557		VALVE	0	0	0	0
F-3558		FLANGE	0	0	0	0
F-3559	LINE TO OWS 2 nd VALVE	FLANGE	0	0	0	0
F-3560		VALVE	0	0	0	0
F-3561		FLANGE	0	0	0	0
F-3562	036-PA-CF-002 B IN LET LINE	V.GLAND	0	0	0	0
F-3563		F.JOINT	0	0	0	0
F-3564		P.GLAND	0	0	0	0
F-3565		F.JOINT	0	0	0	0
F-3566	036-PA-CF-002 B OUT LET LINE	V.GLAND	0	0	0	0
F-3567		F.JOINT	0	0	0	0
F-3568		P.GLAND	0	0	0	0
F-3569		FLANGE	0	0	0	0
F-3570		FLANGE	0	0	0	0
F-3571		FLANGE	0	0	0	0
F-3572	LINE TO OWS 1 st VALVE	FLANGE	0	0	0	0
F-3573		VALVE	0	0	0	0
F-3574		FLANGE	0	0	0	0
F-3575	LINE TO OWS 2 nd VALVE	FLANGE	0	0	0	0
F-3576		VALVE	0	0	0	0
F-3577		FLANGE	0	0	0	0
F-3578	036-PA-CF-001 A IN LET LINE	V.GLAND	0	0	0	0
F-3579	(HDT FEED)	F.JOINT	0	0	0	0
F-3580		P.GLAND	0	0	0	0
F-3581		F.JOINT	0	0	0	0
F-3582	036-PA-CF-001 A OUT LET LINE	V.GLAND	0	0	0	0
F-3583	(HDT FEED)	F.JOINT	0	0	0	0
F-3584		P.GLAND	0	0	0	0
F-3585		FLANGE	0	0	0	0
F-3586		FLANGE	0	0	0	0
F-3587		FLANGE	0	0	0	0
F-3588	LINE TO OWS 1 st VALVE	FLANGE	0	0	0	0
F-3589		VALVE	0	0	0	0
F-3590		FLANGE	0	0	0	0
F-3591	LINE TO OWS 2 nd VALVE	FLANGE	0	0	0	0
F-3592		VALVE	0	0	0	0
F-3593		FLANGE	0	0	0	0
F-3594	036-PA-CF-001B IN LET LINE	V.GLAND	0	0	0	0
F-3595	(HDT FEED)	F.JOINT	0	0	0	0
F-3596		P.GLAND	0	0	0	0
F-3597		F.JOINT	0	0	0	0

F-3598	036-PA-CF-001 B OUT LET LINE	V.GLAND	0	0	0	0
F-3599	(HDT FEED)	F.JOINT	0	0	0	0
F-3600		P.GLAND	0	0	0	0
F-3601		FLANGE	0	0	0	0
F-3602		FLANGE	0	0	0	0
F-3603		FLANGE	0	0	0	0
F-3604	LINE TO OWS 1 st VALVE	FLANGE	0	0	0	0
F-3605		VALVE	0	0	0	0
F-3606		FLANGE	0	0	0	0
F-3607	LINE TO OWS 2 nd VALVE	FLANGE	0	0	0	0
F-3608		VALVE	0	0	0	0
F-3609		FLANGE	0	0	0	0
F-3610	036-RECYCLE GAS COMP B IN LET LINE	F.JOINT	0	0	0	0
F-3611		V.GLAND	0	0	0	0
F-3612		F.JOINT	0	0	0	0
F-3613		F.JOINT	0	0	0	0
F-3614		V.GLAND	0	0	0	0
F-3615		F.JOINT	0	0	0	0
F-3616		F.JOINT	0	0	0	0
F-3617		V.GLAND	0	0	0	0
F-3618		F.JOINT	0	0	0	0
F-3619		F.JOINT	0	0	0	0
F-3620		V.GLAND	0	0	0	0
F-3621		F.JOINT	0	0	0	0
F-3622		F.JOINT	0	0	0	0
F-3623		V.GLAND	0	0	0	0
F-3624		F.JOINT	0	0	0	0
F-3625		FLANGE	0	0	0	0
F-3626		FLANGE	0	0	0	0
F-3627		FLANGE	0	0	0	0
F-3628		FLANGE	0	0	0	0
F-3629		FLANGE	0	0	0	0
F-3630	036-RECYCLE GAS COMP B OUTLET LINE	F.JOINT	0	0	0	0
F-3631		V.GLAND	0	0	0	0
F-3632		F.JOINT	0	0	0	0
F-3633		F.JOINT	0	0	0	0
F-3634		V.GLAND	0	0	0	0
F-3635		F.JOINT	0	0	0	0
F-3636		FLANGE	0	0	0	0
F-3637		FLANGE	0	0	0	0
F-3638		FLANGE	0	0	0	0
F-3639	LINE TO VENT	F.JOINT	0	0	0	0
F-3640		V.GLAND	0	0	0	0
F-3641		F.JOINT	0	0	0	0
F-3642	036-MAKEUP GAS COMP B 1st STAGE IN LET LINE	F.JOINT	0	0	0	0
F-3643		V.GLAND	0	0	0	0
F-3644		F.JOINT	0	0	0	0
F-3645	CONTROL VALVE-036-FV-301	F.JOINT	0	0	0	0
F-3646		V.GLAND	0	0	0	0
F-3647		F.JOINT	0	0	0	0
F-3648		F.JOINT	0	0	0	0
F-3649		V.GLAND	0	0	0	0
F-3650		F.JOINT	0	0	0	0
F-3651		F.JOINT	0	0	0	0
F-3652		V.GLAND	0	0	0	0
F-3653		F.JOINT	0	0	0	0
F-3654		F.JOINT	0	0	0	0
F-3655		V.GLAND	0	0	0	0
F-3656		F.JOINT	0	0	0	0
F-3657	BY PASS LINE CONTROL VALVE-036-FV-307	F.JOINT	0	0	0	0
F-3658		V.GLAND	0	0	0	0
F-3659		F.JOINT	0	0	0	0
F-3660		F.JOINT	0	0	0	0
F-3661		V.GLAND	0	0	0	0
F-3662		F.JOINT	0	0	0	0
F-3663	FG LINE TO HEADER RETURN	F.JOINT	0	0	0	0
F-3664		V.GLAND	0	0	0	0

F-3665		F.JOINT	0	0	0	0
F-3666		F.JOINT	0	0	0	0
F-3667		F.JOINT	0	0	0	0
F-3668		FLANGE	0	0	0	0
F-3669		FLANGE	0	0	0	0
F-3670		FLANGE	0	0	0	0
F-3671		FLANGE	0	0	0	0
F-3672		FLANGE	0	0	0	0
F-3673		FLANGE	0	0	0	0
F-3674	036-MAKEUP GAS COMP B 1st STAGE OUT LET LINE	F.JOINT	0	0	0	0
F-3675		V.GLAND	0	0	0	0
F-3676		F.JOINT	0	0	0	0
F-3677		F.JOINT	0	0	0	0
F-3678		V.GLAND	0	0	0	0
F-3679		F.JOINT	0	0	0	0
F-3680		FLANGE	0	0	0	0
F-3681		FLANGE	0	0	0	0
F-3682		FLANGE	0	0	0	0
F-3683	1st NRB	FLANGE	0	0	0	0
F-3684		FLANGE	0	0	0	0
F-3685	2nd NRB	FLANGE	0	0	0	0
F-3686		FLANGE	0	0	0	0
F-3687	036-MAKEUP GAS COMP B 2d STAGE IN LET LINE	FLANGE	0	0	0	0
F-3688		FLANGE	0	0	0	0
F-3689		FLANGE	0	0	0	0
F-3690	036-MAKEUP GAS COMP B 2d STAGE OUT LET LINE	FLANGE	0	0	0	0
F-3691		FLANGE	0	0	0	0
F-3692		FLANGE	0	0	0	0
F-3693	1st NRB	FLANGE	0	0	0	0
F-3694		FLANGE	0	0	0	0
F-3695	2nd NRB	FLANGE	0	0	0	0
F-3696		FLANGE	0	0	0	0
F-3697	036-MAKEUP GAS COMP B 2d STAGE SPILL BACK	FLANGE	0	0	0	0
F-3698		FLANGE	0	0	0	0
F-3699		VALVE GLAND	0	0	0	0
F-3700		FLANGE	0	0	0	0
F-3701	037-VV-023 INLET	FLANGE	0	0	0	0
F-3702		FLANGE	0	0	0	0
F-3703	037-VV-023 OUTLET	FLANGE	0	0	0	0
F-3704		FLANGE	0	0	0	0
F-3705	LINE STRIPPER 036-CC-001 O/L	F.JOINT	0	0	0	0
F-3706		F.JOINT	0	0	0	0
F-3707		V.GLAND	0	0	0	0
F-3708		F.JOINT	0	0	0	0
F-3709	LINE-FV-501-SL	F.JOINT	0	0	0	0
F-3710		V.GLAND	0	0	0	0
F-3711		F.JOINT	0	0	0	0
F-3712	FV-501-SL BY PASS LINE	F.JOINT	0	0	0	0
F-3713		V.GLAND	0	0	0	0
F-3714		F.JOINT	0	0	0	0
F-3715	LINE- TO C/L	F.JOINT	0	0	0	0
F-3716		V.GLAND	0	0	0	0
F-3717		F.JOINT	0	0	0	0
F-3718		F.JOINT	0	0	0	0
F-3719		V.GLAND	0	0	0	0
F-3720		F.JOINT	0	0	0	0
F-3721	036--VV-001 LINE	FLANGE	0	0	0	0
F-3722		V.GLAND	0	0	0	0
F-3723		FLANGE	0	0	0	0
F-3724		FLANGE	0	0	0	0
F-3725		V.GLAND	0	0	0	0
F-3726		FLANGE	0	0	0	0
F-3727	037-VV-001 LINE	F.JOINT	0	0	0	0
F-3728		V.GLAND	0	0	0	0
F-3729		F.JOINT	0	0	0	0
F-3730		F.JOINT	0	0	0	0
F-3731		V.GLAND	0	0	0	0

F-3732		F.JOINT	0	0	0	0
F-3733	LINE TO NHDT OFF SPEC	FLANGE	0	0	0	0
F-3734		V.GLAND	0	0	0	0
F-3735		FLANGE	0	0	0	0
F-3736		FLANGE	0	0	0	0
F-3737		V.GLAND	0	0	0	0
F-3738		FLANGE	0	0	0	0
F-3739		FLANGE	0	0	0	0
F-3740		V.GLAND	0	0	0	0
F-3741		FLANGE	0	0	0	0
F-3742		F.JOINT	0	0	0	0
F-3743		V.GLAND	0	0	0	0
F-3744		F.JOINT	0	0	0	0
F-3745	LINE TO NHDT OL TO LN T/571	F.JOINT	0	0	0	0
F-3746		V.GLAND	0	0	0	0
F-3747		F.JOINT	0	0	0	0
F-3748		F.JOINT	0	0	0	0
F-3749		V.GLAND	0	0	0	0
F-3750		F.JOINT	0	0	0	0
F-3751	LINE EX 036-VV-002 TO STRIPPER	F.JOINT	0	0	0	0
F-3752		F.JOINT	0	0	0	0
F-3753		V.GLAND	0	0	0	0
F-3754		F.JOINT	0	0	0	0
F-3755	CONTROL VALVE 36-FV-402	F.JOINT	0	0	0	0
F-3756		V.GLAND	0	0	0	0
F-3757		F.JOINT	0	0	0	0
F-3758		F.JOINT	0	0	0	0
F-3759		V.GLAND	0	0	0	0
F-3760		F.JOINT	0	0	0	0
F-3761	START UP LINE EX-036-VV-001	F.JOINT	0	0	0	0
F-3762		V.GLAND	0	0	0	0
F-3763		F.JOINT	0	0	0	0
F-3764		F.JOINT	0	0	0	0
F-3765		F.JOINT	0	0	0	0
F-3766		F.JOINT	0	0	0	0
F-3767		V.GLAND	0	0	0	0
F-3768		F.JOINT	0	0	0	0
F-3769		F.JOINT	0	0	0	0
F-3770		V.GLAND	0	0	0	0
F-3771		F.JOINT	0	0	0	0
F-3772		F.JOINT	0	0	0	0
F-3773		V.GLAND	0	0	0	0
F-3774		F.JOINT	0	0	0	0
F-3775		FLANGE	0	0	0	0
F-3776		V.GLAND	0	0	0	0
F-3777		FLANGE	0	0	0	0
F-3778	START UP LINE EX-036-VV-001 BY PASS	FLANGE	0	0	0	0
F-3779		V.GLAND	0	0	0	0
F-3780		FLANGE	0	0	0	0
F-3781		FLANGE	25.3	15.9	0.00006	0.00526
F-3782		V.GLAND	0	0	0	0
F-3783		FLANGE	0	0	0	0
F-3784	LINE 2'-P-036-0414-B9A5	F.JOINT	0	0	0	0
F-3785		V.GLAND	0	0	0	0
F-3786		F.JOINT	0	0	0	0
F-3787		F.JOINT	0	0	0	0
F-3788		F.JOINT	0	0	0	0
F-3789		FLANGE	0	0	0	0
F-3790		V.GLAND	0	0	0	0
F-3791		FLANGE	0	0	0	0
F-3792	LINE 2'-P-036-0414-B9A5 CONTROL VALVE	FLANGE	0	0	0	0
F-3793	036-LV-401B	V.GLAND	0	0	0	0
F-3794		FLANGE	0	0	0	0
F-3795		FLANGE	0	0	0	0
F-3796		V.GLAND	0	0	0	0
F-3797		FLANGE	0	0	0	0
F-3798	NHDT H2 MAKE UP LINE	FLANGE	0	0	0	0

F-3799		FLANGE	0	0	0	0
F-3800		FLANGE	0	0	0	0
F-3801		V.GLAND	0	0	0	0
F-3802		FLANGE	0	0	0	0
F-3803		FLANGE	0	0	0	0
F-3804		FLANGE	0	0	0	0
F-3805		FLANGE	0	0	0	0
F-3806		FLANGE	0	0	0	0
F-3807		FLANGE	0	0	0	0
F-3808		V.GLAND	0	0	0	0
F-3809		FLANGE	0	0	0	0
F-3810	NHDT H2 MAKE UP LINE 036-FV-201 CONTRL VALVE	FLANGE	0	0	0	0
F-3811		V.GLAND	0	0	0	0
F-3812		FLANGE	0	0	0	0
F-3813		FLANGE	0	0	0	0
F-3814		V.GLAND	0	0	0	0
F-3815		FLANGE	0	0	0	0
F-3816	LINE 2'-P-036-0526-A1A	FLANGE	0	0	0	0
F-3817		FLANGE	0	0	0	0
F-3818		V.GLAND	0	0	0	0
F-3819		FLANGE	0	0	0	0
F-3820	LINE 2'-P-036-0526-A1A CONTROL VALVE 36-FV-101	FLANGE	0	0	0	0
F-3821		V.GLAND	0	0	0	0
F-3822		FLANGE	0	0	0	0
F-3823		FLANGE	0	0	0	0
F-3824		V.GLAND	0	0	0	0
F-3825		FLANGE	0	0	0	0
F-3826	036-0109-A1A BY PASS LINE	FLANGE	0	0	0	0
F-3827		V.GLAND	0	0	0	0
F-3828		FLANGE	0	0	0	0
F-3829		FLANGE	0	0	0	0
F-3830		V.GLAND	0	0	0	0
F-3831		FLANGE	0	0	0	0
F-3832	LINE-LN-TO-036-RB-001	FLANGE	0	0	0	0
F-3833		FLANGE	0	0	0	0
F-3834		V.GLAND	0	0	0	0
F-3835		FLANGE	0	0	0	0
F-3836	CONTROL VALVE-036-FV-102	FLANGE	402	218.5	0.00006	0.000526
F-3837		V.GLAND	0	0	0	0
F-3838		FLANGE	0	0	0	0
F-3839		FLANGE	0	0	0	0
F-3840		V.GLAND	0	0	0	0
F-3841		FLANGE	0	0	0	0
F-3842	LINE-LN-TO-036-RB-001 BYPASS LINE	FLANGE	0	0	0	0
F-3843		V.GLAND	0	0	0	0
F-3844		FLANGE	0	0	0	0
F-3845		FLANGE	0	0	0	0
F-3846		V.GLAND	0	0	0	0
F-3847		FLANGE	0	0	0	0
F-3848		FLANGE	0	0	0	0
F-3849		V.GLAND	0	0	0	0
F-3850		FLANGE	0	0	0	0
F-3851	LINE-LN-TO-036-RB-001	FLANGE	0	0	0	0
F-3852		FLANGE	0	0	0	0
F-3853		FLANGE	0	0	0	0
F-3854		V.GLAND	0	0	0	0
F-3855		FLANGE	0	0	0	0
F-3856		FLANGE	0	0	0	0
F-3857		FLANGE	0	0	0	0
F-3858		FLANGE	0	0	0	0
F-3859		V.GLAND	0	0	0	0
F-3860		FLANGE	0	0	0	0
F-3861	CIRCULATION LINE 36-PA-CF-001A/B	FLANGE	0	0	0	0
F-3862		V.GLAND	0	0	0	0
F-3863		FLANGE	0	0	0	0
F-3864		FLANGE	0	0	0	0
F-3865		FLANGE	0	0	0	0

F-3866		FLANGE	0	0	0	0
F-3867		V.GLAND	0	0	0	0
F-3868		FLANGE	0	0	0	0
F-3869	037-PSV-0601B INLET LINE RUPTURE DISC JOINT	FLANGE	0	0	0	0
F-3870		FLANGE	0	0	0	0
F-3871		V.GLAND	0	0	0	0
F-3872		FLANGE	0	0	0	0
F-3873		FLANGE	0	0	0	0
F-3874		V.GLAND	0	0	0	0
F-3875		FLANGE	0	0	0	0
F-3876	037-PSV-0601A INLET LINE RUPTURE DISC JOINT	FLANGE	0	0	0	0
F-3877		FLANGE	0	0	0	0
F-3878		V.GLAND	0	0	0	0
F-3879		FLANGE	0	0	0	0
F-3880		FLANGE	0	0	0	0
F-3881		V.GLAND	0	0	0	0
F-3882		FLANGE	0	0	0	0
F-3883	LINE LRTO STRIPPER	FLANGE	56	33.3	0.00006	0.000526
F-3884		V.GLAND	0	0	0	0
F-3885		FLANGE	0	0	0	0
F-3886	LRTO STRIPPER LINE CONTROL VALVE	FLANGE	0	0	0	0
F-3887	035-FV-105	V.GLAND	0	0	0	0
F-3888		FLANGE	0	0	0	0
F-3889		FLANGE	0	0	0	0
F-3890		V.GLAND	0	0	0	0
F-3891		FLANGE	0	0	0	0
F-3892	LRTO STRIPPER 1st BY PASS LINE	FLANGE	0	0	0	0
F-3893		V.GLAND	0	0	0	0
F-3894		FLANGE	0	0	0	0
F-3895	LRTO STRIPPER 2nd BY PASS LINE	FLANGE	0	0	0	0
F-3896		V.GLAND	0	0	0	0
F-3897		FLANGE	0	0	0	0
F-3898	035-PA-CF-001 A IN LET LINE	V.GLAND	0	0	0	0
F-3899	(SPLITTER RUFLUX)	F.JOINT	0	0	0	0
F-3900		P.GLAND	0	0	0	0
F-3901		F.JOINT	0	0	0	0
F-3902	035-PA-CF-001 A OUT LET LINE	V.GLAND	0	0	0	0
F-3903	(SPLITTER RUFLUX)	F.JOINT	0	0	0	0
F-3904		P.GLAND	0	0	0	0
F-3905	035-PA-CF-001 B IN LET LINE	V.GLAND	0	0	0	0
F-3906	(SPLITTER RUFLUX)	F.JOINT	0	0	0	0
F-3907		P.GLAND	0	0	0	0
F-3908		F.JOINT	0	0	0	0
F-3909	035-PA-CF-001 B OUT LET LINE	V.GLAND	0	0	0	0
F-3910	(SPLITTER RUFLUX)	F.JOINT	0	0	0	0
F-3911		P.GLAND	0	0	0	0
F-3912	035-PA-CF-002 A IN LET LINE	V.GLAND	0	0	0	0
F-3913	(REFORMATE)	F.JOINT	0	0	0	0
F-3914		P.GLAND	0	0	0	0
F-3915		F.JOINT	0	0	0	0
F-3916	035-PA-CF-002 A OUT LET LINE	V.GLAND	0	0	0	0
F-3917	(REFORMATE)	F.JOINT	0	0	0	0
F-3918		P.GLAND	0	0	0	0
F-3919	035-PA-CF-002 B IN LET LINE	V.GLAND	0	0	0	0
F-3920	(REFORMATE)	F.JOINT	0	0	0	0
F-3921		P.GLAND	0	0	0	0
F-3922		F.JOINT	0	0	0	0
F-3923	035-PA-CF-002 B OUT LET LINE	V.GLAND	0	0	0	0
F-3924	(REFORMATE)	F.JOINT	0	0	0	0
F-3925		P.GLAND	0	0	0	0
F-3926	034-PA-CF-001 A IN LET LINE	V.GLAND	469	245.8	0.0017	0.014892
F-3927	(NAPTHA)	F.JOINT	0	0	0	0
F-3928		P.GLAND	0	0	0	0
F-3929		F.JOINT	0	0	0	0
F-3930	034-PA-CF-001 A OUT LET LINE	V.GLAND	0	0	0	0
F-3931	(NAPTHA)	F.JOINT	0	0	0	0
F-3932		P.GLAND	0	0	0	0

F-3933	034-PA-CF-001 B IN LET LINE	V.GLAND	0	0	0	0
F-3934	(NAPTHA)	F.JOINT	0	0	0	0
F-3935		P.GLAND	0	0	0	0
F-3936		F.JOINT	0	0	0	0
F-3937	034-PA-CF-001 B OUT LET LINE	V.GLAND	0	0	0	0
F-3938	(NAPTHA)	F.JOINT	791	421.4	0.00006	0.000526
F-3939		P.GLAND	0	0	0	0
F-3940	034-PA-CF-002 B IN LET LINE	V.GLAND	0	0	0	0
F-3941	(NAPTHA SPLITTER REFLUX)	F.JOINT	0	0	0	0
F-3942		P.GLAND	0	0	0	0
F-3943		F.JOINT	0	0	0	0
F-3944	034-PA-CF-002 B OUT LET LINE	V.GLAND	0	0	0	0
F-3945	(NAPTHA SPLITTER REFLUX)	F.JOINT	0	0	0	0
F-3946		P.GLAND	0	0	0	0
F-3947	034-PA-CF-002 A IN LET LINE	V.GLAND	0	0	0	0
F-3948	(NAPTHA SPLITTER REFLUX)	F.JOINT	0	0	0	0
F-3949		P.GLAND	0	0	0	0
F-3950		F.JOINT	0	0	0	0
F-3951	034-PA-CF-002 A OUT LET LINE	V.GLAND	0	0	0	0
F-3952	(NAPTHA SPLITTER REFLUX)	F.JOINT	0	0	0	0
F-3953		P.GLAND	0	0	0	0
F-3954	034-PA-CF-003 A IN LET LINE	V.GLAND	53.4	27.3	0.0017	0.01489
F-3955	(NAPTHA SPLITTER BOTTOM)	F.JOINT	0	0	0	0
F-3956		P.GLAND	0	0	0	0
F-3957		F.JOINT	0	0	0	0
F-3958	034-PA-CF-003 A OUT LET LINE	V.GLAND	0	0	0	0
F-3959	(NAPTHA SPLITTER BOTTOM)	F.JOINT	0	0	0	0
F-3960		P.GLAND	0	0	0	0
F-3961	034-PA-CF-003 B IN LET LINE	V.GLAND	0	0	0	0
F-3962	(NAPTHA SPLITTER BOTTOM)	F.JOINT	0	0	0	0
F-3963		P.GLAND	0	0	0	0
F-3964		F.JOINT	0	0	0	0
F-3965	034-PA-CF-003 B OUT LET LINE	V.GLAND	0	0	0	0
F-3966	(NAPTHA SPLITTER BOTTOM)	F.JOINT	0	0	0	0
F-3967		P.GLAND	0	0	0	0
F-3968	LINE TO-34-VV-002 BOOT	FLANGE	0	0	0	0
F-3969		V.GLAND	0	0	0	0
F-3970		FLANGE	0	0	0	0
F-3971		FLANGE	0	0	0	0
F-3972		V.GLAND	0	0	0	0
F-3973		FLANGE	0	0	0	0
F-3974	34-VV-002 BOOT BYPASS LINE	FLANGE	0	0	0	0
F-3975		V.GLAND	0	0	0	0
F-3976		FLANGE	0	0	0	0
F-3977		FLANGE	0	0	0	0
F-3978		V.GLAND	0	0	0	0
F-3979		FLANGE	0	0	0	0
F-3980	4'-P-034-0132-A/L TO OWS LINE	FLANGE	0	0	0	0
F-3981		V.GLAND	0	0	0	0
F-3982		FLANGE	0	0	0	0
F-3983		FLANGE	0	0	0	0
F-3984		V.GLAND	0	0	0	0
F-3985		FLANGE	0	0	0	0
F-3986	34-VV-002 BOOT BYPASS LINE	FLANGE	0	0	0	0
F-3987		V.GLAND	0	0	0	0
F-3988		FLANGE	0	0	0	0
F-3989		FLANGE	0	0	0	0
F-3990		V.GLAND	0	0	0	0
F-3991		FLANGE	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 7(F) UNIT: AVU

SUMMARY SHEET FOR AVU AREA

Total number of points covered	**475**
Date of Monitoring/Rechecking	**14.12.2022 to 15.12.2022**
Total number of Leak detected for VOC	**NIL**

Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-3992	EQP NO-01-PA-00-014 IN	V.GLAND	0	0	0	0
F-3993		F.JOINT	0	0	0	0
F-3994		P.GLAND	161	83.7	0.0017	0.01489
F-3995	EQP NO-01-PA-00-014 OUT	V.GLAND	0	0	0	0
F-3996		F.JOINT	0	0	0	0
F-3997	EQP NO-01-PA-00-001 B IN	V.GLAND	0	0	0	0
F-3998		F.JOINT	0	0	0	0
F-3999		P.GLAND	0	0	0	0
F-4000	EQP NO-01-PA-00-001 B OUT	V.GLAND	0	0	0	0
F-4001		F.JOINT	0	0	0	0
F-4002		F.JOINT	0	0	0	0
F-4003	EQP NO-01-PA-00-005A IN	V.GLAND	0	0	0	0
F-4004		F.JOINT	0	0	0	0
F-4005		P.GLAND	0	0	0	0
F-4006	EQP NO-01-PA-00-005A OUT	V.GLAND	0	0	0	0
F-4007		F.JOINT	0	0	0	0
F-4008	EQP NO-01-PA-00-007 B IN	V.GLAND	0	0	0	0
F-4009		F.JOINT	0	0	0	0
F-4010		P.GLAND	0	0	0	0
F-4011	EQP NO-01-PA-00-007 B OUT	V.GLAND	0	0	0	0
F-4012		F.JOINT	0	0	0	0
F-4013		F.JOINT	0	0	0	0
F-4014	EQP NO-01-PA-00-011B IN	V.GLAND	0	0	0	0
F-4015		F.JOINT	0	0	0	0
F-4016		P.GLAND	0	0	0	0
F-4017	EQP NO-01-PA-00-011B OUT	V.GLAND	0	0	0	0
F-4018		F.JOINT	0	0	0	0
F-4019	EQP NO-01-PA-00-009A IN	V.GLAND	0	0	0	0
F-4020		F.JOINT	0	0	0	0
F-4021		P.GLAND	0	0	0	0
F-4022	EQP NO-01-PA-00-009A OUT	V.GLAND	0	0	0	0
F-4023		F.JOINT	0	0	0	0
F-4024	EQP NO-01-PA-00-008A IN	V.GLAND	0	0	0	0
F-4025		F.JOINT	0	0	0	0
F-4026		P.GLAND	0	0	0	0
F-4027	EQP NO-01-PA-00-008A OUT	V.GLAND	0	0	0	0
F-4028		F.JOINT	0	0	0	0
F-4029	EQP NO-01-PA-00-001A IN	V.GLAND	0	0	0	0
F-4030		F.JOINT	0	0	0	0
F-4031		P.GLAND	0	0	0	0
F-4032	EQP NO-01-PA-00-001 A OUT	V.GLAND	0	0	0	0
F-4033		F.JOINT	0	0	0	0
F-4034	EQP NO-01-PA-00-004A IN	V.GLAND	0	0	0	0
F-4035		F.JOINT	0	0	0	0
F-4036		P.GLAND	0	0	0	0
F-4037	EQP NO-01-PA-00-004A OUT	V.GLAND	0	0	0	0
F-4038		F.JOINT	0	0	0	0
F-4039	EQP NO-01-PA-00-010B IN	V.GLAND	0	0	0	0
F-4040		F.JOINT	0	0	0	0

F-4041		P.GLAND	0	0	0	0
F-4042	EQP NO-01-PA-00-010B OUT	V.GLAND	0	0	0	0
F-4043		F.JOINT	0	0	0	0
F-4044		F.JOINT	0	0	0	0
F-4045	EQP NO-02-PA-00-001B IN	V.GLAND	0	0	0	0
F-4046		F.JOINT	0	0	0	0
F-4047		P.GLAND	0	0	0	0
F-4048	EQP NO-02-PA-00-001 B OUT	V.GLAND	0	0	0	0
F-4049		F.JOINT	0	0	0	0
F-4050	EQP NO-02-PA-00-005A IN	V.GLAND	0	0	0	0
F-4051		F.JOINT	0	0	0	0
F-4052		P.GLAND	0	0	0	0
F-4053	EQP NO-02-PA-00-005A OUT	V.GLAND	0	0	0	0
F-4054		F.JOINT	0	0	0	0
F-4055	EQP NO-02-PA-00-007B IN	V.GLAND	0	0	0	0
F-4056		F.JOINT	0	0	0	0
F-4057		P.GLAND	0	0	0	0
F-4058	EQP NO-02-PA-00-007B OUT	V.GLAND	0	0	0	0
F-4059		F.JOINT	0	0	0	0
F-4060		F.JOINT	0	0	0	0
F-4061	EQP NO-01-PA-00-006B IN	V.GLAND	0	0	0	0
F-4062		F.JOINT	0	0	0	0
F-4063		P.GLAND	0	0	0	0
F-4064	EQP NO-01-PA-00-006B OUT	V.GLAND	0	0	0	0
F-4065		F.JOINT	0	0	0	0
F-4066	EQP NO-01-PA-00-012B IN	V.GLAND	0	0	0	0
F-4067		F.JOINT	0	0	0	0
F-4068		P.GLAND	0	0	0	0
F-4069	EQP NO-01-PA-00-012B OUT	V.GLAND	0	0	0	0
F-4070		F.JOINT	0	0	0	0
F-4071	EQP NO-01-PA-00-002A IN	V.GLAND	0	0	0	0
F-4072		F.JOINT	0	0	0	0
F-4073		P.GLAND	0	0	0	0
F-4074	EQP NO-01-PA-00-002A OUT	V.GLAND	0	0	0	0
F-4075		F.JOINT	0	0	0	0
F-4076	EQP NO-02-PA-00-003B IN	V.GLAND	0	0	0	0
F-4077		F.JOINT	0	0	0	0
F-4078		P.GLAND	0	0	0	0
F-4079	EQP NO-02-PA-00-003B OUT	V.GLAND	0	0	0	0
F-4080		F.JOINT	0	0	0	0
F-4081	EQP NO-02-PA-00-002A IN	V.GLAND	0	0	0	0
F-4082		F.JOINT	0	0	0	0
F-4083		P.GLAND	0	0	0	0
F-4084	EQP NO-02-PA-00-002A OUT	V.GLAND	0	0	0	0
F-4085		F.JOINT	87	47.5	0.00006	0.00526
F-4086	LINE HGO	FLANGE	0	0	0	0
F-4087		VALVE	0	0	0	0
F-4088		FLANGE	0	0	0	0
F-4089	LINEGVC	FLANGE	0	0	0	0
F-4090		VALVE	0	0	0	0
F-4091		FLANGE	0	0	0	0
F-4092	LINE LGO	FLANGE	0	0	0	0
F-4093		VALVE	0	0	0	0
F-4094		FLANGE	0	0	0	0
F-4095	LINE LK	FLANGE	0	0	0	0
F-4096		VALVE	0	0	0	0
F-4097		FLANGE	0	0	0	0
F-4098	LINE HK	FLANGE	0	0	0	0
F-4099		VALVE	0	0	0	0
F-4100		FLANGE	0	0	0	0
F-4101	LINE HSD	FLANGE	0	0	0	0
F-4102		VALVE	123	63.1	0.0017	0.01489
F-4103		FLANGE	0	0	0	0

F-4104	LINE GVC 2.1	VALVE	0	0	0	0
F-4105		VALVE	0	0	0	0
F-4106		VALVE	0	0	0	0
F-4107	SLOPE LINE	VALVE	0	0	0	0
F-4108	SLOP OIL LINE	VALVE	0	0	0	0
F-4109		FLANGE	0	0	0	0
F-4110		FLANGE	0	0	0	0
F-4111	LINE HWD 3.20	VALVE	0	0	0	0
F-4112		VALVE	0	0	0	0
F-4113	LINE CBD	FLANGE	0	0	0	0
F-4114		VALVE	0	0	0	0
F-4115		FLANGE	0	0	0	0
F-4116	LINE HSD	FLANGE	0	0	0	0
F-4117		VALVE	0	0	0	0
F-4118		FLANGE	0	0	0	0
F-4119	LINE1136	FLANGE	0	0	0	0
F-4120		VALVE	0	0	0	0
F-4121		FLANGE	0	0	0	0
F-4122	LINE PWD	FLANGE	0	0	0	0
F-4123		VALVE	0	0	0	0
F-4124		FLANGE	0	0	0	0
F-4125		VALVE	0	0	0	0
F-4126		FLANGE	0	0	0	0
F-4127	LINE VR TO SLOP	FLANGE	0	0	0	0
F-4128		VALVE	0	0	0	0
F-4129		FLANGE	0	0	0	0
F-4130		VALVE	0	0	0	0
F-4131	LINE HGO TO SLOP	FLANGE	0	0	0	0
F-4132		VALVE	0	0	0	0
F-4133		FLANGE	0	0	0	0
F-4134		FLANGE	0	0	0	0
F-4135	LINE HK TO SLOP	FLANGE	0	0	0	0
F-4136		VALVE	0	0	0	0
F-4137		FLANGE	0	0	0	0
F-4138		VALVE	0	0	0	0
F-4139		FLANGE	0	0	0	0
F-4140	LINE LGO TO SLOP	FLANGE	0	0	0	0
F-4141		VALVE	0	0	0	0
F-4142		FLANGE	0	0	0	0
F-4143		VALVE	0	0	0	0
F-4144		FLANGE	0	0	0	0
F-4145	LINE NAPTHA TO SLOP	FLANGE	0	0	0	0
F-4146		VALVE	0	0	0	0
F-4147		FLANGE	28	14.8	0.00006	0.00053
F-4148		FLANGE	0	0	0	0
F-4149	LINE LK TO SLOP	FLANGE	0	0	0	0
F-4150		VALVE	0	0	0	0
F-4151		FLANGE	0	0	0	0
F-4152		VALVE	0	0	0	0
F-4153		FLANGE	0	0	0	0
F-4154	EQP NO-02-PA-00-007A IN	V.GLAND	0	0	0	0
F-4155		F.JOINT	0	0	0	0
F-4156		P.GLAND	0	0	0	0
F-4157	EQP NO-02-PA-00-007A OUT	V.GLAND	0	0	0	0
F-4158		F.JOINT	0	0	0	0
F-4159	EQP NO-02-PA-00-007B IN	V.GLAND	0	0	0	0
F-4160		F.JOINT	0	0	0	0
F-4161		P.GLAND	0	0	0	0
F-4162	EQP NO-01-PA-00-007B OUT	V.GLAND	0	0	0	0
F-4163		F.JOINT	0	0	0	0
F-4164	EQP NO-01-PA-00-004A IN	V.GLAND	0	0	0	0
F-4165		F.JOINT	0	0	0	0
F-4166		P.GLAND	0	0	0	0

F-4167	EQP NO-02-PA-00-004A OUT	V.GLAND	0	0	0	0
F-4168		F.JOINT	0	0	0	0
F-4169	EQP NO-02-PA-00-004B IN	V.GLAND	0	0	0	0
F-4170		F.JOINT	0	0	0	0
F-4171		P.GLAND	0	0	0	0
F-4172	EQP NO-02-PA-00-004B OUT	V.GLAND	0	0	0	0
F-4173		F.JOINT	0	0	0	0
F-4174	EQP NO-02-PA-00-006A IN	V.GLAND	0	0	0	0
F-4175		F.JOINT	0	0	0	0
F-4176		P.GLAND	0	0	0	0
F-4177	EQP NO-02-PA-00-006A OUT	V.GLAND	0	0	0	0
F-4178		F.JOINT	0	0	0	0
F-4179	EQP NO-02-PA-00-006B IN	V.GLAND	0	0	0	0
F-4180		F.JOINT	0	0	0	0
F-4181		P.GLAND	0	0	0	0
F-4182	EQP NO-02-PA-00-006B OUT	V.GLAND	0	0	0	0
F-4183		F.JOINT	0	0	0	0
F-4184	LINE CVD OUT EX 01-EE-003A/B	V.GLAND	0	0	0	0
F-4185		V.GLAND	0	0	0	0
F-4186		V.GLAND	0	0	0	0
F-4187		FLANGE	0	0	0	0
F-4188		VALVE	0	0	0	0
F-4189		FLANGE	0	0	0	0
F-4190		FLANGE	0	0	0	0
F-4191		VALVE	0	0	0	0
F-4192		FLANGE	0	0	0	0
F-4193	OPP LINE CVD	FLANGE	0	0	0	0
F-4194		VALVE	0	0	0	0
F-4195		FLANGE	0	0	0	0
F-4196		FLANGE	0	0	0	0
F-4197		VALVE	0	0	0	0
F-4198		FLANGE	0	0	0	0
F-4199		FLANGE	0	0	0	0
F-4200		VALVE	0	0	0	0
F-4201		FLANGE	0	0	0	0
F-4202		FLANGE	0	0	0	0
F-4203		VALVE	0	0	0	0
F-4204		FLANGE	0	0	0	0
F-4205	LINE CRUDE /LGO-PA	FLANGE	0	0	0	0
F-4206		VALVE	0	0	0	0
F-4207		FLANGE	0	0	0	0
F-4208		FLANGE	0	0	0	0
F-4209		VALVE	0	0	0	0
F-4210		FLANGE	0	0	0	0
F-4211		FLANGE	0	0	0	0
F-4212		VALVE	0	0	0	0
F-4213		FLANGE	0	0	0	0
F-4214		VALVE	0	0	0	0
F-4215		VALVE	0	0	0	0
F-4216		FLANGE	0	0	0	0
F-4217		VALVE	0	0	0	0
F-4218		FLANGE	0	0	0	0
F-4219		FLANGE	0	0	0	0
F-4220		VALVE	0	0	0	0
F-4221		FLANGE	0	0	0	0
F-4222		VALVE	0	0	0	0
F-4223		FLANGE	0	0	0	0
F-4224	UP LINE CRUDE /LGO-PA	FLANGE	0	0	0	0
F-4225		VALVE	9	5.1	0.0017	0.01489
F-4226		FLANGE	0	0	0	0
F-4227		FLANGE	0	0	0	0
F-4228		VALVE	0	0	0	0
F-4229		FLANGE	0	0	0	0

F-4230		FLANGE	0	0	0	0
F-4231		FLANGE	0	0	0	0
F-4232		VALVE	0	0	0	0
F-4233		FLANGE	0	0	0	0
F-4234		FLANGE	0	0	0	0
F-4235		FLANGE	0	0	0	0
F-4236	CRUDE LINE TO PASS 2	FLANGE	0	0	0	0
F-4237		VALVE	0	0	0	0
F-4238		FLANGE	0	0	0	0
F-4239		FLANGE	0	0	0	0
F-4240		VALVE	0	0	0	0
F-4241		FLANGE	0	0	0	0
F-4242		FLANGE	0	0	0	0
F-4243		VALVE	0	0	0	0
F-4244		FLANGE	0	0	0	0
F-4245		FLANGE	0	0	0	0
F-4246		VALVE	0	0	0	0
F-4247		FLANGE	0	0	0	0
F-4248		FLANGE	0	0	0	0
F-4249		VALVE	0	0	0	0
F-4250		FLANGE	0	0	0	0
F-4251		FLANGE	0	0	0	0
F-4252		VALVE	0	0	0	0
F-4253		FLANGE	0	0	0	0
F-4254	LINE CRUDE EX PRE HEATER 1	FLANGE	0	0	0	0
F-4255		VALVE	0	0	0	0
F-4256		FLANGE	0	0	0	0
F-4257	LINEAR CRUDE EX PRE HEATER 1	FLANGE	0	0	0	0
F-4258		VALVE	0	0	0	0
F-4259		FLANGE	0	0	0	0
F-4260		FLANGE	0	0	0	0
F-4261		VALVE	0	0	0	0
F-4262		FLANGE	0	0	0	0
F-4263	LINE FG FROM HDR TO ATM	FLANGE	0	0	0	0
F-4264		FLANGE	0	0	0	0
F-4265		FLANGE	16.3	9.6	0.00006	0.00526
F-4266		FLANGE	0	0	0	0
F-4267		VALVE	0	0	0	0
F-4268		FLANGE	0	0	0	0
F-4269		FLANGE	0	0	0	0
F-4270		FLANGE	0	0	0	0
F-4271		FLANGE	0	0	0	0
F-4272		FLANGE	0	0	0	0
F-4273		VALVE	0	0	0	0
F-4274		FLANGE	0	0	0	0
F-4275		FLANGE	0	0	0	0
F-4276		VALVE	0	0	0	0
F-4277		FLANGE	0	0	0	0
F-4278		FLANGE	0	0	0	0
F-4279		VALVE	0	0	0	0
F-4280		FLANGE	0	0	0	0
F-4281		FLANGE	0	0	0	0
F-4282		VALVE	0	0	0	0
F-4283		FLANGE	0	0	0	0
F-4284		FLANGE	0	0	0	0
F-4285		VALVE	0	0	0	0
F-4286		FLANGE	0	0	0	0
F-4287		FLANGE	0	0	0	0
F-4288		VALVE	0	0	0	0
F-4289		FLANGE	0	0	0	0
F-4290	LINE HGO/PDT CRUDE	FLANGE	0	0	0	0
F-4291		VALVE	0	0	0	0
F-4292		FLANGE	0	0	0	0

F-4293		FLANGE	0	0	0	0
F-4294		FLANGE	0	0	0	0
F-4295		VALVE	0	0	0	0
F-4296		FLANGE	0	0	0	0
F-4297		VALVE	0	0	0	0
F-4298		VALVE	0	0	0	0
F-4299		VALVE	0	0	0	0
F-4300		VALVE	0	0	0	0
F-4301		VALVE	0	0	0	0
F-4302	EQP NO 01 -PA -00-002B IN	V.GLAND	0	0	0	0
F-4303		F.JOINT	0	0	0	0
F-4304		P.GLAND	0	0	0	0
F-4305	EQP NO 01 -PA -00-002B OUT	V.GLAND	0	0	0	0
F-4306		F.JOINT	0	0	0	0
F-4307		FLANGE	0	0	0	0
F-4308		FLANGE	0	0	0	0
F-4309		FLANGE	0	0	0	0
F-4310		FLANGE	0	0	0	0
F-4311		VALVE	0	0	0	0
F-4312		FLANGE	0	0	0	0
F-4313		FLANGE	0	0	0	0
F-4314		FLANGE	0	0	0	0
F-4315		VALVE	0	0	0	0
F-4316		FLANGE	0	0	0	0
F-4317		FLANGE	0	0	0	0
F-4318		FLANGE	0	0	0	0
F-4319		VALVE	0	0	0	0
F-4320		FLANGE	0	0	0	0
F-4321	LINE CRUDE EX 01-EE-00-006	FLANGE	0	0	0	0
F-4322		FLANGE	0	0	0	0
F-4323		VALVE	0	0	0	0
F-4324		FLANGE	0	0	0	0
F-4325		FLANGE	0	0	0	0
F-4326		VALVE	0	0	0	0
F-4327		FLANGE	0	0	0	0
F-4328		FLANGE	0	0	0	0
F-4329		VALVE	0	0	0	0
F-4330		FLANGE	0	0	0	0
F-4331		FLANGE	0	0	0	0
F-4332		VALVE	0	0	0	0
F-4333		FLANGE	0	0	0	0
F-4334		FLANGE	0	0	0	0
F-4335		VALVE	0	0	0	0
F-4336		FLANGE	0	0	0	0
F-4337		FLANGE	0	0	0	0
F-4338		VALVE	0	0	0	0
F-4339		FLANGE	0	0	0	0
F-4340		FLANGE	0	0	0	0
F-4341		FLANGE	0	0	0	0
F-4342		VALVE	0	0	0	0
F-4343		FLANGE	0	0	0	0
F-4344		VALVE	0	0	0	0
F-4345		FLANGE	0	0	0	0
F-4346		VALVE	0	0	0	0
F-4347		FLANGE	0	0	0	0
F-4348		VALVE	0	0	0	0
F-4349		VALVE	0	0	0	0
F-4350		FLANGE	0	0	0	0
F-4351		VALVE	0	0	0	0
F-4352		FLANGE	0	0	0	0
F-4353		FLANGE	0	0	0	0
F-4354		VALVE	0	0	0	0
F-4355		FLANGE	0	0	0	0

F-4356		FLANGE	0	0	0	0
F-4357		VALVE	0	0	0	0
F-4358		FLANGE	0	0	0	0
F-4359	LINE CRO-HVYK PDT	FLANGE	0	0	0	0
F-4360		VALVE	0	0	0	0
F-4361		FLANGE	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 4(D) UNIT: SDU

SUMMARY SHEET FOR SDU AREA

Total number of points covered	**328**
Date of Monitoring/Rechecking	**21-12-2022 & 22-12-2022**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total Emission in a year before Leak detection and repair (ton/year)	**NIL**
Total Emission in a year after Leak detection and repair (ton/year)	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-4362	08-PA-CF-300A IN LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4363	(DEOIL WAX RD)	F.JOINT	0	0	0.00006	0.0005256
F-4364		P.GLAND	0	0	0.0017	0.014892
F-4365		F.JOINT	0	0	0.00006	0.0005256
F-4366	08-PA-CF-300 A OUT LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4367	(DEOIL WAX RD)	F.JOINT	0	0	0.00006	0.0005256
F-4368		P.GLAND	0	0	0.0017	0.014892
F-4369	NRB	FLANGE	0	0	0.00006	0.0005256
F-4370		FLANGE	0	0	0.00006	0.0005256
F-4371	LINE TO OWS	FLANGE	0	0	0.00006	0.0005256
F-4372		VALVE	0	0	0.0017	0.014892
F-4373		FLANGE	0	0	0.00006	0.0005256
F-4374		VALVE	0	0	0.0017	0.014892
F-4375		FLANGE	0	0	0.00006	0.0005256
F-4376	08-PA-CF-300B IN LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4377	(DEOIL WAX RD)	F.JOINT	0	0	0.00006	0.0005256
F-4378		P.GLAND	0	0	0.0017	0.014892
F-4379		F.JOINT	0	0	0.00006	0.0005256
F-4380	08-PA-CF-300B OUT LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4381	(DEOIL WAX RD)	F.JOINT	0	0	0.00006	0.0005256
F-4382		P.GLAND	0	0	0.0017	0.014892
F-4383	NRB	FLANGE	0	0	0.00006	0.0005256
F-4384		FLANGE	0	0	0.00006	0.0005256
F-4385	LINE TO OWS	FLANGE	0	0	0.00006	0.0005256
F-4386		VALVE	0	0	0.0017	0.014892
F-4387		FLANGE	0	0	0.00006	0.0005256
F-4388		VALVE	0	0	0.0017	0.014892
F-4389		FLANGE	0	0	0.00006	0.0005256
F-4390	08-PA-CF-302A IN LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4391	(FOOTS OIL)	F.JOINT	0	0	0.00006	0.0005256
F-4392		P.GLAND	0	0	0.0017	0.014892
F-4393		F.JOINT	0	0	0.00006	0.0005256
F-4394	08-PA-CF-302A A OUT LET LINE	V.GLAND	0	0	0.0017	0.014892

F-4395	(FOOTS OIL)	F.JOINT	0	0	0.00006	0.0005256
F-4396		P.GLAND	0	0	0.0017	0.014892
F-4397	NRB	FLANGE	0	0	0.00006	0.0005256
F-4398		FLANGE	0	0	0.00006	0.0005256
F-4399	LINE TO OWS 1st VALVE	FLANGE	0	0	0.00006	0.0005256
F-4400		VALVE	0	0	0.0017	0.014892
F-4401		FLANGE	0	0	0.00006	0.0005256
F-4402	LINE TO OWS 2nd VALVE	FLANGE	0	0	0.00006	0.0005256
F-4403		VALVE	0	0	0.0017	0.014892
F-4404		FLANGE	0	0	0.00006	0.0005256
F-4405	08-PA-CF-302B IN LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4406	(FOOTS OIL)	F.JOINT	0	0	0.00006	0.0005256
F-4407		P.GLAND	0	0	0.0017	0.014892
F-4408		F.JOINT	0	0	0.00006	0.0005256
F-4409	08-PA-CF-302B OUT LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4410	(FOOTS OIL)	F.JOINT	0	0	0.00006	0.0005256
F-4411		P.GLAND	0	0	0.0017	0.014892
F-4412	NRB	FLANGE	0	0	0.00006	0.0005256
F-4413		FLANGE	0	0	0.00006	0.0005256
F-4414	LINE TO OWS 1st VALVE	FLANGE	0	0	0.00006	0.0005256
F-4415		VALVE	0	0	0.0017	0.014892
F-4416		FLANGE	0	0	0.00006	0.0005256
F-4417	LINE TO OWS 2nd VALVE	FLANGE	0	0	0.00006	0.0005256
F-4418		VALVE	0	0	0.0017	0.014892
F-4419		FLANGE	0	0	0.00006	0.0005256
F-4420	08-PA-CF-301A IN LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4421	(FOOTS OIL)	F.JOINT	0	0	0.00006	0.0005256
F-4422		P.GLAND	0	0	0.0017	0.014892
F-4423		F.JOINT	0	0	0.00006	0.0005256
F-4424	08-PA-CF-301 A OUT LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4425	(FOOTS OIL)	F.JOINT	0	0	0.00006	0.0005256
F-4426		P.GLAND	0	0	0.0017	0.014892
F-4427	NRB	FLANGE	0	0	0.00006	0.0005256
F-4428		FLANGE	0	0	0.00006	0.0005256
F-4429		FLANGE	0	0	0.00006	0.0005256
F-4430	LINE TO OWS 1st VALVE	FLANGE	0	0	0.00006	0.0005256
F-4431		VALVE	0	0	0.0017	0.014892
F-4432		FLANGE	0	0	0.00006	0.0005256
F-4433	LINE TO OWS 2nd VALVE	FLANGE	0	0	0.00006	0.0005256
F-4434		VALVE	0	0	0.0017	0.014892
F-4435		FLANGE	0	0	0.00006	0.0005256
F-4436	08-PA-CF-301 B IN LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4437	(FOOTS OIL)	F.JOINT	0	0	0.00006	0.0005256
F-4438		P.GLAND	0	0	0.0017	0.014892
F-4439		F.JOINT	0	0	0.00006	0.0005256
F-4440	08-PA-CF-301 B OUT LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4441	(FOOTS OIL)	F.JOINT	0	0	0.00006	0.0005256
F-4442		P.GLAND	0	0	0.0017	0.014892
F-4443	NRB	FLANGE	0	0	0.00006	0.0005256
F-4444		FLANGE	0	0	0.00006	0.0005256
F-4445		FLANGE	0	0	0.00006	0.0005256
F-4446	LINE TO OWS 1st VALVE	FLANGE	0	0	0.00006	0.0005256
F-4447		VALVE	0	0	0.0017	0.014892
F-4448		FLANGE	0	0	0.00006	0.0005256
F-4449	LINE TO OWS 2nd VALVE	FLANGE	0	0	0.00006	0.0005256
F-4450		VALVE	0	0	0.0017	0.014892
F-4451		FLANGE	0	0	0.00006	0.0005256
F-4452	FG TO PILOT BURNER 1st VALVE	VALVE GLAND	0	0	0.0017	0.014892
F-4453	FG TO PILOT BURNER 2nd VALVE	VALVE GLAND	0	0	0.0017	0.014892
F-4454	CONTROL VALVE 08-UV-3606	FLANGE	0	0	0.00006	0.0005256
F-4455		VALVE	0	0	0.0017	0.014892
F-4456		FLANGE	0	0	0.00006	0.0005256
F-4457		FLANGE	0	0	0.00006	0.0005256

F-4458		FLANGE	0	0	0.00006	0.0005256
F-4459	08-PA-CF-104 A IN LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4460	(SECONDARY FILTRATE)	F.JOINT	0	0	0.00006	0.0005256
F-4461		P.GLAND	0	0	0.0017	0.014892
F-4462	08-PA-CF-104 A OUT LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4463	(SECONDARY FILTRATE)	F.JOINT	0	0	0.00006	0.0005256
F-4464		P.GLAND	0	0	0.0017	0.014892
F-4465	NRB	FLANGE	0	0	0.00006	0.0005256
F-4466		FLANGE	0	0	0.00006	0.0005256
F-4467		FLANGE	0	0	0.00006	0.0005256
F-4468	LINE TO OWS 1st VALVE	FLANGE	0	0	0.00006	0.0005256
F-4469		VALVE	0	0	0.0017	0.014892
F-4470		FLANGE	0	0	0.00006	0.0005256
F-4471	LINE TO OWS 2nd VALVE	FLANGE	0	0	0.00006	0.0005256
F-4472		VALVE	0	0	0.0017	0.014892
F-4473		FLANGE	0	0	0.00006	0.0005256
F-4474	08-PA-CF-104 B IN LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4475	(SECONDARY FILTRATE)	F.JOINT	0	0	0.00006	0.0005256
F-4476		P.GLAND	0	0	0.0017	0.014892
F-4477		F.JOINT	0	0	0.00006	0.0005256
F-4478	08-PA-CF-104 B OUT LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4479	(SECONDARY FILTRATE)	F.JOINT	0	0	0.00006	0.0005256
F-4480		P.GLAND	0	0	0.0017	0.014892
F-4481	NRB	FLANGE	0	0	0.00006	0.0005256
F-4482		FLANGE	0	0	0.00006	0.0005256
F-4483		FLANGE	0	0	0.00006	0.0005256
F-4484	LINE TO OWS 1st VALVE	FLANGE	0	0	0.00006	0.0005256
F-4485		VALVE	0	0	0.0017	0.014892
F-4486		FLANGE	0	0	0.00006	0.0005256
F-4487	LINE TO OWS 2nd VALVE	FLANGE	0	0	0.00006	0.0005256
F-4488		VALVE	0	0	0.0017	0.014892
F-4489		FLANGE	0	0	0.00006	0.0005256
F-4490	08-PA-CF-203 IN LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4491	(SECONDARY FILTRATE)	F.JOINT	0	0	0.00006	0.0005256
F-4492		P.GLAND	0	0	0.0017	0.014892
F-4493		F.JOINT	0	0	0.00006	0.0005256
F-4494	08-PA-CF-203 OUT LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4495	(SECONDARY FILTRATE)	F.JOINT	0	0	0.00006	0.0005256
F-4496		P.GLAND	0	0	0.0017	0.014892
F-4497	NRB	FLANGE	0	0	0.00006	0.0005256
F-4498		FLANGE	0	0	0.00006	0.0005256
F-4499		FLANGE	0	0	0.00006	0.0005256
F-4500	LINE TO OWS 1st VALVE	FLANGE	0	0	0.00006	0.0005256
F-4501		VALVE	0	0	0.0017	0.014892
F-4502		FLANGE	0	0	0.00006	0.0005256
F-4503	LINE TO OWS 2nd VALVE	FLANGE	0	0	0.00006	0.0005256
F-4504		VALVE	0	0	0.0017	0.014892
F-4505		FLANGE	0	0	0.00006	0.0005256
F-4506	08-PA-CF-103 A IN LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4507	(SECONDARY FILTRATE)	F.JOINT	0	0	0.00006	0.0005256
F-4508		P.GLAND	0	0	0.0017	0.014892
F-4509		F.JOINT	0	0	0.00006	0.0005256
F-4510	08-PA-CF-103 A OUT LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4511	(SECONDARY FILTRATE)	F.JOINT	0	0	0.00006	0.0005256
F-4512		P.GLAND	0	0	0.0017	0.014892
F-4513	NRB	FLANGE	0	0	0.00006	0.0005256
F-4514		FLANGE	0	0	0.00006	0.0005256
F-4515		FLANGE	0	0	0.00006	0.0005256
F-4516	LINE TO OWS 1st VALVE	FLANGE	0	0	0.00006	0.0005256
F-4517		VALVE	0	0	0.0017	0.014892
F-4518		FLANGE	0	0	0.00006	0.0005256
F-4519	LINE TO OWS 2nd VALVE	FLANGE	0	0	0.00006	0.0005256
F-4520		VALVE	0	0	0.0017	0.014892

F-4521		FLANGE	0	0	0.00006	0.0005256
F-4522	08-PA-CF-103 B IN LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4523	(PRIMARY FILTRATE)	F.JOINT	0	0	0.00006	0.0005256
F-4524		P.GLAND	0	0	0.0017	0.014892
F-4525		F.JOINT	0	0	0.00006	0.0005256
F-4526	08-PA-CF-103 B OUT LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4527	(PRIMARY FILTRATE)	F.JOINT	0	0	0.00006	0.0005256
F-4528		P.GLAND	0	0	0.0017	0.014892
F-4529	NRB	FLANGE	0	0	0.00006	0.0005256
F-4530		FLANGE	0	0	0.00006	0.0005256
F-4531		FLANGE	0	0	0.00006	0.0005256
F-4532	LINE TO OWS 1st VALVE	FLANGE	0	0	0.00006	0.0005256
F-4533		VALVE	0	0	0.0017	0.014892
F-4534		FLANGE	0	0	0.00006	0.0005256
F-4535	LINE TO OWS 2nd VALVE	FLANGE	0	0	0.00006	0.0005256
F-4536		VALVE	0	0	0.0017	0.014892
F-4537		FLANGE	0	0	0.00006	0.0005256
F-4538	08-PA-CF-202 A IN LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4539	(TC-ll SECONDARY SLURRY)	F.JOINT	0	0	0.00006	0.0005256
F-4540		P.GLAND	0	0	0.0017	0.014892
F-4541		F.JOINT	0	0	0.00006	0.0005256
F-4542	08-PA-CF-202 A OUT LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4543	(TC-ll SECONDARY SLURRY)	F.JOINT	0	0	0.00006	0.0005256
F-4544		P.GLAND	0	0	0.0017	0.014892
F-4545	NRB	FLANGE	0	0	0.00006	0.0005256
F-4546		FLANGE	0	0	0.00006	0.0005256
F-4547		FLANGE	0	0	0.00006	0.0005256
F-4548	LINE TO OWS 1st VALVE	FLANGE	0	0	0.00006	0.0005256
F-4549		VALVE	0	0	0.0017	0.014892
F-4550		FLANGE	0	0	0.00006	0.0005256
F-4551	LINE TO OWS 2nd VALVE	FLANGE	0	0	0.00006	0.0005256
F-4552		VALVE	0	0	0.0017	0.014892
F-4553		FLANGE	0	0	0.00006	0.0005256
F-4554	08-PA-CF-202 B IN LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4555	(TC-ll SECONDARY SLURRY)	F.JOINT	0	0	0.00006	0.0005256
F-4556		P.GLAND	0	0	0.0017	0.014892
F-4557		F.JOINT	0	0	0.00006	0.0005256
F-4558	08-PA-CF-202 B OUT LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4559	(TC-ll SECONDARY SLURRY)	F.JOINT	0	0	0.00006	0.0005256
F-4560		P.GLAND	0	0	0.0017	0.014892
F-4561	NRB	FLANGE	0	0	0.00006	0.0005256
F-4562		FLANGE	0	0	0.00006	0.0005256
F-4563		FLANGE	0	0	0.00006	0.0005256
F-4564	LINE TO OWS 1st VALVE	FLANGE	0	0	0.00006	0.0005256
F-4565		VALVE	0	0	0.0017	0.014892
F-4566		FLANGE	0	0	0.00006	0.0005256
F-4567	LINE TO OWS 2nd VALVE	FLANGE	0	0	0.00006	0.0005256
F-4568		VALVE	0	0	0.0017	0.014892
F-4569		FLANGE	0	0	0.00006	0.0005256
F-4570	LINE SECONDERY FILTER TO D/LU TK-2	FLANGE	0	0	0.00006	0.0005256
F-4571		VALVE	0	0	0.0017	0.014892
F-4572		FLANGE	0	0	0.00006	0.0005256
F-4573	CONTROL VALVE 08-LV-1902	FLANGE	0	0	0.00006	0.0005256
F-4574		VALVE	126	66.5	0.0017	0.014892
F-4575		FLANGE	0	0	0.00006	0.0005256
F-4576	CONTROL VALVE 08-LV-1902 BY PASS LINE	FLANGE	0	0	0.00006	0.0005256
F-4577		VALVE	0	0	0.0017	0.014892
F-4578		FLANGE	0	0	0.00006	0.0005256
F-4579	LINE SECONDERY FILTER TO TRAIN 1	FLANGE	0	0	0.00006	0.0005256
F-4580		VALVE	0	0	0.0017	0.014892
F-4581		FLANGE	0	0	0.00006	0.0005256
F-4582	LINE SECONDERY FILTER TO TRAIN 2	FLANGE	0	0	0.00006	0.0005256
F-4583		VALVE	0	0	0.0017	0.014892

F-4584		FLANGE	0	0	0.00006	0.0005256
F-4585	LINE SECONDERY FILTER TO D/LU	FLANGE	0	0	0.00006	0.0005256
F-4586		VALVE	0	0	0.0017	0.014892
F-4587		FLANGE	0	0	0.00006	0.0005256
F-4588		FLANGE	0	0	0.00006	0.0005256
F-4589		VALVE	0	0	0.0017	0.014892
F-4590		FLANGE	0	0	0.00006	0.0005256
F-4591	CONTROL VALVE 08-LV-1901A	FLANGE	0	0	0.00006	0.0005256
F-4592		VALVE	0	0	0.0017	0.014892
F-4593		FLANGE	0	0	0.00006	0.0005256
F-4594	CONTROL VALVE 08-LV-1901A BY PASS LINE	FLANGE	0	0	0.00006	0.0005256
F-4595		VALVE	0	0	0.0017	0.014892
F-4596		FLANGE	0	0	0.00006	0.0005256
F-4597	PRIMARY FILTER TO DILUTION TRAIN 2	FLANGE	0	0	0.00006	0.0005256
F-4598		VALVE	0	0	0.0017	0.014892
F-4599		FLANGE	0	0	0.00006	0.0005256
F-4600		FLANGE	0	0	0.00006	0.0005256
F-4601		VALVE	0	0	0.0017	0.014892
F-4602		FLANGE	0	0	0.00006	0.0005256
F-4603	CONTROL VALVE 08-PV-1802	FLANGE	0	0	0.00006	0.0005256
F-4604		VALVE	0	0	0.0017	0.014892
F-4605		FLANGE	0	0	0.00006	0.0005256
F-4606		FLANGE	0	0	0.00006	0.0005256
F-4607		VALVE	0	0	0.0017	0.014892
F-4608		FLANGE	0	0	0.00006	0.0005256
F-4609	CONTROL VALVE 08-PV-1802 BYPASS LINE	FLANGE	0	0	0.00006	0.0005256
F-4610		VALVE	0	0	0.0017	0.014892
F-4611		FLANGE	0	0	0.00006	0.0005256
F-4612	LINE PUMP 103A/B DISCHARGE TO D/LU	FLANGE	0	0	0.00006	0.0005256
F-4613		VALVE	0	0	0.0017	0.014892
F-4614		FLANGE	0	0	0.00006	0.0005256
F-4615		FLANGE	0	0	0.00006	0.0005256
F-4616		VALVE	0	0	0.0017	0.014892
F-4617		FLANGE	0	0	0.00006	0.0005256
F-4618	CONTROL VALVE 08-PV-1801	FLANGE	0	0	0.00006	0.0005256
F-4619		VALVE	0	0	0.0017	0.014892
F-4620		FLANGE	0	0	0.00006	0.0005256
F-4621		FLANGE	0	0	0.00006	0.0005256
F-4622		VALVE	0	0	0.0017	0.014892
F-4623		FLANGE	0	0	0.00006	0.0005256
F-4624	CONTROL VALVE 08-PV-1801 BY PASS LINE	FLANGE	0	0	0.00006	0.0005256
F-4625		VALVE	0	0	0.0017	0.014892
F-4626		FLANGE	0	0	0.00006	0.0005256
F-4627	08-PA-CF-102 A IN LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4628		F.JOINT	0	0	0.00006	0.0005256
F-4629		P.GLAND	0	0	0.0017	0.014892
F-4630		F.JOINT	0	0	0.00006	0.0005256
F-4631	08-PA-CF-102 A OUT LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4632		F.JOINT	235	121.5	0.00006	0.0005256
F-4633		P.GLAND	0	0	0.0017	0.014892
F-4634	NRB	FLANGE	0	0	0.00006	0.0005256
F-4635		FLANGE	0	0	0.00006	0.0005256
F-4636		FLANGE	0	0	0.00006	0.0005256
F-4637	LINE TO OWS 1st VALVE	FLANGE	0	0	0.00006	0.0005256
F-4638		VALVE	0	0	0.0017	0.014892
F-4639		FLANGE	0	0	0.00006	0.0005256
F-4640	LINE TO OWS 2nd VALVE	FLANGE	0	0	0.00006	0.0005256
F-4641		VALVE	0	0	0.0017	0.014892
F-4642		FLANGE	0	0	0.00006	0.0005256
F-4643	08-PA-CF-102 B IN LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4644		F.JOINT	0	0	0.00006	0.0005256
F-4645		P.GLAND	0	0	0.0017	0.014892
F-4646		F.JOINT	0	0	0.00006	0.0005256

F-4647	08-PA-CF-102 B OUT LET LINE	V.GLAND	0	0	0.0017	0.014892
F-4648		F.JOINT	0	0	0.00006	0.0005256
F-4649		P.GLAND	0	0	0.0017	0.014892
F-4650	NRB	FLANGE	0	0	0.00006	0.0005256
F-4651		FLANGE	0	0	0.00006	0.0005256
F-4652		FLANGE	0	0	0.00006	0.0005256
F-4653	LINE TO OWS 1st VALVE	FLANGE	0	0	0.00006	0.0005256
F-4654		VALVE	0	0	0.0017	0.014892
F-4655		FLANGE	0	0	0.00006	0.0005256
F-4656	LINE TO OWS 2nd VALVE	FLANGE	0	0	0.00006	0.0005256
F-4657		VALVE	0	0	0.0017	0.014892
F-4658		FLANGE	0	0	0.00006	0.0005256
F-4659	08-VV-00-325A	FLANGE	0	0	0.00006	0.0005256
F-4660		VALVE	0	0	0.0017	0.014892
F-4661		FLANGE	0	0	0.00006	0.0005256
F-4662		VALVE	0	0	0.0017	0.014892
F-4663		FLANGE	0	0	0.00006	0.0005256
F-4664	LINE TO PSV IN LET	FLANGE	0	0	0.00006	0.0005256
F-4665		VALVE	86	46.7	0.0017	0.014892
F-4666		FLANGE	0	0	0.00006	0.0005256
F-4667	PSV OUT LET	FLANGE	0	0	0.00006	0.0005256
F-4668		VALVE	0	0	0.0017	0.014892
F-4669		FLANGE	0	0	0.00006	0.0005256
F-4670	08-VV-00-325 B	FLANGE	0	0	0.00006	0.0005256
F-4671		VALVE	0	0	0.0017	0.014892
F-4672		FLANGE	0	0	0.00006	0.0005256
F-4673	LINE TO PSV IN LET	FLANGE	0	0	0.00006	0.0005256
F-4674		VALVE	0	0	0.0017	0.014892
F-4675		FLANGE	0	0	0.00006	0.0005256
F-4676	PSV OUT LET	FLANGE	0	0	0.00006	0.0005256
F-4677		VALVE	0	0	0.0017	0.014892
F-4678		FLANGE	0	0	0.00006	0.0005256
F-4679	OIL SEPARATOR VV-OO-272B IN LET	FLANGE	0	0	0.00006	0.0005256
F-4680		FLANGE	0	0	0.00006	0.0005256
F-4681	OIL SEPARATOR VV-OO-272B OUT LET	FLANGE	0	0	0.00006	0.0005256
F-4682		VALVE	48	26.1	0.0017	0.014892
F-4683		FLANGE	0	0	0.00006	0.0005256
F-4684		FLANGE	0	0	0.00006	0.0005256
F-4685		VALVE	0	0	0.0017	0.014892
F-4686		FLANGE	0	0	0.00006	0.0005256
F-4687		FLANGE	0	0	0.00006	0.0005256
F-4688		VALVE	0	0	0.0017	0.014892
F-4689		FLANGE	0	0	0.00006	0.0005256

Report Prepared By :

For Mitra S. K. Private Limited

Authorised Signatory

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Mitra S. K. Private Limited

MSK TESTING • INSPECTION

LDAR PROGRAM at Digboi Refinery	
Leak points Detected in Phase = 3(F) UNIT: HDTU	
SUMMARY SHEET FOR HDTU AREA	
Total number of points covered	**120**
Date of Monitoring/Rechecking	**28.02.2023**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-0001	09-PA-CF-004B	Pump Seal	0	0	0	0
F-0002	09-PA-CF-004B IN LET LINE	V.GLAND	0	0	0	0
F-0003		F.JOINT	0	0	0	0
F-0004		P.GLAND	0	0	0	0
F-0005		F.JOINT	0	0	0	0
F-0006		F.JOINT	0	0	0	0
F-0007	09-PA-CF-004B OUT LET LINE	V.GLAND	0	0	0	0
F-0008		F.JOINT	0	0	0	0
F-0009		F.JOINT	466	236.3	0.00006	0.000526
F-0010		F.JOINT	0	0	0	0
F-0011	09-PA-CF-004A IN LET LINE	V.GLAND	0	0	0	0
F-0012		F.JOINT	0	0	0	0
F-0013		P.GLAND	0	0	0	0
F-0014		V.GLAND	0	0	0	0
F-0015		F.JOINT	0	0	0	0
F-0016	09-PA-CF-004A OUT LET LINE	V.GLAND	0	0	0	0
F-0017		F.JOINT	0	0	0	0
F-0018		P.GLAND	187	39.3	0.0017	0.014892
F-0019		F.JOINT	0	0	0	0
F-0020		F.JOINT	0	0	0	0
F-0021		F.JOINT	0	0	0	0
F-0022		V.GLAND	0	0	0	0
F-0023		F.JOINT	0	0	0	0
F-0024	09-PA-CF-003A IN LET LINE	V.GLAND	0	0	0	0
F-0025		F.JOINT	0	0	0	0
F-0026		P.GLAND	0	0	0	0
F-0027		F.JOINT	0	0	0	0
F-0028	09-PA-CF-003A OUT LET LINE	V.GLAND	0	0	0	0
F-0029		F.JOINT	0	0	0	0
F-0030		F.JOINT	0	0	0	0
F-0031		F.JOINT	0	0	0	0
F-0032		F.JOINT	0	0	0	0
F-0033		V.GLAND	0	0	0	0
F-0034		F.JOINT	0	0	0	0
F-0035		F.JOINT	0	0	0	0
F-0036		P.GLAND	0	0	0	0
F-0037		F.JOINT	0	0	0	0
F-0038	09-PA-CF-003B OUT LET LINE	V.GLAND	0	0	0	0
F-0039		F.JOINT	0	0	0	0
F-0040		F.JOINT	0	0	0	0

F-0041		F.JOINT	0	0	0	0
F-0042		F.JOINT	0	0	0	0
F-0043		V.GLAND	0	0	0	0
F-0044		F.JOINT	0	0	0	0
F-0045	09-PA-CF-002A IN LET LINE	V.GLAND	0	0	0	0
F-0046	FROM VV-002	F.JOINT	0	0	0	0
F-0047		P.GLAND	68	9.6	0.0017	0.014892
F-0048		F.JOINT	0	0	0	0
F-0049	09-PA-CF-002A OUT LET LINE	V.GLAND	0	0	0	0
F-0050	TO EE-003 A/B	F.JOINT	0	0	0	0
F-0051		F.JOINT	0	0	0	0
F-0052		F.JOINT	0	0	0	0
F-0053		F.JOINT	0	0	0	0
F-0054		V.GLAND	0	0	0	0
F-0055		F.JOINT	0	0	0	0
F-0056	09-PA-CF-002B IN LET LINE	V.GLAND	0	0	0	0
F-0057	FROM VV-002	F.JOINT	0	0	0	0
F-0058		P.GLAND	0	0	0	0
F-0059		F.JOINT	0	0	0	0
F-0060	09-PA-CF-002B OUT LET LINE	V.GLAND	0	0	0	0
F-0061	TO EE-003 A/B	F.JOINT	0	0	0	0
F-0062		F.JOINT	0	0	0	0
F-0063		F.JOINT	0	0	0	0
F-0064		V.GLAND	0	0	0	0
F-0065	**FUEL GAS KOD (09-VV-009)IN LET FG FROM HEADER**	V.GLAND	0	0	0	0
F-0066		F.JOINT	73	0	0	0
F-0067		F.JOINT	0	0	0	0
F-0068	**FUEL GAS KOD (09-VV-009)OUT LET LINE**	F.JOINT	0	0	0	0
F-0069		V.GLAND	0	0	0	0
F-0070		F.JOINT	0	0	0	0
F-0071		F.JOINT	0	0	0	0
F-0072		F.JOINT	0	0	0	0
F-0073		V.GLAND	0	0	0	0
F-0074		F.JOINT	0	0	0	0
F-0075	**FUEL GAS KOD (09-VV-009)**	F.JOINT	0	0	0	0
F-0076	LINE TO FLARE	V.GLAND	342	132.5	0.0017	0.014892
F-0077		F.JOINT	0	0	0	0
F-0078		F.JOINT	0	0	0	0
F-0079	LINE TO OWS	F.JOINT	0	0	0	0
F-0080		V.GLAND	0	0	0	0
F-0081		F.JOINT	0	0	0	0
F-0082	**1st STAGE DISCH COLLER(09-EE-00-004)**	F.JOINT	0	0	0	0
F-0083	LINE FROM MUGC-002A 1st STAGE	F.JOINT	56	47.9	0.00006	0.000526
F-0084	**1st STAGE DISCH COLLER(09-EE-00-004)OUT LET TO VV-009**	F.JOINT	0	0	0	0
F-0085	st STAGE SUCTOIN DRUM (09-VV-00-007)H2 FROM HGU IN LE	F.JOINT	0	0	0	0
F-0086	**1st STAGE SUCTOIN DRUM (09-VV-00-007)OUT LET LINE**	F.JOINT	0	0	0	0
F-0087	LINE TO OWS	F.JOINT	0	0	0	0
F-0088		V.GLAND	0	0	0	0
F-0089		F.JOINT	0	0	0	0
F-0090		F.JOINT	0	0	0	0
F-0091		V.GLAND	0	0	0	0
F-0092		F.JOINT	0	0	0	0
F-0093	LINE TO AD	F.JOINT	0	0	0	0
F-0094		V.GLAND	0	0	0	0
F-0095		F.JOINT	0	0	0	0
F-0096	**2nd STAGE SUCTOIN DRUM (09-VV-00-007)IN LET LINE**	F.JOINT	0	0	0	0
F-0097	**2nd STAGE SUCTOIN DRUM (09-VV-00-007)OUT LET LINE**	F.JOINT	0	0	0	0
F-0098	LINE TO OWS	F.JOINT	0	0	0	0
F-0099		V.GLAND	0	0	0	0
F-0100		F.JOINT	0	0	0	0
F-0101		F.JOINT	0	0	0	0
F-0102		V.GLAND	0	0	0	0
F-0103		F.JOINT	0	0	0	0
F-0104	LINE TO AD	F.JOINT	0	0	0	0
F-0105		V.GLAND	0	0	0	0
F-0106		F.JOINT	0	0	0	0
F-0107	STRIPPER GAS KOD (09-VV-00-016)IN LET LINE	F.JOINT	151	0	0	0

F-0108	STRIPPER GAS KOD (09-VV-00-016)OUT LET LINE	F.JOINT	0	0	0	0
F-0109	FG HEADER LINE	F.JOINT	0	0	0	0
F-0110		V.GLAND	0	0	0	0
F-0111		F.JOINT	0	0	0	0
F-0112	CONTRL VALVE 09-PV-2707	F.JOINT	67	0	0	0
F-0113		V.GLAND	0	0	0	0
F-0114		F.JOINT	0	0	0	0
F-0115		F.JOINT	0	0	0	0
F-0116		V.GLAND	0	0	0	0
F-0117		F.JOINT	0	0	0	0
F-0118	CONTRL VALVE 09-PV-2707 BY PASS LINE	F.JOINT	0	0	0	0
F-0119		V.GLAND	6.3	3.4	0.0017	0.014892
F-0120		F.JOINT	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 7(F) UNIT: HGU

SUMMARY SHEET FOR HGU AREA

Total number of points covered	**165**
Date of Monitoring/Rechecking	**01.03.2023**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-0121	10-KAM-101B COMPRESSOR SUCTION LINE	F.JOINT	0	0	0	0
F-0122		F.JOINT	0	0	0	0
F-0123	10-KAM-101B Compressor Discharge to 10EE-00-113	F.JOINT	0	0	0	0
F-0124		F.JOINT	0	0	0	0
F-0125		F.JOINT	0	0	0	0
F-0126		V.GLAND	0	0	0	0
F-0127		F.JOINT	0	0	0	0
F-0128		F.JOINT	0	0	0	0
F-0129		V.GLAND	0	0	0	0
F-0130		F.JOINT	0	0	0	0
F-0131	10-KAM-101B COMPRESSOR 1st STAGE SUCTION	F.JOINT	0	0	0	0
F-0132		V.GLAND	0	0	0	0
F-0133		F.JOINT	0	0	0	0
F-0134	10-KAM-101B COMPRESSOR 1st STAGE DISCHARGE	F.JOINT	0	0	0	0
F-0135	MUP DISCHARGE	F.JOINT	0	0	0	0
F-0136		F.JOINT	0	0	0	0
F-0137	AOP DISCHARGE LINE	F.JOINT	0	0	0	0
F-0138		F.JOINT	0	0	0	0
F-0139		V.GLAND	0	0	0	0
F-0140		F.JOINT	0	0	0	0
F-0141	1st STAGE DISCHARGE TO FLARE	F.JOINT	0	0	0	0
F-0142	LINE TO PSV 1542 B	F.JOINT	0	0	0	0
F-0143	LINE TO PSV 1541 B	F.JOINT	0	0	0	0
F-0144	1st STAGE SUCTION KOD	F.JOINT	0	0	0	0
F-0145		V.GLAND	0	0	0	0
F-0146		F.JOINT	0	0	0	0
F-0147		F.JOINT	0	0	0	0
F-0148		V.GLAND	0	0	0	0
F-0149		F.JOINT	0	0	0	0
F-0150	PURGE GAS TO 16-VV-00-116	F.JOINT	0	0	0	0

F-0151	PRODUCT HYDROGEN LINE	F.JOINT	0	0	0	0
F-0152		V.GLAND	0	0	0	0
F-0153		F.JOINT	0	0	0	0
F-0154		F.JOINT	0	0	0	0
F-0155		V.GLAND	0	0	0	0
F-0156		F.JOINT	0	0	0	0
F-0157		F.JOINT	0	0	0	0
F-0158		F.JOINT	0	0	0	0
F-0159		F.JOINT	0	0	0	0
F-0160		V.GLAND	0	0	0	0
F-0161		F.JOINT	0	0	0	0
F-0162		F.JOINT	0	0	0	0
F-0163		V.GLAND	0	0	0	0
F-0164		F.JOINT	0	0	0	0
F-0165	PRODUCT HYDROGEN BYPASS LINE	F.JOINT	0	0	0	0
F-0166		V.GLAND	0	0	0	0
F-0167		F.JOINT	0	0	0	0
F-0168	ABSORBER INLET LINE TO 10-VV-00-111	F.JOINT	0	0	0	0
F-0169		F.JOINT	0	0	0	0
F-0170		V.GLAND	0	0	0	0
F-0171		F.JOINT	0	0	0	0
F-0172		F.JOINT	0	0	0	0
F-0173		F.JOINT	0	0	0	0
F-0174	OUTLET LINE FROM 10-VV-00-111	F.JOINT	0	0	0	0
F-0175		F.JOINT	0	0	0	0
F-0176		F.JOINT	0	0	0	0
F-0177		F.JOINT	0	0	0	0
F-0178		F.JOINT	0	0	0	0
F-0179	ABSORBER INLET LINE TO 10-VV-00-112	F.JOINT	0	0	0	0
F-0180		F.JOINT	0	0	0	0
F-0181		V.GLAND	0	0	0	0
F-0182		F.JOINT	0	0	0	0
F-0183		F.JOINT	0	0	0	0
F-0184	OUTLET LINE FROM 10-VV-00-112	F.JOINT	46	17.1	0.00006	0.000526
F-0185		F.JOINT	0	0	0	0
F-0186		F.JOINT	0	0	0	0
F-0187		F.JOINT	0	0	0	0
F-0188		F.JOINT	0	0	0	0
F-0189	ABSORBER INLET LINE TO 10-VV-00-113	F.JOINT	0	0	0	0
F-0190		F.JOINT	0	0	0	0
F-0191		V.GLAND	0	0	0	0
F-0192		F.JOINT	0	0	0	0
F-0193		F.JOINT	0	0	0	0
F-0194		F.JOINT	0	0	0	0
F-0195	OUTLET LINE FROM 10-VV-00-113	F.JOINT	0	0	0	0
F-0196		F.JOINT	0	0	0	0
F-0197		F.JOINT	0	0	0	0
F-0198		F.JOINT	0	0	0	0
F-0199		F.JOINT	0	0	0	0
F-0200	ABSORBER INLET LINE TO 10-VV-00-114	F.JOINT	0	0	0	0
F-0201		F.JOINT	0	0	0	0
F-0202		V.GLAND	0	0	0	0
F-0203		F.JOINT	0	0	0	0
F-0204		F.JOINT	0	0	0	0
F-0205		F.JOINT	0	0	0	0
F-0206	OUTLET LINE FROM 10-VV-00-114	F.JOINT	0	0	0	0
F-0207		F.JOINT	0	0	0	0
F-0208		F.JOINT	0	0	0	0
F-0209		F.JOINT	0	0	0	0
F-0210		F.JOINT	0	0	0	0
F-0211	ABSORBER INLET LINE TO 10-VV-00-115	F.JOINT	0	0	0	0
F-0212		F.JOINT	0	0	0	0
F-0213		V.GLAND	0	0	0	0
F-0214		F.JOINT	0	0	0	0
F-0215		F.JOINT	0	0	0	0
F-0216		F.JOINT	0	0	0	0
F-0217	OUTLET LINE FROM 10-VV-00-115	F.JOINT	0	0	0	0

F-0218		F.JOINT	0	0	0	0
F-0219		F.JOINT	0	0	0	0
F-0220		F.JOINT	0	0	0	0
F-0221		F.JOINT	0	0	0	0
F-0222	INLET LINE TO PSV-8111	F.JOINT	0	0	0	0
F-0223		F.JOINT	0	0	0	0
F-0224		V.GLAND	312	182.7	0.0017	0.014892
F-0225		F.JOINT	0	0	0	0
F-0226	10-PSV-8111 BY PASS LINE	F.JOINT	0	0	0	0
F-0227		F.JOINT	0	0	0	0
F-0228	INLET LINE TO PSV-8112	F.JOINT	0	0	0	0
F-0229		F.JOINT	0	0	0	0
F-0230		V.GLAND	0	0	0	0
F-0231		F.JOINT	0	0	0	0
F-0232	10-PSV-8112 BY PASS LINE	F.JOINT	0	0	0	0
F-0233		F.JOINT	0	0	0	0
F-0234	INLET LINE TO PSV-8113	F.JOINT	0	0	0	0
F-0235		F.JOINT	0	0	0	0
F-0236		V.GLAND	0	0	0	0
F-0237		F.JOINT	0	0	0	0
F-0238	10-PSV-8113 BY PASS LINE	F.JOINT	0	0	0	0
F-0239		F.JOINT	0	0	0	0
F-0240	INLET LINE TO PSV-8114	F.JOINT	0	0	0	0
F-0241		F.JOINT	0	0	0	0
F-0242		V.GLAND	0	0	0	0
F-0243		F.JOINT	0	0	0	0
F-0244	10-PSV-8114 BY PASS LINE	F.JOINT	0	0	0	0
F-0245		F.JOINT	0	0	0	0
F-0246	INLET LINE TO PSV-8115	F.JOINT	0	0	0	0
F-0247		F.JOINT	0	0	0	0
F-0248		V.GLAND	0	0	0	0
F-0249		F.JOINT	0	0	0	0
F-0250	10-PSV-8115 BY PASS LINE	F.JOINT	0	0	0	0
F-0251		F.JOINT	0	0	0	0
F-0252	FG COMPRESSOR A FEED GAS TO RECYCLE COOLER	F.JOINT	17	0	0	0
F-0253	10-EE-00-107	V.GLAND	0	0	0	0
F-0254		F.JOINT	0	0	0	0
F-0255	CONTROL VALVE 10-PV-1506 A	V.GLAND	0	0	0	0
F-0256	CONTROL VALVE 10-PV-1506 A BYPASS LINE	F.JOINT	0	0	0	0
F-0257		V.GLAND	0	0	0	0
F-0258		F.JOINT	0	0	0	0
F-0259	FG COMPRESSOR B FEED GAS TO RECYCLE COOLER	F.JOINT	0	0	0	0
F-0260	10-EE-00-107	V.GLAND	0	0	0	0
F-0261		F.JOINT	0	0	0	0
F-0262	CONTRO LVALVE 10-PV-1506 B	V.GLAND	282	151.5	0.0017	0.014892
F-0263	CONTROL VALVE 10-PV-1506 B BYPASS LINE	F.JOINT	0	0	0	0
F-0264		V.GLAND	0	0	0	0
F-0265		F.JOINT	0	0	0	0
F-0266	PRODUCT HYDROGEN LINE 1st GATE VALVE	F.JOINT	0	0	0	0
F-0267		V.GLAND	0	0	0	0
F-0268		F.JOINT	0	0	0	0
F-0269	CONTROL VALVE10-PV-2404	V.GLAND	0	0	0	0
F-0270	PRODUCT HYDROGEN LINE 2nd GATE VALVE	F.JOINT	0	0	0	0
F-0271		V.GLAND	0	0	0	0
F-0272		F.JOINT	0	0	0	0
F-0273	CONTROL VALVE10-PV-2404 BY PASS LINE	F.JOINT	0	0	0	0
F-0274		V.GLAND	0	0	0	0
F-0275		F.JOINT	0	0	0	0
F-0276	PRODUCT HYDROGEN LINE TO MSQU 1st GATE VALVE	F.JOINT	0	0	0	0
F-0277		V.GLAND	0	0	0	0
F-0278		F.JOINT	0	0	0	0
F-0279	CONTROL VALVE37-FV-3302	V.GLAND	0	0	0	0
F-0280	PRODUCT HYDROGEN LINE TO MSQU 2nd GATE VALVE	F.JOINT	0	0	0	0
F-0281		V.GLAND	0	0	0	0
F-0282		F.JOINT	0	0	0	0
F-0283	CONTROL VALVE37-FV-3302 BY PASS LINE	F.JOINT	237	112	0.00006	0.000526
F-0284		V.GLAND	0	0	0	0

F-0285		F.JOINT	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 7(F) UNIT:CRU

SUMMARY SHEET FOR CRU AREA

Total number of points covered	**262**
Date of Monitoring/Rechecking	**02.03.2023**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-0286	05PDT-1369 (F.O Return to ex 05 -FF-00-003) Valve	Gland	0	0	0	0
F-0287	05PDT-1341 (F.O Return to ex 05 -FF-00-002 Valve	Gland	24.0	6.0	0.0017	0.014892
F-0288	05UV-1362(F.O Return to ex 05 -FF-00-003) Valve	Gland	0	0	0	0
F-0289	05UV-1332(F.O Return to ex 05 -FF-00-002) Valve	Gland	0	0	0	0
F-0290	05UV-1302(F.O Return to ex 05 -FF-00-001) Valve	Gland	0	0	0	0
F-0291	04FT-1501(FG to o4FF-00-002)	Flange	0	0	0	0
F-0292	04UV-1501(FG to 04FF-00-002) Valve	Gland	0	0	0	0
F-0293	04UV-1501(FG to 04FF-00-002) Valve	Flange(North)	0	0	0	0
F-0294	04UV-1501(FG to 04FF-00-002) Valve	Flange(South)	0	0	0	0
F-0295	04PCV-1501(FG to 04FF-00-002) Valve	Gland	0	0	0	0
F-0296	04PCV-1501(FG to 04FF-00-002) Valve	Bonet	0	0	0	0
F-0297	04PCV-1501(FG to 04FF-00-002) Valve	Flange(North)	0	0	0	0
F-0298	04PCV-1501(FG to 04FF-00-002) Valve	Flange(South)	0	0	0	0
F-0299	04PCV-1501(FG to 04FF-00-002) I/L Valve	Gland	0	0	0	0
F-0300	04PCV-1501(FG to 04FF-00-002) I/L Valve	Bonet	0	0	0	0
F-0301	04PCV-1501(FG to 04FF-00-002) I/L Valve	Flange(North)	0	0	0	0
F-0302	04PCV-1501(FG to 04FF-00-002) I/L Valve	Flange(South)	0	0	0	0
F-0303	04PCV-1501(FG to 04FF-00-002) O/L Valve	Gland	0	0	0	0
F-0304	04PCV-1501(FG to 04FF-00-002) O/L Valve	Bonet	0	0	0	0
F-0305	04PCV-1501(FG to 04FF-00-002) O/L Valve	Flange(Upper)	0	0	0	0
F-0306	04PCV-1501(FG to 04FF-00-002) O/L Valve	Flange(Lower)	0	0	0	0
F-0307	04PCV-1501(FG to 04FF-00-002) By pass Valve	Gland	0	0	0	0
F-0308	04PCV-1501(FG to 04FF-00-002) By pass Valve	Bonet	0	0	0	0
F-0309	04PCV-1501(FG to 04FF-00-002) By pass Valve	Flange(Upper)	0	0	0	0
F-0310	04PCV-1501(FG to 04FF-00-002) By pass Valve	Flange(Lower)	0	0	0	0
F-0311	04UV-1502(FG to 04FF-00-002)	Gland	0	0	0	0
F-0312	04UV-1502(FG to 04FF-00-002)	Bonet	0	0	0	0
F-0313	04UV-1502(FG to 04FF-00-002)	Flange(North)	0	0	0	0
F-0314	04UV-1502(FG to 04FF-00-002)	Flange(South)	0	0	0	0
F-0315	04UV-1502(FG to 04FF-00-002) O/L Valve	Gland	0	0	0	0
F-0316	04PCV-1201.	Gland	0	0	0	0
F-0317	04PCV-1201.	Bonet	0	0	0	0
F-0318	04PCV-1201.	Flange(North)	81	21.7	0.00006	0.000526
F-0319	04PCV-1201.	Flange(South)	0	0	0	0
F-0320	04PCV-1201. O/L Valve	Gland	0	0	0	0
F-0321	04PCV-1201. O/L Valve	Bonet	0	0	0	0
F-0322	04PCV-1201. I/L Valve	Gland	0	0	0	0
F-0323	04PCV-1201. I/L Valve	Bonet	0	0	0	0
F-0324	04PCV-1201. I/L Valve	Flange(Upper)	0	0	0	0
F-0325	04PCV-1201. I/L Valve	Flange(Lower)	0	0	0	0
F-0326	04PCV-1201. By pass Valve	Flange(Upper)	0	0	0	0
F-0327	04PCV-1201. By pass Valve	Gland	0	0	0	0

F-0328	04PCV-1201. By pass Valve	Bonet	0	0	0	0
F-0329	04PCV-1201. By pass Valve	Flange(Lower)	0	0	0	0
F-0330	03-PA-00-002B	Pump Seal	0	0	0	0
F-0331	03-PA-00-002B Discharge line	Joint Flange	0	0	0	0
F-0332	03-PA-00-002B Discharge line	NRV	0	0	0	0
F-0333	03-PA-00-002B Discharge line NRV	Flange(South)	0	0	0	0
F-0334	03-PA-00-002B Discharge line Valve	Gland	0	0	0	0
F-0335	03-PA-00-002B Discharge line Valve	Bonet	0	0	0	0
F-0336	03-PA-00-002B Discharge line Valve	Flange(North)	0	0	0	0
F-0337	03-PA-00-002B Discharge line Valve	Flange(South)	0	0	0	0
F-0338	03-PA-00-002B Suction line	Joint Flange	0	0	0	0
F-0339	03-PA-00-002B Suction line Valve	Gland	0	0	0	0
F-0340	03-PA-00-002B Suction line Valve	Bonet	0	0	0	0
F-0341	03-PA-00-002B Suction line Valve	Flange(North)	0	0	0	0
F-0342	03-PA-00-002B Suction line Valve	Flange(South)	0	0	0	0
F-0343	03-PA-00-002A	Pump Seal	0	0	0	0
F-0344	03-PA-00-002A Discharge line	Joint Flange	78	38.1	0.00006	0.000526
F-0345	03-PA-00-002A Discharge line Valve	Gland	0	0	0	0
F-0346	03-PA-00-002A Suction line	Joint Flange	0	0	0	0
F-0347	03-PA-00-002A Suction line Valve	Gland	0	0	0	0
F-0348	03-PA-00-002A Suction line Valve	Flange(North)	0	0	0	0
F-0349	03-PA-00-002A Suction line Valve	Flange(South)	0	0	0	0
F-0350	05-PA-00-002B	Pump Seal	0	0	0	0
F-0351	05-PA-00-002B Discharge line	Joint Flange	0	0	0	0
F-0352	05-PA-00-002B Discharge line	NRV	0	0	0	0
F-0353	05-PA-00-002B Discharge line NRV	Flange(North)	0	0	0	0
F-0354	05-PA-00-002B Discharge line NRV	Flange(South)	0	0	0	0
F-0355	05-PA-00-002B Discharge line Valve	Gland	0	0	0	0
F-0356	05-PA-00-002B Discharge line Valve	Bonet	0	0	0	0
F-0357	05-PA-00-002B Discharge line Valve	Flange(Upper)	0	0	0	0
F-0358	05-PA-00-002B Discharge line Valve	Flange(Lower)	0	0	0	0
F-0359	05-PA-00-002B Suction line	Joint Flange	0	0	0	0
F-0360	05-PA-00-002B Suction line Valve	Flange(Upper)	0	0	0	0
F-0361	05-PA-00-002B Suction line Valve	Flange(Lower)	0	0	0	0
F-0362	05-PA-00-002B Suction line Valve	Gland	0	0	0	0
F-0363	05-PA-00-002B Suction line Valve	Bonet	0	0	0	0
F-0364	05-PA-00-002A	Pump Seal	12	0	0	0
F-0365	05-PA-00-002A Discharge line	Joint Flange	0	0	0	0
F-0366	05-PA-00-002A Discharge line	NRV	0	0	0	0
F-0367	05-PA-00-002A Discharge line NRV	Flange(North)	0	0	0	0
F-0368	05-PA-00-002A Discharge line NRV	Flange(South)	0	0	0	0
F-0369	05-PA-00-002A Discharge line Valve	Gland	364	202.7	0.0017	0.014892
F-0370	05-PA-00-002A Discharge line Valve	Bonet	0	0	0	0
F-0371	05-PA-00-002A Discharge line Valve	Flange(Upper)	0	0	0	0
F-0372	05-PA-00-002A Discharge line Valve	Flange(Lower)	0	0	0	0
F-0373	05-PA-00-002A Suction line	Joint Flange	0	0	0	0
F-0374	05-PA-00-002A Suction line Valve	Gland	0	0	0	0
F-0375	05-PA-00-002A Suction line Valve	Bonet	0	0	0	0
F-0376	05-PA-00-002A Suction line Valve	Flange(Lower)	0	0	0	0
F-0377	05-PA-00-002A Suction line Valve	Flange(Upper)	0	0	0	0
F-0378	05LCV-1401(HP absorber cooler)	Gland	0	0	0	0
F-0379	05LCV-1401(HP absorber cooler)	Bonet	0	0	0	0
F-0380	05LCV-1401(HP absorber cooler)	Flange(North)	0	0	0	0
F-0381	05LCV-1401(HP absorber cooler)	Flange(South)	0	0	0	0
F-0382	05LCV-1401(HP absorber cooler)I/L Valve	Flange(Lower)	0	0	0	0
F-0383	05LCV-1401(HP absorber cooler)I/L Valve	Flange(Upper)	0	0	0	0
F-0384	05LCV-1401(HP absorber cooler)I/L Valve	Gland	0	0	0	0
F-0385	05LCV-1401(HP absorber cooler)I/L Valve	Bonet	0	0	0	0
F-0386	05LCV-1401(HP absorber cooler)O/L Valve	Flange(Upper)	0	0	0	0
F-0387	05LCV-1401(HP absorber cooler)O/L Valve	Flange(Lower)	0	0	0	0
F-0388	05LCV-1401(HP absorber cooler)O/L Valve	Gland	0	0	0	0
F-0389	05LCV-1401(HP absorber cooler)O/L Valve	Bonet	0	0	0	0
F-0390	05LCV-1401(HP absorber cooler)By pass Valve	Gland	0	0	0	0
F-0391	05LCV-1401(HP absorber cooler)By pass Valve	Bonet	0	0	0	0
F-0392	05LCV-1401(HP absorber cooler)By pass Valve	Flange(North)	0	0	0	0
F-0393	05LCV-1401(HP absorber cooler)By pass Valve	Flange(South)	0	0	0	0
F-0394	05-EE-004 S/S Suction line	Joint Flange	0	0	0	0

F-0395	05-EE-004 S/S Discharge line	Joint Flange	0	0	0	0
F-0396	05FCV-1101.	Gland	523	294.7	0.0017	0.014892
F-0397	05FCV-1101.	Flange(North)	0	0	0	0
F-0398	05FCV-1101.	Flange(South)	0	0	0	0
F-0399	05FCV-1101. O/L Valve	Gland	0	0	0	0
F-0400	05FCV-1101. O/L Valve	Gland	0	0	0	0
F-0401	05FCV-1101. O/L By Pass Valve	Gland	0	0	0	0
F-0402	05FCV-1101. O/L By Pass Valve	Flange(Upper)	0	0	0	0
F-0403	05FCV-1101. O/L By Pass Valve	Flange(Lower)	0	0	0	0
F-0404	Start up line(05FCV-1101) Upper Valve	Gland	0	0	0	0
F-0405	Start up line(05FCV-1101) Upper Valve	Bonet	0	0	0	0
F-0406	Start up line(05FCV-1101) Upper Valve	Flange(Upper)	0	0	0	0
F-0407	Start up line(05FCV-1101) Upper Valve	Flange(Lower)	0	0	0	0
F-0408	Start up line(05FCV-1101) Lower Valve	Gland	0	0	0	0
F-0409	Start up line(05FCV-1101) Lower Valve	Bonet	0	0	0	0
F-0410	Start up line(05FCV-1101) Lower Valve	Flange(Lower)	0	0	0	0
F-0411	04-PA-00-003B	Pump Seal	22	0	0	0
F-0412	04-PA-00-003B Discharge line	Joint Flange	0	0	0	0
F-0413	04-PA-00-003B Discharge line Valve	Gland	0	0	0	0
F-0414	04-PA-00-003B Discharge line	Flange	0	0	0	0
F-0415	04-PA-00-003B Suction line	Joint Flange	0	0	0	0
F-0416	04-PA-00-003B Suction line Valve	Gland	0	0	0	0
F-0417	04-PA-00-001B	Pump Seal	0	0	0	0
F-0418	04-PA-00-001B Discharge line	Joint Flange	0	0	0	0
F-0419	04-PA-00-001B Discharge line	NRV	0	0	0	0
F-0420	04-PA-00-001B Discharge line NRV	Flange(North)	0	0	0	0
F-0421	04-PA-00-001B Discharge line NRV	Flange(South)	0	0	0	0
F-0422	04-PA-00-001B Discharge line Valve	Gland	0	0	0	0
F-0423	04-PA-00-001B Discharge line Valve	Bonet	0	0	0	0
F-0424	04-PA-00-001B Discharge line Valve	Flange(Upper)	0	0	0	0
F-0425	04-PA-00-001B Discharge line Valve	Flange(Lower)	0	0	0	0
F-0426	04-PA-00-001B Suction line	Joint Flange	0	0	0	0
F-0427	04-PA-00-001B Suction line Valve	Gland	0	0	0	0
F-0428	04-PA-00-001B Suction line Valve	Bonet	0	0	0	0
F-0429	04-PA-00-001B Suction line Valve	Flange(Upper)	0	0	0	0
F-0430	04-PA-00-001B Suction line Valve	Flange(Lower)	0	0	0	0
F-0431	04-PA-00-001A	Pump Seal	0	0	0	0
F-0432	04-PA-00-001A Discharge line	Joint Flange	0	0	0	0
F-0433	04-PA-00-001A Discharge line	NRV	0	0	0	0
F-0434	04-PA-00-001A Discharge line NRV	Flange(North)	0	0	0	0
F-0435	04-PA-00-001A Discharge line NRV	Flange(South)	0	0	0	0
F-0436	04-PA-00-001A Discharge line Valve	Gland	0	0	0	0
F-0437	04-PA-00-001A Discharge line Valve	Bonet	0	0	0	0
F-0438	04-PA-00-001A Discharge line Valve	Flange(North)	0	0	0	0
F-0439	04-PA-00-001A Discharge line Valve	Flange(South)	0	0	0	0
F-0440	04-PA-00-001A Suction line	Joint Flange	0	0	0	0
F-0441	04-PA-00-001A Suction line Valve	Gland	0	0	0	0
F-0442	04-PA-00-001A Suction line Valve	Bonet	0	0	0	0
F-0443	04-PA-00-001A Suction line Valve	Flange(Upper)	0	0	0	0
F-0444	04-PA-00-001A Suction line Valve	Flange(Lower)	0	0	0	0
F-0445	05-PA-001B	Pump Seal	0	0	0	0
F-0446	05-PA-00-001B Discharge line	Joint Flange	0	0	0	0
F-0447	05-PA-00-001B Discharge line	Flange	0	0	0	0
F-0448	05-PA-00-001B Discharge line Valve	Gland	0	0	0	0
F-0449	05-PA-00-001B Suction line	Joint Flange	0	0	0	0
F-0450	05-PA-00-001B Suction line Valve	Gland	0	0	0	0
F-0451	05-PA-001A	Pump Seal	0	0	0	0
F-0452	05-PA-00-001A Discharge line	Joint Flange	0	0	0	0
F-0453	05-PA-00-001A Discharge line	Flange	0	0	0	0
F-0454	05-PA-00-001A Discharge line Valve	Gland	0	0	0	0
F-0455	05-PA-00-001A Suction line	Joint Flange	0	0	0	0
F-0456	05-PA-00-001A Suction line Valve	Gland	0	0	0	0
F-0457	04-PA-00-002B	Pump Seal	0	0	0	0
F-0458	04-PA-00-002B Discharge line	Joint Flange	0	0	0	0
F-0459	04-PA-00-002B Discharge line	NRV	0	0	0	0
F-0460	04-PA-00-002B Discharge line NRV	Flange(North)	0	0	0	0
F-0461	04-PA-00-002B Discharge line NRV	Flange(South)	0	0	0	0

F-0462	04-PA-00-002B Discharge line Valve	Flange(Upper)	0	0	0	0
F-0463	04-PA-00-002B Discharge line Valve	Flange(Lower)	0	0	0	0
F-0464	04-PA-00-002B Discharge line Valve	Gland	0	0	0	0
F-0465	04-PA-00-002B Discharge line Valve	Bonet	0	0	0	0
F-0466	04-PA-00-002B Suction line	Joint Flange	0	0	0	0
F-0467	04-PA-00-002B Suction line Valve	Gland	0	0	0	0
F-0468	04-PA-00-002B Suction line Valve	Bonet	0	0	0	0
F-0469	04-PA-00-002B Suction line Valve	Flange(Upper)	0	0	0	0
F-0470	04-PA-00-002B Suction line Valve	Flange(Lower)	0	0	0	0
F-0471	04-PA-00-002A	Pump Seal	752	398.1	0.012	0.10512
F-0472	04-PA-00-002A Discharge line	Joint Flange	0	0	0	0
F-0473	04-PA-00-002A Discharge line Valve	Gland	0	0	0	0
F-0474	04-PA-00-002A Discharge line Valve	Bonet	0	0	0	0
F-0475	04-PA-00-002A Discharge line Valve	Flange(Upper)	0	0	0	0
F-0476	04-PA-00-002A Discharge line Valve	Flange(Lower)	0	0	0	0
F-0477	04-PA-00-002A Discharge line	NRV	0	0	0	0
F-0478	04-PA-00-002A Discharge line NRV	Flange(North)	0	0	0	0
F-0479	04-PA-00-002A Discharge line NRV	Flange(South)	0	0	0	0
F-0480	04-PA-00-002A Suction line	Joint Flange	0	0	0	0
F-0481	04-PA-00-002A Suction line Valve	Gland	0	0	0	0
F-0482	04-PA-00-002A Suction line Valve	Bonet	0	0	0	0
F-0483	04-PA-00-002A Suction line Valve	Flange(Upper)	0	0	0	0
F-0484	04-PA-00-002A Suction line Valve	Flange(Lower)	0	0	0	0
F-0485	05-FCV-1601.	Gland	0	0	0	0
F-0486	05-FCV-1601.	Bonet	0	0	0	0
F-0487	05-FCV-1601.	Flange(West)	0	0	0	0
F-0488	05-FCV-1601.	Flange(East)	0	0	0	0
F-0489	05-FCV-1601. I/L line Valve	Gland	0	0	0	0
F-0490	05-FCV-1601. I/L line Valve	Bonet	0	0	0	0
F-0491	05-FCV-1601. I/L line Valve	Flange(Upper)	0	0	0	0
F-0492	05-FCV-1601. I/L line Valve	Flange(Lower)	0	0	0	0
F-0493	05-FCV-1601. O/L line Valve	Gland	0	0	0	0
F-0494	05-FCV-1601. O/L line Valve	Bonet	0	0	0	0
F-0495	05-FCV-1601. O/L line Valve	Flange(West)	0	0	0	0
F-0496	05-FCV-1601. O/L line Valve	Flange(East)	0	0	0	0
F-0497	05-FCV-1601. By pass line Valve	Gland	0	0	0	0
F-0498	05-FCV-1601. By pass line Valve	Bonet	0	0	0	0
F-0499	05-FCV-1601. By pass line Valve	Flange(East)	0	0	0	0
F-0500	05-FCV-1601. By pass line Valve	Flange(West)	0	0	0	0
F-0501	Stabilyzer Feed by pass line Valve	Gland	0	0	0	0
F-0502	Stabilyzer Feed by pass line Valve	Bonet	0	0	0	0
F-0503	Stabilyzer Feed by pass line Valve	Flange(Upper)	0	0	0	0
F-0504	Stabilyzer Feed by pass line Valve	Flange(Lower)	0	0	0	0
F-0505	05-PA-00-603A	Pump Seal	0	0	0	0
F-0506	05-PA-00-003A Discharge line	Joint Flange	0	0	0	0
F-0507	05-PA-00-003A Discharge line	NRV	0	0	0	0
F-0508	05-PA-00-003A Discharge line NRV	Flange(North)	0	0	0	0
F-0509	05-PA-00-003A Discharge line NRV	Flange(South)	0	0	0	0
F-0510	05-PA-00-003A Discharge line Valve	Flange(Upper)	0	0	0	0
F-0511	05-PA-00-003A Discharge line Valve	Flange(Lower)	0	0	0	0
F-0512	05-PA-00-003A Discharge line Valve	Gland	0	0	0	0
F-0513	05-PA-00-003A Discharge line Valve	Bonet	0	0	0	0
F-0514	05-PA-00-003A Suction line	Joint Flange	0	0	0	0
F-0515	05-PA-00-003A Suction line Valve	Gland	0	0	0	0
F-0516	05-PA-00-003A Suction line Valve	Bonet	0	0	0	0
F-0517	05-PA-00-003A Suction line Valve	Flange(Upper)	0	0	0	0
F-0518	05-PA-00-003A Suction line Valve	Flange(Lower)	0	0	0	0
F-0519	05-PA-00-603B	Pump Seal	0	0	0	0
F-0520	05-PA-00-003B Discharge line	Joint Flange	0	0	0	0
F-0521	05-PA-00-003B Discharge line	NRV	0	0	0	0
F-0522	05-PA-00-003B Discharge line NRV	Flange(North)	0	0	0	0
F-0523	05-PA-00-003B Discharge line NRV	Flange(South)	0	0	0	0
F-0524	05-PA-00-003B Discharge line Valve	Gland	0	0	0	0
F-0525	05-PA-00-003B Discharge line Valve	Bonet	0	0	0	0
F-0526	05-PA-00-003B Discharge line Valve	Flange(North)	0	0	0	0
F-0527	05-PA-00-003B Discharge line Valve	Flange(South)	0	0	0	0
F-0528	05-PA-00-003B Suction line	Joint Flange	0	0	0	0

F-0529	05-PA-00-003B Suction line Valve	Gland	0	0	0	0
F-0530	05-PA-00-003B Suction line Valve	Bonet	0	0	0	0
F-0531	05-PA-00-003B Suction line Valve	Flange(Upper)	0	0	0	0
F-0532	05-PA-00-003B Suction line Valve	Flange(Lower)	0	0	0	0
F-0533	04 EE-00-03B-STRIPPER FEED BOTTOM EXCHANGER	VALVE	0	0	0	0
F-0534	5 EE-00-03B-STRIPPER FEED BOTTOM EXCHANGER	FLANGE	0	0	0	0
F-0535	6 EE-00-03B-STRIPPER FEED BOTTOM EXCHANGER	VALVE	0	0	0	0
F-0536	7 EE-00-03B-STRIPPER FEED BOTTOM EXCHANGER	FLANGE	0	0	0	0
F-0537	03 LV-1201.LN TO STORAGE SUCTION	VALVE	0	0	0	0
F-0538	4 LV-1201.LN TO STORAGE SUCTION	FLANGE	0	0	0	0
F-0539	5 LV-1201.LN TO STORAGE SUCTION	FLANGE	0	0	0	0
F-0540	6 LV-1201.LN TO STORAGE SUCTION DISCHARGE	VALVE	363	174.1	0.0017	0.014892
F-0541	7 LV-1201.LN TO STORAGE SUCTION DISCHARGE	FLANGE	0	0	0	0
F-0542	8 LV-1201.LN TO STORAGE SUCTION DISCHARGE	FLANGE	0	0	0	0
F-0543	05KA-00-001B COMPRESOR SUCTION	FLANGE	0	0	0	0
F-0544	05KA-00-001B COMPRESOR SUCTION	VALVE	0	0	0	0
F-0545	05KA-00-001B COMPRESOR SUCTION	FLANGE	0	0	0	0
F-0546	05KA-00-001B COMPRESOR DISCHARGE	VALVE	0	0	0	0
F-0547	05KA-00-001B COMPRESOR DISCHARGE	FLANGE	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 7(F) UNIT : O M & S (Crude Oil Pump House)

SUMMARY SHEET FOR O M & S (Crude Oil Pump House) AREA

Total number of points covered	**10**
Date of Monitoring/Rechecking	**06.03.2023**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-0548	P-1	Pump Seal	0	0	0	0
F-0549	P-1. Discharge line Valve	Gland	0	0	0	0
F-0550	P-1. Discharge line Valve	Flange(East)	0	0	0	0
F-0551	P-1. Discharge line Valve	Flange(West)	0	0	0	0
F-0552	P-1. Suction line Valve	Gland	0	0	0	0
F-0553	P-1. Suction line Valve	Flange(Upper)	0	0	0	0
F-0554	P-1. Suction line Valve	Flange(Lower)	0	0	0	0
F-0555	P-2.	Pump Seal	36	5.6	0.012	0.10512
F-0556	P-2. Discharge line Valve	Gland	0	0	0	0
F-0557	P-2. Suction line Valve	Gland	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 7(F) UNIT:O M & S (Production pump house)

SUMMARY SHEET FOR O M & S (Production Pump House) AREA

Total number of points covered	**192**
Date of Monitoring/Rechecking	**04.03.2023**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	

Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-626	043-PA-018	Pump Seal	0	0	0	0
F-627	043-PA-018 Discharge line Valve	Joint Flange	0	0	0	0
F-628	043-PA-018 Discharge line Valve	Gland	0	0	0	0
F-629	043-PA-018 Discharge line Valve	Bonet	0	0	0	0
F-630	043-PA-018 Discharge line Valve	Flange(Upper)	0	0	0	0
F-631	043-PA-018 Discharge line Valve	Flange(Lower)	0	0	0	0
F-632	043-PA-018 Suction line	Joint Flange	0	0	0	0
F-633	043-PA-018 Suction line Valve-I	Gland	32.0	14.1	0.0017	0.014892
F-634	043-PA-018 Suction line Valve-I	Bonet	0	0	0	0
F-635	043-PA-018 Suction line Valve-I	Flange(Upper)	0	0	0	0
F-636	043-PA-018 Suction line Valve-I	Flange(Lower)	0	0	0	0
F-637	043-PA-018 Suction line Valve-II	Gland	0	0	0	0
F-638	043-PA-018 Suction line Valve-II	Bonet	0	0	0	0
F-639	043-PA-018 Suction line Valve-II	Flange(North)	0	0	0	0
F-640	043-PA-018 Suction line Valve-II	Flange(South)	0	0	0	0
F-641	043-PA-018 Suction line Valve-III	Gland	0	0	0	0
F-642	043-PA-018 Suction line Valve-III	Bonet	0	0	0	0
F-643	043-PA-018 Suction line Valve-III	Flange(East)	0	0	0	0
F-644	043-PA-018 Suction line Valve-III	Flange(West)	0	0	0	0
F-645	043-PA-017	Pump Seal	17	0	0	0
F-646	043-PA-017 Discharge line	Joint Flange	0	0	0	0
F-647	043-PA-017 Discharge line Valve	Flange(Upper)	0	0	0	0
F-648	043-PA-017 Discharge line Valve	Flange(Lower)	0	0	0	0
F-649	043-PA-017 Discharge line Valve	Gland	0	0	0	0
F-650	043-PA-017 Discharge line Valve	Bonet	0	0	0	0
F-651	043-PA-017 Suction line	Joint Flange	0	0	0	0
F-652	043-PA-017 Suction line Valve	Flange(Upper)	0	0	0	0
F-653	043-PA-017 Suction line Valve	Flange(Lower)	0	0	0	0
F-654	043-PA-017 Suction line Valve	Gland	0	0	0	0
F-655	043-PA-017 Suction line Valve	Bonet	0	0	0	0
F-656	043-PA-005	Pump Seal	0	0	0	0
F-657	043-PA-005 Discharge line Valve	Joint Flange	0	0	0	0
F-658	043-PA-005 Discharge line Valve-I	Flange(Upper)	0	0	0	0
F-659	043-PA-005 Discharge line Valve-I	Flange(Lower)	0	0	0	0
F-660	043-PA-005 Discharge line Valve-I	Gland	0	0	0	0
F-661	043-PA-005 Discharge line Valve-I	Bonet	0	0	0	0
F-662	043-PA-005 Discharge line Valve-II	Flange(Upper)	0	0	0	0
F-663	043-PA-005 Discharge line Valve-II	Flange(Lower)	0	0	0	0
F-664	043-PA-005 Discharge line Valve-II	Gland	15.0	8.1	0.0017	0.014892
F-665	043-PA-005 Discharge line Valve-II	Bonet	0	0	0	0
F-666	043-PA-005 Suction line	Joint Flange	0	0	0	0
F-667	043-PA-005 Suction line Valve-I	Gland	0	0	0	0
F-668	043-PA-005 Suction line Valve-I	Bonet	0	0	0	0
F-669	043-PA-005 Suction line Valve-I	Flange(East)	0	0	0	0
F-670	043-PA-005 Suction line Valve-I	Flange(West)	0	0	0	0
F-671	043-PA-005 Suction line Valve-II	Gland	0	0	0	0
F-672	043-PA-005 Suction line Valve-II	Bonet	0	0	0	0
F-673	043-PA-005 Suction line Valve-II	Flange(North)	0	0	0	0
F-674	043-PA-005 Suction line Valve-II	Flange(South)	0	0	0	0
F-675	043-PA-005 Suction line Valve-III	Gland	0	0	0	0
F-676	043-PA-005 Suction line Valve-III	Bonet	0	0	0	0
F-677	043-PA-005 Suction line Valve-III	Flange(East)	0	0	0	0
F-678	043-PA-005 Suction line Valve-III	Flange(West)	0	0	0	0
F-679	043-PA-016	Pump Seal	0	0	0	0
F-680	043-PA-016 Discharge line	Joint Flange	0	0	0	0
F-681	043-PA-016 Discharge line Valve	Gland	0	0	0	0
F-682	043-PA-016 Discharge line Valve	Bonet	0	0	0	0
F-683	043-PA-016 Discharge line Valve	Flange(East)	0	0	0	0

F-684	043-PA-016 Discharge line Valve	Flange(West)	0	0	0	0
F-685	043-PA-016 Discharge line	Flange	0	0	0	0
F-686	043-PA-016 Discharge line NRV	Flange(East)	0	0	0	0
F-687	043-PA-016 Discharge line NRV	Flange(West)	0	0	0	0
F-688	043-PA-016 Discharge line	NRV	0	0	0	0
F-689	043-PA-016 Suction line	Joint Flange	0	0	0	0
F-690	043-PA-016 Suction line	Flange-I	0	0	0	0
F-691	043-PA-016 Suction line	Flange-II	0	0	0	0
F-692	043-PA-016 Suction line	Flange-II	0	0	0	0
F-693	043-PA-016 Suction line Valve	Gland	0	0	0	0
F-694	043-PA-016 Suction line Valve	Bonet	0	0	0	0
F-695	043-PA-016 Suction line Valve	Flange(East)	0	0	0	0
F-696	043-PA-016 Suction line Valve	Flange(West)	0	0	0	0
F-697	043-PA-006.	Pump Seal	13.0	1.5	0.012	0.10512
F-698	043-PA-006. Discharge line	Joint Flange	0	0	0	0
F-699	043-PA-006. Discharge line Valve-I	Flange(Upper)	0	0	0	0
F-700	043-PA-006. Discharge line Valve-I	Flange(Lower)	0	0	0	0
F-701	043-PA-006. Discharge line Valve-I	Gland	0	0	0	0
F-702	043-PA-006. Discharge line Valve-I	Bonet	0	0	0	0
F-703	043-PA-006. Discharge line Valve-II	Gland	0	0	0	0
F-704	043-PA-006. Discharge line Valve-II	Bonet	0	0	0	0
F-705	043-PA-006. Discharge line Valve-II	Flange(Upper)	0	0	0	0
F-706	043-PA-006. Discharge line Valve-II	Flange(Lower)	0	0	0	0
F-707	043-PA-006. Suction line	Joint Flange	0	0	0	0
F-708	043-PA-006. Suction line Valve-I	Gland	0	0	0	0
F-709	043-PA-006. Suction line Valve-I	bonet	0	0	0	0
F-710	043-PA-006. Suction line Valve-I	Flange(East)	0	0	0	0
F-711	043-PA-006. Suction line Valve-I	Flange(West)	0	0	0	0
F-712	043-PA-006. Suction line Valve-II	Gland	0	0	0	0
F-713	043-PA-006. Suction line Valve-II	Bonet	0	0	0	0
F-714	043-PA-006. Suction line Valve-II	Flange(North)	0	0	0	0
F-715	043-PA-006. Suction line Valve-II	Flange(South)	0	0	0	0
F-716	043-PA-008.	Pump Seal	0	0	0	0
F-717	043-PA-008. Discharge line	Joint Flange	0	0	0	0
F-718	043-PA-008. Discharge line Valve-I	Gland	0	0	0	0
F-719	043-PA-008. Discharge line Valve-I	Bonet	0	0	0	0
F-720	043-PA-008. Discharge line Valve-I	Flange(Upper)	0	0	0	0
F-721	043-PA-008. Discharge line Valve-I	Flange(Lower)	0	0	0	0
F-722	043-PA-008. Discharge line Valve-II	Gland	0	0	0	0
F-723	043-PA-008. Discharge line Valve-II	Bonet	0	0	0	0
F-724	043-PA-008. Discharge line Valve-II	Flange(Upper)	0	0	0	0
F-725	043-PA-008. Discharge line Valve-II	Flange(Lower)	0	0	0	0
F-726	043-PA-008. Discharge line Valve-III	Gland	0	0	0	0
F-727	043-PA-008. Discharge line Valve-III	Bonet	0	0	0	0
F-728	043-PA-008. Discharge line Valve-III	Flange(East)	0	0	0	0
F-729	043-PA-008. Discharge line Valve-III	Flange(West)	0	0	0	0
F-730	043-PA-008. Discharge line Valve-IV	Gland	0	0	0	0
F-731	043-PA-008. Discharge line Valve-IV	Bonet	0	0	0	0
F-732	043-PA-008. Discharge line Valve-IV	Flange(North)	0	0	0	0
F-733	043-PA-008. Discharge line Valve-IV	Flange(South)	0	0	0	0
F-734	043-PA-008. Suction line	Joint Flange	0	0	0	0
F-735	043-PA-008. Suction line Valve	Gland	0	0	0	0
F-736	043-PA-008. Suction line Valve	Bonet	0	0	0	0
F-737	034-PA-CF-006A.	Pump Seal	7	0	0	0
F-738	034-PA-CF-006A. Discharge line	Joint Flange	0	0	0	0
F-739	034-PA-CF-006A. Discharge line Valve-I	Flange(Upper)	0	0	0	0
F-740	034-PA-CF-006A. Discharge line Valve-I	Flange(Lower)	0	0	0	0
F-741	034-PA-CF-006A. Discharge line Valve-I	Gland	0	0	0	0
F-742	034-PA-CF-006A. Discharge line Valve-I	Bonet	0	0	0	0
F-743	034-PA-CF-006A. Discharge line Valve-II	Gland	0	0	0	0
F-744	034-PA-CF-006A. Discharge line Valve-II	Bonet	0	0	0	0
F-745	034-PA-CF-006A. Discharge line Valve-II	Flange(Upper)	0	0	0	0
F-746	034-PA-CF-006A. Discharge line Valve-II	Flange(Lower)	0	0	0	0
F-747	034-PA-CF-006A. Discharge line Valve-III	Flange(Upper)	0	0	0	0
F-748	034-PA-CF-006A. Discharge line Valve-III	Flange(Lower)	0	0	0	0
F-749	034-PA-CF-006A. Discharge line Valve-III	Gland	0	0	0	0
F-750	034-PA-CF-006A. Discharge line Valve-III	Bonet	0	0	0	0

F-751	034-PA-CF-006A. Suction line	Joint Flange	0	0	0	0
F-752	034-PA-CF-006A. Suction line Valve-I	Gland	0	0	0	0
F-753	034-PA-CF-006A. Suction line Valve-I	Bonet	0	0	0	0
F-754	034-PA-CF-006A. Suction line Valve-I	Flange(East)	0	0	0	0
F-755	034-PA-CF-006A. Suction line Valve-I	Flange(West)	0	0	0	0
F-756	034-PA-CF-006A. Suction line Valve-II	Gland	0	0	0	0
F-757	034-PA-CF-006A. Suction line Valve-II	Bonet	0	0	0	0
F-758	034-PA-CF-006A. Suction line Valve-II	Flange(East)	0	0	0	0
F-759	034-PA-CF-006A. Suction line Valve-II	Flange(West)	0	0	0	0
F-760	034-PA-CF-006A. Suction line Valve-III	Gland	0	0	0	0
F-761	034-PA-CF-006A. Suction line Valve-III	Bonet	0	0	0	0
F-762	034-PA-CF-006A. Suction line Valve-III	Flange(East)	0	0	0	0
F-763	034-PA-CF-006A. Suction line Valve-III	Flange(West)	0	0	0	0
F-764	034-PA-CF-006B.	Pump Seal	0	0	0	0
F-765	034-PA-CF-006B. Discharge line	Joint Flange	0	0	0	0
F-766	034-PA-CF-006B. Discharge line Valve-I	Flange(Upper)	0	0	0	0
F-767	034-PA-CF-006B. Discharge line Valve-I	Flange(Lower)	0	0	0	0
F-768	034-PA-CF-006B. Discharge line Valve-I	Gland	0	0	0	0
F-769	034-PA-CF-006B. Discharge line Valve-I	Bonet	0	0	0	0
F-770	034-PA-CF-006B. Discharge line Valve-II	Flange(Upper)	0	0	0	0
F-771	034-PA-CF-006B. Discharge line Valve-II	Flange(Lower)	0	0	0	0
F-772	034-PA-CF-006B. Discharge line Valve-II	Gland	0	0	0	0
F-773	034-PA-CF-006B. Discharge line Valve-II	Bonet	0	0	0	0
F-774	034-PA-CF-006B. Discharge line Valve-III	Flange(Upper)	0	0	0	0
F-775	034-PA-CF-006B. Discharge line Valve-III	Flange(Lower)	0	0	0	0
F-776	034-PA-CF-006B. Discharge line Valve-III	Gland	0	0	0	0
F-777	034-PA-CF-006B. Discharge line Valve-III	Bonet	0	0	0	0
F-778	034-PA-CF-006B. Suction line	Joint Flange	0	0	0	0
F-779	034-PA-CF-006B. Suction line Valve-I	Gland	0	0	0	0
F-780	034-PA-CF-006B. Suction line Valve-I	Bonet	0	0	0	0
F-781	034-PA-CF-006B. Suction line Valve-I	Flange(East)	0	0	0	0
F-782	034-PA-CF-006B. Suction line Valve-I	Flange(West)	0	0	0	0
F-783	034-PA-CF-006B. Suction line Valve-II	Gland	0	0	0	0
F-784	034-PA-CF-006B. Suction line Valve-II	Bonet	0	0	0	0
F-785	034-PA-CF-006B. Suction line Valve-II	Flange(East)	0	0	0	0
F-786	034-PA-CF-006B. Suction line Valve-II	Flange(West)	0	0	0	0
F-787	034-PA-CF-006B. Suction line Valve-III	Gland	0	0	0	0
F-788	034-PA-CF-006B. Suction line Valve-III	Bonet	0	0	0	0
F-789	034-PA-CF-006B. Suction line Valve-III	Flange(East)	0	0	0	0
F-790	034-PA-CF-006B. Suction line Valve-III	Flange(West)	0	0	0	0
F-791	034-PA-CF-006C.	Pump Seal	0	0	0	0
F-792	034-PA-CF-006C. Suction line	Joint Flange	0	0	0	0
F-793	034-PA-CF-006C. Suction line Valve-I	Gland	0	0	0	0
F-794	034-PA-CF-006C. Suction line Valve-I	Bonet	0	0	0	0
F-795	034-PA-CF-006C. Suction line Valve-I	Flange(East)	0	0	0	0
F-796	034-PA-CF-006C. Suction line Valve-I	Flange(West)	0	0	0	0
F-797	034-PA-CF-006C. Suction line Valve-II	Gland	0	0	0	0
F-798	034-PA-CF-006C. Suction line Valve-II	Bonet	0	0	0	0
F-799	034-PA-CF-006C. Suction line Valve-II	Flange(East)	0	0	0	0
F-800	034-PA-CF-006C. Suction line Valve-II	Flange(West)	0	0	0	0
F-801	034-PA-CF-006C. Suction line Valve-III	Gland	0	0	0	0
F-802	034-PA-CF-006C. Suction line Valve-III	Bonet	0	0	0	0
F-803	034-PA-CF-006C. Suction line Valve-III	Flange(East)	0	0	0	0
F-804	034-PA-CF-006C. Suction line Valve-III	Flange(West)	0	0	0	0
F-805	034-PA-CF-006C. Discharge line	Joint Flange	15.0	3.1	0.00006	0.000526
F-806	034-PA-CF-006C. Discharge line Valve-I	Gland	0	0	0	0
F-807	034-PA-CF-006C. Discharge line Valve-I	Bonet	0	0	0	0
F-808	034-PA-CF-006C. Discharge line Valve-I	Flange(Upper)	0	0	0	0
F-809	034-PA-CF-006C. Discharge line Valve-I	Flange(Lower)	0	0	0	0
F-810	034-PA-CF-006C. Discharge line Valve-II	Gland	0	0	0	0
F-811	034-PA-CF-006C. Discharge line Valve-II	Bonet	0	0	0	0
F-812	034-PA-CF-006C. Discharge line Valve-II	Flange(Upper)	0	0	0	0
F-813	034-PA-CF-006C. Discharge line Valve-II	Flange(Lower)	0	0	0	0
F-814	034-PA-CF-006C. Discharge line Valve-III	Gland	0	0	0	0
F-815	034-PA-CF-006C. Discharge line Valve-III	Bonet	0	0	0	0
F-816	034-PA-CF-006C. Discharge line Valve-III	Flange(Upper)	0	0	0	0
F-817	034-PA-CF-006C. Discharge line Valve-III	Flange(Lower)	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase=7(F) UNIT: O M & S (Circulation pump house)

SUMMARY SHEET FOR O M & S (Circulation Pump house) AREA

Total number of points covered	**98**
Date of Monitoring/Rechecking	**06.03.2023**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-818	043-PA-001.	Pump Seal	0	0	0	0
F-819	043-PA-001. Discharge line	Joint Flange	0	0	0	0
F-820	043-PA-001. Discharge line Valve	Flange(Upper)	0	0	0	0
F-821	043-PA-001. Discharge line Valve	Flange(Lower)	0	0	0	0
F-822	043-PA-001. Discharge line Valve	Gland	0	0	0	0
F-823	043-PA-001. Discharge line Valve	Bonet	0	0	0	0
F-824	043-PA-001. Discharge line NRV	Flange(Upper)	0	0	0	0
F-825	043-PA-001. Discharge line	NRV	0	0	0	0
F-826	043-PA-001. Discharge line	Flange-I	0	0	0	0
F-827	043-PA-001. Suction Line	Joint Flange	0	0	0	0
F-828	043-PA-001. Suction Line Valve	Gland	0	0	0	0
F-829	043-PA-001. Suction Line Valve	Bonet	0	0	0	0
F-830	043-PA-001. Suction Line Valve	Flange(West)	0	0	0	0
F-831	043-PA-001. Suction Line Valve	Flange(East)	0	0	0	0
F-832	043-PA-002.	Pump Seal	0	0	0	0
F-833	043-PA-002. Discharge line	Joint Flange	0	0	0	0
F-834	043-PA-002. Discharge line Valve	Gland	0	0	0	0
F-835	043-PA-002. Discharge line Valve	Bonet	0	0	0	0
F-836	043-PA-002. Discharge line Valve	Flange(Upper)	0	0	0	0
F-837	043-PA-002. Discharge line Valve	Flange(Lower)	0	0	0	0
F-838	043-PA-002. Suction Line	Joint Flange	0	0	0	0
F-839	043-PA-002. Suction Line	Flange	0	0	0	0
F-840	043-PA-002. Suction Line Valve	Gland	0	0	0	0
F-841	043-PA-002. Suction Line Valve	Bonet	0	0	0	0
F-842	043-PA-002. Suction Line Valve	Flange(East)	0	0	0	0
F-843	043-PA-002. Suction Line Valve	Flange(West)	0	0	0	0
F-844	043-PA-003.	Pump Seal	17	0	0	0
F-845	043-PA-003. Suction Line	Joint Flange	0	0	0	0
F-846	043-PA-003. Suction Line Valve	Gland	0	0	0	0
F-847	043-PA-003. Suction Line Valve	Bonet	0	0	0	0
F-848	043-PA-003. Suction Line Valve	Flange(West)	0	0	0	0
F-849	043-PA-003. Discharge line	Joint Flange	0	0	0	0
F-850	043-PA-003. Discharge line Valve	Gland	0	0	0	0
F-851	043-PA-003. Discharge line Valve	Bonet	0	0	0	0
F-852	043-PA-003. Discharge line Valve	Flange(Upper)	0	0	0	0
F-853	043-PA-003. Discharge line Valve	Flange(Lower)	0	0	0	0
F-854	043-PA-004.	Pump Seal	0	0	0	0
F-855	043-PA-004. Discharge line	Joint Flange	0	0	0	0
F-856	043-PA-004. Discharge line Valve	Flange(Upper)	0	0	0	0
F-857	043-PA-004. Discharge line Valve	Flange(Lower)	0	0	0	0
F-858	043-PA-004. Discharge line Valve	Gland	0	0	0	0
F-859	043-PA-004. Discharge line Valve	Bonet	0	0	0	0
F-860	043-PA-004. Suction line	Joint Flange	0	0	0	0

F-861	043-PA-004. Suction line	Flange-I	0	0	0	0
F-862	043-PA-004. Suction line	Flange-II	0	0	0	0
F-863	043-PA-004. Suction line Valve	Gland	0	0	0	0
F-864	043-PA-004. Suction line Valve	Bonet	0	0	0	0
F-865	043-PA-004. Suction line Valve	Flange(North)	0	0	0	0
F-866	043-PA-004. Suction line Valve	Flange(South)	0	0	0	0
F-867	043-PA-005	Pump Seal	0	0	0	0
F-868	043-PA-005 Discharge line Valve	Gland	0	0	0	0
F-869	043-PA-005 Discharge line Valve	Bonet	0	0	0	0
F-870	043-PA-005 Discharge line Valve	Flange(Upper)	0	0	0	0
F-871	043-PA-005 Discharge line Valve	Flange(Lower)	0	0	0	0
F-872	043-PA-005 Suction line	Flange-I	0	0	0	0
F-873	043-PA-005 Suction line	Flange-II	0	0	0	0
F-874	043-PA-005 Suction line Valve	Gland	0	0	0	0
F-875	043-PA-005 Suction line Valve	Bonet	0	0	0	0
F-876	043-PA-005 Suction line Valve	Flange(East)	0	0	0	0
F-877	043-PA-005 Suction line Valve	Flange(West)	0	0	0	0
F-878	043-PA-011	Pump Seal	0	0	0	0
F-879	043-PA-011 Discharge line	Joint Flange	0	0	0	0
F-880	043-PA-011 Discharge line	Flange	0	0	0	0
F-881	043-PA-011 Discharge line Valve	Gland	0	0	0	0
F-882	043-PA-011 Discharge line Valve	Bonet	0	0	0	0
F-883	043-PA-011 Discharge line Valve	Flange(Upper)	0	0	0	0
F-884	043-PA-011 Discharge line Valve	Flange(Lower)	0	0	0	0
F-885	043-PA-011 Suction line	Joint Flange	0	0	0	0
F-886	043-PA-011 Suction line Valve	Gland	0	0	0	0
F-887	043-PA-011 Suction line Valve	Bonet	0	0	0	0
F-888	043-PA-011 Suction line Valve	Flange(East)	0	0	0	0
F-889	043-PA-011 Suction line Valve	Flange(West)	0	0	0	0
F-890	043-PA-010	Pump Seal	9.0	5.2	0.012	0.10512
F-891	043-PA-010 Discharge line Valve	Gland	0	0	0	0
F-892	043-PA-010 Discharge line Valve	Bonet	0	0	0	0
F-893	043-PA-010 Discharge line Valve	Flange(Upper)	0	0	0	0
F-894	043-PA-010 Discharge line Valve	Flange(Lower)	0	0	0	0
F-895	043-PA-010 Suction line	Joint Flange	0	0	0	0
F-896	043-PA-010 Suctionline Valve-I	Gland	0	0	0	0
F-897	043-PA-010 Suctionline Valve-I	bonet	0	0	0	0
F-898	043-PA-010 Suctionline Valve-I	Flange(East)	0	0	0	0
F-899	043-PA-010 Suctionline Valve-I	Flange(West)	0	0	0	0
F-900	043-PA-010 Suctionline Valve-II	Gland	0	0	0	0
F-901	043-PA-010 Suctionline Valve-II	Bonet	0	0	0	0
F-902	043-PA-010 Suctionline Valve-II	Flange(North)	0	0	0	0
F-903	043-PA-010 Suctionline Valve-II	Flange(South)	0	0	0	0
F-904	043-PA-007	Pump Seal	0	0	0	0
F-905	043-PA-007 Discharge line	Joint Flange	0	0	0	0
F-906	043-PA-007 Discharge line	Flange	0	0	0	0
F-907	043-PA-007 Discharge line Valve	Gland	0	0	0	0
F-908	043-PA-007 Discharge line Valve	Bonet	0	0	0	0
F-909	043-PA-007 Discharge line Valve	Flange(Upper)	0	0	0	0
F-910	043-PA-007 Discharge line Valve	Flange(Lower)	0	0	0	0
F-911	043-PA-007 Suction line	Joint Flange	0	0	0	0
F-912	043-PA-007 Suction line valve	Gland	0	0	0	0
F-913	043-PA-007 Suction line valve	Bonet	0	0	0	0
F-914	043-PA-007 Suction line valve	Flange(East)	0	0	0	0
F-915	043-PA-007 Suction line valve	Flange(West)	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 7(F) UNIT : O M & S (SDU off Side Pump House)

SUMMARY SHEET FOR O M & S (SDU off Side Pump House) AREA

Total number of points covered	**33**
Date of Monitoring/Rechecking	**04.03.2023**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**

Pump/Compressor

Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-916	08-PA-001	Pump Seal	0	0	0	0
F-917	08-PA-001	Joint Flange	0	0	0	0
F-918	08-PA-001	Gland	0	0	0	0
F-919	08-PA-CF-002B. Suction line	Joint Flange	32	8	0.00006	0.000526
F-920	08-PA-CF-002B. Suction line Valve	Gland	0	0	0	0
F-921	08-PA-CF-002A.	Pump Seal	0	0	0	0
F-922	08-PA-CF-002A. Suction line	Joint Flange	0	0	0	0
F-923	08-PA-CF-002A. Suction line Valve	Gland	0	0	0	0
F-924	08-PA-CF-002A. Discharge line	Joint Flange	0	0	0	0
F-925	08-PA-CF-002A. Discharge line Valve	Gland	0	0	0	0
F-926	08-PA-CF-001B.	Pump Seal	0	0	0	0
F-927	08-PA-CF-001B. Suction line	Joint Flange	0	0	0	0
F-928	08-PA-CF-001B. Suction line Valve	Gland	0	0	0	0
F-929	08-PA-CF-001B. Discharge line	Joint Flange	0	0	0	0
F-930	08-PA-CF-001B. Discharge line Valve	Gland	0	0	0	0
F-931	08-PA-CF-001A.	Pump Seal	0	0	0	0
F-932	08-PA-CF-001A. Suction line	Joint Flange	0	0	0	0
F-933	08-PA-CF-001A. Suction line Valve	Gland	0	0	0	0
F-934	08-PA-CF-001A. Discharge line	Joint Flange	0	0	0	0
F-935	08-PA-CF-001A. Discharge line Valve	Gland	0	0	0	0
F-936	08-PA-CF-100B.	Pump Seal	0	0	0	0
F-937	08-PA-CF-100B. Suction line	Joint Flange	0	0	0	0
F-938	08-PA-CF-100B. Suction line Valve-I	Gland	0	0	0	0
F-939	08-PA-CF-100B. Suction line Valve-II	Gland	0	0	0	0
F-940	08-PA-CF-100B. Discharge line	Joint Flange	8	0	0	0
F-941	08-PA-CF-100B. Discharge line Valve-I	Gland	0	0	0	0
F-942	08-PA-CF-100A.	Pump Seal	0	0	0	0
F-943	08-PA-CF-100A. Suction line	Joint Flange	0	0	0	0
F-944	08-PA-CF-100A. Suction line Valve-I	Gland	0	0	0	0
F-945	08-PA-CF-100A. Suction line Valve-II	Gland	0	0	0	0
F-946	08-PA-CF-100A. Discharge line	Joint Flange	0	0	0	0
F-947	08-PA-CF-100A. Discharge line Valve-I	Gland	27	11.3	0.0017	0.014892
F-948	08-PA-CF-100A. Discharge line Valve-II	Gland	0	0	0	0
F-949	40PA-CF-802B	Pump Seal	0	0	0	0
F-950	40PA-CF-802B Suction line	Joint Flange	0	0	0	0
F-951	40PA-CF-802B Suction line Valve-I	Gland	0	0	0	0
F-952	40PA-CF-802B Suction line Valve-I	Bonet	0	0	0	0
F-953	40PA-CF-802B Suction line Valve-I	Flange(Upper)	0	0	0	0
F-954	40PA-CF-802B Suction line Valve-I	Flange(Lower)	0	0	0	0
F-955	40PA-CF-802B Suction line Valve-II	Gland	0	0	0	0
F-956	40PA-CF-802B Suction line Valve-II	Bonet	0	0	0	0
F-957	40PA-CF-802B Suction line Valve-II	Flange(North)	0	0	0	0
F-958	40PA-CF-802B Suction line Valve-II	Flange(South)	0	0	0	0
F-959	40PA-CF-802B Discharge line	Joint Flange	0	0	0	0
F-960	40PA-CF-802B Discharge line	NRV	0	0	0	0
F-961	40PA-CF-802B Discharge line NRV	Flange(East)	0	0	0	0
F-962	40PA-CF-802B Discharge line NRV	Flange(West)	0	0	0	0
F-963	40PA-CF-802B Discharge lineValve	Gland	0	0	0	0
F-964	40PA-CF-802B Discharge lineValve	Bonet	0	0	0	0
F-965	40PA-CF-802B Discharge lineValve	Flange(East)	0	0	0	0
F-966	40PA-CF-802B Discharge lineValve	Flange(West)	0	0	0	0
F-967	40PA-CF-802A	Pump Seal	0	0	0	0
F-968	40PA-CF-802A Discharge line	Joint Flange	0	0	0	0
F-969	40PA-CF-802A Discharge line	NRV	0	0	0	0

F-970	40PA-CF-802A Discharge line NRV	Flange(East)	0	0	0	0
F-971	40PA-CF-802A Discharge line NRV	Flange(West)	0	0	0	0
F-972	40PA-CF-802A Discharge lineValve	Gland	0	0	0	0
F-973	40PA-CF-802A Discharge lineValve	Bonet	0	0	0	0
F-974	40PA-CF-802A Discharge lineValve	Flange(East)	0	0	0	0
F-975	40PA-CF-802A Discharge lineValve	Flange(West)	0	0	0	0
F-976	40PA-CF-802A Suction line	Joint Flange	0	0	0	0
F-977	40PA-CF-802A Suction line Valve-I	Gland	0	0	0	0
F-978	40PA-CF-802A Suction line Valve-I	Bonet	0	0	0	0
F-979	40PA-CF-802A Suction line Valve-I	Flange(Upper)	0	0	0	0
F-980	40PA-CF-802A Suction line Valve-I	Flange(Lower)	0	0	0	0
F-981	40PA-CF-802A Suction line Valve-II	Gland	0	0	0	0
F-982	40PA-CF-802A Suction line Valve-II	Bonet	0	0	0	0
F-983	40PA-CF-802A Suction line Valve-II	Flange(East)	0	0	0	0
F-984	40PA-CF-802A Suction line Valve-II	Flange(West)	0	0	0	0
F-985	40-PA-003B	Pump Seal	94	38.1	0.012	0.10512
F-986	40-PA-003B Discharge line	Joint Flange	0	0	0	0
F-987	40-PA-003B Discharge line	Flange-I	0	0	0	0
F-988	40-PA-003B Discharge line	Flange-II	0	0	0	0
F-989	40-PA-003B Discharge line Valve	Gland	0	0	0	0
F-990	40-PA-003B Discharge line Valve	Bonet	0	0	0	0
F-991	40-PA-003B Discharge line Valve	Flange(North)	0	0	0	0
F-992	40-PA-003B Discharge line Valve	Flange(South)	0	0	0	0
F-993	40-PA-003B Suction line	Joint Flange	0	0	0	0
F-994	40-PA-003B Suction line Valve	Gland	0	0	0	0
F-995	40-PA-003B Suction line Valve	Bonet	0	0	0	0
F-996	40-PA-003B Suction line Valve	Flange(North)	0	0	0	0
F-997	40-PA-003B Suction line Valve	Flange(South)	0	0	0	0
F-998	40-PA-003A	Pump Seal	0	0	0	0
F-999	40-PA-003A Suction line	Joint Flange	0	0	0	0
F-1000	40-PA-003A Suction line Valve	Gland	0	0	0	0
F-1001	40-PA-003A Discharge line	Joint Flange	0	0	0	0
F-1002	40-PA-003A Discharge line	NRV	0	0	0	0
F-1003	40-PA-003A Discharge line NRV	Flange(North)	0	0	0	0
F-1004	40-PA-003A Discharge line NRV	Flange(South)	0	0	0	0
F-1005	40-PA-003A Discharge line Valve	Gland	0	0	0	0
F-1006	40-PA-003A Discharge line Valve	Bonet	0	0	0	0
F-1007	40-PA-003A Discharge line Valve	Flange(North)	0	0	0	0
F-1008	40-PA-003A Discharge line Valve	Flange(South)	0	0	0	0
F-1009	40-PA-001A	Pump Seal	0	0	0	0
F-1010	40-PA-001A Suction line	Joint Flange	0	0	0	0
F-1011	40-PA-001A Suction line Valve-I	Gland	0	0	0	0
F-1012	40-PA-001A Suction line Valve-I	Bonet	0	0	0	0
F-1013	40-PA-001A Suction line Valve-I	Flange(East)	0	0	0	0
F-1014	40-PA-001A Suction line Valve-I	Flange(West)	0	0	0	0
F-1015	40-PA-001A Suction line Valve-II	Gland	0	0	0	0
F-1016	40-PA-001A Suction line Valve-II	Bonet	0	0	0	0
F-1017	40-PA-001A Suction line Valve-II	Flange(East)	0	0	0	0
F-1018	40-PA-001A Suction line Valve-II	Flange(West)	0	0	0	0
F-1019	40-PA-001A Discharge line	Joint Flange	0	0	0	0
F-1020	40-PA-001A Discharge line Valve-I	Gland	0	0	0	0
F-1021	40-PA-001A Discharge line Valve-I	Bonet	0	0	0	0
F-1022	40-PA-001A Discharge line Valve-I	Flange(East)	0	0	0	0
F-1023	40-PA-001A Discharge line Valve-I	Flange(West)	0	0	0	0
F-1024	40-PA-001A Discharge line Valve-II	Gland	0	0	0	0
F-1025	40-PA-001A Discharge line Valve-III	Gland	0	0	0	0
F-1026	40-PA-001A Discharge line Valve-III	Flange(East)	0	0	0	0
F-1027	40-PA-001A Discharge line Valve-III	Flange(West)	0	0	0	0
F-1028	40-PA-001B	Pump Seal	0	0	0	0
F-1029	40-PA-001B Suction line	Joint Flange	0	0	0	0
F-1030	40-PA-001B Suction line Valve-I	Gland	0	0	0	0
F-1031	40-PA-001B Suction line Valve-I	Flange(East)	0	0	0	0
F-1032	40-PA-001B Suction line Valve-I	Flange(West)	0	0	0	0
F-1033	40-PA-001B Suction line Valve-II	Gland	0	0	0	0
F-1034	40-PA-001B Suction line Valve-II	Flange(North)	0	0	0	0
F-1035	40-PA-001B Suction line Valve-II	Flange(South)	0	0	0	0
F-1036	40-PA-001B Discharge line	Joint Flange	0	0	0	0

F-1037	40-PA-001B Discharge line Valve	Flange(East)	0	0	0	0
F-1038	40-PA-001B Discharge line Valve	Flange(West)	0	0	0	0
F-1039	40-PA-001B Discharge line Valve	Gland	0	0	0	0
F-1040	40-PA-001C	Pump Seal	16	0	0	0
F-1041	40-PA-001C Suction line	Joint Flange	0	0	0	0
F-1042	40-PA-001C Suction line Valve	Gland	0	0	0	0
F-1043	40-PA-001C Suction line Valve	Flange(East)	0	0	0	0
F-1044	40-PA-001C Suction line Valve	Flange(West)	0	0	0	0
F-1045	40-PA-001C Discharge line	Joint Flange	0	0	0	0
F-1046	40-PA-001C Discharge line Valve	Gland	0	0	0	0
F-1047	40-PA-001C Discharge line Valve	Flange(East)	0	0	0	0
F-1048	40-PA-001C Discharge line Valve	Flange(West)	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase=7(F) UNIT:O M & S (Liquid Transfer Pump House)

SUMMARY SHEET FOR O M & S (Liquid Transfer Pump House) AREA

Total number of points covered	**26**
Date of Monitoring/Rechecking	**06.02.2023**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-1049	09PA-CF-001.	Pump Seal	0	0	0	0
F-1050	09PA-CF-001. Discharge line	Joint Flange	0	0	0	0
F-1051	09PA-CF-001. Discharge line	NRV	0	0	0	0
F-1052	09PA-CF-001. Discharge line NRV	Flange(North)	0	0	0	0
F-1053	09PA-CF-001. Discharge line NRV	Flange(South)	0	0	0	0
F-1054	09PA-CF-001. Discharge line Valve	Gland	0	0	0	0
F-1055	09PA-CF-001. Discharge line Valve	Bonet	0	0	0	0
F-1056	09PA-CF-001. Discharge line Valve	Flange(North)	0	0	0	0
F-1057	09PA-CF-001. Suction line	Joint Flange	0	0	0	0
F-1058	09PA-CF-001. Suction line Valve	Gland	0	0	0	0
F-1059	09PA-CF-001. Suction line Valve	Bonet	0	0	0	0
F-1060	09PA-CF-001. Suction line Valve	Flange(North)	0	0	0	0
F-1061	09PA-CF-001. Suction line Valve	Flange(South)	0	0	0	0
F-1062	09PA-CF-001B	Pump Seal	0	0	0	0
F-1063	09PA-CF-001B Discharge line	Joint Flange	0	0	0	0
F-1064	09PA-CF-001B Discharge line	NRV	0	0	0	0
F-1065	09PA-CF-00B Discharge line NRV	Flange(North)	0	0	0	0
F-1066	09PA-CF-00B Discharge line NRV	Flange(South)	0	0	0	0
F-1067	09PA-CF-00B Discharge line Valve	Gland	0	0	0	0
F-1068	09PA-CF-00B Discharge line Valve	Bonet	0	0	0	0
F-1069	09PA-CF-00B Discharge line Valve	Flange(North)	0	0	0	0
F-1070	09PA-CF-00B Suction line	Joint Flange	0	0	0	0
F-1071	09PA-CF-00B Suction line Valve	Gland	0	0	0	0
F-1072	09PA-CF-00B Suction line Valve	Bonet	0	0	0	0
F-1073	09PA-CF-00B Suction line Valve	Flange(North)	0	0	0	0
F-1074	09PA-CF-00B Suction line Valve	Flange(South)	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 7(F) UNIT : O M & S (CRU Off Side Pump House)

SUMMARY SHEET FOR O M & S (CRU Off Side Pump House) AREA

Total number of points covered	**126**
Date of Monitoring/Rechecking	**02.03.2023**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-1075	41PA-CF-003B	Pump Seal	0	0	0	0
F-1076	41PA-CF-003B Suction line NRV	Flange(North)	0	0	0	0
F-1077	41PA-CF-003B Suction line NRV	Flange(South)	0	0	0	0
F-1078	41PA-CF-003B Suction line	NRV	0	0	0	0
F-1079	41PA-CF-003B Suction line Valve	Flange(North)	0	0	0	0
F-1080	41PA-CF-003B Suction line Valve	Flange(South)	0	0	0	0
F-1081	41PA-CF-003B Suction line Valve	Gland	56	25.1	0.0017	0.014892
F-1082	41PA-CF-003B Suction line Valve	Bonet	0	0	0	0
F-1083	41PA-CF-003B Discharge(PPH) line Valve	Gland	0	0	0	0
F-1084	41PA-CF-003B Discharge(PPH) line Valve	Bonet	0	0	0	0
F-1085	41PA-CF-003B Discharge(PPH) line Valve	Flange(North)	0	0	0	0
F-1086	41PA-CF-003B Discharge(PPH) line Valve	Flange(South)	0	0	0	0
F-1087	41PA-CF-003B Discharge to Nozzle line Valve	Gland	0	0	0	0
F-1088	41PA-CF-003B Discharge to Nozzle line Valve	Bonet	0	0	0	0
F-1089	41PA-CF-003B Discharge to Nozzle line Valve	Flange(North)	0	0	0	0
F-1090	41PA-CF-003B Discharge to Nozzle line Valve	Flange(South)	0	0	0	0
F-1091	41PA-CF-003B Discharge to NTF line Valve	Gland	0	0	0	0
F-1092	41PA-CF-003B Discharge to NTF line Valve	Bonet	0	0	0	0
F-1093	41PA-CF-003B Discharge to NTF line Valve	Flange(North)	0	0	0	0
F-1094	41PA-CF-003B Discharge to NTF line Valve	Flange(South)	0	0	0	0
F-1095	41PA-CF-003A	Pump Seal	0	0	0	0
F-1096	41PA-CF-003A Suction line Valve	Gland	0	0	0	0
F-1097	41PA-CF-003A Suction line Valve	Bonet	0	0	0	0
F-1098	41PA-CF-003A Suction line Valve	Flange(North)	0	0	0	0
F-1099	41PA-CF-003A Suction line Valve	Flange(South)	0	0	0	0
F-1100	41PA-CF-003A Discharge line	Joint Flange	0	0	0	0
F-1101	41PA-CF-003A Discharge line	NRV	0	0	0	0
F-1102	41PA-CF-003A Discharge line NRV	Flange(North)	0	0	0	0
F-1103	41PA-CF-003A Discharge line NRV	Flange(South)	0	0	0	0
F-1104	41PA-CF-003A Discharge to PPH line Valve	Gland	0	0	0	0
F-1105	41PA-CF-003A Discharge to PPH line Valve	Bonet	0	0	0	0
F-1106	41PA-CF-003A Discharge to PPH line Valve	Flange(North)	0	0	0	0
F-1107	41PA-CF-003A Discharge to PPH line Valve	Flange(South)	0	0	0	0
F-1108	41PA-CF-003A Discharge to Nozzle line Valve	Gland	16.0	6.5	0.0017	0.014892
F-1109	41PA-CF-003A Discharge to Nozzle line Valve	Bonet	0	0	0	0
F-1110	41PA-CF-003A Discharge to Nozzle line Valve	Flange(North)	0	0	0	0
F-1111	41PA-CF-003A Discharge to Nozzle line Valve	Flange(South)	0	0	0	0
F-1112	41PA-CF-003A Discharge to NTF line Valve	Gland	0	0	0	0
F-1113	41PA-CF-003A Discharge to NTF line Valve	Bonet	0	0	0	0
F-1114	41PA-CF-003A Discharge to NTF line Valve	Flange(North)	0	0	0	0
F-1115	41PA-CF-003A Discharge to NTF line Valve	Flange(South)	0	0	0	0
F-1116	41PA-CF-002B	Pump Seal	35	0	0	0
F-1117	41PA-CF-002B Suction line	Joint Flange	0	0	0	0
F-1118	41PA-CF-002B Suction line Valve	Gland	0	0	0	0
F-1119	41PA-CF-002B Suction line Valve	Bonet	0	0	0	0
F-1120	41PA-CF-002B Suction line Valve	Flange(North)	0	0	0	0
F-1121	41PA-CF-002B Suction line Valve	Flange(South)	0	0	0	0
F-1122	41PA-CF-002B Discharge line	Joint Flange	0	0	0	0

F-1123	41PA-CF-002B Discharge line	NRV	0	0	0	0
F-1124	41PA-CF-002B Discharge line NRV	Flange(North)	0	0	0	0
F-1125	41PA-CF-002B Discharge line NRV	Flange(South)	0	0	0	0
F-1126	41PA-CF-002B Discharge to Nozzle line Valve	Gland	0	0	0	0
F-1127	41PA-CF-002B Discharge to Nozzle line Valve	Bonet	0	0	0	0
F-1128	41PA-CF-002B Discharge to Nozzle line Valve	Flange(North)	0	0	0	0
F-1129	41PA-CF-002B Discharge to Nozzle line Valve	Flange(South)	0	0	0	0
F-1130	41PA-CF-002B Discharge to NTF line Valve	Gland	0	0	0	0
F-1131	41PA-CF-002B Discharge to NTF line Valve	Bonet	0	0	0	0
F-1132	41PA-CF-002B Discharge to NTF line Valve	Flange(North)	0	0	0	0
F-1133	41PA-CF-002B Discharge to NTF line Valve	Flange(South)	0	0	0	0
F-1134	41PA-CF-002A Suction line	Joint Flange	0	0	0	0
F-1135	41PA-CF-002A Suction line Valve	Gland	0	0	0	0
F-1136	41PA-CF-002A Suction line Valve	Bonet	0	0	0	0
F-1137	41PA-CF-002A Suction line Valve	Flange(North)	0	0	0	0
F-1138	41PA-CF-002A Suction line Valve	Flange(South)	0	0	0	0
F-1139	41PA-CF-002A Discharge line	Joint Flange	0	0	0	0
F-1140	41PA-CF-002A Discharge line	NRV	0	0	0	0
F-1141	41PA-CF-002A Discharge line NRV	Flange(North)	0	0	0	0
F-1142	41PA-CF-002A Discharge line NRV	Flange(South)	0	0	0	0
F-1143	41PA-CF-002A Discharge to Nozzle line Valve	Gland	0	0	0	0
F-1144	41PA-CF-002A Discharge to Nozzle line Valve	Bonet	0	0	0	0
F-1145	41PA-CF-002A Discharge to Nozzle line Valve	Flange(North)	0	0	0	0
F-1146	41PA-CF-002A Discharge to Nozzle line Valve	Flange(South)	0	0	0	0
F-1147	41PA-CF-002A Discharge to NTF line Valve	Gland	0	0	0	0
F-1148	41PA-CF-002A Discharge to NTF line Valve	Bonet	0	0	0	0
F-1149	41PA-CF-002A Discharge to NTF line Valve	Flange(North)	0	0	0	0
F-1150	41PA-CF-002A Discharge to NTF line Valve	Flange(South)	0	0	0	0
F-1151	41PA-CF-001B Suction line	Joint Flange	0	0	0	0
F-1152	41PA-CF-001B Suction from T-568 line Valve	Gland	0	0	0	0
F-1153	41PA-CF-001B Suction from T-568 line Valve	Bonet	0	0	0	0
F-1154	41PA-CF-001B Suction from T-568 line Valve	Flange(North)	0	0	0	0
F-1155	41PA-CF-001B Suction from T-568 line Valve	Flange(South)	0	0	0	0
F-1156	41PA-CF-001B Suction from T-569 line Valve	Gland	0	0	0	0
F-1157	41PA-CF-001B Suction from T-569 line Valve	Bonet	0	0	0	0
F-1158	41PA-CF-001B Suction from T-569 line Valve	Flange(North)	0	0	0	0
F-1159	41PA-CF-001B Suction from T-569 line Valve	Flange(South)	0	0	0	0
F-1160	41PA-CF-001B Suction from T-570 line Valve	Gland	0	0	0	0
F-1161	41PA-CF-001B Suction from T-570 line Valve	Bonet	0	0	0	0
F-1162	41PA-CF-001B Suction from T-570 line Valve	Flange(North)	0	0	0	0
F-1163	41PA-CF-001B Suction from T-570 line Valve	Flange(South)	0	0	0	0
F-1164	41PA-CF-001B Discharge line	Joint Flange	0	0	0	0
F-1165	41PA-CF-001B Discharge line	NRV	0	0	0	0
F-1166	41PA-CF-001B Discharge line NRV	Flange(North)	0	0	0	0
F-1167	41PA-CF-001B Discharge line NRV	Flange(South)	0	0	0	0
F-1168	41PA-CF-001B Discharge Circulation line Valve	Gland	0	0	0	0
F-1169	41PA-CF-001B Discharge Circulation line Valve	Bonet	0	0	0	0
F-1170	41PA-CF-001B Discharge Circulation line Valve	Flange(North)	0	0	0	0
F-1171	41PA-CF-001B Discharge Circulation line Valve	Flange(South)	0	0	0	0
F-1172	41PA-CF-001B Discharge to NTF line Valve	Gland	0	0	0	0
F-1173	41PA-CF-001B Discharge to NTF line Valve	Bonet	0	0	0	0
F-1174	41PA-CF-001B Discharge to NTF line Valve	Flange(North)	0	0	0	0
F-1175	41PA-CF-001B Discharge to NTF line Valve	Flange(South)	0	0	0	0
F-1176	41PA-CF-001A Discharge line	Joint Flange	0	0	0	0
F-1177	41PA-CF-001A Discharge line	NRV	0	0	0	0
F-1178	41PA-CF-001A Discharge line NRV	Flange(North)	0	0	0	0
F-1179	41PA-CF-001A Discharge line NRV	Flange(South)	0	0	0	0
F-1180	41PA-CF-001A Discharge Circulation line Valve	Gland	0	0	0	0
F-1181	41PA-CF-001A Discharge Circulation line Valve	Bonet	0	0	0	0
F-1182	41PA-CF-001A Discharge Circulation line Valve	Flange(North)	0	0	0	0
F-1183	41PA-CF-001A Discharge Circulation line Valve	Flange(South)	0	0	0	0
F-1184	41PA-CF-001A Discharge to Plant line Valve	Gland	0	0	0	0
F-1185	41PA-CF-001A Discharge to Plant line Valve	Bonet	0	0	0	0
F-1186	41PA-CF-001A Discharge to Plant line Valve	Flange(North)	0	0	0	0
F-1187	41PA-CF-001A Discharge to Plant line Valve	Flange(South)	0	0	0	0
F-1188	41PA-CF-001A Suction line	Joint Flange	0	0	0	0
F-1189	41PA-CF-001A Suction from T-568 line Valve	Gland	0	0	0	0

F-1190	41PA-CF-001A Suction from T-568 line Valve	Bonet	0	0	0	0
F-1191	41PA-CF-001A Suction from T-568 line Valve	Flange(North)	0	0	0	0
F-1192	41PA-CF-001A Suction from T-568 line Valve	Flange(South)	0	0	0	0
F-1193	41PA-CF-001A Suction from T-569 line Valve	Gland	0	0	0	0
F-1194	41PA-CF-001A Suction from T-569 line Valve	Bonet	0	0	0	0
F-1195	41PA-CF-001A Suction from T-569 line Valve	Flange(South)	0	0	0	0
F-1196	41PA-CF-001A Suction from T-569 line Valve	Flange(North)	0	0	0	0
F-1197	41PA-CF-001A Suction from T-570 line Valve	Gland	0	0	0	0
F-1198	41PA-CF-001A Suction from T-570 line Valve	Bonet	0	0	0	0
F-1199	41PA-CF-001A Suction from T-570 line Valve	Flange(North)	0	0	0	0
F-1200	41PA-CF-001A Suction from T-570 line Valve	Flange(South)	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase=7(F) UNIT:O M & S (New TANK Firm)

SUMMARY SHEET FOR O M & S (New TANK Firm) AREA

Total number of points covered	**778**
Date of Monitoring/Rechecking	**09.03.2023**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-1201	TK-23 Suction line Valve	Gland	0	0	0	0
F-1202	TK-23 Discharge line Valve	Gland	0	0	0	0
F-1203	TK-113 Suction line Valve	Gland	0	0	0	0
F-1204	TK-113 Discharge line Valve	Gland	0	0	0	0
F-1205	TK-595 Suction/Discharge line Valve	Gland	0	0	0	0
F-1206	TK-596 Suction/Discharge line Valve	Gland	0	0	0	0
F-1207	TK-596 Suction/Discharge line Valve	Bonet	0	0	0	0
F-1208	TK-596 Suction/Discharge line Valve	Flange(North)	0	0	0	0
F-1209	TK-596 Suction/Discharge line Valve	Flange(South)	0	0	0	0
F-1210	TK-590 Suction/Discharge line Valve	Gland	0	0	0	0
F-1211	TK-590 Suction/Discharge line Valve	Bonet	0	0	0	0
F-1212	TK-590 Suction/Discharge line Valve	Flange(North)	0	0	0	0
F-1213	TK-590 Suction/Discharge line Valve	Flange(South)	0	0	0	0
F-1214	TK-594 Suction/Discharge line Valve	Gland	0	0	0	0
F-1215	TK-594 Suction/Discharge line Valve	Bonet	0	0	0	0
F-1216	TK-594 Suction/Discharge line Valve	Flange(North)	0	0	0	0
F-1217	TK-594 Suction/Discharge line Valve	Flange(South)	0	0	0	0
F-1218	TK-592 Suction/Discharge line Valve	Gland	0	0	0	0
F-1219	TK-591 Suction/Discharge line Valve	Gland	0	0	0	0
F-1220	TK-593 Suction/Discharge line Valve	Gland	0	0	0	0
F-1221	TK-593 Suction/Discharge line Valve	Bonet	0	0	0	0
F-1222	TK-593 Suction/Discharge line Valve	Flange(North)	0	0	0	0
F-1223	TK-593 Suction/Discharge line Valve	Flange(South)	0	0	0	0
F-1224	TK-589 Suction/Discharge line Valve	Gland	0	0	0	0
F-1225	TK-585 Suction line Valve	Gland	0	0	0	0
F-1226	TK-585 Suction line Valve	Bonet	0	0	0	0
F-1227	TK-585 Suction line Valve	Flange(North)	0	0	0	0
F-1228	TK-585 Suction line Valve	Flange(South)	0	0	0	0
F-1229	TK-585 Discharge line Valve	Gland	0	0	0	0
F-1230	TK-585 Discharge line Valve	Bonet	0	0	0	0
F-1231	TK-586 Suction line Valve	Gland	0	0	0	0
F-1232	TK-586 Suction line Valve	Bonet	0	0	0	0
F-1233	TK-586 Discharge line Valve	Gland	0	0	0	0

F-1234	TK-586 Discharge line Valve	Bonet	0	0	0	0
F-1235	TK-588 Discharge line Valve	Gland	0	0	0	0
F-1236	TK-588 Suction line Valve	Gland	0	0	0	0
F-1237	TK-587 Discharge line Valve	Gland	0	0	0	0
F-1238	TK-587 Suction line Valve	Gland	0	0	0	0
F-1239	TK-606 Discharge line Valve	Gland	0	0	0	0
F-1240	TK-606 Suction line Valve	Gland	304	142.8	0.0017	0.014892
F-1241	TK-606 Receiving line Valve	Gland	0	0	0	0
F-1242	TK-606 Receiving line Valve	Flange(North)	0	0	0	0
F-1243	TK-606 Receiving line Valve	Flange(South)	0	0	0	0
F-1244	TK-606 Drain line Valve	Gland	0	0	0	0
F-1245	TK-606 Drain line Valve	Flange(North)	0	0	0	0
F-1246	TK-606 Drain line Valve	Flange(South)	0	0	0	0
F-1247	TK-605 Discharge line Valve	Gland	207	107.3	0.0017	0.014892
F-1248	TK-605 Discharge line Valve	Flange(North)	0	0	0	0
F-1249	TK-605 Discharge line Valve	Flange(South)	0	0	0	0
F-1250	TK-605 Receiving line Valve	Gland	0	0	0	0
F-1251	TK-605 Receiving line Valve	Flange(North)	0	0	0	0
F-1252	TK-605 Receiving line Valve	Flange(South)	0	0	0	0
F-1253	TK-605 Drain line Valve	Gland	0	0	0	0
F-1254	TK-605 Drain line Valve	Bonet	0	0	0	0
F-1255	TK-605 Drain line Valve	Flange(North)	0	0	0	0
F-1256	TK-605 Drain line Valve	Flange(South)	0	0	0	0
F-1257	TK-536 line Valve-I	Gland	0	0	0	0
F-1258	TK-536 line Valve-I	Bonet	0	0	0	0
F-1259	TK-536 line Valve-I	Flange(North)	0	0	0	0
F-1260	TK-536 line Valve-I	Flange(South)	0	0	0	0
F-1261	TK-536 line Valve-II	Gland	0	0	0	0
F-1262	TK-536 line Valve-II	Bonet	0	0	0	0
F-1263	TK-536 line Valve-II	Flange(South)	0	0	0	0
F-1264	TK-536 line Valve-III	Gland	0	0	0	0
F-1265	TK-536 line Valve-III	Bonet	0	0	0	0
F-1266	TK-536 line Valve-III	Flange(North)	0	0	0	0
F-1267	TK-536 line Valve-III	Flange(South)	0	0	0	0
F-1268	TK-536 line Valve-IV	Gland	0	0	0	0
F-1269	TK-536 line Valve-IV	Bonet	0	0	0	0
F-1270	TK-536 line Valve-IV	Flange(East)	0	0	0	0
F-1271	TK-536 line Valve-IV	Flange(West)	0	0	0	0
F-1272	TK-536 line Valve-V	Gland	0	0	0	0
F-1273	TK-536 line Valve-V	Flange(North)	0	0	0	0
F-1274	TK-536 line Valve-V	Flange(South)	0	0	0	0
F-1275	TK-260 HSD Receiving line Valve	Gland	0	0	0	0
F-1276	TK-260 HSD Receiving line Valve	Bonet	0	0	0	0
F-1277	TK-260 HSD Receiving line Valve	Flange(East)	0	0	0	0
F-1278	TK-260 HSD Receiving line Valve	Flange(West)	0	0	0	0
F-1279	TK-260Suction line Valve-I	Gland	0	0	0	0
F-1280	TK-260 Suction line Valve-I	Bonet	0	0	0	0
F-1281	TK-260 Suction line Valve-I	Flange(North)	0	0	0	0
F-1282	TK-260 Suction line Valve-I	Flange(South)	0	0	0	0
F-1283	TK-260 Suction line Valve-II	Gland	0	0	0	0
F-1284	TK-260 Suction line Valve-II	Bonet	0	0	0	0
F-1285	TK-260 Suction line Valve-II	Flange(North)	0	0	0	0
F-1286	TK-260 Suction line Valve-II	Flange(South)	0	0	0	0
F-1287	TK-260 BL Ending Suction line Valve-I	Flange(Upper)	0	0	0	0
F-1288	TK-260 BL Ending Suction line Valve-I	Flange(Lower)	0	0	0	0
F-1289	TK-260 BL Ending Suction line Valve-I	Gland	0	0	0	0
F-1290	TK-260 BL Ending Suction line Valve-I	Bonet	0	0	0	0
F-1291	TK-260 BL Ending Suction line Valve-II	Flange(North)	0	0	0	0
F-1292	TK-260 BL Ending Suction line Valve-II	Flange(South)	0	0	0	0
F-1293	TK-260 BL Ending Suction line Valve-II	Gland	0	0	0	0
F-1294	TK-260 Nozzle line Valve	Gland	0	0	0	0
F-1295	TK-260 Nozzle line Valve	Flange(East)	0	0	0	0
F-1296	TK-260 Nozzle line Valve	Flange(West)	0	0	0	0
F-1297	TK-260 Pump Suction line Valve	Gland	0	0	0	0
F-1298	TK-260 Pump Suction line Valve	Bonet	0	0	0	0
F-1299	TK-260 Pump Suction line Valve	Flange(East)	0	0	0	0
F-1300	TK-260 Pump Suction line Valve	Flange(West)	0	0	0	0

F-1301	TK-178 Suction line Valve	Gland	0	0	0	0
F-1302	TK-178 Suction line Valve	Bonet	0	0	0	0
F-1303	TK-178 Suction line Valve	Flange(East)	0	0	0	0
F-1304	TK-178 Suction line Valve	Flange(West)	0	0	0	0
F-1305	TK-178 CLDO line Valve	Gland	0	0	0	0
F-1306	TK-178 CLDO line Valve	Bonet	0	0	0	0
F-1307	TK-178 CLDO line Valve	Flange(North)	0	0	0	0
F-1308	TK-178 CLDO line Valve	Flange(South)	0	0	0	0
F-1309	TK-178 FO/CR line Valve	Gland	0	0	0	0
F-1310	TK-178 FO/CR line Valve	Bonet	0	0	0	0
F-1311	TK-178 FO/CR line Valve	Flange(North)	0	0	0	0
F-1312	TK-178 FO/CR line Valve	Flange(South)	0	0	0	0
F-1313	TK-178 FO receiving line Valve	Gland	0	0	0	0
F-1314	TK-178 FO receiving line Valve	Bonet	0	0	0	0
F-1315	TK-178 FO receiving line Valve	Flange(East)	0	0	0	0
F-1316	TK-178 FO receiving line Valve	Flange(West)	0	0	0	0
F-1317	TK-178 Delivery line Valve	Gland	0	0	0	0
F-1318	TK-178 Delivery line Valve	Bonet	0	0	0	0
F-1319	TK-178 Delivery line Valve	Flange(East)	0	0	0	0
F-1320	TK-178 Delivery line Valve	Flange(West)	0	0	0	0
F-1321	TK-239 Nozzle line Valve	Gland	0	0	0	0
F-1322	TK-239 Nozzle line Valve	Flange(North)	0	0	0	0
F-1323	TK-239 Nozzle line Valve	Flange(South)	0	0	0	0
F-1324	TK-239 CFO/CR line Valve	Gland	0	0	0	0
F-1325	TK-239 CFO/CR line Valve	Bonet	0	0	0	0
F-1326	TK-239 CFO/CR line Valve	Flange(North)	0	0	0	0
F-1327	TK-239 CFO/CR line Valve	Flange(South)	0	0	0	0
F-1328	TK-239 Suction line Valve-I	Gland	0	0	0	0
F-1329	TK-239 Suction line Valve-I	Bonet	0	0	0	0
F-1330	TK-239 Suction line Valve-I	Flange(East)	0	0	0	0
F-1331	TK-239 Suction line Valve-I	Flange(West)	0	0	0	0
F-1332	TK-239 Suction line Valve-II	Gland	0	0	0	0
F-1333	TK-239 Suction line Valve-II	Flange(East)	0	0	0	0
F-1334	TK-239 Suction line Valve-II	Flange(West)	0	0	0	0
F-1335	TK-239 Suction line Valve-III	Gland	0	0	0	0
F-1336	TK-239 Suction line Valve-III	Bonet	0	0	0	0
F-1337	TK-239 Suction line Valve-III	Flange(East)	0	0	0	0
F-1338	TK-239 Suction line Valve-III	Flange(West)	0	0	0	0
F-1339	TK-239 receiving line Valve-I	Gland	0	0	0	0
F-1340	TK-239 receiving line Valve-I	Bonet	0	0	0	0
F-1341	TK-239 receiving line Valve-I	Flange(East)	0	0	0	0
F-1342	TK-239 receiving line Valve-I	Flange(West)	0	0	0	0
F-1343	TK-239 receiving line Valve-II	Gland	0	0	0	0
F-1344	TK-239 receiving line Valve-II	Flange(East)	0	0	0	0
F-1345	TK-239 receiving line Valve-II	Flange(West)	0	0	0	0
F-1346	TK-239 receiving line Valve-III	Gland	0	0	0	0
F-1347	TK-239 receiving line Valve-III	Bonet	0	0	0	0
F-1348	TK-239 receiving line Valve-III	Flange(East)	0	0	0	0
F-1349	TK-239 receiving line Valve-III	Flange(West)	0	0	0	0
F-1350	TK-239 Blending Section line Valve	Gland	0	0	0	0
F-1351	TK-239 Blending Section line Valve	Flange(Lower)	0	0	0	0
F-1352	TK-239 Blending Section line Valve	Flange(Upper)	0	0	0	0
F-1353	TK-599 Receiving line Valve-I	Gland	0	0	0	0
F-1354	TK-599 Receiving line Valve-I	Bonet	0	0	0	0
F-1355	TK-599 Receiving line Valve-I	Flange(South)	0	0	0	0
F-1356	TK-599 Receiving line NRV	Flange(North)	0	0	0	0
F-1357	TK-599 Receiving line NRV	Flange(South)	692	338.1	0.00006	0.000526
F-1358	TK-599 Receiving line	NRV	0	0	0	0
F-1359	TK-599 Receiving line Valve-II	Gland	0	0	0	0
F-1360	TK-599 Receiving line Valve-II	Bonet	0	0	0	0
F-1361	TK-599 Receiving line Valve-II	Flange(East)	0	0	0	0
F-1362	TK-599 Receiving line Valve-II	Flange(West)	0	0	0	0
F-1363	TK-599 Suction line Valve-I	Gland	0	0	0	0
F-1364	TK-599 Suction line Valve-I	Bonet	0	0	0	0
F-1365	TK-599 Suction line Valve-I	Flange(North)	0	0	0	0
F-1366	TK-599 Suction line Valve-I	Flange(South)	0	0	0	0
F-1367	TK-599 Suction line Valve-II	Gland	0	0	0	0

F-1368	TK-599 Suction line Valve-II	Bonet	0	0	0	0
F-1369	TK-599 Suction line Valve-II	Flange(East)	0	0	0	0
F-1370	TK-599 Suction line Valve-II	Flange(West)	0	0	0	0
F-1371	TK-600 Receiving line	NRV	0	0	0	0
F-1372	TK-600 Receiving line NRV	Flange(North)	0	0	0	0
F-1373	TK-600 Receiving lineValve	Gland	0	0	0	0
F-1374	TK-600 Receiving lineValve	Bonet	0	0	0	0
F-1375	TK-600 Receiving lineValve	Flange(South)	0	0	0	0
F-1376	TK-600 Suction line Valve	Gland	154	103.5	0.0017	0.014892
F-1377	TK-600 Suction line Valve	Bonet	0	0	0	0
F-1378	TK-600 Suction line Valve	Flange(North)	0	0	0	0
F-1379	TK-600 Suction line Valve	Flange(South)	0	0	0	0
F-1380	TK-574 Suction line	Joint Flange	0	0	0	0
F-1381	TK-574 Suction line Valve	Gland	0	0	0	0
F-1382	TK-574 Suction line Valve	Bonet	0	0	0	0
F-1383	TK-574 Suction line Valve	Flange(East)	0	0	0	0
F-1384	TK-574 Suction line Valve	Flange(West)	0	0	0	0
F-1385	TK-574 Receiving line Valve	Gland	0	0	0	0
F-1386	TK-574 Receiving line Valve	Bonet	0	0	0	0
F-1387	TK-574 Receiving line Valve	Flange(East)	0	0	0	0
F-1388	TK-574 Receiving line Valve	Flange(West)	0	0	0	0
F-1389	TK-575 Suction line Valve	Gland	0	0	0	0
F-1390	TK-575 Suction line Valve	Bonet	0	0	0	0
F-1391	TK-575 Suction line Valve	Flange(East)	0	0	0	0
F-1392	TK-575 Suction line Valve	Flange(West)	0	0	0	0
F-1393	TK-575 Receiving line Valve	Gland	0	0	0	0
F-1394	TK-575 Receiving line Valve	Bonet	0	0	0	0
F-1395	TK-575 Receiving line Valve	Flange(East)	0	0	0	0
F-1396	TK-575 Receiving line Valve	Flange(West)	0	0	0	0
F-1397	TK-597 Suction line Valve-I	Gland	262	136.3	0.0017	0.014892
F-1398	TK-597 Suction line Valve-I	Bonet	0	0	0	0
F-1399	TK-597 Suction line Valve-I	Flange(North)	0	0	0	0
F-1400	TK-597 Suction line Valve-I	Flange(South)	0	0	0	0
F-1401	TK-597 Suction line Valve-II	Gland	317	204.7	0.0017	0.014892
F-1402	TK-597 Suction line Valve-II	Bonet	0	0	0	0
F-1403	TK-597 Suction line Valve-II	Flange(North)	0	0	0	0
F-1404	TK-597 Suction line Valve-II	Flange(South)	0	0	0	0
F-1405	TK-597 Receiving line Valve	Gland	0	0	0	0
F-1406	TK-597 Receiving line Valve	Bonet	0	0	0	0
F-1407	TK-597 Receiving line Valve	Flange(North)	0	0	0	0
F-1408	TK-597 Receiving line Valve	Flange(South)	0	0	0	0
F-1409	TK-597 Receiving line	NRV	0	0	0	0
F-1410	TK-597 Receiving line NRV	Flange(South)	0	0	0	0
F-1411	TK-597 Drain line Valve-I	Gland	0	0	0	0
F-1412	TK-597 Drain line Valve-I	Bonet	0	0	0	0
F-1413	TK-597 Drain line Valve-I	Flange(East)	0	0	0	0
F-1414	TK-597 Drain line Valve-I	Flange(West)	0	0	0	0
F-1415	TK-597 Drain line Valve-II	Gland	0	0	0	0
F-1416	TK-597 Drain line Valve-II	Bonet	0	0	0	0
F-1417	TK-597 Drain line Valve-II	Flange(East)	0	0	0	0
F-1418	TK-597 Drain line Valve-II	Flange(West)	0	0	0	0
F-1419	TK-597 Drain line Valve-III	Flange(Upper)	0	0	0	0
F-1420	TK-597 Drain line Valve-III	Flange(Lower)	0	0	0	0
F-1421	TK-597 Drain line Valve-III	Gland	0	0	0	0
F-1422	TK-597 Drain line Valve-III	Bonet	0	0	0	0
F-1423	TK-597 Drain line Valve-IV	Gland	0	0	0	0
F-1424	TK-597 Drain line Valve-IV	Bonet	0	0	0	0
F-1425	TK-597 Drain line Valve-IV	Flange(East)	0	0	0	0
F-1426	TK-597 Drain line Valve-IV	Flange(West)	0	0	0	0
F-1427	TK-597 Drain line Valve-V	Gland	0	0	0	0
F-1428	TK-597 Drain line Valve-V	Bonet	0	0	0	0
F-1429	TK-597 Drain line Valve-V	Flange(West)	0	0	0	0
F-1430	TK-597 Drain line Valve-VI	Gland	0	0	0	0
F-1431	TK-597 Drain line Valve-VI	Bonet	0	0	0	0
F-1432	TK-597 Drain line Valve-VI	Flange(East)	0	0	0	0
F-1433	TK-597 Drain line Valve-VI	Flange(West)	0	0	0	0
F-1434	TK-598 Drain line Valve-I	Gland	0	0	0	0

F-1435	TK-598 Drain line Valve-I	Flange(East)	0	0	0	0
F-1436	TK-598 Drain line Valve-I	Flange(West)	0	0	0	0
F-1437	TK-598 Drain line Valve-II	Gland	0	0	0	0
F-1438	TK-598 Drain line Valve-II	Bonet	0	0	0	0
F-1439	TK-598 Drain line Valve-II	Flange(West)	0	0	0	0
F-1440	TK-598 Drain line Valve-III	Flange(Upper)	0	0	0	0
F-1441	TK-598 Drain line Valve-III	Flange(Lower)	0	0	0	0
F-1442	TK-598 Drain line Valve-III	Gland	0	0	0	0
F-1443	TK-598 Drain line Valve-III	Bonet	0	0	0	0
F-1444	TK-598 Drain line Valve-IV	Gland	0	0	0	0
F-1445	TK-598 Drain line Valve-IV	Flange(East)	0	0	0	0
F-1446	TK-598 Drain line Valve-V	Gland	0	0	0	0
F-1447	TK-598 Drain line Valve-V	Flange(East)	0	0	0	0
F-1448	TK-598 Drain line Valve-V	Flange(West)	0	0	0	0
F-1449	TK-598 Drain line Valve-VI	Gland	0	0	0	0
F-1450	TK-598 Drain line Valve-VI	Flange(East)	0	0	0	0
F-1451	TK-598 Drain line Valve-VI	Flange(West)	0	0	0	0
F-1452	TK-598 Suction line Valve-I	Gland	0	0	0	0
F-1453	TK-598 Suction line Valve-I	Bonet	0	0	0	0
F-1454	TK-598 Suction line Valve-I	Flange(North)	0	0	0	0
F-1455	TK-598 Suction line Valve-II	Gland	0	0	0	0
F-1456	TK-598 Suction line Valve-II	Bonet	0	0	0	0
F-1457	TK-598 Suction line Valve-II	Flange(North)	0	0	0	0
F-1458	TK-598 Suction line Valve-II	Flange(South)	0	0	0	0
F-1459	TK-598 Receiving line Valve	Gland	0	0	0	0
F-1460	TK-598 Receiving line Valve	Bonet	0	0	0	0
F-1461	TK-598 Receiving line Valve	Flange(North)	0	0	0	0
F-1462	TK-598 Receiving line Valve	Flange(South)	0	0	0	0
F-1463	TK-598 Receiving line	NRV	13	0	0	0
F-1464	TK-598 Receiving line NRV	Flange(North)	0	0	0	0
F-1465	TK-598 Receiving line NRV	Flange(South)	0	0	0	0
F-1466	TK-573 Suction line Valve-I	Gland	0	0	0	0
F-1467	TK-573 Suction line Valve-I	Bonet	0	0	0	0
F-1468	TK-573 Suction line Valve-I	Flange(North)	0	0	0	0
F-1469	TK-573 Suction line Valve-I	Flange(South)	0	0	0	0
F-1470	TK-573 Suction line Valve-II	Gland	0	0	0	0
F-1471	TK-573 Suction line Valve-II	Bonet	0	0	0	0
F-1472	TK-573 Suction line Valve-II	Flange(North)	0	0	0	0
F-1473	TK-573 Suction line Valve-II	Flange(South)	0	0	0	0
F-1474	TK-573 Receiving line Valve	NRV	0	0	0	0
F-1475	TK-573 Receiving line NRV	Flange(South)	0	0	0	0
F-1476	TK-573 Discharge line Valve-I	Gland	0	0	0	0
F-1477	TK-573 Discharge line Valve-I	Flange(North)	0	0	0	0
F-1478	TK-573 Discharge line Valve-II	Gland	0	0	0	0
F-1479	TK-573 Discharge line Valve-II	Flange(South)	0	0	0	0
F-1480	TK-573 Discharge line Valve-III	Gland	0	0	0	0
F-1481	TK-573 Discharge line Valve-III	Flange(North)	0	0	0	0
F-1482	TK-573 Discharge line Valve-IV	Gland	0	0	0	0
F-1483	TK-573 Discharge line Valve-IV	Flange(South)	0	0	0	0
F-1484	TK-540 Suction line Valve-I	Gland	0	0	0	0
F-1485	TK-540 Suction line Valve-I	Bonet	0	0	0	0
F-1486	TK-540 Suction line Valve-I	Flange(East)	0	0	0	0
F-1487	TK-540 Suction line Valve-I	Flange(West)	0	0	0	0
F-1488	TK-540 Suction line Valve-II	Gland	0	0	0	0
F-1489	TK-540 Suction line Valve-II	Bonet	0	0	0	0
F-1490	TK-540 Suction line Valve-II	Flange(East)	0	0	0	0
F-1491	TK-540 Suction line Valve-II	Flange(West)	0	0	0	0
F-1492	TK-540 Receiving line Valve-I	Gland	0	0	0	0
F-1493	TK-540 Receiving line Valve-I	Bonet	0	0	0	0
F-1494	TK-540 Receiving line Valve-I	Flange(East)	0	0	0	0
F-1495	TK-540 Receiving line Valve-I	Flange(West)	0	0	0	0
F-1496	TK-540 Receiving line Valve-II	Gland	0	0	0	0
F-1497	TK-540 Receiving line Valve-II	Bonet	0	0	0	0
F-1498	TK-540 Receiving line Valve-II	Flange(East)	0	0	0	0
F-1499	TK-540 Receiving line Valve-II	Flange(West)	0	0	0	0
F-1500	TK-540 Drain line Valve-I	Gland	0	0	0	0
F-1501	TK-540 Drain line Valve-I	Bonet	0	0	0	0

F-1502	TK-540 Drain line Valve-I	Flange(North)	0	0	0	0
F-1503	TK-540 Drain line Valve-I	Flange(South)	0	0	0	0
F-1504	TK-540 Drain line Valve-II	Gland	0	0	0	0
F-1505	TK-540 Drain line Valve-II	Bonet	0	0	0	0
F-1506	TK-540 Drain line Valve-II	Flange(Upper)	0	0	0	0
F-1507	TK-540 Drain line Valve-II	Flange(Lower)	0	0	0	0
F-1508	TK-540 Drain line Valve-III	Gland	0	0	0	0
F-1509	TK-540 Drain line Valve-III	Bonet	0	0	0	0
F-1510	TK-540 Drain line Valve-III	Flange(Upper)	0	0	0	0
F-1511	TK-540 Drain line Valve-III	Flange(Lower)	0	0	0	0
F-1512	TK-540 Drain line Valve-IV	Flange(North)	0	0	0	0
F-1513	TK-540 Drain line Valve-IV	Flange(South)	0	0	0	0
F-1514	TK-540 Drain line Valve-V	Gland	0	0	0	0
F-1515	TK-540 Drain line Valve-V	Bonet	0	0	0	0
F-1516	TK-540 Drain line Valve-V	Flange(South)	0	0	0	0
F-1517	TK-603 Minimum Flow line Valve-I	Gland	0	0	0	0
F-1518	TK-603 Minimum Flow line Valve-I	Bonet	0	0	0	0
F-1519	TK-603 Minimum Flow line Valve-I	Flange(East)	0	0	0	0
F-1520	TK-603 Minimum Flow line Valve-I	Flange(West)	0	0	0	0
F-1521	TK-603 Minimum Flow line Valve-II	Gland	0	0	0	0
F-1522	TK-603 Minimum Flow line Valve-II	Bonet	0	0	0	0
F-1523	TK-603 Minimum Flow line Valve-II	Flange(East)	0	0	0	0
F-1524	TK-603 Minimum Flow line Valve-II	Flange(West)	0	0	0	0
F-1525	TK-603 Receiving line Valve-I	Gland	0	0	0	0
F-1526	TK-603 Receiving line Valve-I	Bonet	0	0	0	0
F-1527	TK-603 Receiving line Valve-I	Flange(East)	0	0	0	0
F-1528	TK-603 Receiving line Valve-I	Flange(West)	0	0	0	0
F-1529	TK-603 Receiving line Valve-II	Gland	0	0	0	0
F-1530	TK-603 Receiving line Valve-II	Bonet	0	0	0	0
F-1531	TK-603 Receiving line Valve-II	Flange(East)	0	0	0	0
F-1532	TK-603 Receiving line Valve-II	Flange(West)	0	0	0	0
F-1533	TK-603 Circulation Mixing line Valve-I	Gland	0	0	0	0
F-1534	TK-603 Circulation Mixing line Valve-I	Bonet	0	0	0	0
F-1535	TK-603 Circulation Mixing line Valve-I	Flange(East)	0	0	0	0
F-1536	TK-603 Circulation Mixing line Valve-I	Flange(West)	0	0	0	0
F-1537	TK-603 Circulation Mixing line Valve-II	Gland	0	0	0	0
F-1538	TK-603 Circulation Mixing line Valve-II	Bonet	0	0	0	0
F-1539	TK-603 Circulation Mixing line Valve-II	Flange(East)	0	0	0	0
F-1540	TK-603 Circulation Mixing line Valve-II	Flange(West)	0	0	0	0
F-1541	TK-603 Circulation Suction line Valve-I	Gland	0	0	0	0
F-1542	TK-603 Circulation Suction line Valve-I	Bonet	0	0	0	0
F-1543	TK-603 Circulation Suction line Valve-I	Flange(East)	0	0	0	0
F-1544	TK-603 Circulation Suction line Valve-I	Flange(West)	0	0	0	0
F-1545	TK-603 Circulation Suction line Valve-II	Gland	0	0	0	0
F-1546	TK-603 Circulation Suction line Valve-II	Bonet	0	0	0	0
F-1547	TK-603 Circulation Suction line Valve-II	Flange(East)	0	0	0	0
F-1548	TK-603 Circulation Suction line Valve-II	Flange(West)	0	0	0	0
F-1549	TK-603 Charging Suction line Valve-I	Gland	0	0	0	0
F-1550	TK-603 Charging Suction line Valve-I	Bonet	0	0	0	0
F-1551	TK-603 Charging Suction line Valve-I	Flange(East)	0	0	0	0
F-1552	TK-603 Charging Suction line Valve-I	Flange(West)	0	0	0	0
F-1553	TK-603 Charging Suction line Valve-II	Gland	0	0	0	0
F-1554	TK-603 Charging Suction line Valve-II	Bonet	0	0	0	0
F-1555	TK-603 Charging Suction line Valve-II	Flange(East)	0	0	0	0
F-1556	TK-603 Charging Suction line Valve-II	Flange(West)	0	0	0	0
F-1557	TK-602 Circulation Mixing line Valve-I	Gland	0	0	0	0
F-1558	TK-602 Circulation Mixing line Valve-I	Bonet	0	0	0	0
F-1559	TK-602 Circulation Mixing line Valve-I	Flange(East)	0	0	0	0
F-1560	TK-602 Circulation Mixing line Valve-I	Flange(West)	0	0	0	0
F-1561	TK-602 Circulation Mixing line Valve-II	Flange(West)	0	0	0	0
F-1562	TK-602 Circulation Mixing line Valve-II	Gland	0	0	0	0
F-1563	TK-602 Circulation Mixing line Valve-II	Bonet	0	0	0	0
F-1564	TK-602 Circulation Mixing line Valve-II	Flange(East)	0	0	0	0
F-1565	TK-602 Receiving line Valve-I	Gland	0	0	0	0
F-1566	TK-602 Receiving line Valve-I	Bonet	0	0	0	0
F-1567	TK-602 Receiving line Valve-I	Flange(East)	0	0	0	0
F-1568	TK-602 Receiving line Valve-I	Flange(West)	0	0	0	0

F-1569	TK-602 Receiving line Valve-II	Gland	0	0	0	0
F-1570	TK-602 Receiving line Valve-II	Bonet	0	0	0	0
F-1571	TK-602 Receiving line Valve-II	Flange(East)	0	0	0	0
F-1572	TK-602 Receiving line Valve-II	Flange(West)	0	0	0	0
F-1573	TK-602 Minimum Flow line Valve-I	Gland	276	134.2	0.0017	0.014892
F-1574	TK-602 Minimum Flow line Valve-I	Bonet	0	0	0	0
F-1575	TK-602 Minimum Flow line Valve-I	Flange(East)	0	0	0	0
F-1576	TK-602 Minimum Flow line Valve-I	Flange(West)	0	0	0	0
F-1577	TK-602 Minimum Flow line Valve-II	Gland	0	0	0	0
F-1578	TK-602 Minimum Flow line Valve-II	Bonet	0	0	0	0
F-1579	TK-602 Minimum Flow line Valve-II	Flange(East)	0	0	0	0
F-1580	TK-602 Minimum Flow line Valve-II	Flange(West)	0	0	0	0
F-1581	TK-604 Minimum Flow line Valve-I	Gland	0	0	0	0
F-1582	TK-604 Minimum Flow line Valve-I	Bonet	0	0	0	0
F-1583	TK-604 Minimum Flow line Valve-I	Flange(East)	0	0	0	0
F-1584	TK-604 Minimum Flow line Valve-I	Flange(West)	0	0	0	0
F-1585	TK-604 Minimum Flow line Valve-II	Gland	0	0	0	0
F-1586	TK-604 Minimum Flow line Valve-II	Bonet	0	0	0	0
F-1587	TK-604 Minimum Flow line Valve-II	Flange(East)	0	0	0	0
F-1588	TK-604 Minimum Flow line Valve-II	Flange(West)	0	0	0	0
F-1589	TK-604 Receiving line Valve-I	Gland	0	0	0	0
F-1590	TK-604 Receiving line Valve-I	Bonet	0	0	0	0
F-1591	TK-604 Receiving line Valve-I	Flange(East)	0	0	0	0
F-1592	TK-604 Receiving line Valve-I	Flange(West)	0	0	0	0
F-1593	TK-604 Receiving line Valve-II	Gland	0	0	0	0
F-1594	TK-604 Receiving line Valve-II	Bonet	0	0	0	0
F-1595	TK-604 Receiving line Valve-II	Flange(East)	0	0	0	0
F-1596	TK-604 Receiving line Valve-II	Flange(West)	0	0	0	0
F-1597	TK-604 Circulation Mixing line Valve-I	Gland	0	0	0	0
F-1598	TK-604 Circulation Mixing line Valve-I	Bonet	0	0	0	0
F-1599	TK-604 Circulation Mixing line Valve-I	Flange(East)	0	0	0	0
F-1600	TK-604 Circulation Mixing line Valve-I	Flange(West)	0	0	0	0
F-1601	TK-604 Circulation Mixing line Valve-II	Gland	0	0	0	0
F-1602	TK-604 Circulation Mixing line Valve-II	Bonet	0	0	0	0
F-1603	TK-604 Circulation Mixing line Valve-II	Flange(East)	0	0	0	0
F-1604	TK-604 Circulation Mixing line Valve-II	Flange(West)	0	0	0	0
F-1605	TK-604 Circulation Suction line Valve-I	Gland	697	385.1	0.0017	0.014892
F-1606	TK-604 Circulation Suction line Valve-I	Bonet	0	0	0	0
F-1607	TK-604 Circulation Suction line Valve-I	Flange(East)	0	0	0	0
F-1608	TK-604 Circulation Suction line Valve-I	Flange(West)	0	0	0	0
F-1609	TK-604 Circulation Suction line Valve-II	Gland	0	0	0	0
F-1610	TK-604 Circulation Suction line Valve-II	Bonet	0	0	0	0
F-1611	TK-604 Circulation Suction line Valve-II	Flange(East)	0	0	0	0
F-1612	TK-604 Circulation Suction line Valve-II	Flange(West)	0	0	0	0
F-1613	TK-604 Charging Suction line Valve-I	Gland	0	0	0	0
F-1614	TK-604 Charging Suction line Valve-I	Bonet	0	0	0	0
F-1615	TK-604 Charging Suction line Valve-I	Flange(East)	0	0	0	0
F-1616	TK-604 Charging Suction line Valve-I	Flange(West)	0	0	0	0
F-1617	TK-604 Charging Suction line Valve-II	Gland	0	0	0	0
F-1618	TK-604 Charging Suction line Valve-II	Bonet	0	0	0	0
F-1619	TK-604 Charging Suction line Valve-II	Flange(East)	0	0	0	0
F-1620	TK-604 Charging Suction line Valve-II	Flange(West)	0	0	0	0
F-1621	TK-177 Suction line Valve-I	Gland	0	0	0	0
F-1622	TK-177 Suction line Valve-I	Bonet	0	0	0	0
F-1623	TK-177 Suction line Valve-I	Flange(North)	0	0	0	0
F-1624	TK-177 Suction line Valve-I	Flange(South)	0	0	0	0
F-1625	TK-177 Suction line Valve-II	Gland	0	0	0	0
F-1626	TK-177 Suction line Valve-II	Flange(North)	0	0	0	0
F-1627	TK-177 Suction line Valve-II	Flange(South)	0	0	0	0
F-1628	TK-177 Suction line Valve-III	Gland	0	0	0	0
F-1629	TK-177 Suction line Valve-III	Bonet	0	0	0	0
F-1630	TK-177 Suction line Valve-III	Flange(North)	0	0	0	0
F-1631	TK-177 Suction line Valve-III	Flange(South)	0	0	0	0
F-1632	TK-177 Blending line Valve-I	Gland	0	0	0	0
F-1633	TK-177 Blending line Valve-I	Bonet	0	0	0	0
F-1634	TK-177 Blending line Valve-I	Flange(East)	0	0	0	0
F-1635	TK-177 Blending line Valve-I	Flange(West)	0	0	0	0

F-1636	TK-177 Blending line Valve-II	Gland	0	0	0	0
F-1637	TK-177 Blending line Valve-II	Flange(East)	0	0	0	0
F-1638	TK-177 Blending line Valve-II	Flange(West)	0	0	0	0
F-1639	TK-177 Blending line Valve-III	Gland	0	0	0	0
F-1640	TK-177 Blending line Valve-III	Bonet	0	0	0	0
F-1641	TK-177 Blending line Valve-III	Flange(East)	0	0	0	0
F-1642	TK-177 Blending line Valve-III	Flange(West)	0	0	0	0
F-1643	TK-001 Drain line Valve-I	Gland	0	0	0	0
F-1644	TK-001 Drain line Valve-I	Bonet	0	0	0	0
F-1645	TK-001 Drain line Valve-I	Flange(North)	0	0	0	0
F-1646	TK-001 Drain line Valve-I	Flange(South)	0	0	0	0
F-1647	TK-001 Drain line Valve-II	Gland	0	0	0	0
F-1648	TK-001 Drain line Valve-II	Bonet	0	0	0	0
F-1649	TK-001 Drain line Valve-II	Flange(North)	0	0	0	0
F-1650	TK-001 Suction line Valve-I	Gland	0	0	0	0
F-1651	TK-001 Suction line Valve-I	Bonet	0	0	0	0
F-1652	TK-001 Suction line Valve-I	Flange(East)	0	0	0	0
F-1653	TK-001 Suction line Valve-I	Flange(West)	0	0	0	0
F-1654	TK-001 Suction line Valve-II	Gland	0	0	0	0
F-1655	TK-001 Suction line Valve-II	Bonet	0	0	0	0
F-1656	TK-001 Suction line Valve-II	Flange(West)	0	0	0	0
F-1657	TK-001 Discharge line	Joint Flange	0	0	0	0
F-1658	TK-001 Discharge line	NRV	0	0	0	0
F-1659	TK-001 Discharge line NRV	Flange(East)	0	0	0	0
F-1660	TK-001 Discharge line NRV	Flange(West)	0	0	0	0
F-1661	TK-001 Discharge line Valve-I	Gland	0	0	0	0
F-1662	TK-001 Discharge line Valve-I	Bonet	0	0	0	0
F-1663	TK-001 Discharge line Valve-I	Flange(West)	0	0	0	0
F-1664	TK-001 Discharge line Valve-II	Gland	0	0	0	0
F-1665	TK-001 Discharge line Valve-II	Flange(North)	0	0	0	0
F-1666	TK-001 Discharge line Valve-II	Flange(South)	0	0	0	0
F-1667	TK-001 Discharge line Valve-III	Gland	0	0	0	0
F-1668	TK-001 Discharge line Valve-III	Flange(East)	0	0	0	0
F-1669	TK-001 Discharge line Valve-III	Flange(West)	0	0	0	0
F-1670	TK-607 Suction line	Joint Flange	0	0	0	0
F-1671	TK-607 Suction line Valve-I	Gland	0	0	0	0
F-1672	TK-607 Suction line Valve-I	Bonet	0	0	0	0
F-1673	TK-607 Suction line Valve-I	Flange(West)	0	0	0	0
F-1674	TK-607 Suction line Valve-II	Gland	0	0	0	0
F-1675	TK-607 Suction line Valve-II	Bonet	0	0	0	0
F-1676	TK-607 Suction line Valve-II	Flange(East)	0	0	0	0
F-1677	TK-607 Suction line Valve-II	Flange(West)	0	0	0	0
F-1678	TK-A -452 Crude Suction line	Joint Flange	0	0	0	0
F-1679	TK-A -452 Crude Suction line	NRV	0	0	0	0
F-1680	TK-A -452 Crude Suction line NRV	Flange(North)	0	0	0	0
F-1681	TK-A -452 Crude Suction line Valve-I	Gland	0	0	0	0
F-1682	TK-A -452 Crude Suction line Valve-I	Bonet	0	0	0	0
F-1683	TK-A -452 Crude Suction line Valve-I	Flange(North)	0	0	0	0
F-1684	TK-A -452 Crude Suction line Valve-I	Flange(South)	0	0	0	0
F-1685	TK-A -452 Crude Suction line Valve-II	Gland	0	0	0	0
F-1686	TK-A -452 Crude Suction line Valve-II	Flange(North)	0	0	0	0
F-1687	TK-A -452 Crude Suction line Valve-II	Flange(South)	0	0	0	0
F-1688	TK-A -452 Crude Suction line Valve-III	Gland	0	0	0	0
F-1689	TK-A -452 Crude Suction line Valve-III	Flange(North)	0	0	0	0
F-1690	TK-A -452 Crude Suction line Valve-III	Flange(South)	0	0	0	0
F-1691	TK-A -452 Crude Suction line Valve-IV	Gland	0	0	0	0
F-1692	TK-A -452 Crude Suction line Valve-IV	Flange(East)	0	0	0	0
F-1693	TK-A -452 Crude Suction line Valve-IV	Flange(West)	0	0	0	0
F-1694	TK-A -452 Changing line Valve-I	Gland	0	0	0	0
F-1695	TK-A -452 Changing line Valve-I	Bonet	0	0	0	0
F-1696	TK-A -452 Changing line Valve-I	Flange(East)	0	0	0	0
F-1697	TK-A -452 Changing line Valve-I	Flange(West)	0	0	0	0
F-1698	TK-A -452 Changing line Valve-II	Gland	0	0	0	0
F-1699	TK-A -452 Changing line Valve-II	Bonet	0	0	0	0
F-1700	TK-A -452 Changing line Valve-II	Flange(North)	0	0	0	0
F-1701	TK-A -452 Changing line Valve-II	Flange(South)	0	0	0	0
F-1702	TK-A -452 Changing line Valve-III	Gland	0	0	0	0

F-1703	TK-A -452 Changing line Valve-III	Flange(North)	0	0	0	0
F-1704	TK-A -452 Changing line Valve-III	Flange(South)	0	0	0	0
F-1705	TK-A -452 Drain line Valve-I	Gland	0	0	0	0
F-1706	TK-A -452 Drain line Valve-II	Flange(Upper)	0	0	0	0
F-1707	TK-A -452 Drain line Valve-II	Flange(Lower)	0	0	0	0
F-1708	TK-A -452 Drain line Valve-II	Gland	0	0	0	0
F-1709	TK-A -452 Drain line Valve-III	Gland	0	0	0	0
F-1710	TK-A -452 Drain line Valve-III	Flange(East)	0	0	0	0
F-1711	TK-A -452 Drain line Valve-III	Flange(West)	0	0	0	0
F-1712	TK-A -452 Drain line Valve-IV	Gland	0	0	0	0
F-1713	TK-A -452 Drain line Valve-IV	Flange(West)	0	0	0	0
F-1714	TK-004 Suction line Valve-I	Gland	0	0	0	0
F-1715	TK-004 Suction line Valve-I	Bonet	0	0	0	0
F-1716	TK-004 Suction line Valve-I	Flange(North)	0	0	0	0
F-1717	TK-004 Suction line Valve-I	Flange(South)	0	0	0	0
F-1718	TK-004 Suction line Valve-II	Gland	0	0	0	0
F-1719	TK-004 Suction line Valve-II	Flange(East)	0	0	0	0
F-1720	TK-004 Suction line Valve-II	Flange(West)	0	0	0	0
F-1721	TK-004 Suction line Valve-III	Gland	0	0	0	0
F-1722	TK-004 Suction line Valve-III	Bonet	0	0	0	0
F-1723	TK-004 Suction line Valve-III	Flange(East)	0	0	0	0
F-1724	TK-004 Suction line Valve-III	Flange(West)	0	0	0	0
F-1725	TK-004 Suction line Valve-IV	gland	0	0	0	0
F-1726	TK-004 Suction line Valve-IV	Flange(East)	0	0	0	0
F-1727	TK-004 Suction line Valve-IV	Flange(West)	0	0	0	0
F-1728	TK-004 Discharge line Valve	Gland	0	0	0	0
F-1729	TK-004 Discharge line Valve	Flange(West)	0	0	0	0
F-1730	TK-A-305 Suction line Valve	Flange(North)	0	0	0	0
F-1731	TK-A-305 Suction line Valve	Flange(South)	0	0	0	0
F-1732	TK-A-305 Suction line Valve	Gland	0	0	0	0
F-1733	TK-A-305 Discharge line Valve	Gland	0	0	0	0
F-1734	TK-A-305 Discharge line Valve	Flange(North)	0	0	0	0
F-1735	TK-A-305 Discharge line Valve	Flange(South)	0	0	0	0
F-1736	TK-A-305 Circulation line Valve	Gland	0	0	0	0
F-1737	TK-A-305 Circulation line Valve	Flange(North)	0	0	0	0
F-1738	TK-A-305 Circulation line Valve	Flange(South)	0	0	0	0
F-1739	TK-A-305 Drain line Valve-I	Gland	0	0	0	0
F-1740	TK-A-305 Drain line Valve-I	Flange(Upper)	0	0	0	0
F-1741	TK-A-305 Drain line Valve-I	Flange(Lower)	0	0	0	0
F-1742	TK-A-305 Drain line Valve-II	Gland	0	0	0	0
F-1743	TK-A-305 Drain line Valve-II	Flange(Upper)	0	0	0	0
F-1744	TK-A-305 Drain line Valve-II	Flange(Lower)	0	0	0	0
F-1745	TK-A-305 Drain line Valve-III	Gland	0	0	0	0
F-1746	TK-A-305 Drain line Valve-III	Flange(East)	0	0	0	0
F-1747	TK-A-305 Drain line Valve-III	Flange(West)	0	0	0	0
F-1748	TK-A-305 Drain line Valve-IV	Gland	0	0	0	0
F-1749	TK-A-305 Drain line Valve-IV	Flange(West)	0	0	0	0
F-1750	TK-A-005 Drain line Valve-I	Gland	0	0	0	0
F-1751	TK-A-005 Drain line Valve-I	Flange(North)	0	0	0	0
F-1752	TK-A-005 Drain line Valve-I	Flange(South)	0	0	0	0
F-1753	TK-A-005 Drain line Valve-II	Gland	0	0	0	0
F-1754	TK-A-005 Drain line Valve-II	Flange(North)	0	0	0	0
F-1755	TK-A-005 Suction line Valve	Gland	0	0	0	0
F-1756	TK-A-005 Suction line Valve	Bonet	0	0	0	0
F-1757	TK-A-005 Suction line Valve	Flange(East)	0	0	0	0
F-1758	TK-A-005 Suction line Valve	Flange(West)	0	0	0	0
F-1759	TK-A-005 Discharge line Valve-I	Gland	0	0	0	0
F-1760	TK-A-005 Discharge line Valve-I	Bonet	0	0	0	0
F-1761	TK-A-005 Discharge line Valve-I	Flange(East)	0	0	0	0
F-1762	TK-A-005 Discharge line Valve-I	Flange(West)	0	0	0	0
F-1763	TK-A-005 Discharge line Valve-II	Gland	0	0	0	0
F-1764	TK-A-005 Discharge line Valve-II	Flange(East)	0	0	0	0
F-1765	TK-A-005 Discharge line Valve-II	Flange(West)	0	0	0	0
F-1766	TK-A-005 Discharge line Valve-III	Gland	0	0	0	0
F-1767	TK-A-005 Discharge line Valve-III	Flange(North)	0	0	0	0
F-1768	TK-A-005 Discharge line Valve-III	Flange(South)	0	0	0	0
F-1769	TK-538 Suction line Valve-I	Gland	0	0	0	0

F-1770	TK-538 Suction line Valve-I	Bonet	0	0	0	0
F-1771	TK-538 Suction line Valve-I	Flange(North)	0	0	0	0
F-1772	TK-538 Suction line Valve-I	Flange(South)	0	0	0	0
F-1773	TK-538 Suction line Valve-II	Gland	0	0	0	0
F-1774	TK-538 Suction line Valve-II	Bonet	0	0	0	0
F-1775	TK-538 Suction line Valve-II	Flange(North)	0	0	0	0
F-1776	TK-538 Suction line Valve-II	Flange(South)	0	0	0	0
F-1777	TK-538 Drain line Valve-I	Gland	0	0	0	0
F-1778	TK-538 Drain line Valve-I	Flange(North)	0	0	0	0
F-1779	TK-538 Drain line Valve-I	Flange(South)	0	0	0	0
F-1780	TK-538 Drain line Valve-II	Gland	0	0	0	0
F-1781	TK-538 Drain line Valve-II	Flange(North)	0	0	0	0
F-1782	TK-538 Drain line Valve-III	Flange(Upper)	0	0	0	0
F-1783	TK-538 Drain line Valve-III	Flange(Lower)	0	0	0	0
F-1784	TK-538 Drain line Valve-III	Gland	0	0	0	0
F-1785	TK-538 Drain line Valve-IV	Flange(North)	0	0	0	0
F-1786	TK-538 Drain line Valve-IV	Flange(South)	0	0	0	0
F-1787	TK-538 Drain line Valve-IV	Gland	0	0	0	0
F-1788	TK-538 Drain line Valve-V	Gland	0	0	0	0
F-1789	TK-538 Drain line Valve-V	Flange(North)	0	0	0	0
F-1790	TK-538 Drain line Valve-V	Flange(South)	0	0	0	0
F-1791	TK-583 Receiving/Suction line Valve	Gland	0	0	0	0
F-1792	TK-583 Receiving/Suction line Valve	Bonet	0	0	0	0
F-1793	TK-583 Receiving/Suction line Valve	Flange(East)	0	0	0	0
F-1794	TK-583 Receiving/Suction line Valve	Flange(West)	0	0	0	0
F-1795	TK-583 Drain line Valve-I	Gland	0	0	0	0
F-1796	TK-583 Drain line Valve-I	Bonet	0	0	0	0
F-1797	TK-583 Drain line Valve-I	Flange(East)	0	0	0	0
F-1798	TK-583 Drain line Valve-I	Flange(West)	0	0	0	0
F-1799	TK-583 Drain line Valve-II	Gland	0	0	0	0
F-1800	TK-583 Drain line Valve-II	Bonet	0	0	0	0
F-1801	TK-583 Drain line Valve-II	Flange(West)	0	0	0	0
F-1802	TK-584 Drain line Valve-I	Gland	0	0	0	0
F-1803	TK-584 Drain line Valve-I	Bonet	0	0	0	0
F-1804	TK-584 Drain line Valve-I	Flange(North)	0	0	0	0
F-1805	TK-584 Drain line Valve-I	Flange(South)	0	0	0	0
F-1806	TK-584 Drain line Valve-II	Gland	0	0	0	0
F-1807	TK-584 Drain line Valve-II	Bonet	0	0	0	0
F-1808	TK-584 Drain line Valve-II	Flange(North)	0	0	0	0
F-1809	TK-584 Drain line Valve-II	Flange(South)	0	0	0	0
F-1810	TK-584 Drain line Valve-III	Gland	0	0	0	0
F-1811	TK-584 Drain line Valve-III	Flange(Upper)	0	0	0	0
F-1812	TK-584 Drain line Valve-III	Flange(Lower)	0	0	0	0
F-1813	TK-584 Receiving/Suction line Valve	Gland	248	157.2	0.0017	0.014892
F-1814	TK-584 Receiving/Suction line Valve	Bonet	0	0	0	0
F-1815	TK-584 Receiving/Suction line Valve	Flange(North)	0	0	0	0
F-1816	TK-584 Receiving/Suction line Valve	Flange(South)	0	0	0	0
F-1817	TK-582 Receiving/Suction line Valve	Gland	0	0	0	0
F-1818	TK-582 Receiving/Suction line Valve	Bonet	0	0	0	0
F-1819	TK-582 Receiving/Suction line Valve	Flange(North)	0	0	0	0
F-1820	TK-582 Receiving/Suction line Valve	Flange(South)	0	0	0	0
F-1821	TK-582 Drain line Valve-I	Gland	0	0	0	0
F-1822	TK-582 Drain line Valve-I	Bonet	0	0	0	0
F-1823	TK-582 Drain line Valve-I	Flange(East)	0	0	0	0
F-1824	TK-582 Drain line Valve-I	Flange(West)	0	0	0	0
F-1825	TK-582 Drain line Valve-II	gland	0	0	0	0
F-1826	TK-582 Drain line Valve-II	Bonet	0	0	0	0
F-1827	TK-582 Drain line Valve-II	Flange(West)	0	0	0	0
F-1828	TK-562 Suction line Valve	Gland	0	0	0	0
F-1829	TK-562 Suction line Valve	Bonet	0	0	0	0
F-1830	TK-562 Suction line Valve	Flange(North)	0	0	0	0
F-1831	TK-562 Suction line Valve	Flange(South)	0	0	0	0
F-1832	TK-562 Discharge line Valve	Gland	0	0	0	0
F-1833	TK-562 Discharge line Valve	Bonet	0	0	0	0
F-1834	TK-562 Discharge line Valve	Flange(North)	0	0	0	0
F-1835	TK-562 Discharge line Valve	Flange(South)	0	0	0	0
F-1836	TK-565 Suction line Valve	Gland	0	0	0	0

F-1837	TK-565 Suction line Valve	Bonet	0	0	0	0
F-1838	TK-565 Suction line Valve	Flange(East)	0	0	0	0
F-1839	TK-565 Suction line Valve	Flange(West)	0	0	0	0
F-1840	TK-565 Discharge line Valve	Gland	0	0	0	0
F-1841	TK-563 Suction line Valve	Gland	0	0	0	0
F-1842	TK-563 Discharge line Valve	Gland	64.0	40	0.0017	0.014892
F-1843	TK-564 Suction line Valve	Gland	0	0	0	0
F-1844	TK-564 Suction line Valve	Bonet	0	0	0	0
F-1845	TK-564 Suction line Valve	Flange(East)	0	0	0	0
F-1846	TK-564 Suction line Valve	Flange(West)	0	0	0	0
F-1847	TK-564 Discharge line	Gland	0	0	0	0
F-1848	TK-572 Drain line Valve-I	Gland	0	0	0	0
F-1849	TK-572 Drain line Valve-I	Bonet	0	0	0	0
F-1850	TK-572 Drain line Valve-I	Flange(North)	0	0	0	0
F-1851	TK-572 Drain line Valve-I	Flange(South)	0	0	0	0
F-1852	TK-572 Drain line Valve-II	Gland	0	0	0	0
F-1853	TK-572 Drain line Valve-II	Bonet	0	0	0	0
F-1854	TK-572 Drain line Valve-II	Flange(North)	0	0	0	0
F-1855	TK-572 Drain line Valve-III	Gland	0	0	0	0
F-1856	TK-572 Drain line Valve-III	Flange(Lower)	0	0	0	0
F-1857	TK-572 Drain line Valve-IV	Gland	0	0	0	0
F-1858	TK-572 Drain line Valve-IV	Flange(North)	0	0	0	0
F-1859	TK-572 Drain line Valve-IV	Flange(South)	0	0	0	0
F-1860	TK-572 Drain line Valve-V	Gland	0	0	0	0
F-1861	TK-572 Drain line Valve-V	Flange(North)	0	0	0	0
F-1862	TK-572 Drain line Valve-V	Flange(South)	0	0	0	0
F-1863	TK-572 Circulation line Valve	Gland	0	0	0	0
F-1864	TK-572 Circulation line Valve	Bonet	0	0	0	0
F-1865	TK-572 Circulation line Valve	Flange(East)	0	0	0	0
F-1866	TK-572 Circulation line Valve	Flange(West)	0	0	0	0
F-1867	TK-572 Suction/Receiving line Valve	Gland	0	0	0	0
F-1868	TK-572 Suction/Receiving line Valve	Bonet	0	0	0	0
F-1869	TK-572 Suction/Receiving line Valve	Flange(East)	0	0	0	0
F-1870	TK-572 Suction/Receiving line Valve	Flange(West)	0	0	0	0
F-1871	TK-571 Drain line Valve-I	Gland	0	0	0	0
F-1872	TK-571 Drain line Valve-I	Flange(North)	0	0	0	0
F-1873	TK-571 Drain line Valve-I	Flange(South)	0	0	0	0
F-1874	TK-571 Drain line Valve-II	Gland	0	0	0	0
F-1875	TK-571 Drain line Valve-II	Flange(North)	0	0	0	0
F-1876	TK-571 Drain line Valve-II	Flange(South)	0	0	0	0
F-1877	TK-571 Drain line Valve-III	Gland	0	0	0	0
F-1878	TK-571 Drain line Valve-IV	Gland	0	0	0	0
F-1879	TK-571 Drain line Valve-IV	Flange(North)	0	0	0	0
F-1880	TK-571 Drain line Valve-IV	Flange(South)	0	0	0	0
F-1881	TK-571 Suction/Receiving line Valve	Gland	156.0	68.1	0.0017	0.014892
F-1882	TK-571 Suction/Receiving line Valve	Bonet	0	0	0	0
F-1883	TK-571 Suction/Receiving line Valve	Flange(North)	0	0	0	0
F-1884	TK-571 Suction/Receiving line Valve	Flange(South)	0	0	0	0
F-1885	TK-571 Circulation line Valve	Gland	0	0	0	0
F-1886	TK-571 Circulation line Valve	Bonet	0	0	0	0
F-1887	TK-571 Circulation line Valve	Flange(North)	0	0	0	0
F-1888	TK-571 Circulation line Valve	Flange(South)	543	305.7	0.00006	0.000526
F-1889	TK-568 Drain line Valve-I	Gland	0	0	0	0
F-1890	TK-568 Drain line Valve-I	Bonet	0	0	0	0
F-1891	TK-568 Drain line Valve-I	Flange(South)	0	0	0	0
F-1892	TK-568 Drain line Valve-II	Gland	0	0	0	0
F-1893	TK-568 Drain line Valve-II	Bonet	0	0	0	0
F-1894	TK-568 Drain line Valve-II	Flange(North)	0	0	0	0
F-1895	TK-568 Drain line Valve-III	Gland	0	0	0	0
F-1896	TK-568 Drain line Valve-III	Bonet	0	0	0	0
F-1897	TK-568 Drain line Valve-III	Flange(Lower)	0	0	0	0
F-1898	TK-568 Drain line Valve-III	Flange(Upper)	108	58.1	0.00006	0.000526
F-1899	TK-568 Drain line Valve-IV	Gland	0	0	0	0
F-1900	TK-568 Drain line Valve-IV	Flange(North)	0	0	0	0
F-1901	TK-568 Drain line Valve-IV	Flange(South)	0	0	0	0
F-1902	TK-568 Drain line Valve-V	Gland	0	0	0	0
F-1903	TK-568 Drain line Valve-V	Bonet	0	0	0	0

F-1904	TK-568 Drain line Valve-V	Flange(North)	0	0	0	0
F-1905	TK-568 Drain line Valve-V	Flange(South)	0	0	0	0
F-1906	TK-568 Suction line Valve	Gland	186	103.7	0.0017	0.014892
F-1907	TK-568 Suction line Valve	Bonet	0	0	0	0
F-1908	TK-568 Suction line Valve	Flange(South)	0	0	0	0
F-1909	TK-568 Suction line Valve	Flange(North)	0	0	0	0
F-1910	TK-568 Circulation line Valve	Gland	0	0	0	0
F-1911	TK-568 Circulation line Valve	Bonet	0	0	0	0
F-1912	TK-568 Circulation line Valve	Flange(South)	0	0	0	0
F-1913	TK-568 Circulation line Valve	Flange(North)	0	0	0	0
F-1914	TK-568 Receiving line Valve	Flange(South)	0	0	0	0
F-1915	TK-568 Receiving line Valve	Flange(North)	0	0	0	0
F-1916	TK-568 Receiving line Valve	Gland	0	0	0	0
F-1917	TK-568 Receiving line Valve	Bonet	0	0	0	0
F-1918	TK-569 Drain line Valve-I	Gland	0	0	0	0
F-1919	TK-569 Drain line Valve-I	Bonet	0	0	0	0
F-1920	TK-569 Drain line Valve-I	Flange(North)	0	0	0	0
F-1921	TK-569 Drain line Valve-I	Flange(South)	0	0	0	0
F-1922	TK-569 Drain line Valve-II	Gland	0	0	0	0
F-1923	TK-569 Drain line Valve-II	Bonet	0	0	0	0
F-1924	TK-569 Drain line Valve-II	Flange(North)	0	0	0	0
F-1925	TK-569 Drain line Valve-III	gland	0	0	0	0
F-1926	TK-569 Drain line Valve-III	Flange(Lower)	0	0	0	0
F-1927	TK-569 Drain line Valve-IV	Gland	0	0	0	0
F-1928	TK-569 Drain line Valve-IV	Bonet	0	0	0	0
F-1929	TK-569 Drain line Valve-IV	Flange(North)	0	0	0	0
F-1930	TK-569 Drain line Valve-IV	Flange(South)	0	0	0	0
F-1931	TK-569 Drain line Valve-V	Gland	0	0	0	0
F-1932	TK-569 Drain line Valve-V	Bonet	0	0	0	0
F-1933	TK-569 Drain line Valve-V	Flange(North)	0	0	0	0
F-1934	TK-569 Suction line Valve	Gland	0	0	0	0
F-1935	TK-569 Suction line Valve	Bonet	0	0	0	0
F-1936	TK-569 Suction line Valve	Flange(North)	0	0	0	0
F-1937	TK-569 Suction line Valve	Flange(South)	0	0	0	0
F-1938	TK-569 Circulation line Valve	Gland	0	0	0	0
F-1939	TK-569 Circulation line Valve	Bonet	0	0	0	0
F-1940	TK-569 Circulation line Valve	Flange(North)	0	0	0	0
F-1941	TK-569 Circulation line Valve	Flange(South)	0	0	0	0
F-1942	TK-569 Receiving line Valve	Gland	0	0	0	0
F-1943	TK-569 Receiving line Valve	Bonet	0	0	0	0
F-1944	TK-569 Receiving line Valve	Flange(North)	0	0	0	0
F-1945	TK-569 Receiving line Valve	Flange(South)	0	0	0	0
F-1946	TK-570 Drain line Valve-I	Gland	0	0	0	0
F-1947	TK-570 Drain line Valve-I	Bonet	0	0	0	0
F-1948	TK-570 Drain line Valve-I	Flange(East)	0	0	0	0
F-1949	TK-570 Drain line Valve-I	Flange(West)	0	0	0	0
F-1950	TK-570 Drain line Valve-II	Gland	0	0	0	0
F-1951	TK-570 Drain line Valve-II	Bonet	0	0	0	0
F-1952	TK-570 Drain line Valve-II	Flange(West)	0	0	0	0
F-1953	TK-570 Drain line Valve-III	Gland	0	0	0	0
F-1954	TK-570 Drain line Valve-III	Flange(Upper)	0	0	0	0
F-1955	TK-570 Drain line Valve-III	Flange(Lower)	0	0	0	0
F-1956	TK-570 Drain line Valve-IV	Gland	0	0	0	0
F-1957	TK-570 Drain line Valve-IV	Bonet	0	0	0	0
F-1958	TK-570 Drain line Valve-IV	Flange(East)	0	0	0	0
F-1959	TK-570 Drain line Valve-IV	Flange(West)	0	0	0	0
F-1960	TK-570 Drain line Valve-V	Gland	0	0	0	0
F-1961	TK-570 Drain line Valve-V	Bonet	0	0	0	0
F-1962	TK-570 Drain line Valve-V	Flange(West)	0	0	0	0
F-1963	TK-570 Suction line Valve	Gland	384	214.5	0.0017	0.014892
F-1964	TK-570 Suction line Valve	Bonet	0	0	0	0
F-1965	TK-570 Suction line Valve	Flange(East)	0	0	0	0
F-1966	TK-570 Suction line Valve	Flange(West)	0	0	0	0
F-1967	TK-570 Circulation line Valve	Gland	0	0	0	0
F-1968	TK-570 Circulation line Valve	Bonet	0	0	0	0
F-1969	TK-570 Circulation line Valve	Flange(East)	0	0	0	0
F-1970	TK-570 Circulation line Valve	Flange(West)	0	0	0	0

F-1971	TK-570 Receiving line Valve-I	Gland	0	0	0	0
F-1972	TK-570 Receiving line Valve-I	Bonet	0	0	0	0
F-1973	TK-570 Receiving line Valve-I	Flange(East)	0	0	0	0
F-1974	TK-570 Receiving line Valve-I	Flange(West)	0	0	0	0
F-1975	TK-570 Receiving line Valve-II	Gland	0	0	0	0
F-1976	TK-570 Receiving line Valve-II	Bonet	0	0	0	0
F-1977	TK-570 Receiving line Valve-II	Flange(North)	0	0	0	0
F-1978	TK-570 Receiving line Valve-II	Flange(South)	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 7(F) UNIT: DCU

SUMMARY SHEET FOR DCU AREA

Total number of points covered	**1043**
Date of Monitoring/Rechecking	**24.02.2023**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-1979	EQP NO-07PA-001B IN LET	V.GLAND	46	37.5	0.0017	0.014892
F-1980		F.JOINT	0	0	0	0
F-1981		P.GLAND	0	0	0	0
F-1982	EQP NO-07PA-001B OUTLET	F.JOINT	0	0	0	0
F-1983		P.GLAND	0	0	0	0
F-1984	EQP NO-07-PA-041B INLET	V.GLAND	0	0	0	0
F-1985		F.JOINT	0	0	0	0
F-1986		P.GLAND	0	0	0	0
F-1987	EQP NO-07-PA-041B OUTLET	F.JOINT	0	0	0	0
F-1988		P.GLAND	0	0	0	0
F-1989	Bypass line to OWS 2nd Valve	V.GLAND	0	0	0	0
F-1990	EQP NO-07-PA-042 B INLET	V.GLAND	0	0	0	0
F-1991		F.JOINT	0	0	0	0
F-1992		P.GLAND	0	0	0	0
F-1993	EQP NO-07-PA-042B OUTLET	F.JOINT	0	0	0	0
F-1994		P.GLAND	0	0	0	0
F-1995	EQP NO-07-PA-005B INLET	V.GLAND	0	0	0	0
F-1996		F.JOINT	32.0	13.1	0.00006	0.000526
F-1997		P.GLAND	0	0	0	0
F-1998	EQP NO-07-PA-005B OUTLET	F.JOINT	0	0	0	0
F-1999		P.GLAND	0	0	0	0
F-2000	EQP NO-07-PA-007A INLET	V.GLAND	0	0	0	0
F-2001		F.JOINT	0	0	0	0
F-2002		P.GLAND	0	0	0	0
F-2003	EQP NO-07-PA-007A OUT	F.JOINT	0	0	0	0
F-2004		P.GLAND	0	0	0	0
F-2005	EQP NO-07-PA-004A IN	V.GLAND	0	0	0	0
F-2006		F.JOINT	0	0	0	0
F-2007		P.GLAND	0	0	0	0
F-2008	EQP NO-07-PA-004A OUT	F.JOINT	0	0	0	0
F-2009		P.GLAND	0	0	0	0
F-2010	EQP NO-07-PA-001 IN B	V.GLAND	0	0	0	0
F-2011		F.JOINT	0	0	0	0
F-2012		P.GLAND	0	0	0	0
F-2013	EQP NO-07-PA-001 B OUT	F.JOINT	0	0	0	0

F-2014		P.GLAND	0	0	0	0
F-2015	EQP NO-07-PA-043B IN	V.GLAND	0	0	0	0
F-2016		F.JOINT	0	0	0	0
F-2017		P.GLAND	0	0	0	0
F-2018	EQP NO-07-PA-043B OUT	F.JOINT	0	0	0	0
F-2019		V.GLAND	0	0	0	0
F-2020		F.JOINT	0	0	0	0
F-2021	Circulation line Pump 43 A/B 1st isolating valve	V.GLAND	0	0	0	0
F-2022		F.JOINT	0	0	0	0
F-2023		F.JOINT	0	0	0	0
F-2024	Control Valvve 07-FV-3403	V.GLAND	0	0	0	0
F-2025		F.JOINT	0	0	0	0
F-2026		F.JOINT	0	0	0	0
F-2027	Circulation line Pump 43 A/B 2nd isolating valve	V.GLAND	0	0	0	0
F-2028		F.JOINT	0	0	0	0
F-2029	EQP NO-07-PA-048 A IN	V.GLAND	0	0	0	0
F-2030		F.JOINT	0	0	0	0
F-2031		P.GLAND	0	0	0	0
F-2032	EQP NO-07-PA-048 A OUT	F.JOINT	0	0	0	0
F-2033		P.GLAND	0	0	0	0
F-2034	EQP NO-07-PA-012 B IN	V.GLAND	0	0	0	0
F-2035		F.JOINT	0	0	0	0
F-2036		P.GLAND	0	0	0	0
F-2037	EQP NO-07-PA-012 B OUT	F.JOINT	0	0	0	0
F-2038		P.GLAND	0	0	0	0
F-2039	EQP NO-07-PA-004 A IN	V.GLAND	0	0	0	0
F-2040		F.JOINT	0	0	0	0
F-2041		P.GLAND	0	0	0	0
F-2042	EQP NO-07-PA-004 A OUT	F.JOINT	0	0	0	0
F-2043		P.GLAND	0	0	0	0
F-2044	EQP NO-07-PA-002A IN	V.GLAND	0	0	0	0
F-2045		F.JOINT	0	0	0	0
F-2046		P.GLAND	0	0	0	0
F-2047	EQP NO-07-PA-002 A OUT	F.JOINT	0	0	0	0
F-2048		P.GLAND	0	0	0	0
F-2049		V.GLAND	0	0	0	0
F-2050	EQP NO-07-PA-006 B IN	V.GLAND	0	0	0	0
F-2051		F.JOINT	0	0	0	0
F-2052		P.GLAND	38.0	20.5	0.0017	0.014892
F-2053	EQP NO-07-PA-006 B OUT	F.JOINT	0	0	0	0
F-2054		P.GLAND	0	0	0	0
F-2055		V.GLAND	0	0	0	0
F-2056	EQP NO-07-PA-003 A IN	V.GLAND	0	0	0	0
F-2057		F.JOINT	0	0	0	0
F-2058		P.GLAND	0	0	0	0
F-2059	EQP NO-07-PA-003 A OUT	F.JOINT	0	0	0	0
F-2060		P.GLAND	0	0	0	0
F-2061	EQP NO-07-PA-009A IN	V.GLAND	0	0	0	0
F-2062		F.JOINT	0	0	0	0
F-2063		P.GLAND	0	0	0	0
F-2064	EQP NO-07-PA-009A OUT	F.JOINT	0	0	0	0
F-2065		P.GLAND	0	0	0	0
F-2066	LINE CFO FORCED REFLUX	VALVE	0	0	0	0
F-2067		VALVE	0	0	0	0
F-2068		VALVE	0	0	0	0
F-2069	FEED SAMPLE POINT	VALVE	0	0	0	0
F-2070		VALVE	18.0	5.4	0.0017	0.014892
F-2071		VALVE	0	0	0	0
F-2072		VALVE	0	0	0	0
F-2073		FLANGE	0	0	0	0
F-2074		FLANGE	0	0	0	0
F-2075	EQP NO-07-PA-014 B IN	V.GLAND	0	0	0	0
F-2076		F.JOINT	0	0	0	0
F-2077		P.GLAND	0	0	0	0
F-2078	EQP NO-07-PA-014 B OUT	F.JOINT	0	0	0	0
F-2079		P.GLAND	0	0	0	0
F-2080	EQP NO-07-PA-044 A IN	V.GLAND	0	0	0	0

F-2081		F.JOINT	0	0	0	0
F-2082		P.GLAND	0	0	0	0
F-2083	EQP NO-07-PA-044 A OUT	F.JOINT	0	0	0	0
F-2084		P.GLAND	0	0	0	0
F-2085	FEED SAMPLE POINT	FLANGE	0	0	0	0
F-2086	DOWN LINE	VALVE	0	0	0	0
F-2087		FLANGE	0	0	0	0
F-2088		FLANGE	0	0	0	0
F-2089		VALVE	0	0	0	0
F-2090		FLANGE	0	0	0	0
F-2091		VALVE	0	0	0	0
F-2092		FLANGE	0	0	0	0
F-2093		FLANGE	0	0	0	0
F-2094		VALVE	0	0	0	0
F-2095		FLANGE	0	0	0	0
F-2096		VALVE	0	0	0	0
F-2097		VALVE	0	0	0	0
F-2098		FLANGE	0	0	0	0
F-2099		FLANGE	0	0	0	0
F-2100	LINE LDO OUT	FLANGE	0	0	0	0
F-2101	BACK SIDE OF SAMPLE POINT	FLANGE	0	0	0	0
F-2102		VALVE	0	0	0	0
F-2103		FLANGE	0	0	0	0
F-2104		FLANGE	0	0	0	0
F-2105	LINE 2-P-07,115	VALVE	0	0	0	0
F-2106		FLANGE	0	0	0	0
F-2107		FLANGE	0	0	0	0
F-2108	LINE P/1107	VALVE	0	0	0	0
F-2109		VALVE	0	0	0	0
F-2110		FLANGE	0	0	0	0
F-2111		FLANGE	0	0	0	0
F-2112		FLANGE	0	0	0	0
F-2113		FLANGE	0	0	0	0
F-2114		VALVE	0	0	0	0
F-2115		FLANGE	0	0	0	0
F-2116		VALVE	0	0	0	0
F-2117		FLANGE	0	0	0	0
F-2118	LINE 4-P-07-1101	VALVE	0	0	0	0
F-2119		FLANGE	0	0	0	0
F-2120		VALVE	0	0	0	0
F-2121		FLANGE	0	0	0	0
F-2122		FLANGE	0	0	0	0
F-2123		VALVE	0	0	0	0
F-2124		FLANGE	0	0	0	0
F-2125	SIDE OF	FLANGE	0	0	0	0
F-2126	LINE 4-P-07-1101	VALVE	0	0	0	0
F-2127		FLANGE	0	0	0	0
F-2128		FLANGE	0	0	0	0
F-2129		VALVE	0	0	0	0
F-2130		FLANGE	0	0	0	0
F-2131		VALVE	0	0	0	0
F-2132		VALVE	0	0	0	0
F-2133	LINE LDO TO STORAGE/SLOP	FLANGE	9.0	4.6	0.00006	0.00526
F-2134		VALVE	0	0	0	0
F-2135		FLANGE	0	0	0	0
F-2136		FLANGE	0	0	0	0
F-2137		VALVE	0	0	0	0
F-2138		FLANGE	0	0	0	0
F-2139		VALVE	0	0	0	0
F-2140		VALVE	0	0	0	0
F-2141	LDO TO SLOP LINE	VALVE	0	0	0	0
F-2142		VALVE	0	0	0	0
F-2143		FLANGE	0	0	0	0
F-2144		VALVE	0	0	0	0
F-2145		FLANGE	0	0	0	0
F-2146		VALVE	0	0	0	0
F-2147		VALVE	0	0	0	0

F-2148		FLANGE	0	0	0	0
F-2149		VALVE	0	0	0	0
F-2150		FLANGE	0	0	0	0
F-2151		VALVE	0	0	0	0
F-2152	LINE WCR -2301	FLANGE	0	0	0	0
F-2153		VALVE	0	0	0	0
F-2154		FLANGE	0	0	0	0
F-2155	RIGHT SIDE OF	VALVE	0	0	0	0
F-2156	LINE WCR -2301	VALVE	0	0	0	0
F-2157		VALVE	0	0	0	0
F-2158		VALVE	0	0	0	0
F-2159		FLANGE	0	0	0	0
F-2160		VALVE	0	0	0	0
F-2161		FLANGE	0	0	0	0
F-2162	LINE WCR-2302	FLANGE	0	0	0	0
F-2163		VALVE	0	0	0	0
F-2164		FLANGE	0	0	0	0
F-2165	RIGHT SIDE OF	VALVE	0	0	0	0
F-2166	LINE WCR -2302	VALVE	0	0	0	0
F-2167		VALVE	0	0	0	0
F-2168		VALVE	0	0	0	0
F-2169		VALVE	0	0	0	0
F-2170	LINE TO FPJ 1701	FLANGE	0	0	0	0
F-2171		VALVE	0	0	0	0
F-2172		FLANGE	0	0	0	0
F-2173		FLANGE	0	0	0	0
F-2174		VALVE	0	0	0	0
F-2175		FLANGE	0	0	0	0
F-2176		FLANGE	0	0	0	0
F-2177		VALVE	0	0	0	0
F-2178		FLANGE	0	0	0	0
F-2179	LINE TO P-1702	FLANGE	0	0	0	0
F-2180		VALVE	0	0	0	0
F-2181		FLANGE	0	0	0	0
F-2182		FLANGE	0	0	0	0
F-2183		VALVE	0	0	0	0
F-2184		FLANGE	0	0	0	0
F-2185		FLANGE	0	0	0	0
F-2186		VALVE	0	0	0	0
F-2187		FLANGE	0	0	0	0
F-2188		FLANGE	0	0	0	0
F-2189		FLANGE	0	0	0	0
F-2190		FLANGE	0	0	0	0
F-2191		VALVE	0	0	0	0
F-2192	LINE TO EX SLOP HEADER	FLANGE	0	0	0	0
F-2193		VALVE	0	0	0	0
F-2194		FLANGE	0	0	0	0
F-2195		FLANGE	0	0	0	0
F-2196		VALVE	0	0	0	0
F-2197		FLANGE	0	0	0	0
F-2198		FLANGE	0	0	0	0
F-2199		VALVE	0	0	0	0
F-2200		FLANGE	0	0	0	0
F-2201		FLANGE	0	0	0	0
F-2202		VALVE	0	0	0	0
F-2203		FLANGE	0	0	0	0
F-2204		VALVE	0	0	0	0
F-2205		VALVE	0	0	0	0
F-2206	LINE TO P/1104	FLANGE	0	0	0	0
F-2207		VALVE	0	0	0	0
F-2208		FLANGE	0	0	0	0
F-2209	LINE TO CC-002	FLANGE	0	0	0	0
F-2210		VALVE	0	0	0	0
F-2211		FLANGE	0	0	0	0
F-2212	LINE CV-FV-1601	FLANGE	0	0	0	0
F-2213		VALVE	0	0	0	0
F-2214		FLANGE	0	0	0	0

F-2215		FLANGE	0	0	0	0
F-2216		VALVE	0	0	0	0
F-2217		FLANGE	0	0	0	0
F-2218	BY PASS LINE	FLANGE	0	0	0	0
F-2219		VALVE	0	0	0	0
F-2220		FLANGE	0	0	0	0
F-2221		FLANGE	0	0	0	0
F-2222		VALVE	0	0	0	0
F-2223		FLANGE	0	0	0	0
F-2224	RECYCLE NAPTHA TO EX-PA-044 A/B	FLANGE	0	0	0	0
F-2225	1st Isolating valve	VALVE	0	0	0	0
F-2226		FLANGE	0	0	0	0
F-2227	Control Valve 07-FV-3401	FLANGE	618	336.0	0.00006	0.000526
F-2228		VALVE	0	0	0	0
F-2229		FLANGE	0	0	0	0
F-2230		FLANGE	0	0	0	0
F-2231	2 nd Isolating valve	VALVE	0	0	0	0
F-2232		FLANGE	0	0	0	0
F-2233	BY PASS LINE TO EE-22	FLANGE	0	0	0	0
F-2234		VALVE	0	0	0	0
F-2235		FLANGE	0	0	0	0
F-2236	LINE LPG EX PA-12 A/B PUMP	FLANGE	0	0	0	0
F-2237		VALVE	0	0	0	0
F-2238		FLANGE	0	0	0	0
F-2239	Control Valve 07-FV-3501	FLANGE	0	0	0	0
F-2240		VALVE	0	0	0	0
F-2241		FLANGE	0	0	0	0
F-2242		FLANGE	0	0	0	0
F-2243		VALVE	0	0	0	0
F-2244		FLANGE	0	0	0	0
F-2245	BY PASS LINE	FLANGE	0	0	0	0
F-2246		VALVE	0	0	0	0
F-2247		FLANGE	0	0	0	0
F-2248		FLANGE	0	0	0	0
F-2249		VALVE	0	0	0	0
F-2250		FLANGE	0	0	0	0
F-2251		FLANGE	0	0	0	0
F-2252		VALVE	0	0	0	0
F-2253		FLANGE	0	0	0	0
F-2254	CIRCULATION LINE 043 A/B	FLANGE	0	0	0	0
F-2255		VALVE	0	0	0	0
F-2256		FLANGE	0	0	0	0
F-2257	07-FV-3403	FLANGE	44.6	24.0	0.00006	0.000526
F-2258		VALVE	0	0	0	0
F-2259		FLANGE	0	0	0	0
F-2260	BY PASS LINE	FLANGE	0	0	0	0
F-2261		VALVE	0	0	0	0
F-2262		FLANGE	0	0	0	0
F-2263		VALVE	0	0	0	0
F-2264		VALVE	0	0	0	0
F-2265	DEBUTANIZER REFLUX LINE	FLANGE	0	0	0	0
F-2266		VALVE	0	0	0	0
F-2267		FLANGE	0	0	0	0
F-2268		FLANGE	0	0	0	0
F-2269		VALVE	0	0	0	0
F-2270		FLANGE	0	0	0	0
F-2271		FLANGE	0	0	0	0
F-2272		VALVE	0	0	0	0
F-2273		FLANGE	0	0	0	0
F-2274		FLANGE	0	0	0	0
F-2275		FLANGE	0	0	0	0
F-2276		FLANGE	0	0	0	0
F-2277	LINE CR -01-GBF	VALVE	0	0	0	0
F-2278		VALVE	0	0	0	0
F-2279		VALVE	0	0	0	0
F-2280		FLANGE	0	0	0	0
F-2281		FLANGE	0	0	0	0

F-2282		FLANGE	0	0	0	0
F-2283	LEFT SIDE OF LINE	FLANGE	0	0	0	0
F-2284	LINE CR -01-GBF	VALVE	0	0	0	0
F-2285		FLANGE	0	0	0	0
F-2286		FLANGE	0	0	0	0
F-2287		VALVE	0	0	0	0
F-2288		FLANGE	0	0	0	0
F-2289		FLANGE	0	0	0	0
F-2290		VALVE	0	0	0	0
F-2291		FLANGE	0	0	0	0
F-2292	LINE 2P-07-1505	FLANGE	0	0	0	0
F-2293		VALVE	0	0	0	0
F-2294		FLANGE	0	0	0	0
F-2295	BACK SIDE OF	FLANGE	14.0	8.9	0.00006	0.000526
F-2296	LINE 2P-07-1505	VALVE	0	0	0	0
F-2297		FLANGE	0	0	0	0
F-2298		FLANGE	0	0	0	0
F-2299		VALVE	0	0	0	0
F-2300		FLANGE	0	0	0	0
F-2301		VALVE	0	0	0	0
F-2302		VALVE	0	0	0	0
F-2303		VALVE	0	0	0	0
F-2304		VALVE	0	0	0	0
F-2305		VALVE	0	0	0	0
F-2306		VALVE	0	0	0	0
F-2307	LINE 3 P -07 -1406-31A	VALVE	0	0	0	0
F-2308		VALVE	0	0	0	0
F-2309	STABILIZED NAPTHA COOLER	FLANGE	0	0	0	0
F-2310		VALVE	0	0	0	0
F-2311		FLANGE	0	0	0	0
F-2312		FLANGE	0	0	0	0
F-2313		VALVE	0	0	0	0
F-2314		FLANGE	0	0	0	0
F-2315		FLANGE	0	0	0	0
F-2316		VALVE	0	0	0	0
F-2317		FLANGE	0	0	0	0
F-2318		FLANGE	0	0	0	0
F-2319		VALVE	0	0	0	0
F-2320		FLANGE	0	0	0	0
F-2321		FLANGE	0	0	0	0
F-2322		VALVE	0	0	0	0
F-2323		FLANGE	0	0	0	0
F-2324		FLANGE	0	0	0	0
F-2325		VALVE	0	0	0	0
F-2326		FLANGE	0	0	0	0
F-2327	LINE TO EE - 024	FLANGE	0	0	0	0
F-2328		VALVE	0	0	0	0
F-2329		FLANGE	0	0	0	0
F-2330		VALVE	0	0	0	0
F-2331	LINE EX EE - 024	FLANGE	0	0	0	0
F-2332		VALVE	0	0	0	0
F-2333		FLANGE	0	0	0	0
F-2334		VALVE	0	0	0	0
F-2335	DEBUTANISER CONDENSER	FLANGE	0	0	0	0
F-2336		VALVE	0	0	0	0
F-2337		FLANGE	0	0	0	0
F-2338		FLANGE	0	0	0	0
F-2339		VALVE	0	0	0	0
F-2340		FLANGE	0	0	0	0
F-2341		FLANGE	0	0	0	0
F-2342		VALVE	0	0	0	0
F-2343		FLANGE	0	0	0	0
F-2344		FLANGE	0	0	0	0
F-2345		VALVE	0	0	0	0
F-2346		FLANGE	0	0	0	0
F-2347		FLANGE	0	0	0	0
F-2348		VALVE	0	0	0	0

F-2349		FLANGE	0	0	0	0
F-2350	LPG Ex _12A/B Line 1st Isolating valve	FLANGE	598	317.3	0.00006	0.000526
F-2351		VALVE	0	0	0	0
F-2352		FLANGE	0	0	0	0
F-2353	Contrl Valve 07-FV-3501	FLANGE	0	0	0	0
F-2354		VALVE	0	0	0	0
F-2355		FLANGE	0	0	0	0
F-2356		FLANGE	0	0	0	0
F-2357	LPG Ex _12A/B Line 2nd Isolating valve	VALVE	0	0	0	0
F-2358		FLANGE	0	0	0	0
F-2359		FLANGE	0	0	0	0
F-2360	NEAR NAPTHA SAMPLE POINT	VALVE	0	0	0	0
F-2361		VALVE	0	0	0	0
F-2362		FLANGE	0	0	0	0
F-2363		FLANGE	0	0	0	0
F-2364		VALVE	0	0	0	0
F-2365		FLANGE	0	0	0	0
F-2366		FLANGE	0	0	0	0
F-2367		VALVE	0	0	0	0
F-2368		FLANGE	0	0	0	0
F-2369		FLANGE	0	0	0	0
F-2370		FLANGE	0	0	0	0
F-2371		VALVE	0	0	0	0
F-2372		FLANGE	0	0	0	0
F-2373		FLANGE	0	0	0	0
F-2374		VALVE	0	0	0	0
F-2375		FLANGE	0	0	0	0
F-2376		FLANGE	0	0	0	0
F-2377		VALVE	0	0	0	0
F-2378		FLANGE	0	0	0	0
F-2379		VALVE	0	0	0	0
F-2380		FLANGE	0	0	0	0
F-2381		FLANGE	0	0	0	0
F-2382		VALVE	0	0	0	0
F-2383		FLANGE	0	0	0	0
F-2384	DE-GASSER LINE	FLANGE	0	0	0	0
F-2385		VALVE	0	0	0	0
F-2386		FLANGE	0	0	0	0
F-2387		FLANGE	0	0	0	0
F-2388		VALVE	0	0	0	0
F-2389		FLANGE	0	0	0	0
F-2390		FLANGE	0	0	0	0
F-2391		VALVE	0	0	0	0
F-2392		FLANGE	0	0	0	0
F-2393		VALVE	0	0	0	0
F-2394		FLANGE	0	0	0	0
F-2395		VALVE	0	0	0	0
F-2396	LINE EX-PA -002 A/B	VALVE	0	0	0	0
F-2397		VALVE	0	0	0	0
F-2398		VALVE	0	0	0	0
F-2399	LINE COMPRESSOR SUCTION KOD	FLANGE	14	0	0	0
F-2400		FLANGE	0	0	0	0
F-2401		VALVE	0	0	0	0
F-2402		FLANGE	0	0	0	0
F-2403		FLANGE	0	0	0	0
F-2404		FLANGE	0	0	0	0
F-2405		FLANGE	0	0	0	0
F-2406		VALVE	0	0	0	0
F-2407		FLANGE	0	0	0	0
F-2408		FLANGE	0	0	0	0
F-2409		VALVE	0	0	0	0
F-2410		FLANGE	0	0	0	0
F-2411		FLANGE	0	0	0	0
F-2412		VALVE	0	0	0	0
F-2413		FLANGE	0	0	0	0
F-2414		FLANGE	0	0	0	0
F-2415		VALVE	0	0	0	0

F-2416		FLANGE	0	0	0	0
F-2417		VALVE	0	0	0	0
F-2418		VALVE	0	0	0	0
F-2419		FLANGE	0	0	0	0
F-2420		VALVE	0	0	0	0
F-2421		FLANGE	0	0	0	0
F-2422		FLANGE	0	0	0	0
F-2423		VALVE	0	0	0	0
F-2424		FLANGE	0	0	0	0
F-2425		FLANGE	0	0	0	0
F-2426		VALVE	0	0	0	0
F-2427		FLANGE	0	0	0	0
F-2428		FLANGE	0	0	0	0
F-2429		VALVE	0	0	0	0
F-2430		FLANGE	0	0	0	0
F-2431	LINE TO VV -031-BOOT	FLANGE	0	0	0	0
F-2432		VALVE	0	0	0	0
F-2433		FLANGE	0	0	0	0
F-2434		FLANGE	0	0	0	0
F-2435		VALVE	0	0	0	0
F-2436		FLANGE	0	0	0	0
F-2437		FLANGE	0	0	0	0
F-2438		VALVE	0	0	0	0
F-2439		FLANGE	0	0	0	0
F-2440	LINE TO CBD 07-3202	FLANGE	0	0	0	0
F-2441		VALVE	0	0	0	0
F-2442		FLANGE	0	0	0	0
F-2443		FLANGE	0	0	0	0
F-2444		VALVE	0	0	0	0
F-2445		FLANGE	0	0	0	0
F-2446		FLANGE	0	0	0	0
F-2447		VALVE	0	0	0	0
F-2448		FLANGE	0	0	0	0
F-2449	LINE TO '07-GN-00-007B	FLANGE	0	0	0	0
F-2450		FLANGE	0	0	0	0
F-2451		VALVE	0	0	0	0
F-2452		FLANGE	0	0	0	0
F-2453		VALVE	0	0	0	0
F-2454	LINE TO '07-GN-00-007A	FLANGE	0	0	0	0
F-2455		FLANGE	0	0	0	0
F-2456		VALVE	0	0	0	0
F-2457		FLANGE	0	0	0	0
F-2458		VALVE	0	0	0	0
F-2459	LINE -19 Control Valve	FLANGE	0	0	0	0
F-2460		VALVE	0	0	0	0
F-2461		FLANGE	0	0	0	0
F-2462		FLANGE	0	0	0	0
F-2463		VALVE	0	0	0	0
F-2464		FLANGE	0	0	0	0
F-2465		VALVE	0	0	0	0
F-2466		FLANGE	0	0	0	0
F-2467		VALVE	0	0	0	0
F-2468		FLANGE	0	0	0	0
F-2469		VALVE	0	0	0	0
F-2470		FLANGE	0	0	0	0
F-2471		FLANGE	0	0	0	0
F-2472		VALVE	0	0	0	0
F-2473		FLANGE	0	0	0	0
F-2474	ABSORBER REFLUX LINE 1 st isolating valve	FLANGE	0	0	0	0
F-2475		VALVE	0	0	0	0
F-2476		FLANGE	0	0	0	0
F-2477		FLANGE	0	0	0	0
F-2478	CONTRL VALVE 07-FV-3402	VALVE	0	0	0	0
F-2479		FLANGE	0	0	0	0
F-2480	ABSORBER REFLUX LINE 2 nd isolating valve	FLANGE	0	0	0	0
F-2481		VALVE	0	0	0	0
F-2482		FLANGE	0	0	0	0

F-2483	Bypass line	FLANGE	36.0	19.5	0.00006	0.000526
F-2484		VALVE	0	0	0	0
F-2485		FLANGE	0	0	0	0
F-2486		FLANGE	0	0	0	0
F-2487		FLANGE	0	0	0	0
F-2488	NEAR LINE 21 CV	VALVE	0	0	0	0
F-2489	LINE 1 (A)	VALVE	0	0	0	0
F-2490		FLANGE	0	0	0	0
F-2491		FLANGE	0	0	0	0
F-2492		VALVE	0	0	0	0
F-2493	LINE 2 (A)	VALVE	0	0	0	0
F-2494		VALVE	0	0	0	0
F-2495		FLANGE	0	0	0	0
F-2496		FLANGE	0	0	0	0
F-2497	LINE 3 (A)	VALVE	0	0	0	0
F-2498		VALVE	0	0	0	0
F-2499		FLANGE	0	0	0	0
F-2500		VALVE	0	0	0	0
F-2501		VALVE	0	0	0	0
F-2502	LINE 4 (A)	VALVE	0	0	0	0
F-2503		VALVE	0	0	0	0
F-2504		FLANGE	0	0	0	0
F-2505		FLANGE	0	0	0	0
F-2506		VALVE	0	0	0	0
F-2507		VALVE	0	0	0	0
F-2508	LINE 5 (A)	VALVE	0	0	0	0
F-2509		VALVE	0	0	0	0
F-2510		FLANGE	0	0	0	0
F-2511		FLANGE	0	0	0	0
F-2512		VALVE	0	0	0	0
F-2513		VALVE	0	0	0	0
F-2514	NEAR LINE 21 CV LINE 1 (B)	VALVE	0	0	0	0
F-2515		VALVE	0	0	0	0
F-2516		FLANGE	0	0	0	0
F-2517		FLANGE	0	0	0	0
F-2518		VALVE	0	0	0	0
F-2519		VALVE	0	0	0	0
F-2520	LINE 2 (B)	VALVE	0	0	0	0
F-2521		VALVE	0	0	0	0
F-2522		FLANGE	0	0	0	0
F-2523		FLANGE	0	0	0	0
F-2524		VALVE	0	0	0	0
F-2525		VALVE	0	0	0	0
F-2526	LINE 3 (B)	VALVE	0	0	0	0
F-2527		VALVE	0	0	0	0
F-2528		FLANGE	0	0	0	0
F-2529		FLANGE	0	0	0	0
F-2530		VALVE	0	0	0	0
F-2531		VALVE	0	0	0	0
F-2532	LINE 4 (B)	VALVE	0	0	0	0
F-2533		VALVE	0	0	0	0
F-2534		FLANGE	0	0	0	0
F-2535		FLANGE	0	0	0	0
F-2536		VALVE	0	0	0	0
F-2537		VALVE	0	0	0	0
F-2538	LINE 5 (B)	VALVE	0	0	0	0
F-2539		VALVE	0	0	0	0
F-2540		FLANGE	0	0	0	0
F-2541		FLANGE	0	0	0	0
F-2542		VALVE	0	0	0	0
F-2543	LINE 2 P-07-240 (20 CV)	FLANGE	0	0	0	0
F-2544		VALVE	0	0	0	0
F-2545		FLANGE	0	0	0	0
F-2546		FLANGE	0	0	0	0
F-2547		FLANGE	0	0	0	0
F-2548		VALVE	0	0	0	0
F-2549		FLANGE	0	0	0	0

F-2550		VALVE	0	0	0	0
F-2551		VALVE	0	0	0	0
F-2552		FLANGE	0	0	0	0
F-2553		VALVE	0	0	0	0
F-2554		FLANGE	0	0	0	0
F-2555		FLANGE	0	0	0	0
F-2556	LINE 2 CBD -07 -1402A 1A	FLANGE	0	0	0	0
F-2557	**(N.S)**	VALVE	0	0	0	0
F-2558		FLANGE	0	0	0	0
F-2559		FLANGE	0	0	0	0
F-2560		VALVE	0	0	0	0
F-2561		FLANGE	0	0	0	0
F-2562		FLANGE	0	0	0	0
F-2563		VALVE	0	0	0	0
F-2564		FLANGE	0	0	0	0
F-2565		FLANGE	0	0	0	0
F-2566		FLANGE	0	0	0	0
F-2567		VALVE	0	0	0	0
F-2568		FLANGE	0	0	0	0
F-2569		FLANGE	0	0	0	0
F-2570		VALVE	0	0	0	0
F-2571		VALVE	0	0	0	0
F-2572		FLANGE	0	0	0	0
F-2573		VALVE	0	0	0	0
F-2574		FLANGE	0	0	0	0
F-2575		FLANGE	0	0	0	0
F-2576		VALVE	0	0	0	0
F-2577		FLANGE	0	0	0	0
F-2578		FLANGE	0	0	0	0
F-2579		VALVE	0	0	0	0
F-2580		FLANGE	0	0	0	0
F-2581		FLANGE	0	0	0	0
F-2582		VALVE	0	0	0	0
F-2583		FLANGE	0	0	0	0
F-2584		VALVE	0	0	0	0
F-2585		FLANGE	0	0	0	0
F-2586		FLANGE	0	0	0	0
F-2587		VALVE	0	0	0	0
F-2588		FLANGE	0	0	0	0
F-2589		FLANGE	0	0	0	0
F-2590		FLANGE	0	0	0	0
F-2591		VALVE	0	0	0	0
F-2592		FLANGE	0	0	0	0
F-2593		FLANGE	0	0	0	0
F-2594		FLANGE	0	0	0	0
F-2595	LINE EX- PA-016-B	FLANGE	0	0	0	0
F-2596		VALVE	0	0	0	0
F-2597		FLANGE	0	0	0	0
F-2598		FLANGE	0	0	0	0
F-2599		VALVE	0	0	0	0
F-2600		FLANGE	0	0	0	0
F-2601		FLANGE	0	0	0	0
F-2602		VALVE	0	0	0	0
F-2603		FLANGE	0	0	0	0
F-2604		FLANGE	0	0	0	0
F-2605		VALVE	0	0	0	0
F-2606		FLANGE	0	0	0	0
F-2607		FLANGE	0	0	0	0
F-2608		VALVE	0	0	0	0
F-2609		FLANGE	0	0	0	0
F-2610		FLANGE	0	0	0	0
F-2611		VALVE	0	0	0	0
F-2612		FLANGE	0	0	0	0
F-2613	LINE 4P -07-2510 A1A	FLANGE	0	0	0	0
F-2614		VALVE	0	0	0	0
F-2615		FLANGE	0	0	0	0
F-2616		FLANGE	0	0	0	0

F-2617		VALVE	0	0	0	0
F-2618		FLANGE	0	0	0	0
F-2619		FLANGE	0	0	0	0
F-2620		FLANGE	0	0	0	0
F-2621		VALVE	0	0	0	0
F-2622		FLANGE	0	0	0	0
F-2623		VALVE	0	0	0	0
F-2624		FLANGE	0	0	0	0
F-2625		FLANGE	0	0	0	0
F-2626		VALVE	0	0	0	0
F-2627		FLANGE	0	0	0	0
F-2628		FLANGE	0	0	0	0
F-2629		VALVE	0	0	0	0
F-2630		FLANGE	0	0	0	0
F-2631		FLANGE	0	0	0	0
F-2632		VALVE	0	0	0	0
F-2633		FLANGE	0	0	0	0
F-2634		FLANGE	0	0	0	0
F-2635		FLANGE	0	0	0	0
F-2636		FLANGE	0	0	0	0
F-2637		VALVE	0	0	0	0
F-2638		FLANGE	0	0	0	0
F-2639		FLANGE	0	0	0	0
F-2640		VALVE	0	0	0	0
F-2641		FLANGE	0	0	0	0
F-2642		VALVE	0	0	0	0
F-2643	LINE PA-EX-002A/B	FLANGE	0	0	0	0
F-2644		VALVE	0	0	0	0
F-2645		FLANGE	0	0	0	0
F-2646		FLANGE	0	0	0	0
F-2647		VALVE	0	0	0	0
F-2648		FLANGE	0	0	0	0
F-2649		FLANGE	0	0	0	0
F-2650		VALVE	0	0	0	0
F-2651		FLANGE	0	0	0	0
F-2652		VALVE	0	0	0	0
F-2653		FLANGE	0	0	0	0
F-2654	LPG SAMPLING POINT LINE	VALVE	0	0	0	0
F-2655	LPG RD 4th VALVE	FLANGE	26	0	0	0
F-2656		VALVE	0	0	0	0
F-2657		VALVE	0	0	0	0
F-2658		VALVE	0	0	0	0
F-2659		FLANGE	0	0	0	0
F-2660		FLANGE	0	0	0	0
F-2661		FLANGE	0	0	0	0
F-2662		VALVE	0	0	0	0
F-2663		FLANGE	0	0	0	0
F-2664		VALVE	0	0	0	0
F-2665		VALVE	0	0	0	0
F-2666		FLANGE	0	0	0	0
F-2667		VALVE	0	0	0	0
F-2668		FLANGE	0	0	0	0
F-2669		VALVE	0	0	0	0
F-2670		FLANGE	0	0	0	0
F-2671		VALVE	0	0	0	0
F-2672		VALVE	0	0	0	0
F-2673	BELOW FLARE KNOCK OUT DRUM	FLANGE	0	0	0	0
F-2674	LINE 07-VV-00-019	VALVE	0	0	0	0
F-2675		FLANGE	0	0	0	0
F-2676		FLANGE	0	0	0	0
F-2677		VALVE	0	0	0	0
F-2678		FLANGE	0	0	0	0
F-2679		FLANGE	0	0	0	0
F-2680		VALVE	0	0	0	0
F-2681		FLANGE	0	0	0	0
F-2682		FLANGE	0	0	0	0
F-2683		VALVE	0	0	0	0

F-2684		FLANGE	0	0	0	0
F-2685		VALVE	0	0	0	0
F-2686		FLANGE	0	0	0	0
F-2687		VALVE	0	0	0	0
F-2688		FLANGE	0	0	0	0
F-2689		VALVE	0	0	0	0
F-2690		FLANGE	0	0	0	0
F-2691		FLANGE	0	0	0	0
F-2692		FLANGE	0	0	0	0
F-2693		FLANGE	0	0	0	0
F-2694	DRAIN EX PA-42 A/B LINE 1st VALVE	FLANGE	0	0	0	0
F-2695		VALVE	0	0	0	0
F-2696		FLANGE	0	0	0	0
F-2697	DRAIN EX PA-42 A/B LINE 2 nd VALVE	FLANGE	0	0	0	0
F-2698		VALVE	0	0	0	0
F-2699		FLANGE	0	0	0	0
F-2700		FLANGE	0	0	0	0
F-2701		VALVE	0	0	0	0
F-2702		FLANGE	0	0	0	0
F-2703		FLANGE	0	0	0	0
F-2704		VALVE	0	0	0	0
F-2705		FLANGE	0	0	0	0
F-2706		FLANGE	0	0	0	0
F-2707		VALVE	0	0	0	0
F-2708		FLANGE	0	0	0	0
F-2709		VALVE	0	0	0	0
F-2710		FLANGE	0	0	0	0
F-2711		VALVE	0	0	0	0
F-2712		FLANGE	0	0	0	0
F-2713		FLANGE	0	0	0	0
F-2714		FLANGE	0	0	0	0
F-2715	LINE 2 CL -07-2401	FLANGE	0	0	0	0
F-2716		VALVE	0	0	0	0
F-2717		FLANGE	0	0	0	0
F-2718		FLANGE	0	0	0	0
F-2719		FLANGE	0	0	0	0
F-2720		FLANGE	0	0	0	0
F-2721		VALVE	0	0	0	0
F-2722		FLANGE	0	0	0	0
F-2723		VALVE	0	0	0	0
F-2724	BELOW FLUSHING DRUM	FLANGE	0	0	0	0
F-2725	LINE 07 -VV -02 -020	VALVE	0	0	0	0
F-2726		FLANGE	0	0	0	0
F-2727		FLANGE	0	0	0	0
F-2728		VALVE	0	0	0	0
F-2729		FLANGE	0	0	0	0
F-2730		FLANGE	0	0	0	0
F-2731		VALVE	0	0	0	0
F-2732		FLANGE	0	0	0	0
F-2733		FLANGE	0	0	0	0
F-2734		VALVE	0	0	0	0
F-2735		FLANGE	0	0	0	0
F-2736		FLANGE	0	0	0	0
F-2737		VALVE	0	0	0	0
F-2738		FLANGE	0	0	0	0
F-2739	LINE EX -PA -015 A/B	FLANGE	0	0	0	0
F-2740		VALVE	0	0	0	0
F-2741		FLANGE	0	0	0	0
F-2742		FLANGE	0	0	0	0
F-2743		VALVE	0	0	0	0
F-2744		FLANGE	0	0	0	0
F-2745		FLANGE	0	0	0	0
F-2746		VALVE	0	0	0	0
F-2747		FLANGE	0	0	0	0
F-2748		FLANGE	0	0	0	0
F-2749		VALVE	0	0	0	0
F-2750		FLANGE	0	0	0	0

F-2751		FLANGE	0	0	0	0
F-2752		VALVE	0	0	0	0
F-2753		FLANGE	0	0	0	0
F-2754		FLANGE	0	0	0	0
F-2755		VALVE	0	0	0	0
F-2756		FLANGE	0	0	0	0
F-2757		FLANGE	0	0	0	0
F-2758		VALVE	0	0	0	0
F-2759		FLANGE	0	0	0	0
F-2760		FLANGE	0	0	0	0
F-2761		VALVE	0	0	0	0
F-2762		FLANGE	0	0	0	0
F-2763	LINE 4P-07-2510 -A 1A	VALVE	0	0	0	0
F-2764		VALVE	0	0	0	0
F-2765		FLANGE	0	0	0	0
F-2766		VALVE	0	0	0	0
F-2767		FLANGE	0	0	0	0
F-2768		FLANGE	0	0	0	0
F-2769		VALVE	0	0	0	0
F-2770		FLANGE	0	0	0	0
F-2771		FLANGE	0	0	0	0
F-2772		FLANGE	0	0	0	0
F-2773		FLANGE	0	0	0	0
F-2774		VALVE	0	0	0	0
F-2775		FLANGE	0	0	0	0
F-2776		FLANGE	0	0	0	0
F-2777		FLANGE	0	0	0	0
F-2778		VALVE	0	0	0	0
F-2779		VALVE	0	0	0	0
F-2780		FLANGE	0	0	0	0
F-2781		FLANGE	0	0	0	0
F-2782		VALVE	0	0	0	0
F-2783		FLANGE	0	0	0	0
F-2784		FLANGE	0	0	0	0
F-2785		VALVE	0	0	0	0
F-2786		FLANGE	0	0	0	0
F-2787		FLANGE	0	0	0	0
F-2788		VALVE	0	0	0	0
F-2789		FLANGE	0	0	0	0
F-2790		FLANGE	0	0	0	0
F-2791		VALVE	0	0	0	0
F-2792		FLANGE	0	0	0	0
F-2793		FLANGE	0	0	0	0
F-2794		VALVE	0	0	0	0
F-2795		FLANGE	0	0	0	0
F-2796		VALVE	0	0	0	0
F-2797		VALVE	0	0	0	0
F-2798		VALVE	0	0	0	0
F-2799		VALVE	0	0	0	0
F-2800		VALVE	0	0	0	0
F-2801		VALVE	0	0	0	0
F-2802	LINE 3P- -07 -2401 -A1A	FLANGE	36	14.5	0.00006	0.000526
F-2803		VALVE	0	0	0	0
F-2804		FLANGE	0	0	0	0
F-2805		VALVE	0	0	0	0
F-2806		FLANGE	0	0	0	0
F-2807		VALVE	0	0	0	0
F-2808		FLANGE	0	0	0	0
F-2809		FLANGE	0	0	0	0
F-2810		FLANGE	0	0	0	0
F-2811		FLANGE	0	0	0	0
F-2812		FLANGE	0	0	0	0
F-2813		VALVE	181	101.8	0.0017	0.014892
F-2814		FLANGE	0	0	0	0
F-2815		FLANGE	0	0	0	0
F-2816		FLANGE	0	0	0	0
F-2817		FLANGE	0	0	0	0

F-2818	LINE 3P -07 -2402 - A1A	FLANGE	0	0	0	0
F-2819		VALVE	0	0	0	0
F-2820		FLANGE	0	0	0	0
F-2821		FLANGE	0	0	0	0
F-2822		VALVE	0	0	0	0
F-2823		FLANGE	0	0	0	0
F-2824		VALVE	0	0	0	0
F-2825		VALVE	0	0	0	0
F-2826		FLANGE	0	0	0	0
F-2827		VALVE	0	0	0	0
F-2828		FLANGE	0	0	0	0
F-2829		VALVE	0	0	0	0
F-2830		VALVE	0	0	0	0
F-2831		FLANGE	0	0	0	0
F-2832		VALVE	0	0	0	0
F-2833		FLANGE	0	0	0	0
F-2834		VALVE	0	0	0	0
F-2835		FLANGE	0	0	0	0
F-2836		VALVE	0	0	0	0
F-2837		FLANGE	0	0	0	0
F-2838		FLANGE	0	0	0	0
F-2839		VALVE	0	0	0	0
F-2840		FLANGE	0	0	0	0
F-2841		FLANGE	0	0	0	0
F-2842		VALVE	0	0	0	0
F-2843		FLANGE	0	0	0	0
F-2844		FLANGE	0	0	0	0
F-2845		VALVE	0	0	0	0
F-2846		FLANGE	0	0	0	0
F-2847	LINE BELOW LDO VESSEL	VALVE	0	0	0	0
F-2848		VALVE	0	0	0	0
F-2849		FLANGE	0	0	0	0
F-2850		VALVE	0	0	0	0
F-2851		FLANGE	0	0	0	0
F-2852		FLANGE	0	0	0	0
F-2853		VALVE	0	0	0	0
F-2854		FLANGE	0	0	0	0
F-2855		FLANGE	0	0	0	0
F-2856		VALVE	0	0	0	0
F-2857		FLANGE	0	0	0	0
F-2858		FLANGE	0	0	0	0
F-2859		VALVE	0	0	0	0
F-2860		FLANGE	0	0	0	0
F-2861		VALVE	0	0	0	0
F-2862		FLANGE	0	0	0	0
F-2863		FLANGE	0	0	0	0
F-2864		FLANGE	0	0	0	0
F-2865		FLANGE	0	0	0	0
F-2866	LPG Ex 12 A/B LINE	FLANGE	0	0	0	0
F-2867		VALVE	0	0	0	0
F-2868		FLANGE	0	0	0	0
F-2869	CONTROL VALVE 07-FV 3501	FLANGE	0	0	0	0
F-2870		VALVE	0	0	0	0
F-2871		FLANGE	0	0	0	0
F-2872		FLANGE	0	0	0	0
F-2873		VALVE	0	0	0	0
F-2874		FLANGE	0	0	0	0
F-2875		FLANGE	0	0	0	0
F-2876		VALVE	0	0	0	0
F-2877		FLANGE	0	0	0	0
F-2878	BY PASS LINE VALVE	FLANGE	0	0	0	0
F-2879		VALVE	0	0	0	0
F-2880		FLANGE	0	0	0	0
F-2881		FLANGE	0	0	0	0
F-2882		VALVE	0	0	0	0
F-2883		FLANGE	0	0	0	0
F-2884	ABSORBER REFLUX LINE	FLANGE	0	0	0	0

F-2885		VALVE	0	0	0	0
F-2886		FLANGE	0	0	0	0
F-2887	CONTROL VALVE 07-FV-3402	FLANGE	0	0	0	0
F-2888		VALVE	0	0	0	0
F-2889		FLANGE	0	0	0	0
F-2890		FLANGE	0	0	0	0
F-2891		VALVE	0	0	0	0
F-2892		FLANGE	0	0	0	0
F-2893	BY PASS LINE VALVE	FLANGE	0	0	0	0
F-2894		VALVE	0	0	0	0
F-2895		FLANGE	0	0	0	0
F-2896	LPG SAMPLING POINT,	FLANGE	0	0	0	0
F-2897	LINE LPG R/D	FLANGE	0	0	0	0
F-2898		FLANGE	0	0	0	0
F-2899		VALVE	0	0	0	0
F-2900		FLANGE	0	0	0	0
F-2901		FLANGE	0	0	0	0
F-2902		VALVE	0	0	0	0
F-2903		FLANGE	0	0	0	0
F-2904	CONTROL VALVE 07-PV-3502	FLANGE	0	0	0	0
F-2905		VALVE	0	0	0	0
F-2906		FLANGE	0	0	0	0
F-2907		FLANGE	0	0	0	0
F-2908		VALVE	0	0	0	0
F-2909		FLANGE	0	0	0	0
F-2910		FLANGE	0	0	0	0
F-2911		VALVE	0	0	0	0
F-2912		FLANGE	0	0	0	0
F-2913	BY PASS LINE VALVE	FLANGE	0	0	0	0
F-2914		VALVE	0	0	0	0
F-2915		FLANGE	0	0	0	0
F-2916		FLANGE	0	0	0	0
F-2917	LINE PA-Ex-002 A/B	VALVE	0	0	0	0
F-2918	07-FV-1801	FLANGE	0	0	0	0
F-2919	BY PASS LINE VALVE	VALVE GLAND	0	0	0	0
F-2920	EQP NO07-VV036 DEGASSER	FLANGE	0	0	0	0
F-2921	OUT LET LINE CONTROL VALVE	VALVE	0	0	0	0
F-2922		FLANGE	0	0	0	0
F-2923		VALVE GLAND	0	0	0	0
F-2924		VALVE GLAND	0	0	0	0
F-2925		VALVE GLAND	0	0	0	0
F-2926	VV-31 1st DRAIN VALVE	FLANGE	0	0	0	0
F-2927		VALVE GLAND	0	0	0	0
F-2928		FLANGE	0	0	0	0
F-2929	07-VV-021, NAPTHA COALESER	VALVE GLAND	166	83.1	0.0017	0.014892
F-2930		VALVE GLAND	0	0	0	0
F-2931	OUT LET LINE C/NAPTHA	VALVE GLAND	0	0	0	0
F-2932		VALVE GLAND	0	0	0	0
F-2933	DRAIN EX -PA-002 SUCTION 1st VALVE	VALVE GLAND	0	0	0	0
F-2934	2nd VALVE	VALVE GLAND	0	0	0	0
F-2935	VV-31 1st STAGE DRAIN VALVE	VALVE GLAND	0	0	0	0
F-2936		VALVE GLAND	0	0	0	0
F-2937	07-VV-00-008 COMPRESSOR 1st STAGE SUCTION KOD	VALVE GLAND	0	0	0	0
F-2938		VALVE GLAND	0	0	0	0
F-2939	CBD LINE	VALVE GLAND	0	0	0	0
F-2940		VALVE GLAND	0	0	0	0
F-2941	LINE EX -EE - 011 -A/B	FLANGE	0	0	0	0
F-2942		VALVE	0	0	0	0
F-2943		FLANGE	0	0	0	0
F-2944		FLANGE	0	0	0	0
F-2945		VALVE	0	0	0	0
F-2946		FLANGE	0	0	0	0
F-2947		FLANGE	0	0	0	0
F-2948		VALVE	0	0	0	0
F-2949		FLANGE	0	0	0	0
F-2950		FLANGE	0	0	0	0
F-2951		FLANGE	0	0	0	0

F-2952		FLANGE	0	0	0	0
F-2953		VALVE	0	0	0	0
F-2954		FLANGE	0	0	0	0
F-2955		FLANGE	0	0	0	0
F-2956		FLANGE	0	0	0	0
F-2957	NEAR LINE	VALVE	0	0	0	0
F-2958	EX -EE - 011 -A/B	VALVE	0	0	0	0
F-2959	B-1	FLANGE	0	0	0	0
F-2960		FLANGE	0	0	0	0
F-2961		VALVE	0	0	0	0
F-2962	NEAR LINE	VALVE	0	0	0	0
F-2963	EX -EE - 011 -A/B	VALVE	0	0	0	0
F-2964	B-2	FLANGE	0	0	0	0
F-2965		FLANGE	0	0	0	0
F-2966		VALVE	0	0	0	0
F-2967	NEAR LINE	VALVE	0	0	0	0
F-2968	EX -EE - 011 -A/B B-3	FLANGE	0	0	0	0
F-2969		FLANGE	0	0	0	0
F-2970		VALVE	0	0	0	0
F-2971	NEAR LINE	VALVE	0	0	0	0
F-2972	B-4 EX -EE - 011 -A/B	FLANGE	0	0	0	0
F-2973		FLANGE	0	0	0	0
F-2974		VALVE	0	0	0	0
F-2975	LINE -VV -00 -024	VALVE	0	0	0	0
F-2976		VALVE	0	0	0	0
F-2977		VALVE	0	0	0	0
F-2978		VALVE	0	0	0	0
F-2979		VALVE	0	0	0	0
F-2980		VALVE	0	0	0	0
F-2981		VALVE	0	0	0	0
F-2982		FLANGE	0	0	0	0
F-2983		VALVE	0	0	0	0
F-2984		FLANGE	0	0	0	0
F-2985	NEAR START UP LINE TO	FLANGE	0	0	0	0
F-2986	CC-002	VALVE	0	0	0	0
F-2987		FLANGE	0	0	0	0
F-2988		FLANGE	0	0	0	0
F-2989		VALVE	0	0	0	0
F-2990		FLANGE	0	0	0	0
F-2991		FLANGE	0	0	0	0
F-2992		FLANGE	0	0	0	0
F-2993	OIL OUT LINE FROM PRIMERY CRUDE	FLANGE	0	0	0	0
F-2994		FLANGE	0	0	0	0
F-2995		VALVE	0	0	0	0
F-2996		FLANGE	0	0	0	0
F-2997		FLANGE	0	0	0	0
F-2998		VALVE	0	0	0	0
F-2999		FLANGE	0	0	0	0
F-3000		FLANGE	0	0	0	0
F-3001		FLANGE	0	0	0	0
F-3002		VALVE	0	0	0	0
F-3003		FLANGE	0	0	0	0
F-3004		FLANGE	0	0	0	0
F-3005		VALVE	0	0	0	0
F-3006		FLANGE	0	0	0	0
F-3007		FLANGE	0	0	0	0
F-3008		VALVE	0	0	0	0
F-3009		FLANGE	0	0	0	0
F-3010		FLANGE	28.0	11.7	0.00006	0.00526
F-3011		VALVE	0	0	0	0
F-3012		FLANGE	0	0	0	0
F-3013	LINE CFO FORCED REFLUX	VALVE	0	0	0	0
F-3014		VALVE	0	0	0	0
F-3015		VALVE	0	0	0	0
F-3016	FEED SAMPLE POINT	VALVE	0	0	0	0
F-3017		VALVE	0	0	0	0
F-3018		VALVE	0	0	0	0

F-3019		VALVE	0	0	0	0
F-3020		FLANGE	0	0	0	0
F-3021		FLANGE	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 7(F) UNIT: MSQU

SUMMARY SHEET FOR MSQU AREA

Total number of points covered	**970**
Date of Monitoring/Rechecking	**.03.03.2023**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-3022	LINE P-037-1001A1A	F.JOINT	0	0	0	0
F-3023		V.GLAND	0	0	0	0
F-3024		F.JOINT	0	0	0	0
F-3025		F.JOINT	0	0	0	0
F-3026		V.GLAND	0	0	0	0
F-3027		F.JOINT	0	0	0	0
F-3028	VAPORISER INLET LINE CONTROL VALVE	F.JOINT	0	0	0	0
F-3029	037-PV-1002	V.GLAND	0	0	0	0
F-3030		F.JOINT	0	0	0	0
F-3031		F.JOINT	0	0	0	0
F-3032		V.GLAND	0	0	0	0
F-3033		F.JOINT	0	0	0	0
F-3034		F.JOINT	0	0	0	0
F-3035		F.JOINT	0	0	0	0
F-3036	BY PASS LINE	V.GLAND	0	0	0	0
F-3037		F.JOINT	0	0	0	0
F-3038		V.GLAND	0	0	0	0
F-3039		V.GLAND	0	0	0	0
F-3040		F.JOINT	0	0	0	0
F-3041		V.GLAND	0	0	0	0
F-3042	FEED DRYER LINE 037-EE-014	F.JOINT	0	0	0	0
F-3043	LINE NAPTHA FROM FEED DRYER	F.JOINT	0	0	0	0
F-3044		V.GLAND	0	0	0	0
F-3045		F.JOINT	0	0	0	0
F-3046		F.JOINT	0	0	0	0
F-3047		V.GLAND	0	0	0	0
F-3048		F.JOINT	0	0	0	0
F-3049	LINE P-037-0408 C1AN (MIXING POINT)	F.JOINT	0	0	0	0
F-3050		F.JOINT	0	0	0	0
F-3051		F.JOINT	0	0	0	0
F-3052		V.GLAND	0	0	0	0
F-3053		F.JOINT	0	0	0	0
F-3054	NRB	F.JOINT	0	0	0	0
F-3055		F.JOINT	0	0	0	0
F-3056		F.JOINT	0	0	0	0
F-3057		V.GLAND	0	0	0	0
F-3058		F.JOINT	0	0	0	0
F-3059		F.JOINT	0	0	0	0
F-3060		F.JOINT	0	0	0	0
F-3061		F.JOINT	0	0	0	0

F-3062		F.JOINT	0	0	0	0
F-3063	BY PASS LINE	F.JOINT	0	0	0	0
F-3064		V.GLAND	0	0	0	0
F-3065		F.JOINT	0	0	0	0
F-3066		F.JOINT	0	0	0	0
F-3067		V.GLAND	0	0	0	0
F-3068		F.JOINT	0	0	0	0
F-3069	LINE 2" P-0309 B1A, CONTROL VALVE	F.JOINT	0	0	0	0
F-3070	037-PV-304	V.GLAND	0	0	0	0
F-3071		F.JOINT	0	0	0	0
F-3072		F.JOINT	0	0	0	0
F-3073		V.GLAND	0	0	0	0
F-3074		F.JOINT	0	0	0	0
F-3075	BY PASS LINE	F.JOINT	0	0	0	0
F-3076		V.GLAND	0	0	0	0
F-3077		F.JOINT	0	0	0	0
F-3078	INLET LINE 037-0114-A1L	F.JOINT	0	0	0	0
F-3079		V.GLAND	0	0	0	0
F-3080		F.JOINT	0	0	0	0
F-3081	CONTROL VALVE 037-PV-101 B	F.JOINT	0	0	0	0
F-3082		V.GLAND	0	0	0	0
F-3083		F.JOINT	0	0	0	0
F-3084	BY PASS LINE	F.JOINT	0	0	0	0
F-3085		V.GLAND	0	0	0	0
F-3086		F.JOINT	0	0	0	0
F-3087	LINE P4 TO FLARE	F.JOINT	0	0	0	0
F-3088		V.GLAND	0	0	0	0
F-3089		F.JOINT	0	0	0	0
F-3090		F.JOINT	0	0	0	0
F-3091		F.JOINT	0	0	0	0
F-3092		V.GLAND	0	0	0	0
F-3093		F.JOINT	0	0	0	0
F-3094		F.JOINT	0	0	0	0
F-3095		V.GLAND	0	0	0	0
F-3096		F.JOINT	0	0	0	0
F-3097		F.JOINT	0	0	0	0
F-3098		V.GLAND	0	0	0	0
F-3099		F.JOINT	0	0	0	0
F-3100	DIH RECYCLE LINE TO 037-VV-001	F.JOINT	0	0	0	0
F-3101		V.GLAND	0	0	0	0
F-3102		F.JOINT	0	0	0	0
F-3103	CONTROL VALVE 037-FV 101	F.JOINT	0	0	0	0
F-3104		V.GLAND	0	0	0	0
F-3105		F.JOINT	0	0	0	0
F-3106		F.JOINT	0	0	0	0
F-3107		V.GLAND	0	0	0	0
F-3108		F.JOINT	0	0	0	0
F-3109	BY PASS LINE	F.JOINT	0	0	0	0
F-3110		V.GLAND	0	0	0	0
F-3111		F.JOINT	0	0	0	0
F-3112	CIR TO 037-VV-001	F.JOINT	0	0	0	0
F-3113		V.GLAND	0	0	0	0
F-3114		F.JOINT	0	0	0	0
F-3115	CONTROL VALVE 037-FV-102	F.JOINT	0	0	0	0
F-3116		V.GLAND	0	0	0	0
F-3117		F.JOINT	0	0	0	0
F-3118		F.JOINT	0	0	0	0
F-3119		V.GLAND	0	0	0	0
F-3120		F.JOINT	0	0	0	0
F-3121	FEED FLOW TO FEED DRYER	F.JOINT	0	0	0	0
F-3122		V.GLAND	0	0	0	0
F-3123		F.JOINT	0	0	0	0
F-3124	CONTROL VALVE 037-FV -103	F.JOINT	0	0	0	0
F-3125		V.GLAND	0	0	0	0
F-3126		FLANGE	0	0	0	0
F-3127		FLANGE	0	0	0	0
F-3128		VALVE	0	0	0	0

F-3129		FLANGE	0	0	0	0
F-3130		FLANGE	0	0	0	0
F-3131		FLANGE	0	0	0	0
F-3132	BY PASS LINE	FLANGE	0	0	0	0
F-3133		VALVE	0	0	0	0
F-3134		FLANGE	0	0	0	0
F-3135	FEED DRYER LINE 037-0205-B1A-IH60	FLANGE	0	0	0	0
F-3136		VALVE	0	0	0	0
F-3137		FLANGE	0	0	0	0
F-3138	FEED DRYER LINE 037-020-B1A-LP40	FLANGE	0	0	0	0
F-3139		VALVE	0	0	0	0
F-3140		FLANGE	0	0	0	0
F-3141		VALVE	0	0	0	0
F-3142	FEED DRYER LINE 037-0202-B1A-IH100	FLANGE	0	0	0	0
F-3143		VALVE	0	0	0	0
F-3144		FLANGE	0	0	0	0
F-3145	TOTAL SPIL BACK LINE	FLANGE	0	0	0	0
F-3146		VALVE	0	0	0	0
F-3147		FLANGE	0	0	0	0
F-3148	CONTROL VALVE 037-PV- 304	FLANGE	0	0	0	0
F-3149		VALVE	0	0	0	0
F-3150		FLANGE	0	0	0	0
F-3151		FLANGE	0	0	0	0
F-3152		VALVE	0	0	0	0
F-3153		FLANGE	0	0	0	0
F-3154	BY PASS LINE	FLANGE	0	0	0	0
F-3155		VALVE	107.0	58.1	0.0017	0.014892
F-3156		FLANGE	0	0	0	0
F-3157	LINE H2 MAKE TO NHDT	FLANGE	0	0	0	0
F-3158		VALVE	0	0	0	0
F-3159		FLANGE	0	0	0	0
F-3160		FLANGE	0	0	0	0
F-3161		FLANGE	0	0	0	0
F-3162		FLANGE	0	0	0	0
F-3163		VALVE	0	0	0	0
F-3164		FLANGE	0	0	0	0
F-3165	INLET LINE 037-VV-001 1ST ISOLATING VALVE	FLANGE	0	0	0	0
F-3166		VALVE	0	0	0	0
F-3167		FLANGE	0	0	0	0
F-3168	CONTROL VALVE 037-PV- 101A	FLANGE	0	0	0	0
F-3169		VALVE	0	0	0	0
F-3170		FLANGE	0	0	0	0
F-3171		FLANGE	0	0	0	0
F-3172		VALVE	0	0	0	0
F-3173		FLANGE	0	0	0	0
F-3174	BY PASS LINE	FLANGE	0	0	0	0
F-3175		VALVE	0	0	0	0
F-3176		FLANGE	0	0	0	0
F-3177	OUT LET LINE 037-VV-001 1ST	FLANGE	0	0	0	0
F-3178		FLANGE	0	0	0	0
F-3179		FLANGE	0	0	0	0
F-3180	037-PA-CF-001A IN LET LINE	V.GLAND	0	0	0	0
F-3181	(REFLUX)	F.JOINT	0	0	0	0
F-3182		P.GLAND	0	0	0	0
F-3183		F.JOINT	0	0	0	0
F-3184	037-PA-CF-001A OUT LET LINE	V.GLAND	0	0	0	0
F-3185	(REFLUX)	F.JOINT	0	0	0	0
F-3186		P.GLAND	0	0	0	0
F-3187	NRB	FLANGE	0	0	0	0
F-3188		FLANGE	0	0	0	0
F-3189		FLANGE	0	0	0	0
F-3190	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3191		VALVE	0	0	0	0
F-3192		FLANGE	0	0	0	0
F-3193	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3194		VALVE	0	0	0	0
F-3195		FLANGE	0	0	0	0

F-3196	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3197		VALVE	0	0	0	0
F-3198		FLANGE	0	0	0	0
F-3199	037-PA-CF-001B IN LET LINE	V.GLAND	0	0	0	0
F-3200	(REFLUX)	F.JOINT	0	0	0	0
F-3201		P.GLAND	0	0	0	0
F-3202		F.JOINT	0	0	0	0
F-3203	037-PA-CF-001B OUT LET LINE	V.GLAND	0	0	0	0
F-3204	(REFLUX)	F.JOINT	0	0	0	0
F-3205		P.GLAND	0	0	0	0
F-3206		FLANGE	0	0	0	0
F-3207		FLANGE	0	0	0	0
F-3208		FLANGE	0	0	0	0
F-3209	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3210		VALVE	0	0	0	0
F-3211		FLANGE	0	0	0	0
F-3212	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3213		VALVE	0	0	0	0
F-3214		FLANGE	0	0	0	0
F-3215	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3216		VALVE	0	0	0	0
F-3217		FLANGE	0	0	0	0
F-3218	037-PA-CF-002A IN LET LINE	V.GLAND	0	0	0	0
F-3219	(REFLUX)	F.JOINT	0	0	0	0
F-3220		P.GLAND	0	0	0	0
F-3221		F.JOINT	0	0	0	0
F-3222	037-PA-CF-002 A OUT LET LINE	V.GLAND	0	0	0	0
F-3223	(REFLUX)	F.JOINT	0	0	0	0
F-3224		P.GLAND	0	0	0	0
F-3225	NRB	FLANGE	0	0	0	0
F-3226		FLANGE	0	0	0	0
F-3227		FLANGE	0	0	0	0
F-3228	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3229		VALVE	0	0	0	0
F-3230		FLANGE	0	0	0	0
F-3231	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3232		VALVE	0	0	0	0
F-3233		FLANGE	0	0	0	0
F-3234	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3235		VALVE	0	0	0	0
F-3236		FLANGE	0	0	0	0
F-3237	037-PA-CF-002B IN LET LINE	V.GLAND	0	0	0	0
F-3238	(REFLUX)	F.JOINT	0	0	0	0
F-3239		P.GLAND	0	0	0	0
F-3240		F.JOINT	0	0	0	0
F-3241	037-PA-CF-002B OUT LET LINE	V.GLAND	0	0	0	0
F-3242	(REFLUX)	F.JOINT	0	0	0	0
F-3243		P.GLAND	0	0	0	0
F-3244		FLANGE	0	0	0	0
F-3245		FLANGE	0	0	0	0
F-3246		FLANGE	0	0	0	0
F-3247	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3248		VALVE	0	0	0	0
F-3249		FLANGE	0	0	0	0
F-3250	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3251		VALVE	0	0	0	0
F-3252		FLANGE	0	0	0	0
F-3253	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3254		VALVE	0	0	0	0
F-3255		FLANGE	0	0	0	0
F-3256	037-PA-CF-003A IN LET LINE	V.GLAND	0	0	0	0
F-3257	(REFLUX)	F.JOINT	0	0	0	0
F-3258		P.GLAND	0	0	0	0
F-3259		F.JOINT	0	0	0	0
F-3260	037-PA-CF-003A OUT LET LINE	V.GLAND	0	0	0	0
F-3261	(REFLUX)	F.JOINT	0	0	0	0
F-3262		P.GLAND	0	0	0	0

F-3263	NRB	FLANGE	0	0	0	0
F-3264		FLANGE	0	0	0	0
F-3265		FLANGE	0	0	0	0
F-3266	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3267		VALVE	0	0	0	0
F-3268		FLANGE	0	0	0	0
F-3269	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3270		VALVE	0	0	0	0
F-3271		FLANGE	0	0	0	0
F-3272	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3273		VALVE	0	0	0	0
F-3274		FLANGE	0	0	0	0
F-3275	037-PA-CF-003B IN LET LINE	V.GLAND	0	0	0	0
F-3276	(REFLUX)	F.JOINT	0	0	0	0
F-3277		P.GLAND	0	0	0	0
F-3278		F.JOINT	0	0	0	0
F-3279	037-PA-CF-003B OUT LET LINE	V.GLAND	0	0	0	0
F-3280	(REFLUX)	F.JOINT	0	0	0	0
F-3281		P.GLAND	0	0	0	0
F-3282		FLANGE	0	0	0	0
F-3283		FLANGE	0	0	0	0
F-3284		FLANGE	0	0	0	0
F-3285	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3286		VALVE	0	0	0	0
F-3287		FLANGE	0	0	0	0
F-3288	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3289		VALVE	0	0	0	0
F-3290		FLANGE	0	0	0	0
F-3291	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3292		VALVE	0	0	0	0
F-3293		FLANGE	0	0	0	0
F-3294	037-PA-CF-004A IN LET LINE	V.GLAND	0	0	0	0
F-3295	(REFLUX)	F.JOINT	0	0	0	0
F-3296		P.GLAND	0	0	0	0
F-3297		F.JOINT	0	0	0	0
F-3298	037-PA-CF-004 A OUT LET LINE	V.GLAND	0	0	0	0
F-3299	(REFLUX)	F.JOINT	0	0	0	0
F-3300		P.GLAND	0	0	0	0
F-3301	NRB	FLANGE	0	0	0	0
F-3302		FLANGE	0	0	0	0
F-3303		FLANGE	0	0	0	0
F-3304	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3305		VALVE	0	0	0	0
F-3306		FLANGE	0	0	0	0
F-3307	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3308		VALVE	0	0	0	0
F-3309		FLANGE	0	0	0	0
F-3310	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3311		VALVE	0	0	0	0
F-3312		FLANGE	0	0	0	0
F-3313	037-PA-CF-004B IN LET LINE	V.GLAND	0	0	0	0
F-3314	(REFLUX)	F.JOINT	0	0	0	0
F-3315		P.GLAND	0	0	0	0
F-3316		F.JOINT	0	0	0	0
F-3317	037-PA-CF-004B OUT LET LINE	V.GLAND	0	0	0	0
F-3318	(REFLUX)	F.JOINT	0	0	0	0
F-3319		P.GLAND	0	0	0	0
F-3320		FLANGE	0	0	0	0
F-3321		FLANGE	0	0	0	0
F-3322		FLANGE	0	0	0	0
F-3323	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3324		VALVE	0	0	0	0
F-3325		FLANGE	0	0	0	0
F-3326	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3327		VALVE	0	0	0	0
F-3328		FLANGE	0	0	0	0
F-3329	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0

F-3330		VALVE	0	0	0	0
F-3331		FLANGE	0	0	0	0
F-3332	037-PA-CF-005 A IN LET LINE	V.GLAND	0	0	0	0
F-3333	(REFLUX)	F.JOINT	0	0	0	0
F-3334		P.GLAND	0	0	0	0
F-3335		F.JOINT	0	0	0	0
F-3336	037-PA-CF-005 A OUT LET LINE	V.GLAND	0	0	0	0
F-3337	(REFLUX)	F.JOINT	0	0	0	0
F-3338		P.GLAND	0	0	0	0
F-3339	NRB	FLANGE	0	0	0	0
F-3340		FLANGE	0	0	0	0
F-3341		FLANGE	0	0	0	0
F-3342	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3343		VALVE	0	0	0	0
F-3344		FLANGE	0	0	0	0
F-3345	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3346		VALVE	0	0	0	0
F-3347		FLANGE	0	0	0	0
F-3348	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3349		VALVE	0	0	0	0
F-3350		FLANGE	0	0	0	0
F-3351	037-PA-CF-005B IN LET LINE	V.GLAND	0	0	0	0
F-3352	(REFLUX)	F.JOINT	0	0	0	0
F-3353		P.GLAND	0	0	0	0
F-3354		F.JOINT	0	0	0	0
F-3355	037-PA-CF-005 B OUT LET LINE	V.GLAND	0	0	0	0
F-3356	(REFLUX)	F.JOINT	0	0	0	0
F-3357		P.GLAND	0	0	0	0
F-3358		FLANGE	0	0	0	0
F-3359		FLANGE	0	0	0	0
F-3360		FLANGE	0	0	0	0
F-3361	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3362		VALVE	0	0	0	0
F-3363		FLANGE	0	0	0	0
F-3364	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3365		VALVE	0	0	0	0
F-3366		FLANGE	0	0	0	0
F-3367	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3368		VALVE	0	0	0	0
F-3369		FLANGE	0	0	0	0
F-3370	PRODUCT RUNDOWN LINE(037-EE-10)	FLANGE	0	0	0	0
F-3371		VALVE	0	0	0	0
F-3372		FLANGE	0	0	0	0
F-3373		FLANGE	0	0	0	0
F-3374		VALVE	0	0	0	0
F-3375		FLANGE	0	0	0	0
F-3376		FLANGE	0	0	0	0
F-3377		VALVE	0	0	0	0
F-3378		FLANGE	0	0	0	0
F-3379		FLANGE	0	0	0	0
F-3380		VALVE	0	0	0	0
F-3381		FLANGE	0	0	0	0
F-3382	LINE TO 37-VV-001	FLANGE	0	0	0	0
F-3383		VALVE	0	0	0	0
F-3384		FLANGE	0	0	0	0
F-3385		FLANGE	0	0	0	0
F-3386		VALVE	0	0	0	0
F-3387		FLANGE	0	0	0	0
F-3388	LINE TO 037--0803-A1A	FLANGE	0	0	0	0
F-3389		VALVE	0	0	0	0
F-3390		FLANGE	0	0	0	0
F-3391		FLANGE	0	0	0	0
F-3392		VALVE	0	0	0	0
F-3393		FLANGE	0	0	0	0
F-3394	LINE TO P- 037--0825-A1A	FLANGE	0	0	0	0
F-3395		VALVE	0	0	0	0
F-3396		FLANGE	0	0	0	0

F-3397		FLANGE	0	0	0	0
F-3398		VALVE	0	0	0	0
F-3399		FLANGE	0	0	0	0
F-3400	LINE TO 037-EE-002	FLANGE	0	0	0	0
F-3401		VALVE	0	0	0	0
F-3402		FLANGE	0	0	0	0
F-3403		FLANGE	0	0	0	0
F-3404		VALVE	0	0	0	0
F-3405		FLANGE	0	0	0	0
F-3406	LINE TO P- 037--0825-A1A	FLANGE	0	0	0	0
F-3407		VALVE	0	0	0	0
F-3408		FLANGE	0	0	0	0
F-3409		FLANGE	0	0	0	0
F-3410		VALVE	0	0	0	0
F-3411		FLANGE	0	0	0	0
F-3412	LINE TO NHDT OFF SPEC	FLANGE	0	0	0	0
F-3413		VALVE	0	0	0	0
F-3414		FLANGE	0	0	0	0
F-3415	037-EE-11 PRODUCT R/D LINE	FLANGE	0	0	0	0
F-3416		VALVE	0	0	0	0
F-3417		FLANGE	0	0	0	0
F-3418		FLANGE	0	0	0	0
F-3419		FLANGE	0	0	0	0
F-3420	BY PASS LINE 1st VALVE	FLANGE	0	0	0	0
F-3421		VALVE	0	0	0	0
F-3422		FLANGE	0	0	0	0
F-3423	BY PASS LINE 2nd VALVE	FLANGE	0	0	0	0
F-3424		VALVE	0	0	0	0
F-3425		FLANGE	0	0	0	0
F-3426		FLANGE	0	0	0	0
F-3427	BY PASS LINE 3rd VALVE	FLANGE	0	0	0	0
F-3428		VALVE	0	0	0	0
F-3429		FLANGE	0	0	0	0
F-3430	CONTROL VALVE 37-FV-801	FLANGE	0	0	0	0
F-3431		VALVE	0	0	0	0
F-3432		FLANGE	0	0	0	0
F-3433	BY PASS LINE 4th VALVE	FLANGE	0	0	0	0
F-3434		VALVE	0	0	0	0
F-3435		FLANGE	0	0	0	0
F-3436	LINE TO P-037-0812 A1H	FLANGE	0	0	0	0
F-3437		VALVE	0	0	0	0
F-3438		FLANGE	0	0	0	0
F-3439		FLANGE	0	0	0	0
F-3440		VALVE	0	0	0	0
F-3441		FLANGE	0	0	0	0
F-3442	LINE TO 37-RB-001-O/L	FLANGE	0	0	0	0
F-3443		VALVE	0	0	0	0
F-3444		FLANGE	0	0	0	0
F-3445		FLANGE	0	0	0	0
F-3446		VALVE	0	0	0	0
F-3447		FLANGE	0	0	0	0
F-3448	LINE TO 37-RB-002-O/L	FLANGE	0	0	0	0
F-3449		VALVE	0	0	0	0
F-3450		FLANGE	0	0	0	0
F-3451		FLANGE	0	0	0	0
F-3452		VALVE	0	0	0	0
F-3453		FLANGE	0	0	0	0
F-3454	LINE TO 37-0226-B1AH 1st VALVE	FLANGE	0	0	0	0
F-3455		VALVE	0	0	0	0
F-3456		FLANGE	0	0	0	0
F-3457	LINE TO 37-0226-B1AH 2nd VALVE	FLANGE	0	0	0	0
F-3458		VALVE	0	0	0	0
F-3459		FLANGE	0	0	0	0
F-3460	LINE TO 37-0226-B1AH 3rd VALVE	FLANGE	0	0	0	0
F-3461		VALVE	0	0	0	0
F-3462		FLANGE	0	0	0	0
F-3463	LINE TO 37-0226-B1AH 4th VALVE	FLANGE	0	0	0	0

F-3464		VALVE	0	0	0	0
F-3465		FLANGE	0	0	0	0
F-3466	LINE TO 37-0226-B1AH 5th VALVE	FLANGE	0	0	0	0
F-3467		VALVE	0	0	0	0
F-3468		FLANGE	0	0	0	0
F-3469	LINE TO 37-0226-B1AH 6th VALVE	FLANGE	0	0	0	0
F-3470		VALVE	0	0	0	0
F-3471		FLANGE	0	0	0	0
F-3472	LINE MUGC DISCHARGE TO DRYER	FLANGE	0	0	0	0
F-3473	(2"-P-037-0301-C1AHY)	VALVE	0	0	0	0
F-3474		FLANGE	0	0	0	0
F-3475		FLANGE	0	0	0	0
F-3476		VALVE	0	0	0	0
F-3477		FLANGE	0	0	0	0
F-3478		FLANGE	0	0	0	0
F-3479		VALVE	0	0	0	0
F-3480		FLANGE	0	0	0	0
F-3481	LINE PT-401	FLANGE	0	0	0	0
F-3482		FLANGE	0	0	0	0
F-3483		FLANGE	0	0	0	0
F-3484		VALVE	0	0	0	0
F-3485		FLANGE	0	0	0	0
F-3486		FLANGE	0	0	0	0
F-3487		VALVE	0	0	0	0
F-3488		FLANGE	0	0	0	0
F-3489	CONTROL VALVE 037-FV-401 1st isolating valve	FLANGE	0	0	0	0
F-3490		VALVE	0	0	0	0
F-3491		FLANGE	0	0	0	0
F-3492	CONTROL VALVE 037-FV-401	FLANGE	0	0	0	0
F-3493		VALVE	0	0	0	0
F-3494		FLANGE	0	0	0	0
F-3495	BY PASS LINE	FLANGE	0	0	0	0
F-3496		VALVE	0	0	0	0
F-3497		FLANGE	0	0	0	0
F-3498	LINE TO KOD	FLANGE	0	0	0	0
F-3499		VALVE	0	0	0	0
F-3500		FLANGE	0	0	0	0
F-3501		FLANGE	0	0	0	0
F-3502		VALVE	0	0	0	0
F-3503		FLANGE	0	0	0	0
F-3504		FLANGE	0	0	0	0
F-3505		VALVE	0	0	0	0
F-3506		FLANGE	0	0	0	0
F-3507		FLANGE	0	0	0	0
F-3508		VALVE	0	0	0	0
F-3509		FLANGE	0	0	0	0
F-3510	037-PA-CF-016 A IN LET LINE	V.GLAND	0	0	0	0
F-3511		F.JOINT	0	0	0	0
F-3512		P.GLAND	0	0	0	0
F-3513		F.JOINT	0	0	0	0
F-3514	037-PA-CF-016 A OUT LET LINE	V.GLAND	0	0	0	0
F-3515		F.JOINT	0	0	0	0
F-3516		P.GLAND	0	0	0	0
F-3517	NRB	FLANGE	0	0	0	0
F-3518		FLANGE	0	0	0	0
F-3519		FLANGE	0	0	0	0
F-3520	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3521		VALVE	0	0	0	0
F-3522		FLANGE	0	0	0	0
F-3523	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3524		VALVE	0	0	0	0
F-3525		FLANGE	0	0	0	0
F-3526	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3527		VALVE	0	0	0	0
F-3528		FLANGE	0	0	0	0
F-3529		P.GLAND	0	0	0	0
F-3530		F.JOINT	0	0	0	0

F-3531	037-PA-CF-016 B OUT LET LINE	V.GLAND	0	0	0	0
F-3532		F.JOINT	0	0	0	0
F-3533		P.GLAND	0	0	0	0
F-3534		FLANGE	0	0	0	0
F-3535		FLANGE	0	0	0	0
F-3536		FLANGE	0	0	0	0
F-3537	LINE TO CBD 1 st VALVE	FLANGE	0	0	0	0
F-3538		VALVE	0	0	0	0
F-3539		FLANGE	0	0	0	0
F-3540	LINE TO CBD 2 nd VALVE	FLANGE	0	0	0	0
F-3541		VALVE	0	0	0	0
F-3542		FLANGE	0	0	0	0
F-3543	LINE TO CBD 3 rd VALVE	FLANGE	0	0	0	0
F-3544		VALVE	0	0	0	0
F-3545		FLANGE	0	0	0	0
F-3546	036-PA-CF-002 A IN LET LINE	V.GLAND	0	0	0	0
F-3547		F.JOINT	58.0	32.5	0.00006	0.00053
F-3548		P.GLAND	0	0	0	0
F-3549		F.JOINT	0	0	0	0
F-3550	036-PA-CF-002 A OUT LET LINE	V.GLAND	0	0	0	0
F-3551		F.JOINT	0	0	0	0
F-3552		P.GLAND	0	0	0	0
F-3553		FLANGE	0	0	0	0
F-3554		FLANGE	0	0	0	0
F-3555		FLANGE	0	0	0	0
F-3556	LINE TO OWS 1 st VALVE	FLANGE	0	0	0	0
F-3557		VALVE	0	0	0	0
F-3558		FLANGE	0	0	0	0
F-3559	LINE TO OWS 2 nd VALVE	FLANGE	0	0	0	0
F-3560		VALVE	0	0	0	0
F-3561		FLANGE	0	0	0	0
F-3562	036-PA-CF-002 B IN LET LINE	V.GLAND	0	0	0	0
F-3563		F.JOINT	0	0	0	0
F-3564		P.GLAND	0	0	0	0
F-3565		F.JOINT	0	0	0	0
F-3566	036-PA-CF-002 B OUT LET LINE	V.GLAND	0	0	0	0
F-3567		F.JOINT	0	0	0	0
F-3568		P.GLAND	0	0	0	0
F-3569		FLANGE	0	0	0	0
F-3570		FLANGE	0	0	0	0
F-3571		FLANGE	0	0	0	0
F-3572	LINE TO OWS 1 st VALVE	FLANGE	0	0	0	0
F-3573		VALVE	0	0	0	0
F-3574		FLANGE	0	0	0	0
F-3575	LINE TO OWS 2 nd VALVE	FLANGE	0	0	0	0
F-3576		VALVE	0	0	0	0
F-3577		FLANGE	0	0	0	0
F-3578	036-PA-CF-001 A IN LET LINE	V.GLAND	0	0	0	0
F-3579	(HDT FEED)	F.JOINT	0	0	0	0
F-3580		P.GLAND	0	0	0	0
F-3581		F.JOINT	0	0	0	0
F-3582	036-PA-CF-001 A OUT LET LINE	V.GLAND	0	0	0	0
F-3583	(HDT FEED)	F.JOINT	0	0	0	0
F-3584		P.GLAND	0	0	0	0
F-3585		FLANGE	0	0	0	0
F-3586		FLANGE	0	0	0	0
F-3587		FLANGE	0	0	0	0
F-3588	LINE TO OWS 1 st VALVE	FLANGE	0	0	0	0
F-3589		VALVE	0	0	0	0
F-3590		FLANGE	0	0	0	0
F-3591	LINE TO OWS 2 nd VALVE	FLANGE	0	0	0	0
F-3592		VALVE	0	0	0	0
F-3593		FLANGE	0	0	0	0
F-3594	036-PA-CF-001B IN LET LINE	V.GLAND	0	0	0	0
F-3595	(HDT FEED)	F.JOINT	0	0	0	0
F-3596		P.GLAND	0	0	0	0
F-3597		F.JOINT	0	0	0	0

F-3598	036-PA-CF-001 B OUT LET LINE	V.GLAND	0	0	0	0
F-3599	(HDT FEED)	F.JOINT	0	0	0	0
F-3600		P.GLAND	0	0	0	0
F-3601		FLANGE	0	0	0	0
F-3602		FLANGE	0	0	0	0
F-3603		FLANGE	0	0	0	0
F-3604	LINE TO OWS 1 st VALVE	FLANGE	0	0	0	0
F-3605		VALVE	0	0	0	0
F-3606		FLANGE	0	0	0	0
F-3607	LINE TO OWS 2 nd VALVE	FLANGE	0	0	0	0
F-3608		VALVE	0	0	0	0
F-3609		FLANGE	0	0	0	0
F-3610	036-RECYCLE GAS COMP B IN LET LINE	F.JOINT	0	0	0	0
F-3611		V.GLAND	0	0	0	0
F-3612		F.JOINT	0	0	0	0
F-3613		F.JOINT	0	0	0	0
F-3614		V.GLAND	0	0	0	0
F-3615		F.JOINT	0	0	0	0
F-3616		F.JOINT	0	0	0	0
F-3617		V.GLAND	0	0	0	0
F-3618		F.JOINT	0	0	0	0
F-3619		F.JOINT	0	0	0	0
F-3620		V.GLAND	0	0	0	0
F-3621		F.JOINT	0	0	0	0
F-3622		F.JOINT	0	0	0	0
F-3623		V.GLAND	0	0	0	0
F-3624		F.JOINT	0	0	0	0
F-3625		FLANGE	0	0	0	0
F-3626		FLANGE	0	0	0	0
F-3627		FLANGE	0	0	0	0
F-3628		FLANGE	0	0	0	0
F-3629		FLANGE	0	0	0	0
F-3630	036-RECYCLE GAS COMP B OUTLET LINE	F.JOINT	0	0	0	0
F-3631		V.GLAND	0	0	0	0
F-3632		F.JOINT	0	0	0	0
F-3633		F.JOINT	0	0	0	0
F-3634		V.GLAND	0	0	0	0
F-3635		F.JOINT	0	0	0	0
F-3636		FLANGE	0	0	0	0
F-3637		FLANGE	0	0	0	0
F-3638		FLANGE	0	0	0	0
F-3639	LINE TO VENT	F.JOINT	0	0	0	0
F-3640		V.GLAND	0	0	0	0
F-3641		F.JOINT	0	0	0	0
F-3642	036-MAKEUP GAS COMP B 1st STAGE IN LET LINE	F.JOINT	0	0	0	0
F-3643		V.GLAND	0	0	0	0
F-3644		F.JOINT	0	0	0	0
F-3645	CONTROL VALVE-036-FV-301	F.JOINT	0	0	0	0
F-3646		V.GLAND	0	0	0	0
F-3647		F.JOINT	0	0	0	0
F-3648		F.JOINT	0	0	0	0
F-3649		V.GLAND	0	0	0	0
F-3650		F.JOINT	0	0	0	0
F-3651		F.JOINT	0	0	0	0
F-3652		V.GLAND	0	0	0	0
F-3653		F.JOINT	0	0	0	0
F-3654		F.JOINT	0	0	0	0
F-3655		V.GLAND	0	0	0	0
F-3656		F.JOINT	0	0	0	0
F-3657	BY PASS LINE CONTROL VALVE-036-FV-307	F.JOINT	0	0	0	0
F-3658		V.GLAND	0	0	0	0
F-3659		F.JOINT	0	0	0	0
F-3660		F.JOINT	0	0	0	0
F-3661		V.GLAND	0	0	0	0
F-3662		F.JOINT	0	0	0	0
F-3663	FG LINE TO HEADER RETURN	F.JOINT	0	0	0	0
F-3664		V.GLAND	0	0	0	0

F-3665		F.JOINT	0	0	0	0
F-3666		F.JOINT	0	0	0	0
F-3667		F.JOINT	0	0	0	0
F-3668		FLANGE	0	0	0	0
F-3669		FLANGE	0	0	0	0
F-3670		FLANGE	0	0	0	0
F-3671		FLANGE	0	0	0	0
F-3672		FLANGE	0	0	0	0
F-3673		FLANGE	0	0	0	0
F-3674	036-MAKEUP GAS COMP B 1st STAGE OUT LET LINE	F.JOINT	0	0	0	0
F-3675		V.GLAND	0	0	0	0
F-3676		F.JOINT	0	0	0	0
F-3677		F.JOINT	0	0	0	0
F-3678		V.GLAND	0	0	0	0
F-3679		F.JOINT	0	0	0	0
F-3680		FLANGE	0	0	0	0
F-3681		FLANGE	0	0	0	0
F-3682		FLANGE	0	0	0	0
F-3683	1st NRB	FLANGE	0	0	0	0
F-3684		FLANGE	0	0	0	0
F-3685	2nd NRB	FLANGE	0	0	0	0
F-3686		FLANGE	0	0	0	0
F-3687	036-MAKEUP GAS COMP B 2d STAGE IN LET LINE	FLANGE	0	0	0	0
F-3688		FLANGE	0	0	0	0
F-3689		FLANGE	0	0	0	0
F-3690	036-MAKEUP GAS COMP B 2d STAGE OUT LET LINE	FLANGE	0	0	0	0
F-3691		FLANGE	0	0	0	0
F-3692		FLANGE	0	0	0	0
F-3693	1st NRB	FLANGE	0	0	0	0
F-3694		FLANGE	0	0	0	0
F-3695	2nd NRB	FLANGE	0	0	0	0
F-3696		FLANGE	0	0	0	0
F-3697	036-MAKEUP GAS COMP B 2d STAGE SPILL BACK	FLANGE	0	0	0	0
F-3698		FLANGE	0	0	0	0
F-3699		VALVE GLAND	0	0	0	0
F-3700		FLANGE	0	0	0	0
F-3701	037-VV-023 INLET	FLANGE	0	0	0	0
F-3702		FLANGE	0	0	0	0
F-3703	037-VV-023 OUTLET	FLANGE	0	0	0	0
F-3704		FLANGE	0	0	0	0
F-3705	LINE STRIPPER 036-CC-001 O/L	F.JOINT	0	0	0	0
F-3706		F.JOINT	0	0	0	0
F-3707		V.GLAND	0	0	0	0
F-3708		F.JOINT	0	0	0	0
F-3709	LINE-FV-501-SL	F.JOINT	0	0	0	0
F-3710		V.GLAND	0	0	0	0
F-3711		F.JOINT	0	0	0	0
F-3712	FV-501-SL BY PASS LINE	F.JOINT	0	0	0	0
F-3713		V.GLAND	0	0	0	0
F-3714		F.JOINT	0	0	0	0
F-3715	LINE- TO C/L	F.JOINT	0	0	0	0
F-3716		V.GLAND	0	0	0	0
F-3717		F.JOINT	0	0	0	0
F-3718		F.JOINT	0	0	0	0
F-3719		V.GLAND	0	0	0	0
F-3720		F.JOINT	0	0	0	0
F-3721	036--VV-001 LINE	FLANGE	0	0	0	0
F-3722		V.GLAND	0	0	0	0
F-3723		FLANGE	0	0	0	0
F-3724		FLANGE	0	0	0	0
F-3725		V.GLAND	0	0	0	0
F-3726		FLANGE	0	0	0	0
F-3727	037-VV-001 LINE	F.JOINT	0	0	0	0
F-3728		V.GLAND	0	0	0	0
F-3729		F.JOINT	0	0	0	0
F-3730		F.JOINT	0	0	0	0
F-3731		V.GLAND	0	0	0	0

F-3732		F.JOINT	0	0	0	0
F-3733	LINE TO NHDT OFF SPEC	FLANGE	0	0	0	0
F-3734		V.GLAND	0	0	0	0
F-3735		FLANGE	0	0	0	0
F-3736		FLANGE	0	0	0	0
F-3737		V.GLAND	0	0	0	0
F-3738		FLANGE	0	0	0	0
F-3739		FLANGE	0	0	0	0
F-3740		V.GLAND	0	0	0	0
F-3741		FLANGE	0	0	0	0
F-3742		F.JOINT	0	0	0	0
F-3743		V.GLAND	0	0	0	0
F-3744		F.JOINT	0	0	0	0
F-3745	LINE TO NHDT OL TO LN T/571	F.JOINT	0	0	0	0
F-3746		V.GLAND	0	0	0	0
F-3747		F.JOINT	0	0	0	0
F-3748		F.JOINT	0	0	0	0
F-3749		V.GLAND	0	0	0	0
F-3750		F.JOINT	0	0	0	0
F-3751	LINE EX 036-VV-002 TO STRIPPER	F.JOINT	18	0	0	0
F-3752		F.JOINT	0	0	0	0
F-3753		V.GLAND	0	0	0	0
F-3754		F.JOINT	0	0	0	0
F-3755	CONTROL VALVE 36-FV-402	F.JOINT	0	0	0	0
F-3756		V.GLAND	0	0	0	0
F-3757		F.JOINT	0	0	0	0
F-3758		F.JOINT	0	0	0	0
F-3759		V.GLAND	0	0	0	0
F-3760		F.JOINT	0	0	0	0
F-3761	START UP LINE EX-036-VV-001	F.JOINT	0	0	0	0
F-3762		V.GLAND	0	0	0	0
F-3763		F.JOINT	0	0	0	0
F-3764		F.JOINT	0	0	0	0
F-3765		F.JOINT	0	0	0	0
F-3766		F.JOINT	0	0	0	0
F-3767		V.GLAND	0	0	0	0
F-3768		F.JOINT	0	0	0	0
F-3769		F.JOINT	0	0	0	0
F-3770		V.GLAND	0	0	0	0
F-3771		F.JOINT	0	0	0	0
F-3772		F.JOINT	0	0	0	0
F-3773		V.GLAND	0	0	0	0
F-3774		F.JOINT	0	0	0	0
F-3775		FLANGE	0	0	0	0
F-3776		V.GLAND	0	0	0	0
F-3777		FLANGE	0	0	0	0
F-3778	START UP LINE EX-036-VV-001 BY PASS	FLANGE	0	0	0	0
F-3779		V.GLAND	0	0	0	0
F-3780		FLANGE	0	0	0	0
F-3781		FLANGE	28.0	15.9	0.00006	0.00526
F-3782		V.GLAND	0	0	0	0
F-3783		FLANGE	0	0	0	0
F-3784	LINE 2'-P-036-0414-B9A5	F.JOINT	0	0	0	0
F-3785		V.GLAND	0	0	0	0
F-3786		F.JOINT	0	0	0	0
F-3787		F.JOINT	0	0	0	0
F-3788		F.JOINT	0	0	0	0
F-3789		FLANGE	0	0	0	0
F-3790		V.GLAND	0	0	0	0
F-3791		FLANGE	0	0	0	0
F-3792	LINE 2'-P-036-0414-B9A5 CONTROL VALVE	FLANGE	0	0	0	0
F-3793	036-LV-401B	V.GLAND	0	0	0	0
F-3794		FLANGE	0	0	0	0
F-3795		FLANGE	0	0	0	0
F-3796		V.GLAND	0	0	0	0
F-3797		FLANGE	0	0	0	0
F-3798	NHDT H2 MAKE UP LINE	FLANGE	0	0	0	0

F-3799		FLANGE	0	0	0	0
F-3800		FLANGE	0	0	0	0
F-3801		V.GLAND	0	0	0	0
F-3802		FLANGE	0	0	0	0
F-3803		FLANGE	0	0	0	0
F-3804		FLANGE	0	0	0	0
F-3805		FLANGE	0	0	0	0
F-3806		FLANGE	0	0	0	0
F-3807		FLANGE	0	0	0	0
F-3808		V.GLAND	0	0	0	0
F-3809		FLANGE	0	0	0	0
F-3810	NHDT H2 MAKE UP LINE 036-FV-201 CONTRL VALVE	FLANGE	0	0	0	0
F-3811		V.GLAND	0	0	0	0
F-3812		FLANGE	0	0	0	0
F-3813		FLANGE	0	0	0	0
F-3814		V.GLAND	0	0	0	0
F-3815		FLANGE	0	0	0	0
F-3816	LINE 2'-P-036-0526-A1A	FLANGE	0	0	0	0
F-3817		FLANGE	0	0	0	0
F-3818		V.GLAND	0	0	0	0
F-3819		FLANGE	0	0	0	0
F-3820	LINE 2'-P-036-0526-A1A CONTROL VALVE 36-FV-101	FLANGE	0	0	0	0
F-3821		V.GLAND	0	0	0	0
F-3822		FLANGE	0	0	0	0
F-3823		FLANGE	0	0	0	0
F-3824		V.GLAND	0	0	0	0
F-3825		FLANGE	0	0	0	0
F-3826	036-0109-A1A BY PASS LINE	FLANGE	0	0	0	0
F-3827		V.GLAND	0	0	0	0
F-3828		FLANGE	0	0	0	0
F-3829		FLANGE	0	0	0	0
F-3830		V.GLAND	0	0	0	0
F-3831		FLANGE	0	0	0	0
F-3832	LINE-LN-TO-036-RB-001	FLANGE	0	0	0	0
F-3833		FLANGE	0	0	0	0
F-3834		V.GLAND	0	0	0	0
F-3835		FLANGE	0	0	0	0
F-3836	CONTROL VALVE-036-FV-102	FLANGE	436	218.5	0.00006	0.000526
F-3837		V.GLAND	0	0	0	0
F-3838		FLANGE	0	0	0	0
F-3839		FLANGE	0	0	0	0
F-3840		V.GLAND	0	0	0	0
F-3841		FLANGE	0	0	0	0
F-3842	LINE-LN-TO-036-RB-001 BYPASS LINE	FLANGE	0	0	0	0
F-3843		V.GLAND	0	0	0	0
F-3844		FLANGE	0	0	0	0
F-3845		FLANGE	0	0	0	0
F-3846		V.GLAND	0	0	0	0
F-3847		FLANGE	0	0	0	0
F-3848		FLANGE	0	0	0	0
F-3849		V.GLAND	0	0	0	0
F-3850		FLANGE	0	0	0	0
F-3851	LINE-LN-TO-036-RB-001	FLANGE	0	0	0	0
F-3852		FLANGE	0	0	0	0
F-3853		FLANGE	0	0	0	0
F-3854		V.GLAND	0	0	0	0
F-3855		FLANGE	0	0	0	0
F-3856		FLANGE	0	0	0	0
F-3857		FLANGE	0	0	0	0
F-3858		FLANGE	0	0	0	0
F-3859		V.GLAND	0	0	0	0
F-3860		FLANGE	0	0	0	0
F-3861	CIRCULATION LINE 36-PA-CF-001A/B	FLANGE	0	0	0	0
F-3862		V.GLAND	0	0	0	0
F-3863		FLANGE	0	0	0	0
F-3864		FLANGE	0	0	0	0
F-3865		FLANGE	0	0	0	0

F-3866		FLANGE	0	0	0	0
F-3867		V.GLAND	0	0	0	0
F-3868		FLANGE	0	0	0	0
F-3869	037-PSV-0601B INLET LINE RUPTURE DISC JOINT	FLANGE	0	0	0	0
F-3870		FLANGE	0	0	0	0
F-3871		V.GLAND	0	0	0	0
F-3872		FLANGE	0	0	0	0
F-3873		FLANGE	0	0	0	0
F-3874		V.GLAND	0	0	0	0
F-3875		FLANGE	0	0	0	0
F-3876	037-PSV-0601A INLET LINE RUPTURE DISC JOINT	FLANGE	0	0	0	0
F-3877		FLANGE	0	0	0	0
F-3878		V.GLAND	0	0	0	0
F-3879		FLANGE	0	0	0	0
F-3880		FLANGE	0	0	0	0
F-3881		V.GLAND	0	0	0	0
F-3882		FLANGE	0	0	0	0
F-3883	LINE LRTO STRIPPER	FLANGE	54	33.3	0.00006	0.000526
F-3884		V.GLAND	0	0	0	0
F-3885		FLANGE	0	0	0	0
F-3886	LRTO STRIPPER LINE CONTROL VALVE	FLANGE	0	0	0	0
F-3887	035-FV-105	V.GLAND	0	0	0	0
F-3888		FLANGE	0	0	0	0
F-3889		FLANGE	0	0	0	0
F-3890		V.GLAND	0	0	0	0
F-3891		FLANGE	0	0	0	0
F-3892	LRTO STRIPPER 1st BY PASS LINE	FLANGE	0	0	0	0
F-3893		V.GLAND	0	0	0	0
F-3894		FLANGE	0	0	0	0
F-3895	LRTO STRIPPER 2nd BY PASS LINE	FLANGE	0	0	0	0
F-3896		V.GLAND	0	0	0	0
F-3897		FLANGE	0	0	0	0
F-3898	035-PA-CF-001 A IN LET LINE	V.GLAND	0	0	0	0
F-3899	(SPLITTER RUFLUX)	F.JOINT	0	0	0	0
F-3900		P.GLAND	0	0	0	0
F-3901		F.JOINT	0	0	0	0
F-3902	035-PA-CF-001 A OUT LET LINE	V.GLAND	0	0	0	0
F-3903	(SPLITTER RUFLUX)	F.JOINT	0	0	0	0
F-3904		P.GLAND	0	0	0	0
F-3905	035-PA-CF-001 B IN LET LINE	V.GLAND	0	0	0	0
F-3906	(SPLITTER RUFLUX)	F.JOINT	0	0	0	0
F-3907		P.GLAND	0	0	0	0
F-3908		F.JOINT	0	0	0	0
F-3909	035-PA-CF-001 B OUT LET LINE	V.GLAND	0	0	0	0
F-3910	(SPLITTER RUFLUX)	F.JOINT	0	0	0	0
F-3911		P.GLAND	0	0	0	0
F-3912	035-PA-CF-002 A IN LET LINE	V.GLAND	0	0	0	0
F-3913	(REFORMATE)	F.JOINT	0	0	0	0
F-3914		P.GLAND	0	0	0	0
F-3915		F.JOINT	0	0	0	0
F-3916	035-PA-CF-002 A OUT LET LINE	V.GLAND	0	0	0	0
F-3917	(REFORMATE)	F.JOINT	0	0	0	0
F-3918		P.GLAND	0	0	0	0
F-3919	035-PA-CF-002 B IN LET LINE	V.GLAND	0	0	0	0
F-3920	(REFORMATE)	F.JOINT	0	0	0	0
F-3921		P.GLAND	0	0	0	0
F-3922		F.JOINT	0	0	0	0
F-3923	035-PA-CF-002 B OUT LET LINE	V.GLAND	0	0	0	0
F-3924	(REFORMATE)	F.JOINT	0	0	0	0
F-3925		P.GLAND	0	0	0	0
F-3926	034-PA-CF-001 A IN LET LINE	V.GLAND	526	245.8	0.0017	0.014892
F-3927	(NAPTHA)	F.JOINT	0	0	0	0
F-3928		P.GLAND	0	0	0	0
F-3929		F.JOINT	0	0	0	0
F-3930	034-PA-CF-001 A OUT LET LINE	V.GLAND	0	0	0	0
F-3931	(NAPTHA)	F.JOINT	0	0	0	0
F-3932		P.GLAND	0	0	0	0

F-3933	034-PA-CF-001 B IN LET LINE	V.GLAND	0	0	0	0
F-3934	(NAPTHA)	F.JOINT	0	0	0	0
F-3935		P.GLAND	0	0	0	0
F-3936		F.JOINT	0	0	0	0
F-3937	034-PA-CF-001 B OUT LET LINE	V.GLAND	0	0	0	0
F-3938	(NAPTHA)	F.JOINT	764	421.4	0.00006	0.000526
F-3939		P.GLAND	0	0	0	0
F-3940	034-PA-CF-002 B IN LET LINE	V.GLAND	0	0	0	0
F-3941	(NAPTHA SPLITTER REFLUX)	F.JOINT	0	0	0	0
F-3942		P.GLAND	0	0	0	0
F-3943		F.JOINT	0	0	0	0
F-3944	034-PA-CF-002 B OUT LET LINE	V.GLAND	0	0	0	0
F-3945	(NAPTHA SPLITTER REFLUX)	F.JOINT	0	0	0	0
F-3946		P.GLAND	0	0	0	0
F-3947	034-PA-CF-002 A IN LET LINE	V.GLAND	0	0	0	0
F-3948	(NAPTHA SPLITTER REFLUX)	F.JOINT	0	0	0	0
F-3949		P.GLAND	0	0	0	0
F-3950		F.JOINT	0	0	0	0
F-3951	034-PA-CF-002 A OUT LET LINE	V.GLAND	0	0	0	0
F-3952	(NAPTHA SPLITTER REFLUX)	F.JOINT	0	0	0	0
F-3953		P.GLAND	0	0	0	0
F-3954	034-PA-CF-003 A IN LET LINE	V.GLAND	57.0	27.3	0.0017	0.01489
F-3955	(NAPTHA SPLITTER BOTTOM)	F.JOINT	0	0	0	0
F-3956		P.GLAND	0	0	0	0
F-3957		F.JOINT	0	0	0	0
F-3958	034-PA-CF-003 A OUT LET LINE	V.GLAND	0	0	0	0
F-3959	(NAPTHA SPLITTER BOTTOM)	F.JOINT	0	0	0	0
F-3960		P.GLAND	0	0	0	0
F-3961	034-PA-CF-003 B IN LET LINE	V.GLAND	0	0	0	0
F-3962	(NAPTHA SPLITTER BOTTOM)	F.JOINT	0	0	0	0
F-3963		P.GLAND	0	0	0	0
F-3964		F.JOINT	0	0	0	0
F-3965	034-PA-CF-003 B OUT LET LINE	V.GLAND	0	0	0	0
F-3966	(NAPTHA SPLITTER BOTTOM)	F.JOINT	0	0	0	0
F-3967		P.GLAND	0	0	0	0
F-3968	LINE TO-34-VV-002 BOOT	FLANGE	0	0	0	0
F-3969		V.GLAND	0	0	0	0
F-3970		FLANGE	0	0	0	0
F-3971		FLANGE	0	0	0	0
F-3972		V.GLAND	0	0	0	0
F-3973		FLANGE	0	0	0	0
F-3974	34-VV-002 BOOT BYPASS LINE	FLANGE	0	0	0	0
F-3975		V.GLAND	0	0	0	0
F-3976		FLANGE	0	0	0	0
F-3977		FLANGE	0	0	0	0
F-3978		V.GLAND	0	0	0	0
F-3979		FLANGE	0	0	0	0
F-3980	4'-P-034-0132-A/L TO OWS LINE	FLANGE	0	0	0	0
F-3981		V.GLAND	0	0	0	0
F-3982		FLANGE	0	0	0	0
F-3983		FLANGE	0	0	0	0
F-3984		V.GLAND	0	0	0	0
F-3985		FLANGE	0	0	0	0
F-3986	34-VV-002 BOOT BYPASS LINE	FLANGE	0	0	0	0
F-3987		V.GLAND	0	0	0	0
F-3988		FLANGE	0	0	0	0
F-3989		FLANGE	0	0	0	0
F-3990		V.GLAND	0	0	0	0
F-3991		FLANGE	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 7(F) UNIT: AVU

SUMMARY SHEET FOR AVU AREA

Total number of points covered	**475**
Date of Monitoring/Rechecking	**23.02.2023**
Total number of Leak detected for VOC	**NIL**

Total number of Leak detected for Benzene	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-3992	EQP NO-01-PA-00-014 IN	V.GLAND	0	0	0	0
F-3993		F.JOINT	0	0	0	0
F-3994		P.GLAND	142	83.7	0.0017	0.01489
F-3995	EQP NO-01-PA-00-014 OUT	V.GLAND	0	0	0	0
F-3996		F.JOINT	0	0	0	0
F-3997	EQP NO-01-PA-00-001 B IN	V.GLAND	0	0	0	0
F-3998		F.JOINT	0	0	0	0
F-3999		P.GLAND	0	0	0	0
F-4000	EQP NO-01-PA-00-001 B OUT	V.GLAND	0	0	0	0
F-4001		F.JOINT	0	0	0	0
F-4002		F.JOINT	0	0	0	0
F-4003	EQP NO-01-PA-00-005A IN	V.GLAND	0	0	0	0
F-4004		F.JOINT	0	0	0	0
F-4005		P.GLAND	0	0	0	0
F-4006	EQP NO-01-PA-00-005A OUT	V.GLAND	0	0	0	0
F-4007		F.JOINT	0	0	0	0
F-4008	EQP NO-01-PA-00-007 B IN	V.GLAND	0	0	0	0
F-4009		F.JOINT	0	0	0	0
F-4010		P.GLAND	0	0	0	0
F-4011	EQP NO-01-PA-00-007 B OUT	V.GLAND	0	0	0	0
F-4012		F.JOINT	0	0	0	0
F-4013		F.JOINT	0	0	0	0
F-4014	EQP NO-01-PA-00-011B IN	V.GLAND	0	0	0	0
F-4015		F.JOINT	0	0	0	0
F-4016		P.GLAND	0	0	0	0
F-4017	EQP NO-01-PA-00-011B OUT	V.GLAND	0	0	0	0
F-4018		F.JOINT	0	0	0	0
F-4019	EQP NO-01-PA-00-009A IN	V.GLAND	0	0	0	0
F-4020		F.JOINT	0	0	0	0
F-4021		P.GLAND	0	0	0	0
F-4022	EQP NO-01-PA-00-009A OUT	V.GLAND	0	0	0	0
F-4023		F.JOINT	0	0	0	0
F-4024	EQP NO-01-PA-00-008A IN	V.GLAND	0	0	0	0
F-4025		F.JOINT	0	0	0	0
F-4026		P.GLAND	0	0	0	0
F-4027	EQP NO-01-PA-00-008A OUT	V.GLAND	0	0	0	0
F-4028		F.JOINT	0	0	0	0
F-4029	EQP NO-01-PA-00-001A IN	V.GLAND	0	0	0	0
F-4030		F.JOINT	0	0	0	0
F-4031		P.GLAND	0	0	0	0
F-4032	EQP NO-01-PA-00-001 A OUT	V.GLAND	0	0	0	0
F-4033		F.JOINT	0	0	0	0
F-4034	EQP NO-01-PA-00-004A SUCTION LINE	V.GLAND	61	0	0	0
F-4035		F.JOINT	0	0	0	0
F-4036		P.GLAND	0	0	0	0
F-4037	EQP NO-01-PA-00-004A DISCHARGE LINE	V.GLAND	74	0	0	0
F-4038		F.JOINT	0	0	0	0
F-4039	EQP NO-01-PA-00-010B IN	V.GLAND	0	0	0	0
F-4040		F.JOINT	0	0	0	0

F-4041		P.GLAND	0	0	0	0
F-4042	EQP NO-01-PA-00-010B OUT	V.GLAND	0	0	0	0
F-4043		F.JOINT	0	0	0	0
F-4044		F.JOINT	0	0	0	0
F-4045	EQP NO-02-PA-00-001B IN	V.GLAND	0	0	0	0
F-4046		F.JOINT	0	0	0	0
F-4047		P.GLAND	0	0	0	0
F-4048	EQP NO-02-PA-00-001 B OUT	V.GLAND	0	0	0	0
F-4049		F.JOINT	0	0	0	0
F-4050	EQP NO-02-PA-00-005A IN	V.GLAND	0	0	0	0
F-4051		F.JOINT	0	0	0	0
F-4052		P.GLAND	0	0	0	0
F-4053	EQP NO-02-PA-00-005A OUT	V.GLAND	0	0	0	0
F-4054		F.JOINT	0	0	0	0
F-4055	EQP NO-02-PA-00-007B IN	V.GLAND	0	0	0	0
F-4056		F.JOINT	0	0	0	0
F-4057		P.GLAND	0	0	0	0
F-4058	EQP NO-02-PA-00-007B OUT	V.GLAND	0	0	0	0
F-4059		F.JOINT	0	0	0	0
F-4060		F.JOINT	0	0	0	0
F-4061	EQP NO-01-PA-00-006B IN	V.GLAND	0	0	0	0
F-4062		F.JOINT	0	0	0	0
F-4063		P.GLAND	0	0	0	0
F-4064	EQP NO-01-PA-00-006B OUT	V.GLAND	0	0	0	0
F-4065		F.JOINT	0	0	0	0
F-4066	EQP NO-01-PA-00-012B IN	V.GLAND	0	0	0	0
F-4067		F.JOINT	0	0	0	0
F-4068		P.GLAND	0	0	0	0
F-4069	EQP NO-01-PA-00-012B OUT	V.GLAND	0	0	0	0
F-4070		F.JOINT	0	0	0	0
F-4071	EQP NO-01-PA-00-002A IN	V.GLAND	0	0	0	0
F-4072		F.JOINT	0	0	0	0
F-4073		P.GLAND	0	0	0	0
F-4074	EQP NO-01-PA-00-002A OUT	V.GLAND	0	0	0	0
F-4075		F.JOINT	0	0	0	0
F-4076	EQP NO-02-PA-00-003B IN	V.GLAND	0	0	0	0
F-4077		F.JOINT	0	0	0	0
F-4078		P.GLAND	0	0	0	0
F-4079	EQP NO-02-PA-00-003B OUT	V.GLAND	0	0	0	0
F-4080		F.JOINT	0	0	0	0
F-4081	EQP NO-02-PA-00-002A IN	V.GLAND	0	0	0	0
F-4082		F.JOINT	0	0	0	0
F-4083		P.GLAND	0	0	0	0
F-4084	EQP NO-02-PA-00-002A OUT	V.GLAND	0	0	0	0
F-4085		F.JOINT	84	47.5	0.00006	0.00526
F-4086	LINE HGO	FLANGE	0	0	0	0
F-4087		VALVE	0	0	0	0
F-4088		FLANGE	0	0	0	0
F-4089	LINEGVC	FLANGE	0	0	0	0
F-4090		VALVE	0	0	0	0
F-4091		FLANGE	0	0	0	0
F-4092	LINE LGO	FLANGE	0	0	0	0
F-4093		VALVE	0	0	0	0
F-4094		FLANGE	0	0	0	0
F-4095	LINE LK	FLANGE	0	0	0	0
F-4096		VALVE	0	0	0	0
F-4097		FLANGE	0	0	0	0
F-4098	LINE HK	FLANGE	0	0	0	0
F-4099		VALVE	0	0	0	0
F-4100		FLANGE	0	0	0	0
F-4101	LINE HSD	FLANGE	0	0	0	0
F-4102		VALVE	132	63.1	0.0017	0.01489
F-4103		FLANGE	0	0	0	0

F-4104	LINE GVC 2.1	VALVE	0	0	0	0
F-4105		VALVE	0	0	0	0
F-4106		VALVE	0	0	0	0
F-4107	SLOPE LINE	VALVE	0	0	0	0
F-4108	SLOP OIL LINE	VALVE	0	0	0	0
F-4109		FLANGE	0	0	0	0
F-4110		FLANGE	0	0	0	0
F-4111	LINE HWD 3.20	VALVE	0	0	0	0
F-4112		VALVE	0	0	0	0
F-4113	LINE CBD	FLANGE	0	0	0	0
F-4114		VALVE	0	0	0	0
F-4115		FLANGE	0	0	0	0
F-4116	LINE HSD	FLANGE	0	0	0	0
F-4117		VALVE	0	0	0	0
F-4118		FLANGE	0	0	0	0
F-4119	LINE1136	FLANGE	0	0	0	0
F-4120		VALVE	0	0	0	0
F-4121		FLANGE	0	0	0	0
F-4122	LINE PWD	FLANGE	0	0	0	0
F-4123		VALVE	0	0	0	0
F-4124		FLANGE	0	0	0	0
F-4125		VALVE	0	0	0	0
F-4126		FLANGE	0	0	0	0
F-4127	LINE VR TO SLOP	FLANGE	0	0	0	0
F-4128		VALVE	0	0	0	0
F-4129		FLANGE	0	0	0	0
F-4130		VALVE	0	0	0	0
F-4131	LINE HGO TO SLOP	FLANGE	0	0	0	0
F-4132		VALVE	0	0	0	0
F-4133		FLANGE	0	0	0	0
F-4134		FLANGE	0	0	0	0
F-4135	LINE HK TO SLOP	FLANGE	0	0	0	0
F-4136		VALVE	0	0	0	0
F-4137		FLANGE	0	0	0	0
F-4138		VALVE	0	0	0	0
F-4139		FLANGE	0	0	0	0
F-4140	LINE LGO TO SLOP	FLANGE	0	0	0	0
F-4141		VALVE	0	0	0	0
F-4142		FLANGE	0	0	0	0
F-4143		VALVE	0	0	0	0
F-4144		FLANGE	0	0	0	0
F-4145	LINE NAPTHA TO SLOP	FLANGE	0	0	0	0
F-4146		VALVE	0	0	0	0
F-4147		FLANGE	32	14.8	0.00006	0.00053
F-4148		FLANGE	0	0	0	0
F-4149	LINE LK TO SLOP	FLANGE	0	0	0	0
F-4150		VALVE	0	0	0	0
F-4151		FLANGE	0	0	0	0
F-4152		VALVE	0	0	0	0
F-4153		FLANGE	0	0	0	0
F-4154	EQP NO-02-PA-00-007A IN	V.GLAND	0	0	0	0
F-4155		F.JOINT	0	0	0	0
F-4156		P.GLAND	0	0	0	0
F-4157	EQP NO-02-PA-00-007A OUT	V.GLAND	0	0	0	0
F-4158		F.JOINT	0	0	0	0
F-4159	EQP NO-02-PA-00-007B IN	V.GLAND	0	0	0	0
F-4160		F.JOINT	0	0	0	0
F-4161		P.GLAND	0	0	0	0
F-4162	EQP NO-01-PA-00-007B OUT	V.GLAND	0	0	0	0
F-4163		F.JOINT	0	0	0	0
F-4164	EQP NO-01-PA-00-004A IN	V.GLAND	0	0	0	0
F-4165		F.JOINT	0	0	0	0
F-4166		P.GLAND	0	0	0	0

F-4167	EQP NO-02-PA-00-004A OUT	V.GLAND	0	0	0	0
F-4168		F.JOINT	0	0	0	0
F-4169	EQP NO-02-PA-00-004B IN	V.GLAND	0	0	0	0
F-4170		F.JOINT	0	0	0	0
F-4171		P.GLAND	0	0	0	0
F-4172	EQP NO-02-PA-00-004B OUT	V.GLAND	0	0	0	0
F-4173		F.JOINT	0	0	0	0
F-4174	EQP NO-02-PA-00-006A IN	V.GLAND	0	0	0	0
F-4175		F.JOINT	0	0	0	0
F-4176		P.GLAND	0	0	0	0
F-4177	EQP NO-02-PA-00-006A OUT	V.GLAND	0	0	0	0
F-4178		F.JOINT	0	0	0	0
F-4179	EQP NO-02-PA-00-006B IN	V.GLAND	0	0	0	0
F-4180		F.JOINT	0	0	0	0
F-4181		P.GLAND	0	0	0	0
F-4182	EQP NO-02-PA-00-006B OUT	V.GLAND	0	0	0	0
F-4183		F.JOINT	0	0	0	0
F-4184	LINE CVD OUT EX 01-EE-003A/B	V.GLAND	0	0	0	0
F-4185		V.GLAND	0	0	0	0
F-4186		V.GLAND	0	0	0	0
F-4187		FLANGE	0	0	0	0
F-4188		VALVE	0	0	0	0
F-4189		FLANGE	0	0	0	0
F-4190		FLANGE	0	0	0	0
F-4191		VALVE	0	0	0	0
F-4192		FLANGE	0	0	0	0
F-4193	OPP LINE CVD	FLANGE	0	0	0	0
F-4194		VALVE	0	0	0	0
F-4195		FLANGE	0	0	0	0
F-4196		FLANGE	0	0	0	0
F-4197		VALVE	0	0	0	0
F-4198		FLANGE	0	0	0	0
F-4199		FLANGE	0	0	0	0
F-4200		VALVE	0	0	0	0
F-4201		FLANGE	0	0	0	0
F-4202		FLANGE	0	0	0	0
F-4203		VALVE	0	0	0	0
F-4204		FLANGE	0	0	0	0
F-4205	LINE CRUDE /LGO-PA	FLANGE	0	0	0	0
F-4206		VALVE	0	0	0	0
F-4207		FLANGE	0	0	0	0
F-4208		FLANGE	0	0	0	0
F-4209		VALVE	0	0	0	0
F-4210		FLANGE	0	0	0	0
F-4211		FLANGE	0	0	0	0
F-4212		VALVE	0	0	0	0
F-4213		FLANGE	0	0	0	0
F-4214		VALVE	0	0	0	0
F-4215		VALVE	0	0	0	0
F-4216		FLANGE	0	0	0	0
F-4217		VALVE	0	0	0	0
F-4218		FLANGE	0	0	0	0
F-4219		FLANGE	0	0	0	0
F-4220		VALVE	0	0	0	0
F-4221		FLANGE	0	0	0	0
F-4222		VALVE	0	0	0	0
F-4223		FLANGE	0	0	0	0
F-4224	UP LINE CRUDE /LGO-PA	FLANGE	0	0	0	0
F-4225		VALVE	8	5.1	0.0017	0.01489
F-4226		FLANGE	0	0	0	0
F-4227		FLANGE	0	0	0	0
F-4228		VALVE	0	0	0	0
F-4229		FLANGE	0	0	0	0

F-4230		FLANGE	0	0	0	0
F-4231		FLANGE	0	0	0	0
F-4232		VALVE	0	0	0	0
F-4233		FLANGE	0	0	0	0
F-4234		FLANGE	0	0	0	0
F-4235		FLANGE	0	0	0	0
F-4236	CRUDE LINE TO PASS 2	FLANGE	0	0	0	0
F-4237		VALVE	0	0	0	0
F-4238		FLANGE	0	0	0	0
F-4239		FLANGE	0	0	0	0
F-4240		VALVE	0	0	0	0
F-4241		FLANGE	0	0	0	0
F-4242		FLANGE	0	0	0	0
F-4243		VALVE	0	0	0	0
F-4244		FLANGE	0	0	0	0
F-4245		FLANGE	0	0	0	0
F-4246		VALVE	0	0	0	0
F-4247		FLANGE	0	0	0	0
F-4248		FLANGE	0	0	0	0
F-4249		VALVE	0	0	0	0
F-4250		FLANGE	0	0	0	0
F-4251		FLANGE	0	0	0	0
F-4252		VALVE	0	0	0	0
F-4253		FLANGE	0	0	0	0
F-4254	LINE CRUDE EX PRE HEATER 1	FLANGE	0	0	0	0
F-4255		VALVE	0	0	0	0
F-4256		FLANGE	0	0	0	0
F-4257	LINEAR CRUDE EX PRE HEATER 1	FLANGE	0	0	0	0
F-4258		VALVE	0	0	0	0
F-4259		FLANGE	0	0	0	0
F-4260		FLANGE	0	0	0	0
F-4261		VALVE	0	0	0	0
F-4262		FLANGE	0	0	0	0
F-4263	LINE FG FROM HDR TO ATM	FLANGE	0	0	0	0
F-4264		FLANGE	0	0	0	0
F-4265		FLANGE	18.0	9.6	0.00006	0.00526
F-4266		FLANGE	0	0	0	0
F-4267		VALVE	0	0	0	0
F-4268		FLANGE	0	0	0	0
F-4269		FLANGE	0	0	0	0
F-4270		FLANGE	0	0	0	0
F-4271		FLANGE	0	0	0	0
F-4272		FLANGE	0	0	0	0
F-4273		VALVE	0	0	0	0
F-4274		FLANGE	0	0	0	0
F-4275		FLANGE	0	0	0	0
F-4276		VALVE	0	0	0	0
F-4277		FLANGE	0	0	0	0
F-4278		FLANGE	0	0	0	0
F-4279		VALVE	0	0	0	0
F-4280		FLANGE	0	0	0	0
F-4281		FLANGE	0	0	0	0
F-4282		VALVE	0	0	0	0
F-4283		FLANGE	0	0	0	0
F-4284		FLANGE	0	0	0	0
F-4285		VALVE	0	0	0	0
F-4286		FLANGE	0	0	0	0
F-4287		FLANGE	0	0	0	0
F-4288		VALVE	0	0	0	0
F-4289		FLANGE	0	0	0	0
F-4290	LINE HGO/PDT CRUDE	FLANGE	0	0	0	0
F-4291		VALVE	0	0	0	0
F-4292		FLANGE	0	0	0	0

F-4293		FLANGE	0	0	0	0
F-4294		FLANGE	0	0	0	0
F-4295		VALVE	0	0	0	0
F-4296		FLANGE	0	0	0	0
F-4297		VALVE	0	0	0	0
F-4298		VALVE	0	0	0	0
F-4299		VALVE	0	0	0	0
F-4300		VALVE	0	0	0	0
F-4301		VALVE	0	0	0	0
F-4302	EQP NO 01 -PA -00-002B IN	V.GLAND	0	0	0	0
F-4303		F.JOINT	0	0	0	0
F-4304		P.GLAND	0	0	0	0
F-4305	EQP NO 01 -PA -00-002B OUT	V.GLAND	0	0	0	0
F-4306		F.JOINT	0	0	0	0
F-4307		FLANGE	0	0	0	0
F-4308		FLANGE	0	0	0	0
F-4309		FLANGE	0	0	0	0
F-4310		FLANGE	0	0	0	0
F-4311		VALVE	0	0	0	0
F-4312		FLANGE	0	0	0	0
F-4313		FLANGE	0	0	0	0
F-4314		FLANGE	0	0	0	0
F-4315		VALVE	0	0	0	0
F-4316		FLANGE	0	0	0	0
F-4317		FLANGE	0	0	0	0
F-4318		FLANGE	0	0	0	0
F-4319		VALVE	0	0	0	0
F-4320		FLANGE	0	0	0	0
F-4321	LINE CRUDE EX 01-EE-00-006	FLANGE	0	0	0	0
F-4322		FLANGE	0	0	0	0
F-4323		VALVE	0	0	0	0
F-4324		FLANGE	0	0	0	0
F-4325		FLANGE	0	0	0	0
F-4326		VALVE	0	0	0	0
F-4327		FLANGE	0	0	0	0
F-4328		FLANGE	0	0	0	0
F-4329		VALVE	0	0	0	0
F-4330		FLANGE	0	0	0	0
F-4331		FLANGE	0	0	0	0
F-4332		VALVE	0	0	0	0
F-4333		FLANGE	0	0	0	0
F-4334		FLANGE	0	0	0	0
F-4335		VALVE	0	0	0	0
F-4336		FLANGE	0	0	0	0
F-4337		FLANGE	0	0	0	0
F-4338		VALVE	0	0	0	0
F-4339		FLANGE	0	0	0	0
F-4340		FLANGE	0	0	0	0
F-4341		FLANGE	0	0	0	0
F-4342		VALVE	0	0	0	0
F-4343		FLANGE	0	0	0	0
F-4344		VALVE	0	0	0	0
F-4345		FLANGE	0	0	0	0
F-4346		VALVE	0	0	0	0
F-4347		FLANGE	0	0	0	0
F-4348		VALVE	0	0	0	0
F-4349		VALVE	0	0	0	0
F-4350		FLANGE	0	0	0	0
F-4351		VALVE	0	0	0	0
F-4352		FLANGE	0	0	0	0
F-4353		FLANGE	0	0	0	0
F-4354		VALVE	0	0	0	0
F-4355		FLANGE	0	0	0	0

F-4356		FLANGE	0	0	0	0
F-4357		VALVE	0	0	0	0
F-4358		FLANGE	0	0	0	0
F-4359	LINE CRO-HVYK PDT	FLANGE	0	0	0	0
F-4360		VALVE	0	0	0	0
F-4361		FLANGE	0	0	0	0

LDAR PROGRAM at Digboi Refinery

Leak points Detected in Phase = 7(F) UNIT: SDU

SUMMARY SHEET FOR SDU AREA

Total number of points covered	**328**
Date of Monitoring/Rechecking	**25.02.2023**
Total number of Leak detected for VOC	**NIL**
Total number of Leak detected for Benzene	**NIL**
Total Emission in a year before Leak detection and repair (ton/year)	**NIL**
Total Emission in a year after Leak detection and repair (ton/year)	**NIL**
Total save in a year in (ton/year)	**NIL**
Pump/Compressor	
Total No Leak detected VOC	**NIL**
Total No Leak detected Benzene	**NIL**
Gland/Bonet/NRV	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	
Flange/Joint	
Total Leak detected VOC	**NIL**
Total Leak detected Benzene	**NIL**

COM ID	COMPONENT TYPE	LEAK POINT	VOC in ppm	Benzene in ppm	Emmission(f) kg/hr	Total ton/year
F-4362	08-PA-CF-300A IN LET LINE	V.GLAND	0	0	0	0
F-4363	(DEOIL WAX RD)	F.JOINT	0	0	0	0
F-4364		P.GLAND	0	0	0	0
F-4365		F.JOINT	0	0	0	0
F-4366	08-PA-CF-300 A OUT LET LINE	V.GLAND	0	0	0	0
F-4367	(DEOIL WAX RD)	F.JOINT	42	0	0	0
F-4368		P.GLAND	0	0	0	0
F-4369	NRB	FLANGE	0	0	0	0
F-4370		FLANGE	0	0	0	0
F-4371	LINE TO OWS	FLANGE	0	0	0	0
F-4372		VALVE	0	0	0	0
F-4373		FLANGE	0	0	0	0
F-4374		VALVE	0	0	0	0
F-4375		FLANGE	0	0	0	0
F-4376	08-PA-CF-300B IN LET LINE	V.GLAND	0	0	0	0
F-4377	(DEOIL WAX RD)	F.JOINT	0	0	0	0
F-4378		P.GLAND	0	0	0	0
F-4379		F.JOINT	0	0	0	0
F-4380	08-PA-CF-300B OUT LET LINE	V.GLAND	0	0	0	0
F-4381	(DEOIL WAX RD)	F.JOINT	36	0	0	0
F-4382		P.GLAND	0	0	0	0
F-4383	NRB	FLANGE	0	0	0	0
F-4384		FLANGE	0	0	0	0
F-4385	LINE TO OWS	FLANGE	0	0	0	0
F-4386		VALVE	0	0	0	0
F-4387		FLANGE	0	0	0	0
F-4388		VALVE	0	0	0	0
F-4389		FLANGE	0	0	0	0
F-4390	08-PA-CF-302A IN LET LINE	V.GLAND	0	0	0	0
F-4391	(FOOTS OIL)	F.JOINT	0	0	0	0
F-4392		P.GLAND	0	0	0	0
F-4393		F.JOINT	0	0	0	0
F-4394	08-PA-CF-302A A OUT LET LINE	V.GLAND	0	0	0	0

F-4395	(FOOTS OIL)	F.JOINT	0	0	0	0
F-4396		P.GLAND	0	0	0	0
F-4397	NRB	FLANGE	0	0	0	0
F-4398		FLANGE	0	0	0	0
F-4399	LINE TO OWS 1st VALVE	FLANGE	0	0	0	0
F-4400		VALVE	0	0	0	0
F-4401		FLANGE	0	0	0	0
F-4402	LINE TO OWS 2nd VALVE	FLANGE	0	0	0	0
F-4403		VALVE	0	0	0	0
F-4404		FLANGE	0	0	0	0
F-4405	08-PA-CF-302B IN LET LINE	V.GLAND	0	0	0	0
F-4406	(FOOTS OIL)	F.JOINT	0	0	0	0
F-4407		P.GLAND	0	0	0	0
F-4408		F.JOINT	0	0	0	0
F-4409	08-PA-CF-302B OUT LET LINE	V.GLAND	0	0	0	0
F-4410	(FOOTS OIL)	F.JOINT	0	0	0	0
F-4411		P.GLAND	0	0	0	0
F-4412	NRB	FLANGE	0	0	0	0
F-4413		FLANGE	0	0	0	0
F-4414	LINE TO OWS 1st VALVE	FLANGE	0	0	0	0
F-4415		VALVE	0	0	0	0
F-4416		FLANGE	0	0	0	0
F-4417	LINE TO OWS 2nd VALVE	FLANGE	0	0	0	0
F-4418		VALVE	0	0	0	0
F-4419		FLANGE	0	0	0	0
F-4420	08-PA-CF-301A IN LET LINE	V.GLAND	0	0	0	0
F-4421	(FOOTS OIL)	F.JOINT	0	0	0	0
F-4422		P.GLAND	0	0	0	0
F-4423		F.JOINT	0	0	0	0
F-4424	08-PA-CF-301 A OUT LET LINE	V.GLAND	0	0	0	0
F-4425	(FOOTS OIL)	F.JOINT	0	0	0	0
F-4426		P.GLAND	0	0	0	0
F-4427	NRB	FLANGE	0	0	0	0
F-4428		FLANGE	0	0	0	0
F-4429		FLANGE	0	0	0	0
F-4430	LINE TO OWS 1st VALVE	FLANGE	0	0	0	0
F-4431		VALVE	0	0	0	0
F-4432		FLANGE	0	0	0	0
F-4433	LINE TO OWS 2nd VALVE	FLANGE	0	0	0	0
F-4434		VALVE	0	0	0	0
F-4435		FLANGE	0	0	0	0
F-4436	08-PA-CF-301 B IN LET LINE	V.GLAND	0	0	0	0
F-4437	(FOOTS OIL)	F.JOINT	0	0	0	0
F-4438		P.GLAND	0	0	0	0
F-4439		F.JOINT	0	0	0	0
F-4440	08-PA-CF-301 B OUT LET LINE	V.GLAND	0	0	0	0
F-4441	(FOOTS OIL)	F.JOINT	0	0	0	0
F-4442		P.GLAND	0	0	0	0
F-4443	NRB	FLANGE	0	0	0	0
F-4444		FLANGE	0	0	0	0
F-4445		FLANGE	0	0	0	0
F-4446	LINE TO OWS 1st VALVE	FLANGE	0	0	0	0
F-4447		VALVE	0	0	0	0
F-4448		FLANGE	0	0	0	0
F-4449	LINE TO OWS 2nd VALVE	FLANGE	0	0	0	0
F-4450		VALVE	0	0	0	0
F-4451		FLANGE	0	0	0	0
F-4452	FG TO PILOT BURNER 1st VALVE	VALVE GLAND	0	0	0	0
F-4453	FG TO PILOT BURNER 2nd VALVE	VALVE GLAND	0	0	0	0
F-4454	CONTROL VALVE 08-UV-3606	FLANGE	0	0	0	0
F-4455		VALVE	0	0	0	0
F-4456		FLANGE	0	0	0	0
F-4457		FLANGE	0	0	0	0

F-4458		FLANGE	0	0	0	0
F-4459	08-PA-CF-104 A IN LET LINE	V.GLAND	0	0	0	0
F-4460	(SECONDARY FILTRATE)	F.JOINT	0	0	0	0
F-4461		P.GLAND	0	0	0	0
F-4462	08-PA-CF-104 A OUT LET LINE	V.GLAND	0	0	0	0
F-4463	(SECONDARY FILTRATE)	F.JOINT	46	0	0	0
F-4464		P.GLAND	0	0	0	0
F-4465	NRB	FLANGE	0	0	0	0
F-4466		FLANGE	0	0	0	0
F-4467		FLANGE	0	0	0	0
F-4468	LINE TO OWS 1st VALVE	FLANGE	0	0	0	0
F-4469		VALVE	0	0	0	0
F-4470		FLANGE	0	0	0	0
F-4471	LINE TO OWS 2nd VALVE	FLANGE	0	0	0	0
F-4472		VALVE	0	0	0	0
F-4473		FLANGE	0	0	0	0
F-4474	08-PA-CF-104 B IN LET LINE	V.GLAND	0	0	0	0
F-4475	(SECONDARY FILTRATE)	F.JOINT	0	0	0	0
F-4476		P.GLAND	0	0	0	0
F-4477		F.JOINT	0	0	0	0
F-4478	08-PA-CF-104 B OUT LET LINE	V.GLAND	0	0	0	0
F-4479	(SECONDARY FILTRATE)	F.JOINT	0	0	0	0
F-4480		P.GLAND	0	0	0	0
F-4481	NRB	FLANGE	0	0	0	0
F-4482		FLANGE	0	0	0	0
F-4483		FLANGE	0	0	0	0
F-4484	LINE TO OWS 1st VALVE	FLANGE	0	0	0	0
F-4485		VALVE	0	0	0	0
F-4486		FLANGE	0	0	0	0
F-4487	LINE TO OWS 2nd VALVE	FLANGE	0	0	0	0
F-4488		VALVE	0	0	0	0
F-4489		FLANGE	0	0	0	0
F-4490	08-PA-CF-203 IN LET LINE	V.GLAND	0	0	0	0
F-4491	(SECONDARY FILTRATE)	F.JOINT	0	0	0	0
F-4492		P.GLAND	0	0	0	0
F-4493		F.JOINT	0	0	0	0
F-4494	08-PA-CF-203 OUT LET LINE	V.GLAND	0	0	0	0
F-4495	(SECONDARY FILTRATE)	F.JOINT	0	0	0	0
F-4496		P.GLAND	0	0	0	0
F-4497	NRB	FLANGE	0	0	0	0
F-4498		FLANGE	0	0	0	0
F-4499		FLANGE	0	0	0	0
F-4500	LINE TO OWS 1st VALVE	FLANGE	0	0	0	0
F-4501		VALVE	0	0	0	0
F-4502		FLANGE	0	0	0	0
F-4503	LINE TO OWS 2nd VALVE	FLANGE	0	0	0	0
F-4504		VALVE	0	0	0	0
F-4505		FLANGE	0	0	0	0
F-4506	08-PA-CF-103 A IN LET LINE	V.GLAND	0	0	0	0
F-4507	(SECONDARY FILTRATE)	F.JOINT	0	0	0	0
F-4508		P.GLAND	0	0	0	0
F-4509		F.JOINT	18	0	0	0
F-4510	08-PA-CF-103 A OUT LET LINE	V.GLAND	0	0	0	0
F-4511	(SECONDARY FILTRATE)	F.JOINT	0	0	0	0
F-4512		P.GLAND	0	0	0	0
F-4513	NRB	FLANGE	0	0	0	0
F-4514		FLANGE	0	0	0	0
F-4515		FLANGE	0	0	0	0
F-4516	LINE TO OWS 1st VALVE	FLANGE	0	0	0	0
F-4517		VALVE	0	0	0	0
F-4518		FLANGE	0	0	0	0
F-4519	LINE TO OWS 2nd VALVE	FLANGE	0	0	0	0
F-4520		VALVE	0	0	0	0

F-4521		FLANGE	0	0	0	0
F-4522	08-PA-CF-103 B IN LET LINE	V.GLAND	0	0	0	0
F-4523	(PRIMARY FILTRATE)	F.JOINT	0	0	0	0
F-4524		P.GLAND	0	0	0	0
F-4525		F.JOINT	0	0	0	0
F-4526	08-PA-CF-103 B OUT LET LINE	V.GLAND	0	0	0	0
F-4527	(PRIMARY FILTRATE)	F.JOINT	0	0	0	0
F-4528		P.GLAND	0	0	0	0
F-4529	NRB	FLANGE	0	0	0	0
F-4530		FLANGE	0	0	0	0
F-4531		FLANGE	0	0	0	0
F-4532	LINE TO OWS 1st VALVE	FLANGE	0	0	0	0
F-4533		VALVE	0	0	0	0
F-4534		FLANGE	0	0	0	0
F-4535	LINE TO OWS 2nd VALVE	FLANGE	0	0	0	0
F-4536		VALVE	0	0	0	0
F-4537		FLANGE	0	0	0	0
F-4538	08-PA-CF-202 A IN LET LINE	V.GLAND	0	0	0	0
F-4539	(TC-ll SECONDARY SLURRY)	F.JOINT	24	0	0	0
F-4540		P.GLAND	0	0	0	0
F-4541		F.JOINT	0	0	0	0
F-4542	08-PA-CF-202 A OUT LET LINE	V.GLAND	0	0	0	0
F-4543	(TC-ll SECONDARY SLURRY)	F.JOINT	0	0	0	0
F-4544		P.GLAND	0	0	0	0
F-4545	NRB	FLANGE	0	0	0	0
F-4546		FLANGE	0	0	0	0
F-4547		FLANGE	0	0	0	0
F-4548	LINE TO OWS 1st VALVE	FLANGE	0	0	0	0
F-4549		VALVE	0	0	0	0
F-4550		FLANGE	0	0	0	0
F-4551	LINE TO OWS 2nd VALVE	FLANGE	0	0	0	0
F-4552		VALVE	0	0	0	0
F-4553		FLANGE	0	0	0	0
F-4554	08-PA-CF-202 B IN LET LINE	V.GLAND	0	0	0	0
F-4555	(TC-ll SECONDARY SLURRY)	F.JOINT	0	0	0	0
F-4556		P.GLAND	0	0	0	0
F-4557		F.JOINT	0	0	0	0
F-4558	08-PA-CF-202 B OUT LET LINE	V.GLAND	0	0	0	0
F-4559	(TC-ll SECONDARY SLURRY)	F.JOINT	0	0	0	0
F-4560		P.GLAND	0	0	0	0
F-4561	NRB	FLANGE	0	0	0	0
F-4562		FLANGE	0	0	0	0
F-4563		FLANGE	0	0	0	0
F-4564	LINE TO OWS 1st VALVE	FLANGE	0	0	0	0
F-4565		VALVE	0	0	0	0
F-4566		FLANGE	0	0	0	0
F-4567	LINE TO OWS 2nd VALVE	FLANGE	0	0	0	0
F-4568		VALVE	0	0	0	0
F-4569		FLANGE	0	0	0	0
F-4570	LINE SECONDERY FILTER TO D/LU TK-2	FLANGE	0	0	0	0
F-4571		VALVE	0	0	0	0
F-4572		FLANGE	0	0	0	0
F-4573	CONTROL VALVE 08-LV-1902	FLANGE	0	0	0	0
F-4574		VALVE	126	66.5	0.0017	0.014892
F-4575		FLANGE	0	0	0	0
F-4576	CONTROL VALVE 08-LV-1902 BY PASS LINE	FLANGE	0	0	0	0
F-4577		VALVE	0	0	0	0
F-4578		FLANGE	0	0	0	0
F-4579	LINE SECONDERY FILTER TO TRAIN 1	FLANGE	0	0	0	0
F-4580		VALVE	0	0	0	0
F-4581		FLANGE	0	0	0	0
F-4582	LINE SECONDERY FILTER TO TRAIN 2	FLANGE	0	0	0	0
F-4583		VALVE	0	0	0	0

F-4584		FLANGE	0	0	0	0
F-4585	LINE SECONDERY FILTER TO D/LU	FLANGE	0	0	0	0
F-4586		VALVE	0	0	0	0
F-4587		FLANGE	0	0	0	0
F-4588		FLANGE	0	0	0	0
F-4589		VALVE	0	0	0	0
F-4590		FLANGE	0	0	0	0
F-4591	CONTROL VALVE 08-LV-1901A	FLANGE	0	0	0	0
F-4592		VALVE	0	0	0	0
F-4593		FLANGE	0	0	0	0
F-4594	CONTROL VALVE 08-LV-1901A BY PASS LINE	FLANGE	0	0	0	0
F-4595		VALVE	0	0	0	0
F-4596		FLANGE	0	0	0	0
F-4597	PRIMARY FILTER TO DILUTION TRAIN 2	FLANGE	0	0	0	0
F-4598		VALVE	0	0	0	0
F-4599		FLANGE	0	0	0	0
F-4600		FLANGE	0	0	0	0
F-4601		VALVE	0	0	0	0
F-4602		FLANGE	0	0	0	0
F-4603	CONTROL VALVE 08-PV-1802	FLANGE	0	0	0	0
F-4604		VALVE	0	0	0	0
F-4605		FLANGE	0	0	0	0
F-4606		FLANGE	0	0	0	0
F-4607		VALVE	0	0	0	0
F-4608		FLANGE	0	0	0	0
F-4609	CONTROL VALVE 08-PV-1802 BYPASS LINE	FLANGE	0	0	0	0
F-4610		VALVE	0	0	0	0
F-4611		FLANGE	0	0	0	0
F-4612	LINE PUMP 103A/B DISCHARGE TO D/LU	FLANGE	0	0	0	0
F-4613		VALVE	0	0	0	0
F-4614		FLANGE	0	0	0	0
F-4615		FLANGE	0	0	0	0
F-4616		VALVE	0	0	0	0
F-4617		FLANGE	0	0	0	0
F-4618	CONTROL VALVE 08-PV-1801	FLANGE	0	0	0	0
F-4619		VALVE	0	0	0	0
F-4620		FLANGE	0	0	0	0
F-4621		FLANGE	0	0	0	0
F-4622		VALVE	0	0	0	0
F-4623		FLANGE	0	0	0	0
F-4624	CONTROL VALVE 08-PV-1801 BY PASS LINE	FLANGE	0	0	0	0
F-4625		VALVE	0	0	0	0
F-4626		FLANGE	0	0	0	0
F-4627	08-PA-CF-102 A IN LET LINE	V.GLAND	0	0	0	0
F-4628		F.JOINT	0	0	0	0
F-4629		P.GLAND	0	0	0	0
F-4630		F.JOINT	0	0	0	0
F-4631	08-PA-CF-102 A OUT LET LINE	V.GLAND	0	0	0	0
F-4632		F.JOINT	235	121.5	0.00006	0.0005256
F-4633		P.GLAND	0	0	0	0
F-4634	NRB	FLANGE	0	0	0	0
F-4635		FLANGE	0	0	0	0
F-4636		FLANGE	0	0	0	0
F-4637	LINE TO OWS 1st VALVE	FLANGE	0	0	0	0
F-4638		VALVE	0	0	0	0
F-4639		FLANGE	0	0	0	0
F-4640	LINE TO OWS 2nd VALVE	FLANGE	0	0	0	0
F-4641		VALVE	0	0	0	0
F-4642		FLANGE	0	0	0	0
F-4643	08-PA-CF-102 B IN LET LINE	V.GLAND	0	0	0	0
F-4644		F.JOINT	0	0	0	0
F-4645		P.GLAND	0	0	0	0
F-4646		F.JOINT	0	0	0	0

F-4647	08-PA-CF-102 B OUT LET LINE	V.GLAND	0	0	0	0
F-4648		F.JOINT	0	0	0	0
F-4649		P.GLAND	0	0	0	0
F-4650	NRB	FLANGE	0	0	0	0
F-4651		FLANGE	0	0	0	0
F-4652		FLANGE	0	0	0	0
F-4653	LINE TO OWS 1st VALVE	FLANGE	0	0	0	0
F-4654		VALVE	0	0	0	0
F-4655		FLANGE	0	0	0	0
F-4656	LINE TO OWS 2nd VALVE	FLANGE	0	0	0	0
F-4657		VALVE	0	0	0	0
F-4658		FLANGE	0	0	0	0
F-4659	08-VV-00-325A	FLANGE	12	0	0	0
F-4660		VALVE	0	0	0	0
F-4661		FLANGE	0	0	0	0
F-4662		VALVE	0	0	0	0
F-4663		FLANGE	0	0	0	0
F-4664	LINE TO PSV IN LET	FLANGE	0	0	0	0
F-4665		VALVE	78	46.7	0.0017	0.014892
F-4666		FLANGE	0	0	0	0
F-4667	PSV OUT LET	FLANGE	0	0	0	0
F-4668		VALVE	0	0	0	0
F-4669		FLANGE	0	0	0	0
F-4670	08-VV-00-325 B	FLANGE	0	0	0	0
F-4671		VALVE	0	0	0	0
F-4672		FLANGE	0	0	0	0
F-4673	LINE TO PSV IN LET	FLANGE	0	0	0	0
F-4674		VALVE	0	0	0	0
F-4675		FLANGE	0	0	0	0
F-4676	PSV OUT LET	FLANGE	0	0	0	0
F-4677		VALVE	0	0	0	0
F-4678		FLANGE	0	0	0	0
F-4679	OIL SEPARATOR VV-OO-272B IN LET	FLANGE	0	0	0	0
F-4680		FLANGE	0	0	0	0
F-4681	OIL SEPARATOR VV-OO-272B OUT LET	FLANGE	0	0	0	0
F-4682		VALVE	56	26.1	0.0017	0.014892
F-4683		FLANGE	0	0	0	0
F-4684		FLANGE	0	0	0	0
F-4685		VALVE	0	0	0	0
F-4686		FLANGE	0	0	0	0
F-4687		FLANGE	0	0	0	0
F-4688		VALVE	0	0	0	0
F-4689		FLANGE	0	0	0	0

Report Prepared By :

For Mitra S. K. Private Limited

Authorised Signatory

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Annexure - 8

CREP – Status of Digboi Refinery

Sl No	Action Point	Present Status of Digboi Refinery
1.	Member Secretary, CPCB expressed serious concern on most of the Refineries not Monitoring all the New parameters (as per March, 2008 notification) in effluent and desired Refineries should develop capabilities to start monitoring each parameter and report the detail data to CPCB regularly. Further effluents discharged from the ETP outlet were found having high values of BOD and oil and grease indicating that effluent treatment facilities are not meeting standards and may require up-gradation. The effluent data to be sent CPCB on daily basis through the CPCB online air quality monitoring server	For Effluent out of 21 parameters 9 Parameters i.e pH, oil and grease, BOD, COD, TSS, MLSS, Phenol, Sulphide & Cyanide are tested in Digboi Refinery on daily basis. Report of these test are submitted to PCB, Assam regularly. Remaining tests are done by the Third Party MITRA S.K. Pvt Ltd, Kolkata. Detailed up gradation study of ETP through M/s NEERI, Nagpur, was done in October 2014. Treated effluent from ETP is recycled to refinery as Fire water tank make up, cleaning and gardening purposes at ETP. Treated effluent is reused as make up for Coke Cutting water at delayed coking unit, Wax Sector Cooling Tower & Fire Water Network. During October 2022 – March 2023,100 % of treated effluent was reused.
2.	2.1 The PM Emission from furnace, boilers and captive power plant is not compiled in some of the units and the reason stated are (10 & 100 mg/Nm3 for FG and NG Respectively) too stringent and retrofitting like ESP or installation of filters for fuel is not feasible.	Emission of PM from furnace, boilers & Captive Power Plant is well within the prescribed limit. Due to the use of natural gas with very low sulphur content and sweetened refinery fuel gas as fuel.
	2.2 Installation of low Nox burner is yet to be completed. Refineries shall give the status and time target for the same and if installation is not possible, reason to be given, so that decision could be arrived.	As natural gas is the primary fuel used at Digboi Refinery, emissions of NOx from process units and Captive Power Plant is below the limit.
	2.3 IOC Refineries expressed inability to meet PM stipulations on neat fuel gas firing in furnaces. Member Secretary advised to generated data for both cases i.e. neat fuel gas firing and mixed (oil and gas)firing to look into the issue of PM standards compliance. All the Refineries are advised to submit in detail fuel gas & Oil analysis and emission data every month to HSE , RHQ for taking up with MoEF & CC.	• For firing, only fuel gas is used and no liquid fuels are in use. • Emission of PM from stacks at Digboi refinery is within specified norms.
	2.4 PM in FCC regenerators is not achieved is some of the units. In some of the units it is proposed to be taken during revamp. Gujarat and Mathura Refineries to give detail action plan.	Not applicable for Digboi Refinery.

3	Member Secretary, CPCB expressed, although the units have started bioremediation of oily sludge, the disposal of bio-remediated material and storage will be a problem leading to space constraint and leachate problem on the nearby areas, He advised to find better avenues like Co-processing of oily sludge in cement plants or providing common remediation sites. Within 6 months.	1. Bioremediation of 4500MT Oily sludge is in progress through M/s Innotech Interventions Private Limited, Guwahati. 2. Direct sale of 3000 MT of oily sludge through MSTC e-auction done in Digboi Refinery to M/S Star Petrochem Industries.
4	Linking of CAAQMS & Stacks data to server. Target date June, 2013(to submit road map) and 7-8 months for Implementation. The pending Refineries shall submit activity-wise schedule within a month.	Online connectivity of Furnaces with heat capacity of 10mkcl/hr (HGU) established to CPCB Server. One no. of Continuous Ambient Air Quality Monitoring Station installed and commissioned in September 2012.
5	Member Secretary desired that all the parameters of treated effluent shall be Linked to CPCB server using online analyzer by taking advantage of the technological development. All the Refineries shall initiate necessary action for implementation of the same. Till such time, Refineries shall post the requisite data on CPCB server day-to-day basis (Target –July, 2013)	Online effluent monitoring & connectivity to CPCB server was commissioned on 28th December 2015. WebSite: Online Emission and Effluent Monitoring System (cpcb.gov.in)
6	Minimization of fugitive VOC emission from ETP 's- To meet the environmental standard, old Refineries shall take necessary action to cover effluent sump, API , TPI and other equipments exposed to atmosphere to reduce fugitive emission and also recovery facility.	1. For reduction of fugitive VOC emission from ETP,VOC reduction facility has been commissioned inside ETP on 04.12.2022 2. The CSS (Central Static Sump) inside refinery has already been covered.
7	Member Secretary advised Refineries to follow LDAR programme in true spirit as per gazette notification of "Effluent & Emission Standards, 2008. Data shall be submitted in periodic intervals to CPCB	Quarterly LDAR surveys are being followed. LDAR reports are being sent to MoEF & CC Bi-annually with EC compliance.

8	Member Secretary expressed concern on non-reporting of incidents of fire, oil spills and pollution to CPCB. He advised all the Refineries to reporting of such incidents to CPCB of concerned area during such occurrence.	No major oil spill has occurred till 31/03/2023. Shall be ensured.

Place: Digboi

Date: 31.05.2023

Signature of the Authorized Person

Designation: CM(HSE)

त्रिदिव सईकीया /TRIDIB SAIKIA
सी.एम. (एच एस ई) /C.M. (HSE)
आई.ओ.सी.एल.(एओडी), डिगबोई
I.O.C.L. (AOD), DIGBOI

Annexure -9

DIGBOI REFINERY

INDIAN OIL CORPORATION LIMITED

BIO-MONITORING SURVEY OF AQUATIC LIFE IN LOTIC AND LENTIC WATER BODIES IN AND AROUND DIGBOI REFINERY:2023

Conducted By:

ABNS SCIENTIFIC SERVICES

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Report Preparation	Dr. Mayur J Mahanta & Dr. Manoj Barthakur

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BIO-MONITORING SURVEY OF AQUATIC LIFE IN LOTIC AND LENTIC WATER BODIES IN AND AROUND DIGBOI REFINERY

Introduction:

Bio monitoring is generally used to examine existing stream condition and instant insights into changes in stream water and habitat quality. Historically, invertebrates have received considerable attention in the study of running water ecosystems; in particular relationships between macro invertebrate community structures and environmental variables have been the subject of numerous investigations. Biological assessments are being developed worldwide. Evaluating changes in genetic composition of specific populations, bioaccumulation of toxins and related occurrence of morphological deformities, changes in community composition and ecosystem functioning.

Biological monitoring of water quality provides an integrated approach to assess the overall environmental quality of aquatic ecosystem and it has become one of the most commonmethod for reliable assessment of anthropogenic impacts on aquatic ecosystem, which is complementary to the alternative method of physico-chemical evaluation of water quality. There has been enormous advancement in bio-monitoring methods and a variety of indices have been developed for the purpose of water quality assessment. Bio-monitoring of aquatic ecosystem based on macro-invertebrates has attained wide acceptance since the beginning of the twentieth century and the method has been tested reliably in both temperate and tropical aquatic ecosystems. It underlies the assumptions that any modifications/alteration in the aquatic process would most likely be manifested in qualitative and quantitative changes in macro invertebrate assemblages.

Modern techniques for monitoring pollution involve the use of pollution-sensitive insects, especially benthic macro invertebrates as biological indicators or “sentinels” has become wide spread only over the last two decades. Since benthic aquatic insects are sensitive indicators of environmental changes they can be employed to express long-term changes in water and habitat quality rather than instantaneous conditions.

Bio-monitoring or bio-assessment is one of such Effect parameter used to determine the impact of pollutants on aquatic life mainly of surface water bodies. Analysis of physico-chemical parameters has some limitations. Firstly, the water especially wastewaters are highly complex in nature and may contain thousands of chemicals, many of which may be present in such a low concentration that they may be beyond detection limit of existing analytical techniques and for many of them even the analytical techniques are inadequate. Moreover, the impact of these chemicals individually and in combination, on biological system varies significantly. Further, many of these chemicals and by-products are present as trace pollutants they may still be harmful even in low concentrations. To overcome these problems, application of summary parameters which are generally Effect parameters are increasing during the recent past to assess the status of aquatic water bodies. Bio-monitoring as a summary parameter sums all the effects of cause parameters in an easy to measure parameters.

Digboi is a town and a town area committee in Tinsukia district in the north-eastern part of the state of Assam, India

Crude oil was discovered here in late 19th century and first oil well was dug in 1866. Digboi is known as the Oil City of Assam where the first oil well in Asia was drilled. The first refinery was started here as early as 1901. Digboi has the oldest oil well in operation. With a significant number of British professionals working for Assam Oil Company until the decade following independence of India, Digboi had a well-developed infrastructure and a number of bungalows unique to the town. It has eighteen holes golf course as part of the Digboi Club. It has guest

houses and tourist residential apartments laid on Italian architectural plan to promote tourism in upper Assam. It is said that the town gets its name from the phrase "dig-boy-dig," which is what the English and Canadian miners told the labourers as they dug for crude oil. It is said that Canadians first noticed oil on the feet of elephants. That's how oil was discovered here. The town's history begins in 1867 when a small group of men from the Assam Railway and Trading Co. found their elephants' legs soaked in black mud, which smelled somewhat like oil. The men began exploring more, and in 1889, the English started a small oil installation. India (and Asia) obtained its first refinery in Digboi in the year 1901. Assam Oil Company was formed in 1899 to look after the running of the oil business in this area. The Digboi oil field produced close to 7,000 barrels per day (1,100 m^3/d) of crude oil at its peak, which was during World War II. The field was pushed to produce the maximum amount of oil with little regard to reservoir management; as a result, production started to drop almost immediately after the war. The current production from the Digboi fields is about 240 barrels per day (38 m^3/d). Over 1,000 wells have been drilled at Digboi – the first well in 1889 had stuck oil at 178 feet (54 m). In 1989, the Department of Posts, India came out with a stamp commemorating 100 years of the Digboi fields. Today, though the crude production is not high, Digboi has the distinction of being India's oldest continuously producing oilfield. Digboi refinery, now a division of Indian Oil Corporation, had a capacity of about 0.65 million tonnes per year as of 2003.

Digboi is now Headquarter of Assam Oil Division of Indian Oil Corporation Limited. The

Earliest recorded to the existence of oil in India is found in the memories and dispatches of the Army Officers who penetrated the jungles of Upper Assam since 1825. Lt. R. Wilcox, Major A. White, Capt. Francis Jenkins, Capt. P.S. Hanney—they all saw at different times petroleum exuding from banks of the Dihing River. Mr. C.A. Bruce (1828) and Mr. H.B. Medicott (1865) of the Geological Survey of India also saw oil while prospecting for coal in Upper Assam.

Types of biological assessment

Various methodologies used for bio-assessment are detailed below:

- **Ecosystem study** – This includes study of biotic community living in a prescribed area or physical habitat along with study of population of various groups of organism.
- **Measurement of primary production** – The most popular method used for measurement of primary production of a water body is the measurement of Oxygen production and its consumption through dark and light bottle experiment and chlorophyll estimation.
- **Observation of behavioural changes** - This includes changes in the behaviour of aquatic organisms which includes feeding and predatory behaviour, locomotorbehaviour, reproductive behaviour etc.
- **Assessment of morphological and physiological changes** - These changes include physical appearance, deformities in various body parts and their abnormal functioning e.g. operculum movements, opening and closing of valves in Molluscs, growth inhibition etc.
- **Toxicity/Bioassay test** - To know acute or chronic effect of pollutants on biological system, this test is used both in laboratory by exposing specified number of test organisms directly in the water body or in test sample specified time period.

- **Bio-accumulation and bio-magnification studies** – In bio-accumulation certain chemicals taken up by the organisms through the entire body surface (as occurs in many annelids and simple plants) or through specific surfaces such as the gill membranes of fish. These chemicals/toxicants may tend to be retained by organisms in concentrations that exceed ambient levels. Bio-magnification is another type of bio-accumulation. Consumers at successive trophic levels in the food pyramid feed on populations much larger than their own. Therefore, any material that is retained in individuals at lower trophic levels may be further concentrated near the top of the food pyramid. The study of these two parameters is being used to have an idea accumulation of toxicants in food chain components at levels high enough to exert a toxic effect.

Among these methods, study of biotic community and population of different organisms are more widely used for bio-assessment because in an ecosystem all groups of organisms are interdependent on each other, any impact on one group of organisms affects the entire ecosystem. Similarly, population study of organisms provides information on density, natality (birth rate), mortality (death rate) age distribution, biotic potential dispersion etc. Population also possess genetic characteristics related to their ecology e.g. adaptability, fitness, persistence etc. The ecosystem study can also be used to detect slow changes in the ecosystem both structural and functional.

Site Selection:

The following sites are selected for bio monitoring study in consultation with the Digboi Refinery authorities on the basis of upstream and downstream condition. Samples are collected from the following sites for Physico-chemical and Bio monitoring analysis covered in the present study:

1. Dihing - Margherita: 27.284275° 95.663482°
2. Dihing - Makum: 27.292424° 95.616147°
3. Dihing - Mirika: 27.273380° 95.564508°
4. Dihing - Gammon bridge: 27.311866° 94.882183°
5. Dihing mukh: 27.262802° 94.703727°
6. Digboi river - Kenduguri: 27.402045° 95.580806°
7. Digboi river - 15 KM pt: 27.345290° 95.479622°
8. Digboi river - 26 KM pt: 27.323431° 95.364031°
9. Dihing - before confluence with Digboi river: 27.302082° 95.347753°
10. Dihing - after confluence with Digboi river: 27.302421° 95.344287°

The GPS map present below shows the sample collection locations...

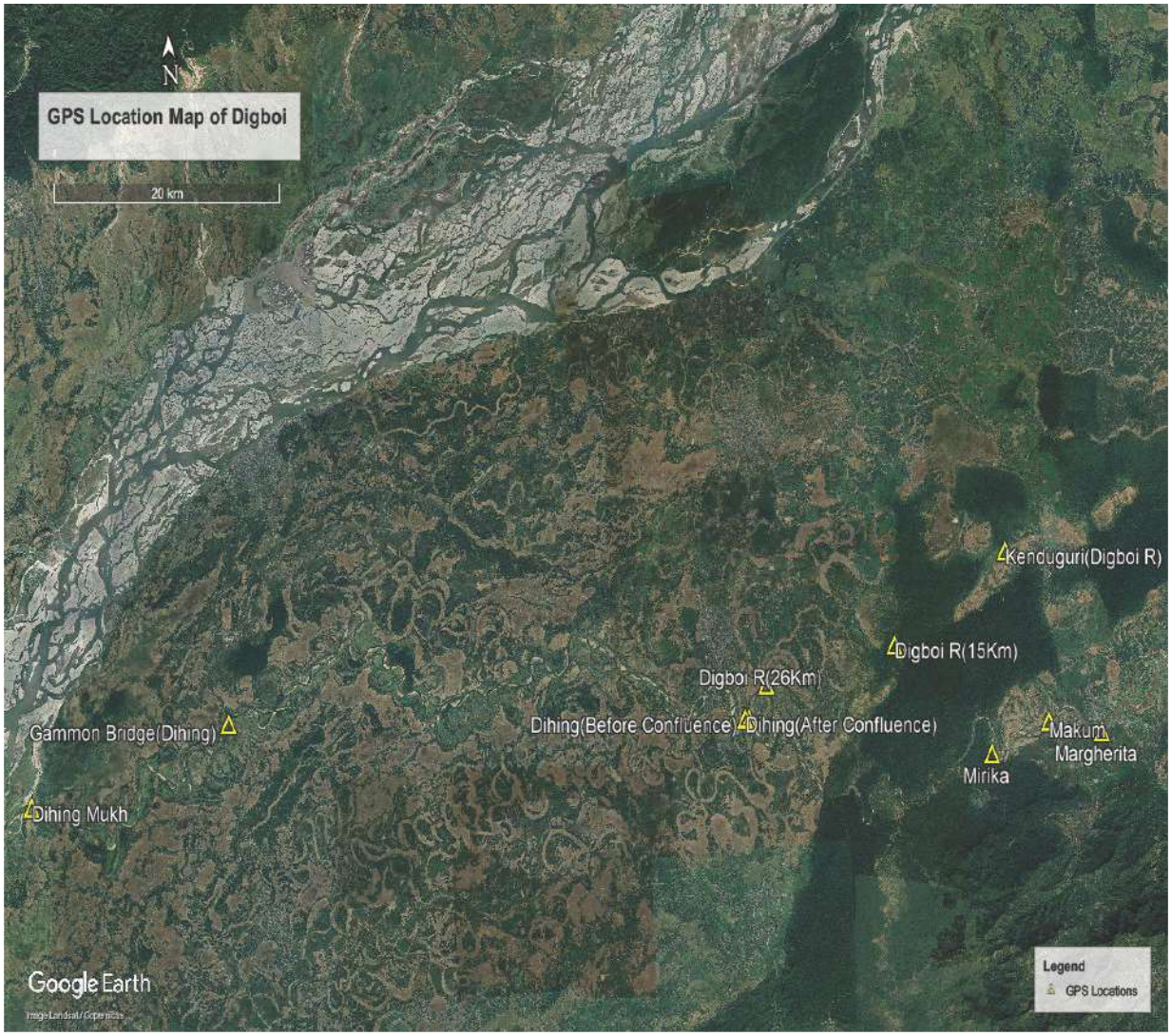


Fig 1: GPS map showing the sampling sites.

Aquatic organisms used in Bio-monitoring

Several groups of organisms are being used for bio-monitoring (and belongs to various trophic levels of food chain. Decomposers include bacteria and protozoa, producers include phytoplankton and aquatic plants, herbivores consist zooplanktons, crustaceans etc., lower level carnivores comprise worms, insects, molluscs, small fishes etc. whereas, top level carnivores are large sized fishes, reptiles etc. The advantages and disadvantages of various groups of organisms in bio-assessment are summarised in Table 1.

Table.1: Organisms used in Bio-monitoring and their Advantages and Disadvantages

Group of Organisms	**Advantages**	**Disadvantages**
Bacteria	•Well-developed methodology for regular assessment. • Collection is easy. • Rapid response to changes, including pollution. • Good indicators of faecal contamination.	Cells may not have originated from sampling point. • Populations recover rapidly from intermittent pollution. • Expertise and specific infrastructure is required for analysis.
Protozoa	• Saprobic values well known. • Collection is easy. • Rapid responses to changes.	• Taxonomic expertise is required. • Cells may not have originated from sampling point. • Indicator species of impacts often present in normal environments also.
Planktons	• Can tolerate pollution stress. • Good indicators of pollutants. • Good taxonomic keys are available for identification.	• Taxonomic expertise required. • Not very useful for severe organic pollution. • Sampling and enumeration problems with certain groups. • Not good for lotic environment
Macro-invertebrates	• Present in abundant numbers and belongs to diverse groups. • Many invertebrates are sedentary and are unable to avoid the effects of pollutants due to limited mobility. • Waterbodies that often do not support organisms of higher level of food chain but support macroinvertebrate communities.	• Sampling procedure is time consuming. • Quantitative sampling is difficult. • Occurrence is less in fast moving waters. • Require taxonomic expertise for identification.

	• Good indicators of pollution especially organic pollution. • Small size facilitates easy collection and identification. • Requires less sampling devices. • Good taxonomic keys are available for macroinvertebrates identification. • Reappears quickly when conditions become favourable.	
Macrophytes	• Species usually attached, easy to observe and identify. • Good indicators of suspended solids and nutrient enrichment.	• Responses to pollution not well documented. • Often tolerant to intermittent pollution. • Mostly seasonal occurrence.
Fishes	• Easy collection. • Effect of impact can easily be accessed through behavioural, physiological, morphological effects etc. • Can be used for measurement of long and short term effects. • Can indicate food chain effects. • Identification is easy.	• Able to migrate to avoid pollution.

Among these groups of organisms, **macro-invertebrates** are found best suited for bio-monitoring and are used worldwide because of more advantages. Further, more ecological information available for their taxonomic groups and in bio-monitoring, taxonomic richness and composition characterization of macro-invertebrates are being used. Taxonomic identification of macro-invertebrates is done up to family level.

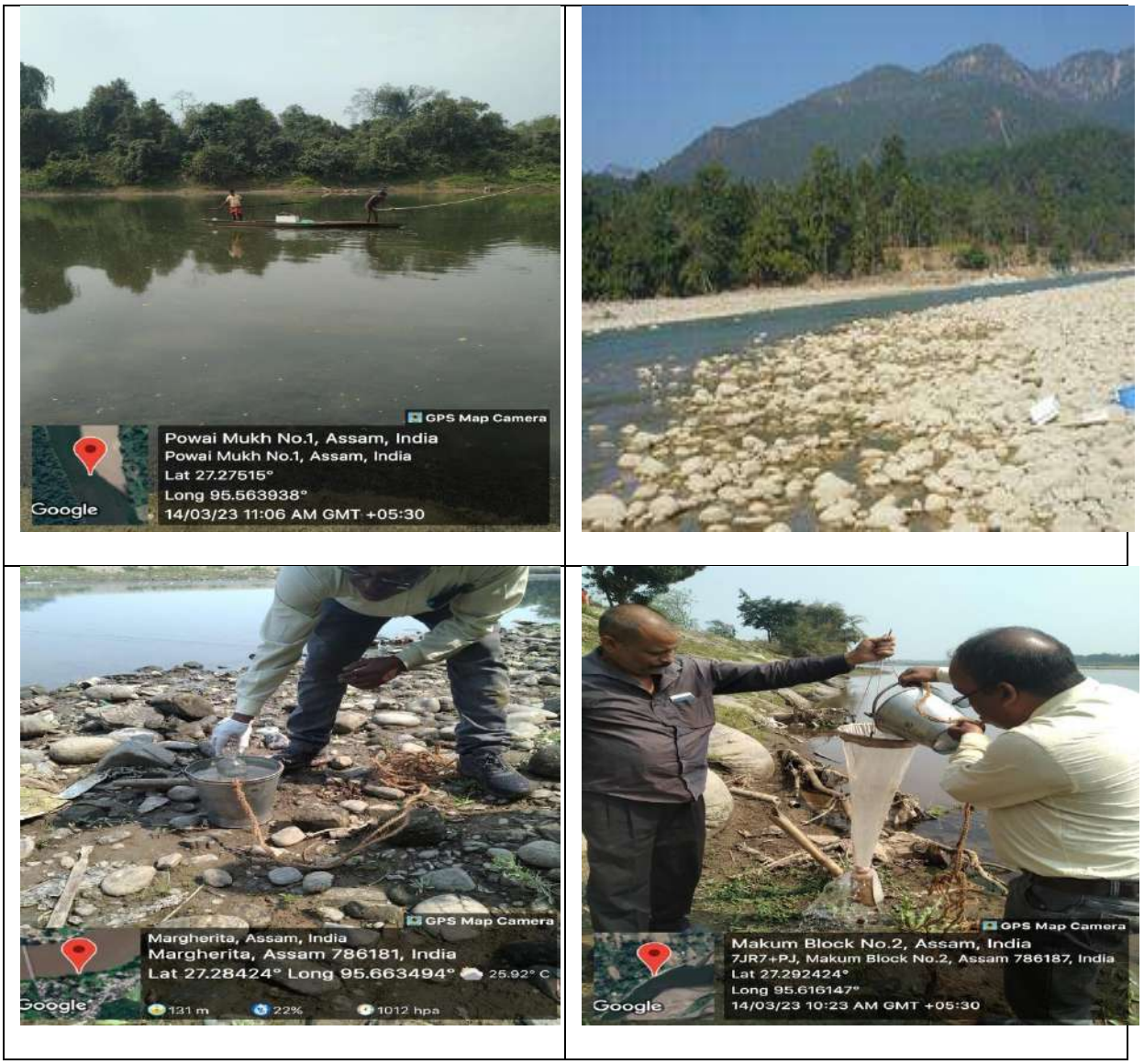
The Samples are collected for general physico-chemical and Boi-monitoring Characterization from the above mentioned Locations.

Aquatic fauna (Benthic Macro-invertebrates) comprising of lower aquatic organisms mostly of insect larvae, which are regarded as the prominent indicators of water quality and aquatic ecosystem health, were sampled from a total of 10 locations in the catchment of the Digboi River, Digboi, Assam during February, 2023. A semi-quantitative sampling of aquatic macro-fauna was performed by employing a 'D-frame' aquatic dip net having mesh size of 200 microns. In general, the benthic macro-invertebrates were collected by vigorously churning the running water in the stream bed immediately above the location where the hand held net was placed at the bottom vertically by its long handle so as to kick and dislodge the bottom substrata such as pebbles, broken logs, foliages, etc., into the net. In case of pools, the net was towed along the bottom as well as vegetated margins. The dislodged organisms along with the debris carried by the running water to the net were then transferred into a sorting tray and after initial sorting; the samples were preserved in 70% ethyl alcohol in the field and later sorted and identified up to the maximum lowest taxonomic level possible under stereo-zoom microscope in the laboratory following standard identification manuals. Wherever possible, different kinds of habitats such as pools, riffles and cascades in a location were sampled preferably in duplicate to get a uniform representation of the aquatic fauna. This short-term study employing macro-invertebrates as indicators for monitoring streams, lower resolution identification especially at the family level is considered rather than species level, since most studies of a similar nature have recommended family level identification as the best resolution for resolving patterns in macro-invertebrate assemblages as well as assigning the most appropriate tolerance value for calculating the water quality index.

Macro-invertebrates sample collection

Water samples were collected and stored in thoroughly sterilized bottles on seasonal basis for one year (February -2023) from the 10 sampling stations of as mentioned above.

Sample collection procedures are shown in figure 2 below.



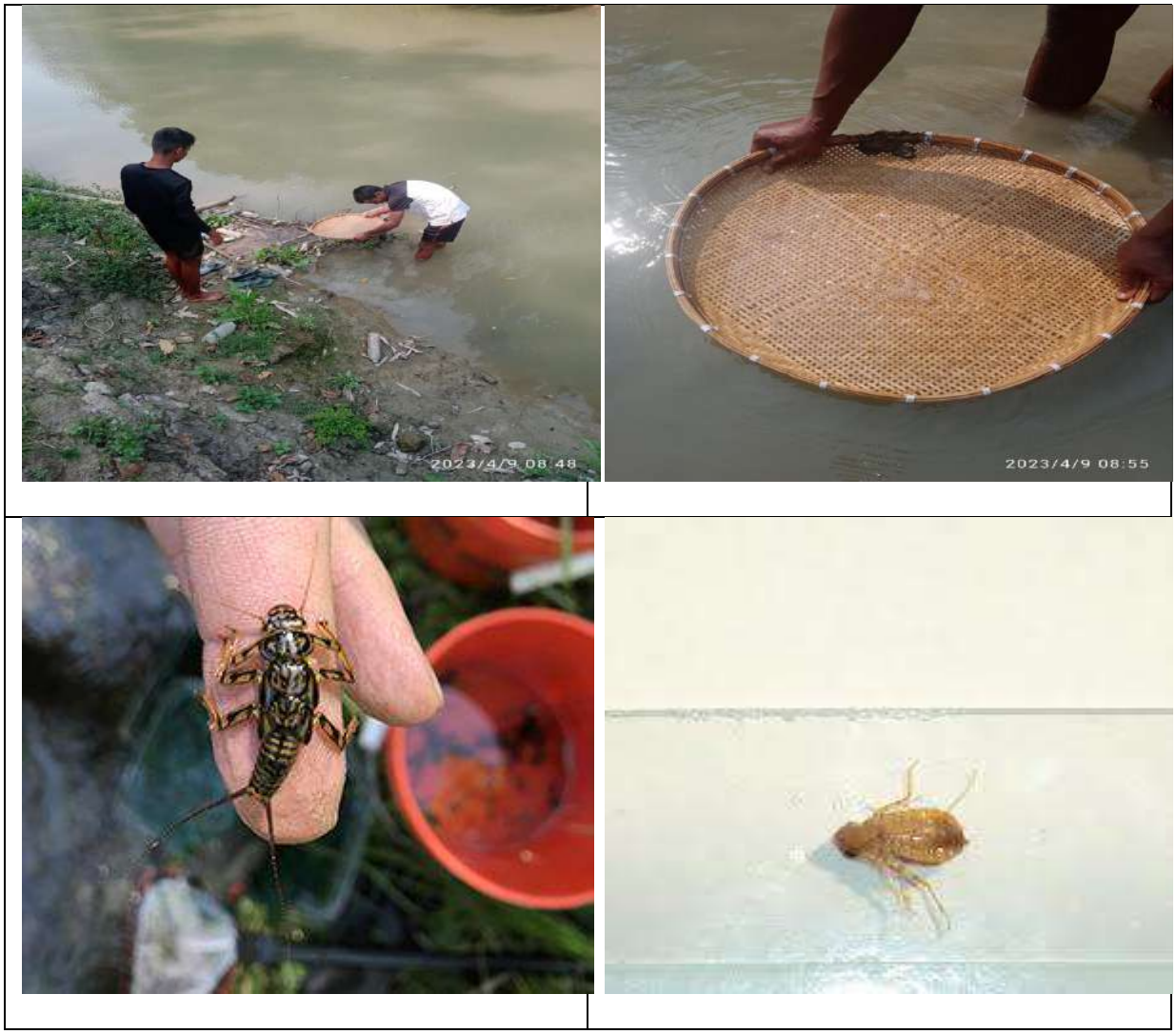


Fig2: Collection of Macro-invertebrates in the present study.

Collection of water samples was undertaken according to the standard methods for examination of water (APHA, 1995). Water samples used for the analysis of chemical variables, were collected in plastic container of 250 ml. The Institute for Water Research glassware acid wash protocol was fully observed in preparing sampling bottle before each field trip. Water samples were collected facing upstream of the river as recommended in APHA et al., (1971) and the bottles were filled to the neck allowing no head space and transported to the laboratory in an ice-filled cooler box. Samples were preserved at 4^0C in the laboratory for chemical analysis. All chemical analyses were performed within 24 hours of sample collection. Analyses were

conducted for three replicates for each sample and averaged. This method was adopted due to the fact that average readings were more representatives besides reducing variability in the measured results.

Macro-invertebrates colonize in different habitats and substratum of the water bodies like boulders, cobbles, pebbles, gravels, sand, silt, clay, macrophytic vegetation etc. Sample for bio-monitoring is collected in such a manner so that it represents all type of habitats exists at a location. The number of collected individual organisms in the sample shall represent the population of organisms in the community. Macro-invertebrates sample collection requires use of different sampling methods and devices depending on the type of substratum in which they exist. To assess the actual health of water bodies, CPCB has derived a Biological Water Quality Criteria (BWQC) for water quality evaluation (Table 2). This system is based on the range of saprobic values and diversity of the benthic macro invertebrate families with respect to water quality. Saprobic score method involves a quantitative inventory of the presence of Macro-Invertebrate benthic fauna up to family level of taxonomic precision. All possible families having saprobic indicator value are classified on a score scale of 1 to 10 according to the preference for saprobic water quality. The families which are more sensitive to pollution are getting a score of 10 while the most pollution tolerant families are getting a score of 1 and 2.

Table 2: **Range of Saprobic Score:**

Range of Saprobic Score	**Range of Diversity Score**	**Water Quality**	**Water Quality Class**	**Indicator Colour**
6-7	0.5-1.0	Slight pollution	B	Light Blue
3-6	0.3-0.9	Moderate pollution	C	Green
2-5	0.4-less	Heavy pollution	D	Orange
0-2	0-0.2	Severe pollution	E	Red

The samples are collected depending on the characteristic of River bed.

a) **Boulders and Cobbles**: The stones are lifted randomly and the organisms are picked up using soft forceps or brushed off into the white tray.

b) **Pebbles and Gravels**: The hand net is placed firmly on the stream bed against the flow. The stream bed is kicked up by foot and the organisms are collected into the net. After this, the collected material is washed using sieve (recommended mesh size 0.6 mm as per ISO) and macro-invertebrates are collected intro plastic bottles containing formalin (4%).

SUBSTRATUM CONSISTS OF SAND OR SILT

a. In deep-flowing and still water- In such conditions, organisms are collected by drawing or pushing the hand-net through the surface layer of the substratum.

b. In shallow stream with clay- the grab samples are picked up using the shovel. Then, samples are washed using sieve to remove sediments and debris. Finally, the organisms are collected by hand or soft forceps.

SUBSTRATUM CONSISTS OF ATTACHED MACROPHYTES

If the river bed is covered with macrophytes then, BMIs are collected by uprooting the plants first and washing the roots with water into sieve and collected into white tray. From the tray organisms are picked up using forceps and preserved in 4% formalin for further study.

IDENTIFICATION OF MACROINVERTEBRATES:

The macroinvertebrates were sorted and identified as suggested by online published journals, with consultation of experts. Digital Camera was used to document larger specimens, while Stereomicroscope for smaller samples.

Some of the macro invertibrates collected is shown in the figures below.

Fig 3: Some of Macro-invertibrates found in present study.

BIOLOGICAL MONITORING WORKING PARTY (BMWP) SCORE:

The BMWP score was devised in the United Kingdom but was not specific to any single river catchment or geographical area. This scoring system which is based on study of macro-invertebrates' community is being used worldwide with modifications considering local conditions and type of invertebrates present/ absent in the aquatic system. The system uses sensitivity of invertebrates towards organic pollution (indicators of organic pollution) i.e. saprobic condition. All observed families have assigned a specific saprobic indicator value and are classified on the scale of 1 to 10. The families which are most sensitive to organic pollution are on the top of the list with weightage score of 10 while the tolerant families are at the bottom of the list with score value of 1. The other intermediately sensitive families are placed in between the scoring scale of 2 to 9.

BMWP Score is calculated by assigning all the observed families as per BMWP Score chart (Table 3). Total no. of families observed in one particular group is multiplied with its respective weightage value and then all multiplied values are added to generate BMWP Score. The original BMWP Score chart with some minor modifications, by including/ excluding families present/ absent in Indian conditions was adopted in India after thorough testing and discussion with experts. Table 3 summarises BMWP Scoring system adopted by CPCB.

$$\textit{BMWP Score} = \Sigma \textit{ No. of families in one group} \times \textit{Weightage score}$$

Table.3: BMWP score system adopted by CPCB

Sl No	Taxonomical Families	Weightage Score
1	Siphlonuridae, Heptageniidae, Leptophlebiidae, Ephemerelidae, Potaminthidae, Ephemeridae, Prosopistomatidae, Neoephemeridae, Ameletidae, Taeniopterygidae, Leuctridae, Capniidae, Perlodidae, Perlidae, Aphelocheridae, Leptoceridae, Georidae, Lepidostomatidae, Brachycentridae, Sericostomatidae, , Glossosomatidae, Helicopsychidae , Leptohyphidae	10
2	Chloroperlidae	9
3	Euphaidae, Protoneuridae, Plathycnemididae, Lestidae, Gomphidae, Cordulegastridae, Aeshnidae, Corduliidae, Libellulidae, Macromiidae, Psychomyiidae, Philopotamidae, Cheumatopsychidae, Chrysomelidae, Hydrenidae,Sciomyzidae, Limoniidae	8
4	Caenidae, Nemouridae, Rhycophilidae, Polycaltropodidae, Limnephilidae, Stenopsychidae	7
5	Ancylidae, Hydrobiidae, Neritidae, Viviparidae, Thiaridae, Bithynidae, Unionidae, Pleuroceridae, Amblemidae, Septariidae, Assiminidae, Ampullaridae, Solecurtidae, Stenothyridae, Arcidae, Succinidae, Hydroptilidae, Palaemonidae, Atyidae, Genocentridae, Gammaridae, Potamidae, Parathelphusidae, Anthuridae, Niphargidae, Talitridae, Mysidae, Hymenosomatidae, Varunidae, Sesarmidae, Gecarcinucidae, Nereidae, Nephthyidae, Nereididae, Sabellidae, Pisionidae, Histriobdellidae, Megascolecidae, Coenagrionidae, Agriidae	6
6	Mesovelidae, Hydrometridae, Gerridae, Nepidae, Naucaridae, Notonectidae, Pleidae, Corixidae, Vellidae, Hebridae, Belastomatidae, Haliplidae, Hygrobidae, Dytiscidae, Gyrinidae, Hydrophilidae, Noteridae,	5

	Dryopidae, Elminthidae, Psephenidae, Heteroceridae, Elmididae, Scritidae, Eulichadidae, Histeridae, Curculionidae, Hydropsychidae, Ecnomidae, Tipulidae, Culicidae, Blepharoceridae, Simulidae, Nymphomyidae, Sarcophagidae, Stratiomyiidae, Ceratopogonidae, Pyralidae,Planariidae, Dendrocoeclidae , Carabidae, Hydrochidae, Staphylinidae	
7	Baetidae, Sialidae, Corydalidae, Piscicolidae, Hirudinidae	4
8	Lymnaeidae, Planorbidae, Sphaeridae, Physidae, orbiculidae, Onchididae, Glossophonidae, Hirudidae, Erpobdellidae, Haemadipsidae, Salifidae, Dugesidae, Aselidae, Cirolanidae, Aegidae, Stenasellidae, Cymothoidae,	3
9	Chironomidae, Syrphidae, Ephydridae, Muscidae, Psychodidae	2
10	Tubifiscidae, Naididae, Octochaetidae, Lumbricidae, Lumbricullidae	1

The Saprobic Score is calculated by

Saprobic Score = BMWP Score/ ∑Number of families encountered

RESULTS AND DISCUSSION:

In DigboiRiver, the phylum Annelida included a single class (Clitellata) with one order Haplotaxida; phylum Arthropoda included the two classes (Insecta and Malacostraca) of orders-Hemiptera, Odonata, Ephemeroptera, Coleoptera and Decapoda. Phylum Mollusca included two classes (Gastropoda and Bivalvia) of three orders Mesogastropoda, Unionoida and Architaenioglossa.

In Digboi River, the most abundant species recorded was Orthetrum Sabina and the least species was Baetis sp.

The study revealed the presence of 20 species of aquatic insects belonging to 13 families and 7 orders at five different sampling sites of river Digboi. The orders are Ephemeroptera, Hemiptera, Trichoptera, Coleoptera, Decapoda, Diptera and Odonata. Insect species were dominated by the orders Hemiptera and Decapoda with 4 and 5 representatives of each respectively. The representative species of Hemiptera are Laccotrephes sp., Curicta sp., Micronecta sp. and Notonecta sp. The representative species of Decapoda include Macrobrachium carcinus, Macrobrachium malcolmsonii, Macrobrachium choprai, Macrobrachium assamense and Macrobrachium birmanicum. Moreover, 6 molluscan species has also been recorded from the area of study. The molluscan species belonged to 5 different families and they are Viviparidae, Planorbidae, Pachychilidae, Ampullariidae and Bithyniidae. Molluscs were dominated by Gastropods with 5 representatives (Bellamya bengalensis, Gyrulus convexiusculus, Brotia costula, Pila globosa and Gabbia sp.). Among the insects, Laccotrephes sp., Notonecta sp., Hydaticus sp. and Hydrophilus sp. were the most dominant species. Gyrulus convexiusculus, Brotia costula and Pila globosa were the dominant molluscan species in the aquatic system. Altogether 55 species of aquatic macro-invertebratesbelonging to 29 families, 13 orders and five classes from three phyla viz., Arthropoda, Annelida and Mollusca were recorded during the study period. Class Insecta was found to be the dominant taxa represented by six orders and 17 families that comprised of 35 species (63.63% of the total species richness). Gastropoda was the second dominant class represented by the families viz., Viviparidae, Ampullaridae, Pachychilidae, Thiaridae, and Planorbidae, contributing with 17.24 % to the total 29 families. With two families (6.89%) class Bivalvia was represented by Unionidae and Cyrenidae families. On the contrary,

the class Clitellata was comprised of only a single-family and represented by the annelidHirudinaria manillensis.

ANALYSIS OF RESULTS:

SITE 1, Digboi Nala, Kenduguri: The sample collected from Digboi Nala. In the sample an oily film is observed floating over the water surface, and bottom mud and pebbles were also covered by a dark greasy coating. There was evidence of algal growth in the bottom and sides of the stream and Hydrilla could also be observed to be growing in many positons. In this present study there are presence of some Taxonomical families with very low weightage score such as Naididae, Muscidae etc, which indicates that the samples from Site 1 is polluted.

SITE 2, Digboi Nala, 15 km pt:. At the Site 2, the sample which is also from Digboi Nala, the oil slick noticed in the reference point was present. The analysis for micro-invertibates shows the presence of some pollution resistant families such as Odonata, Histeridae, Corydalidae, Lumbricidae etc but failed to reveal the presence of both Ephemeroptera and Trichoptera. There is also marginal vegetation present.

SITE 3, Digboi Nala, 26 km pt:. In 26 km pt, the sample is found to be turbid and the oily slick noticed. the macro-invertebrates recorded at this point were representatives of the orders Corixidae, Odonata, Coleoptera and Diptera, Nereididae, Heteroceridae, Chironomus larvae were abundantly present. No Mayfly or Caddis fly species could be recorded at this point.

SITE 4, Dihing-before confluence with Digboi river:. In the DihingRiver the sampling of invertebrate assemblage is dominated by odonates. Trichopterans, and also pollution sensitivetaxonomical families such as Corixidae, Lustidae, Viviparodae, Arcidae etc are well represented while the incidence of Agriidae was moderate. No Ephemeroptera species can however be recorded.

SITE 5, Dihing-After the confluence with Digboi River:. Sampling is carried out at the point where the Digboi Nala entered the Dihing River. In the samples collected from this point, the sample is turbid oil is seen floating above water. The pollution resistant macro-invertibates found in the samples are Lustidae, Viviparodae, Arcidae etc which shows that the samples are moderately polluted.

SITE 6, Dihing-Margherita:. At the Dihing river at Margherita area sampling for benthic macro-invertebrates revealed a good representation of Odonata species, with Coleopterans being less well represented. No presence of either Ephemeroptera or Trichoptera could be recorded. The presence of Pollution sensitive Taxonomical Families such as Dytiscidae, Carabidae, Agriidae, Physidae shows moderately good condition of river water at this point. The presence of Chironomus larvae was however significant.

SITE 7, Dihing-Makum:. Samplings for the various assemblages carried out at site 7 of Dihing River. The macro-invertibates such as Physidae, Tipulidae, Gammaridae which are pollution resistant and moderately resistants are also found in the water samples of this specific site.

SITE 8, Dihing-Mikira:. At the sampling site in the Dihing River, the benthic macroinvertebrate assemblage was dominated by Odonata while Trichoptera were sparsely represented. A few specimens of Coleoptera could also be recorded. The representative species of Hemiptera are Laccotrephes sp., Curicta sp., Micronecta sp. and Notonecta sp. The representative species of Decapoda include Macrobrachium carcinus, Macrobrachium malcolmsonii, Macrobrachium choprai, Macrobrachium assamense and Macrobrachium birmanicum. Moreover, 6 molluscan species has also been recorded from the area of study. The molluscan species belonged to 6 different families and they are Corixidae, Viviparidae, Planorbidae, Pachychilidae, Ampullariidae, Bithyniidae and Annomidae. Molluscs were dominated by Gastropods with 5 representatives (Bellamya bengalensis, Gyrulus convexiusculus, Brotia costula, Pila globosa and Gabbia sp.)

SITE 9, Dihing-Gammon Bridge:. Reference point sampling in the Dihing River was carried out with respect to the macro-invertibate assemblage. Among the species, which could be recorded at this point, the dominant group, both abundance and taxa richness, was that of cyprinids. The macro-invertibates of which the taxonomical families present are Ancylidae, Rhycophilidae, Agriidae, Carabidae, Gammaridae etc, which are moderately pollution sensitive.

SITE 10, Dihing Mukh:. . The micro-ivertibates Hirudinea,Gastropoda, Bivalvia, Crustacea, Insecta and Hirudinidae, Physidae, Gammaridae, Panaediae,Isotomidae, Caenidae, Gomphidae, Belostomatidae, Nepidae,Hydrophilidae, Chaoboridae, Chironomidae are found in thestudy.Animal carcasses were seen floating on water near this point leading to further degradation of the aquatic habitat.

DISCUSSION OF THE RESULTS

In the present study, the order Histeridae, Odonata Musidae are found most diverse and relatively abundant in Digboi and Dihing river. The causes of fluctuations in insect abundance, dominance and distribution include macroclimatic and microclimatic in the availability of food resources.

Characteristically, the Digboi and Dihing River is dominated by group of macro-invertebrates families such as Naididae, Musidae, Odonata, Histeridae, Corydalidae, Lustidae, Arcidae, Agriidae, Viviparodae, Planorbidae, Bithyniidae etc. at almost all the sampling sites. These kinds of macro-invertebrates are moderately pollution sensitive organisms or somewhat pollution tolerant macro-invertebrates. They can survive in good quality and fair quality of water because their habitat requirements are not as strict as pollution sensitive organisms such as Siphlonuridae, Capniidae, Chloroperlidae etc. Hence these macroinvertebrates indicate that the aquatic environment of Digboi and DihingRiver is moderately polluted.

On the other hand, the sampling site 1 and 2, which are of Digboi Nala, the large abundance of very tolerant pollution species like Naididae, Lumbricidae, Histeridae indicate that the river is not clean at the specified stations.

Macro-invertebrates are the most diverse group of organisms inhabiting a variety of habitats. About 3%of them spend a part of their life in aquatic habitats in the form of larva (mosquitoes), pupa (water beetles), or as adults (annelids, molluscs). Most aquatic faunalassemblage participates in ecological processes suchas the decomposition of the organic matter, nutrient cycling and sediment bioturbation. They also control the density of other aquatic macro-invertebrates fauna by acting as a predator to them and as a food source for other groups of animals such as fish and to other aquatic groups. In India, about 5,000 insect species are estimated in various inland wetlands that are distributed heterogeneously. Usually, the Coleopterans are found associated with submerged aquatic vegetation and are predacious in nature. Extensive work has been carried out by Vazirani on aquatic beetles of India such as Gyrinidae, Dytiscidae and Haliplidae. In a similar study on the Dytiscidae family, three species viz., Hydaticus fabricii, Dytiscus verticalis and Laccophilus anticatus have reported from Pushkar Lake, Ajmer. In the present study, the Dytiscidae family is found dominant in the study area.

Aquatic Heteroptera occupy a broad array of aquaticecosystems and are adapted to a broad variety of niches. The prevalence of hemipterans has been reported inthe north-east region as well. Lethocerus indicus (hemipteran) the giant waterbug is a very popular edible macro-invertebrate anddistributed in different parts of the country. Generally,this group feeds upon different types of aquatic faunasuch as small insects, fishes, snails etc. The membersof the Corixidae family are known as water boatmenas their legs resemble oars. Their mouthparts aregenerally unsuited for sucking or piercing. In the presentinvestigation, Corixidae are found in sampling site 4, 5, and 8.Chironomidae and Culicidae were recorded underthe order Diptera during the present study period.Chironomids, commonly known as midges, are oneof the most widespread among the aquatic macroinvertebratestaxa occurring in all continents of theworld.

Worldwide approximately more than15,000species are recorded, exhibiting a wide array of habitat heterogeneity. Due to the ubiquitous nature of thesetaxa, they are more often useful in biomonitoring ofdifferent aquatic ecosystems. The study on the diversityof aquatic insect fauna in the urban freshwater lakesof Tripura reported Culicidae as the most dominantfamily represented with 20.15% of the total insectabundance. A similar pattern of the pre-dominanceof the Culicidae family has also been reported in a lenticaquatic system.

Families such as Hirudinidae, Physidae, Gammaridae, Isotomidae, Caenidae, Gomphidae, Nepidae, Hydrophilidae, Chaoboridae, Chironomidae were found in the study. Assessment of water quality by using Family biotic index of macroinvertebrate reveals the poor water quality in the studied Dihing river section. However, this family represents a substantial population in all10 sampling point studied. It has been noticed that among two families of Mollusca, Physidae occurs in highest no. Physidae was seen to be comparatively highest in Site 6and 7.Annomidae is only found in Site 8.

The bio survey carried out with respect to the identified assemblages was unable to identify an ideal reference point in Digboi Nala. Even before the discharge from the Refinery's ETP entered this stream, it was considerably degraded at Site 1 which was sampled to assess its suitability in serving as a reference site. Samplings in the Digboi Nala, at points downstream to the ETP discharge, showed the habitat to be capable of supporting only highly tolerant species of the target assemblages. At Site 3 there was evidence of high degree of organic pollution.

There is a general consensus that the attributes of a good quality stream should include

1. Extensive old natural riparian vegetation.
2. High heterogeneity in channel width and depth
3. Abundant woody debris, extensive aquatic or overhanging vegetation.
4. Relatively high or constant discharge.
5. Relatively clear waters with natural color and odor.

6. Abundant diatoms, insect and fish assemblages.
7. Presence of piscivorous birds and mammals.

On the basis of these characteristics, the Digboi Nala and Digboi Nadi would *largely* fail to qualify as 'good quality streams', at least in the stretches surveyed. However the degradation of the Digboi Nala – Digboi Nadi system that was observed may not only be due to the point source permitted discharge from the ETP. Since bio surveys are primarily designed to detect water quality impairment, the problems can be identified, but it is more difficult to speculate on the potential sources of impairment. In the present survey there was ample evidence to suggest an overall impairment of the system due to municipal waste dumping, agricultural runoffs, silting and large seasonal variation in the flow volume. It is therefore important to discriminate between the impact of the point source discharge and that of non-point source contributors to the degradation of the system. This would require that bio survey information be complemented by chemical monitoring data and evaluation of target point source discharge effects on specific components of the biota under lab conditions with the results being extended to the field. At present it can only be said that the Digboi Nala – Digboi Nadi system has been considerably degraded and corrective measures need to be speedily put in place.

The Dihing River is largely free from pollution effects and some awareness among the people residing in the areas near the confluence of the Digboi Nadi and Dihing River can take care of the impact noticed in the confluence.

With reference to the Digboi Nala-Digboi Nadi system, the following suggestions are put forward, which could be helpful in restoration of the system:

i) Definition of the attainable conditions on the basis of historical data and biological surveys with a consideration for both spatial and temporal dimensions.

ii) Selection of an appropriate Assemblage and the Development of an Index of Biological Integrity so that there is a quantitative measure of the habitat status.

iii) Provide for the necessary setup, which will allow monitoring of point source discharge effects on selected species in the laboratory. This is an essential step in discriminating between the impact of target discharge and other contributors to overall degradation.

iv) Plan for a continuous process of bio monitoring by field personnel.

An adequate Index of Biological Integrity can be developed with reference to the fish assemblage, focusing primarily on cyprinid species. *Brachydanio rerio, Esomus danricus, Puntius ticto and Puntius sophore* are the species which could be suggested as indicators as these are common species and easily recognizable. Field personnel should be trained to recognize the indicator species and record the relevant attributes in the field.

The following criteria have been used in defining total taxa richness:

i) Poor: Presence of a single taxon representing an assemblage,

ii) Fair: Presence of at least two taxa representing an assemblage,

iii) Average: Presence of three to five taxa representing an assemblage, and

iv) Rich: More than five taxa representing an assemblage.

Physico-chemical study

Along with Bio-monitoring, the determination of the following water quality parameters was carried out simultaneously at all the stations:

1. Temperature
2. Free CO_2
3. pH Value,
4. Turbidity
5. Dissolved Oxygen
6. Oil & Grease
7. TDS,
8. TSS,
9. Sulphate
10. BOD
11. COD
12. Nitrate
13. Total Hardness
14. Total Alkalinity
15. Heavy Metals as Arsenic, Lead, Iron, Zinc

Analytical Results of Physico-chemical parameters:

Table: 4 Physico-chemical parameters for the Surface water samples

Parameter	Unit	Site1	Site2	Site3	Site4	Site5	Site6	Site7	Site8	Site9	Site10
Temperature	^{0}C	24.9	21.3	21.7	23.4	22.7	22.3	21.8	21.2	24.2	21.5
Free CO_2	mg/L	16.8	12.3	12.7	8.9	7.6	5.4	10.7	11.5	9.8	7.4
pH	-	6.7	7.1	7.2	7.9	7.8	7.9	7.7	6.8	7.2	6.9
Turbidity	NTU	10.9	8.7	12.2	4.3	2.6	3.5	10.3	2.2	1.8	11.4
DO	mg/L	0.7	2.4	4.3	3.4	2.7	4.7	5.2	6.3	5.4	6.2
BOD	mg/L	2.6	2.8	3.4	4.5	3.5	1.6	1.2	1.5	2.0	2.1
COD	mg/L	15.6	18.0	22.8	24.0	22.0	6.7	6.5	7.8	11.2	11.9
Oil & Grease	mg/L	18.6	10.4	4.5	2.1	1.7	1.1	2.3	5.8	BDL	1.2
TSS	mg/L	0.47	0.1	0.1	0.2	0.37	0.36	1.2	0.35	0.08	0.4
TDS	mg/L	521	642	304	226	289	307	418	321	272	314
Sulphate	mg/L	3.68	3.77	3.22	3.52	4.07	8.92	3.02	6.73	10.52	4.16
Nitrate	mg/L	11.3	9.7	4.5	6.6	8.9	10.3	11.6	11.4	19.7	4.5
Total Hardness	mg/L	112	85	162	78	92	121	153	108	62	105
Total Alkalinity	mg/L	45.6	75.8	110	142	95	62	117	104	40.6	71.5
Arsenic	ug/L	1.17	3.02	0.95	8.74	4.36	2.18	1.07	0.99	10.6	18.3
Lead	mg/L	BDL	0.17	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Iron	mg/L	1.21	2.38	0.76	1.04	0.34	0.21	0.88	1.33	2.31	0.17
Zinc	mg/L	0.05	0.17	0.06	BDL	1.23	1.05	0.05	0.92	BDL	0.06

Discussion of the Results:

Different physico-chemical parameters are important in deciding the quality and productivity of anaquatic system. Temperature is an important ecological feature that influences the behavioral characteristics of organisms, solubility of gases and content of salts in water. The fluctuation of temperature usually depends on the season, geographic location, sampling time and content of effluents entering the river system. In the present investigation, the water temperature was found to vary from 21.3 in site 2 to 24.9 in site. Temperature exerts a strong influence on many physical and chemical characteristics of water including the solubility of oxygen and other gases. A higher temperature depletes solubility of dissolved oxygen in water and reduces its concentration. Vulnerability of organisms to the toxins e.g. cyanide, zinc, phenol and xylene is found intensified as temperature increases. Change in alkalinity is a result of change in pH. The pH value increases due to the activity of photosynthetic algae which consumes CO_2 dissolved in water. The variations of Temperature, free CO_2 and pH is shown in the graph below (Fig 4)

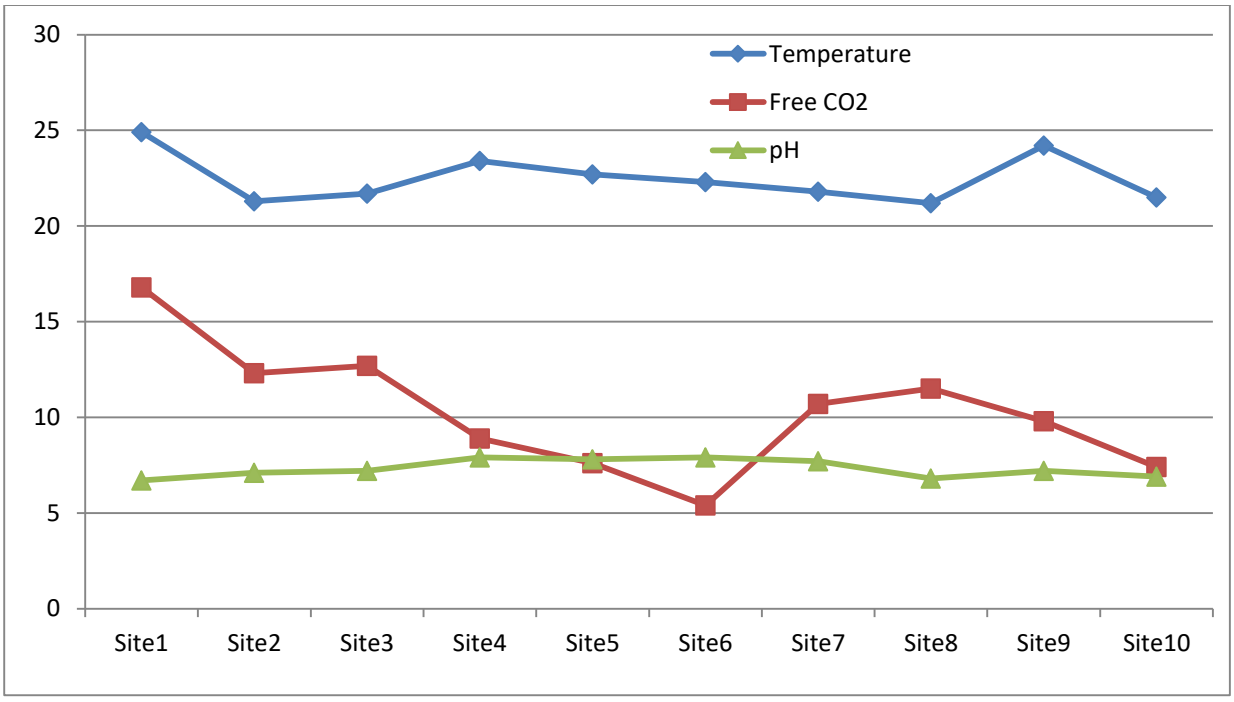


Fig 4: Variations of Temperature, free CO_2 and pH for each site of Sample collection.

Dissolved oxygen (DO) content has a vital role for maintaining aquatic life and is susceptible to slight environment changes. In the present investigation, DO value depleted in Site 1, 2, 4 and 6 with the values 0.7, 2.4, 3.4 and 2.7 mg/L.

The value of FCO_2 was found to range from 5.4 mg/L to 16.8 mg/L. The maximum value (16.8 mg/L) was recorded in Site 1 and the minimum value of 5.4 mg/L was estimated in Site 6.

The pH of a water body has importance in determination of water quality as it chemically reacts with remaining factors. Aquatic organisms are sensitive to pH fluctuations and their biological treatment requires pH control or monitoring. Significant difference was not found in pH during the assessment period. The range of pH value (6.7 – 7.9) was found to be within the WHO permissible limit. Turbidity which is the measure of water clarity indicates the degree to which light entering a column is scattered by suspended solids. The Sampling **Site 1** had turbidity of 10.9 NTU and Site 7 had 10.7 NTU during the period of study.

D.O. level was found to be minimum in July but maximum in January in all the stations. Alkalinity was found to be highest towards April, May and Jun. Hardness showed high values during wet seasons in all the sampling sites.

The above data indicated that the BOD load has failed to meet the standard criteria in most of the occasions. The BOD value which indicates organic load generally increases due to the waste generated from the activity of the residents in the form of domestic household waste through different drains and channels. The river receives untreated sewage through two major drains coming from the Digboi Township. Hence this consistent exceedance of pollution load may be due to the discharge of organic waste originating from domestic household waste through the drains to the river as the town does not have any treatment facility for the sewage.

The water samples were analyzed for physicochemical characteristics.

The hydrogen ion concentration in water is expressed in terms of pH. It is defined as the logarithm of inverse of hydrogen ion concentration in moles/L. The pH value of natural waters mostly depends on free carbon dioxide, bicarbonates and carbonate ions. Low pH values indicate acidic water having corrosive properties. The higher values of pH represent that there is high chloride, bicarbonate, carbonate etc. that means the water is alkaline. The pH value in between 6.5-8.5 is considered acceptable. However, no health-based guideline value has been proposed for pH. The value of pH in Site 4 and Site 6 of present study are found to be in higher side with the reading 7.9. And that of Site 1 is seen to have pH of 6.7. The slightly acidic behaviour of this sampling site of river might be due to contamination of Digboi river with discharge from Digboi Refinery.. However as per the Classification of Inland surface waters (IS: 2296-1982), it is suitable for A and B class of water.

A total dissolved solid (TDS) is the measure of the dissolved combined content of all organic and inorganic substances present in a liquid in molecular, ionized, or microgranular suspended form. Total dissolved solids information is used to determine the overall ionic effect in a water source. Certain physiological effects on plants and animals are often affected by the number of available ions in the water. Elevated dissolved solids can cause "mineral tastes" in drinking water. Corrosion or encrustation of metallic surfaces by waters high in dissolved solids causes problems with industrial equipment and boilers as well as domestic plumbing. The TDS value for river waters depends largely on the ratio of the contribution of the overland flow to the subsoil flow. It may vary from less than 50 mg/L to a few thousand mg/L. The value of TDS for Site 2 of the Digboi River is found to be 642 mg/L which is higher than the TDS value of other sites. And that of Site 4 is found to be lowest. The TDS value except site 2 is less than 500 mg/L, which is the permissible value for A Class water as per Water Quality Standards in India (Source IS 2296:1992). For Site 1 and 2, the TDS values are on higher side which may be due to the discharge of waste water from Digboi refinery. The variation related to Turbidity,

DO, BOD and COD are shown in figure 5.

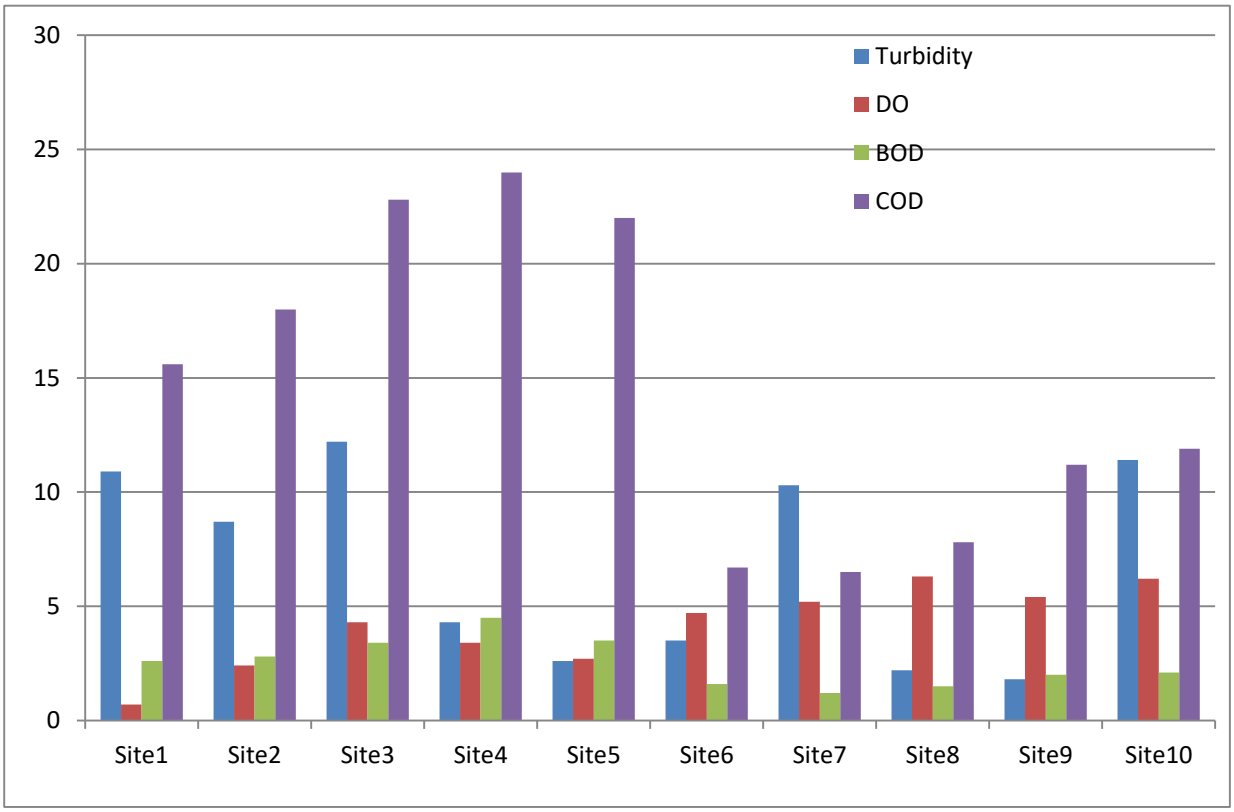


Fig 5: Variations of Turbidity, DO, BOD and COD for each site.

Turbidity, which is a related parameter, is interference to the passage of light or scattering of light by suspended particles in a column of water. It is measured in nephelometric turbidity units (NTU). It may range from 1 to 1000 NTU. In this present study, the turbidity ranges from 1.8 NTU to 11.4 NTU. The Site 10 has the highest turbidity whereas Site 9 has turbidity of 1.8 NTU. The turbidity analysis does not show any trend with respect to the discharge of Effluent from Digboi refinery.

Hardness is due to the presence of multivalent metal ions which come from minerals dissolved in the water. Hardness is based on the ability of these ions to react with soap to form a precipitate or soap scum. In fresh water the primary ions are calcium and magnesium; however iron and manganese may also contribute. Carbonate hardness is equal to alkalinity but a non-carbonate

fraction may include nitrates and chlorides. Generally, the harder the water, the lower is the toxicity of other metals to aquatic life. In hard water some of the metal ions form insoluble precipitates and drop out of solution and are not available to be taken in by the organisms. If a stream or river is a drinking water source, hardness can present problems in the water treatment process. Hardness must also be removed before certain industries can use the water. For this reason, the hardness test is one of the most frequent analyses done by facilities that use water. Total hardness of present study is varying between 62 to 162 mg/L. The highest value of Total Hardness is found in Site 3 whereas Site 9 has the lowest value i.e. 62 mg/L. The Water Quality Standards in India (Source IS 2296:1992) designated the use of water whose value for total hardness is not exceeding 200 mg/L as A Class water.

Total alkalinity ranges from 40.6 mg/L to 140 mg/L. The maximum value (140 mg/L) was recorded in Site 4 and the minimum of 40.6 mg/L was estimated in Site 9. The concentration of Total Alkalinity, Total Hardness, Nitrate, Sulphate, TDS, TSS and Oil & Grease are shown in figure 6

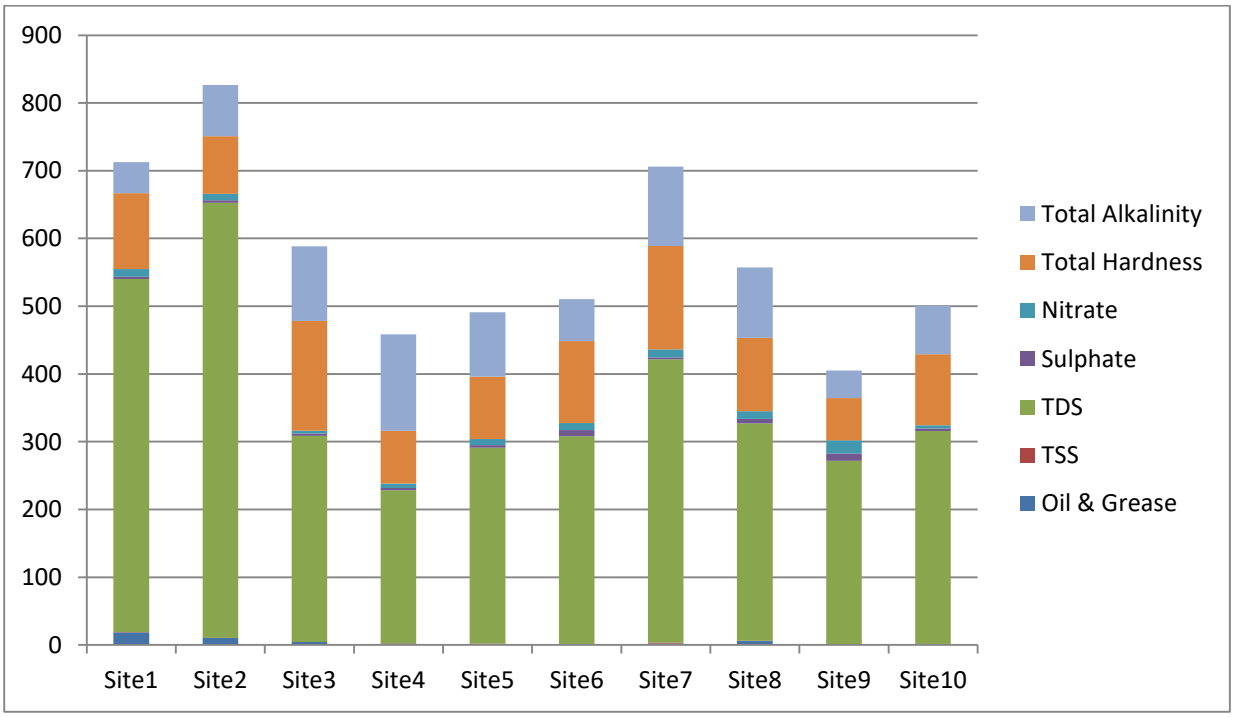


Fig 6: The concentration of Total Alkalinity, Total Hardness, Nitrate, Sulphate, TDS, TSS and Oil & Grease.

The metal concentrations of the samples collected are shown in table 4. Lead is found only in site 2. Arsenic concentrations varies from 0.99 to 8.74 mg/L with site 4 has highest concentration. Iron ranges from 0.34 mg/L to 2.38. The concentrations of Zinc are found in the rage of BDL to 1.23. Figure 7 shows the concentrations of Arsenic, Lead, Iron and Zn.

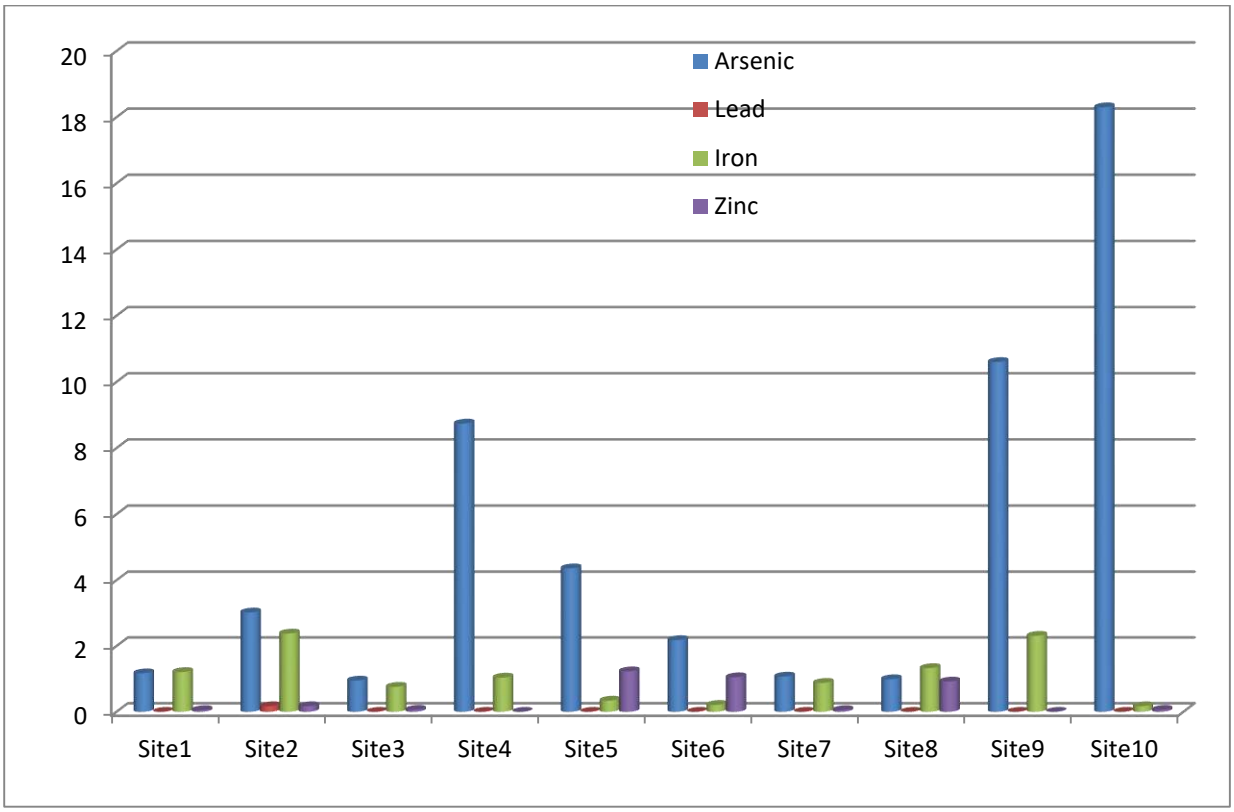


Figure 7: The concentrations of Arsenic, Lead, Iron and Zinc

CONCLUSION:

The value of these parameters pH, EC, TDS, Turbidity, Chloride, Total Hardness, Calcium and Magnesium were analysed and compared with the standard values mentioned for classification of Inland Surface Waters (IS: 2296-1982). It is observed that the values of pH is showing different trend, In the present investigation variation of certain physico-chemical parameters of river Digboi and Dihing has been studied togetherwithmacro-invertebrate diversity.Physical parameters were found to within the permissible limits but turbidity was found to be minimum at 1.8 NTU in site 9 and maximum at 12.2 NTU at site 3. These values were found to be within the WHO permissible limit for drinking water quality (5-25 NTU).Regarding chemical parameters, DO value depleted in every site and were found to be in the range of 0.7 mg/L to 6.3 mg/L. During the present investigation it was also found that the pH range was 6.7to 7.9. The values were within the range of WHO permissible limit of 6.5–8.5. The molluscan species belonged to 5 different families and they are Viviparidae, Planorbidae, Pachychilidae, Ampullariidaeand Bithyniidae.In future investigationsdiversity index will be studiedto evaluate the variety of a data group consisting of different types of components. Features of a population such as number of existing species (Richness), distribution of individuals equally (Evenness) and total number of existing individuals underlie the basis of diversity indices. Thus, any changes in any of these three features will affect the whole population. The diversity indices depending upon these features can beused effectively to determine the changes in a population. Diversity index can therefore be used to measure environmental stress.

The findings depict that the status of water quality of Digboi and Dihing River is not very clean because its aquatic environment is slight to moderately polluted. Long term bio-monitoring of water quality of the stream coupled with socio economic reviews might provide clues for identifying the sources of stress and subsequently environment awareness can be disseminated. Failure to monitor the studied stream may result in health hazards to local inhabitants who use it

for day-to-day domestic activities. Therefore, this study recommends that the relevant authorities should regularly monitor and control the source of pollutants. Further, the study recommends the adoption of biological indicators and their indices by pertinent authorities while assessing the condition of selected river.

Ultimately, clean adequate water and aquatic resources (such as fisheries) are necessary for all. Given the increasingly negative human impacts on aquatic ecosystems and their catchments, it is important for society to have a better understanding of the links between ecosystems and water resources, as well as know how to monitor their local streams, therebyacting as sentinels for noticing adverse changes. Monitoring, knowing what is the current status is the first step towards management of ecosystems and water resources that necessitates cooperation between all stakeholders involved, from local communities to the government, organizations and educational institutions. With that in mind, giving the current generation the tools and the perspectives is a way to foster a collective conservation mindset. The protection and wise management of natural resources requires our united effort, more than ever in recent history given the ongoing degradation and the looming uncertainty of climate change upon water resources.