COMPLIANCE OF CONDITIONS IN ENVIRONMENTAL CLEARANCE

(COMPLIANCE REPORT)

Environmental Clearance No. J-11011/431/2011-IA II(I), dt: 25.06.20143

Well Nos.:PDCE **Drilling Status: Drilled**

Sl.No.	Conditions	Compliance status as on 01.07.2016
1	This EC is only for Exploratory Drilling.In case Development drilling is to be done in future,prior clearance must be obtained from the Ministry.	**Complied**. This EC and conditions prescribed therein are only for drilling exploratory wells whereas for drilling development wells separate EC will be taken.
2	Ambient air quality shall be monitored near the closest human settlements as per the National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No.826(E) dated 16th November,2009 for PM_{10}, $PM_{2.5}$, SO_2,NO_X, CO,methane & Non-methane HC etc.	**Complied**. Ambient air quality was monitored through 3rd party for PM10, PM 2.5, SO2,NOX, CO,methane & Non-methane HC, within and upto the premises of drill site. Henceforth, monitoring of AAQM shall also be carried out near the closest human settlement. It is evident from the monitoring reports placed as Annexure - I, that the concentration of all parameters are within prescribed limits.
3	Mercury shall also be analyzed in air, water and drill cuttings twice during drilling period.	**Complied**. Mercury was analysed in waste water & drill cuttings during drilling period. For Testing of mercury in air the program is underway. Report placed as Annexure - II
4	Approach road shall be made pucca to minimise generation of suspended dust.	**Complied**. Approach road to drill site are made of metals to minimise generation of suspended dust during transportation of rig equipment, etc..In case of this well approach road of dimension 400 m x 4.0 m was constructed.
5	The company shall make the arrangement for control of noise from the drilling activity Acoustic enclosure shall be provided to DG Sets and proper stake height shall be provided as per CPCB guidelines.	**Complied**. Accoustic enclosure have been provided to DG sets to reduce noise within permissible limits (Noise level monitoring divulge the efficiency of the acoustic enclosures when the noise levels were monitored within the perimeters of the drill site. However, the noise levels are slightly higher near the engine house and mud pump area and personnel working in these areas are always using ear muff/plug, pl refer reports placed as Annexure-III). The height of Stack of 3 nos. of DG sets ranges from 7-8-ft . Though as per formula referred by CPCB guidelines the stack height of gen sets should be approx. 5 metre. However, the GLC of various parameters prescribed in NAAQM are within the permissible limit which qualifies the spirit under which stack height standards has been set by CPCB. Please refer to AAQM report placed at Annexure - IV. It is notable that the increase in the present height of stacks of DG sets, shall reduce the efficiency of DG sets, as assessed internally. In light of this present stack height of the DG sets should be considered as appropriate.
6	Total water requirement shall not exceed 27 M3/day and prior permission shall be obtained from the competent authority.	**Complied**.During the drilling activity the water consumption was approx. 27 m3 per day on an average.
7	The Company shall contruct the garland drain all around the drilling site to prevent run off any oil containing waste it to the nearby water bodies. Separate drainage system shall be created for oil contaminated and non-oil contaminated. Effluent shall be properly treated and treated waste water should confirmed to CPCB standards.	The garland drains are not constructed to prevent run off any oil contaminating waste as all the vulnerable processess like diesel storage tank, POL shed have their dedicated containment whereas Drains are constructed through out the drill site near mud pumps, cellar pit, mud tanks which drain waste water in HDPE lined waste pit. No garland drains are constructed around drill sites as these are not required since the waste pits have enough volume to accummulate waste water and prevent any run off. The drilled cuttings and other wastes are collected in HDPE lined waste pits and solar dried. It is notable that Gujarat is rain deficient area and chance of run off from drill site area is very remote. As the drill site effluent is a soft effluent , the suspended particles like bentonitic clay are settled leaving clear supernatant water which at times is recycled for washing purpose. Please refer to Annexure-II. In view of this the condition may be considered as **Complied**.

8	Drilling waste water including drill cuttings wash water shall be collected in disposal pit lined with HDPE lining evaporated or treated and shall comply with the notified standards for on-shore disposal. The membership of common TSDF shall be obtained for the disposal of drill cuttings and hazardous waste. Otherwise secured land fill shall be created at the site as per design approved by the CPCB and obtain Authorization from the SPCB. Copy of authorization or membership od TSDF should be submitted to Ministry's Regional Office at Bhopal.	**Complied**. Drilling waste water including drill cuttings wash water is collected in disposal pit lined with HDPE lining and solar dried. Drill cuttings from water based mud have been removed from the category of hazardous waste [Schedule I - rule 3 (1) (17) (i) of MOEFCC notification dt: 14.04.2016]. ONGC Ahmedabad is member of TSDF at Bharuch Enviro Infrastructure Limited.
9	Good sanitation facility shall be provided at the drilling sites. Domestic sewage shall be disposed of through septic tank/soft pit.	**Complied**. Domestic sewage is disposed through adequate septic tanks and soak pits
10	Oil spillage prevention schme shall be prepared. In case of oil spillage/contamination, action plan shall be prepared to clean the site by adopting proven technology. The recyclabale waste(oily sludge) and spent oil shall be disposed of to the authorized recycler.	**Complied**. Oil spillage prevention plan like containments of diesel storage tank, POL shed and testing tank(during production testing) and drainage leading to waste pit are in place. However, in case of oil spill and contamination of soil thereof, ONGC is equipped with the technology of bio remediation to address such eventualities. It is notable that ONGC has a step down company M/S ONGC TERI BIO REMEDIATION LIMITED (OTBL) which has developed a consortium of bacteria capable of digesting entire range of hydrocarbon. Recylable hazardous waste like Spent oil, POL barrels etc. are recycled centrally through authorised re-cyclers.
11	The company shall comply with the guidelines for disposal of solid waste, drill cutting and drilling fluids for onshore drilling operation notified vide GSR.546(E) dated 30th August, 2005.	**Complied**. Solid waste like drill cuttings and left over drilling fluids are collected in HDPE lined waste pits which is eventually back filled and covered with local soil after the drilling operations are over. Other solid wastes like oil contaminated hand gloves, cotton waste, filters, chemical sack, etc. are deposited at TSDF site.
12	The company shall take necessary measures to prevent fire hazards,containing oil spill and soil remediation as needed.Possibility of using ground flare shall be explored.At the place of ground flaring,the overhead flaring stack with knockout drums shall be installed to minimize gaseous emissions during operation.	**Complied**. Each drilling rig in ONGC has fixed fire fighting system and portable extinguishers in accordance to OISD 189. All personnel posted at Drill site are trained in fire fighting. Hot jobs are controlled through a permit system ie.e "Hot Work Permit" system. As mentioned above in point 12, in case of oil spill and contamination of soil thereof, ONGC is equpped with the technology of bio remediation to address such eventualities. It is notable that ONGC has a step down company M/S ONGC TERI BIO REMEDIATION LIMITED (OTBL) which has developed a consortium of bacteria capable of digesting entire range of hydrocarbon. All the quantity of gas come across testing is flared through elevated flare equipped with separator and knock out drum. No ground flaring is resorted to.

13	The company shall develop a contingency plan for H2S release including all necessary aspects from evacuation to resumption of normal operations. The workers shall be provided with personal H2S detectors in locations of high risk of exposure along with self containing breathing apparatus.	**Complied**. Emergency response plans for H2S release is available. H2S detector are available at drilling rigs. However, it is pertinent to mention that H2S is usually not encountered during drilling operations in oil fields of Bharuch district.
14	On completion of drilling, the company shall plug the drill wells safely and obtain certificate from the enviroment safety angle from the concerned authority.	**Complied**. On completeion of drilling the well is equipped with a christmas tree which safely regulates the flow of oil& gas. However, if any well is abandoned, it is plugged with a cement coloumn as prescribed in OMR 1984 and the same is communicated to DGMS.
15	Blow Out Preventor(BOP) system shall be installed to prevent well blowouts during drilling operations.BOPmeasures during drilling shall focus on maintaining well bore hydrostatic pressure by proper pre-well planning and drilling fluid logging etc.	**Complied**. Appropriate Blow Out Preventor(BOP) systems having a set of Annular and RAM BOPs is installed to prevent well blowouts during drilling operations. Function test of BOPs are carried out frequently and care is taken to maintaing proper hydrostatic pressure in the well bore during drilling, logging and other well operations by maintaining mud weight.
16	Emergency response plan(ERP) shall be based on the guidelines prepared by OISD, DGMS and Government of India	**Complied**. ONGC has Site Specific Emergency Plan (ERP) and Contingency Plans and Disaster management Plan (DMP) based on relevant and realistic emergency scenarios. ERP and contingency plan are duly approved by DGMS whereas offsite DMP is approved by local district authorities. (copy enclosed)
17	The company shall take measures after completion of drilling process by well plugging and secured enclosures, decommissioning of rig upon abandonment of the well and drilling site shall be restored to original condition. In the event that no economic quantity of hydrocarbon is found a full abandonment plan shall be implemented for the drilling site in accordance with the applicable Indian Petroleum Regulations.	**Complied**. ONGC has formulated a well defined and plausible abandonment and restoration procedure which is being followed in the event of decision taken to abandon the well. The procedure is Annexed as V.
18	Abandoned well inventory and remediation plan shall be submitted with in six month from the date of issue of letter.	**Complied**. Remediation plan is already adressed at point no 12 above. This well has been abandoned and restoration of land by inviting tender and as per SOP for restoration, is in progress.
19	Occupational health surveillance of the workers shall be carried out as per the prevailing Acts and Rules.	**Complied**. PME of all employees is carried out as per company policy (Annexure-VI).
20	In case commercial viability of the project is established, the company shall prepare a detailed plan for development of oil and gas fields and obtain fresh environmental clearance from the Ministry.	**Complied**. In case of commercial viability of oil/gas, fresh EC is obtained for the entire block.
21	Restoration of the project site shall be carried out satsfactorily and report shall be sent to Minstry's Regional Office at Bhopal.	**Complied**. After the restoration job in this well is over, the report shall be sent to Ministry's regional office Bhopal.
22	Oil content in the drill cuttings shall be monitored by some Authorised agency and report shall be sent to the Ministry's Regional Office at Bhopal.	**Complied**. Cuttings are analysed for oil content through a reputed laboratory in the area. The analysis shows that the parameters are within permissible limits(Copy of Monitoring Report enclosed - Annexure-II).
23	Under Enterprise Social Commitment (ESC),sufficent budgetary provision shall be made for health improvement,education,water and electricity supply etc. in and around the project.	**Complied**. 2% of average net profit of ONGC is earmarked for CSR(Corporate Social Responsibility) projects which includes components of health, education, water, solar lights, ecological development in an around operational area, as directed by GOI
24	An audit shall be done to ensure that the Environment Management Plan is implemented in totality and report shall be submitted to Ministry's Regional Office	**Complied**. An annual environment audit is carried out through schedule auditors and the reports are submitted to Gujarat Pollution control Board, apart from it annual internal audit and surveillance audit of Environment Management system is carried out in accordance to the protocol of ISO 14001. It is notable that all drilling rigs are maintaining 3rd party certified EMS based on ISO 14001.

25	All the commitment made regarding issues raised during the public hearing/consultation meeting held on 12th November,2013 and 13th November,2013 and shall be satisfactorily implemented.	**Complied.** In the Public Hearing conducted at Surat on 12.11.2013, the mostly points raised by the villagers were about the welfare measure such as construction/repair of roads and also about the drilling mud used, it was told that the water base mud is being used by ONGC and it is non hazardous. During the Public Hearing held on 13.11.2013 at village Itola the farmer told about the late payments by ONGC towards the crop compensation. The same was resolved.
26	All personnel including those of contractors shall be trained and made fully aware of the hazards,risks and controls in place.	**Complied.** MVT(Mines Vocational Training) are imparted to all contractual workers before deployment at site. MVT trainings are specially designed to develop competence and skill of employees including contractual employees w .r.t risk management
27	Company shall have own Environment Management Cell having qualified persons with proper background.	**Complied.** EM Cell is atCorporate HSE of ONGC, New Delhi. HSE set up at unit level are also having qualified safety & environment officers.
28	Company shall prepare operating manual in respect of all activities.It shall cover all safety & environment related issues and system.Measures to be taken for protection.One set of environment manual shall be made available at the drilling site/project site.Awareness shall be created at each level of the management.All the schedules and results of environment monitoring shall be available at the project site office.	**Complied.** Standard Operating Procedures for drilling operations covering safety and environmental aspects of operations and management thereof, have been given to supervisors and concerned persons at all drilling rigs. Safe Work Practices is also made available at all rigs. Regular safety and environment training is being provided to the employees by our various in- house training institutes like IPSHEM Goa,IDT and ONGC Academy, Dehradun and RTI Vadodara etc. Ambient/stack, noise level and potable water report is available at rigs.
29	Company should prepare operating manual in respect of all activities.It shall cover all safety & environment related issues and system.Measures to be taken for protection.One set of environment manual shall be made available at the drilling site/project site.Awareness shall be created at each level of the management.All the schedules and results of environment monitoring shall be available at the project site office.	**Complied.** Standard Operating Procedures for drilling operations covering safety and environmental aspects of operations and management thereof, have been given to supervisors and concerned persons at all drilling rigs. Safe Work Practices is also made available at all rigs. Regular safety and environment training is being provided to the employees by our various in- house training institutes like IPSHEM Goa,IDT and ONGC Academy, Dehradun and RTI Vadodara etc. Ambient/stack, noise level and potable water report is available at rigs.

B	GENERAL CONDITIONS	
i	The project authorities must strictly adhere to the stipulations made by the Gujarat State Pollution Control Board (GPCB) State Government and any other statutory authority.	**Complied**. Consent to Establish (CTE)for exploratory drilling is taken from Gujarat Pollution Control Board prior to commencement of drilling. Conditions stipulated in CTE are complied to. Apart from it all the oil and gas processing installations wherein the oil and gas produced during exploratory and development drilling is processed are operating under concolidated consent and authorisation (CCA) from GPCB. Monthly and annual returns are filed online on XGN site as per the conditions stipulated in CCA
ii	No further expansion or modification in the project shall be carried out without prior approval of the Ministry of Environment & Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, afresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	**Complied**. So far no expansion or modification in the project has been carried out. In future if any expansion and modification happens the stipulated condition shall be complied.
iii	The project authorities must strictly comply with the rules and regulations under Manufacture, Storage and import of Hazardous chemicals Rules, 2000 as amended subsequently. Prior approvals from Chief Inspectorate of Factories, Chief Controller of Explosives, Fire Safety Inspectorate etc. must be obtained, wherever applicable.	**Complied**. During drilling water base mud is used and no hazardous /toxic chemicals are used. All the mud systems got tested through National Institute of Oceanography (NIO), Goa and found non-hazardous and non-toxic. Hence this point is not applicable. However as precautionary measure MSDS of chemicals are displayed at site. Permissionfor storage ,transportation and use of explosives for perforation of well are taken from controller of explosive.
iv	The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (nighttime).	**Complied**. The overall noise levels in and around the rig area is kept well within the standards by keeping provision of aquostic enclosures and regular condition monitoring of equipment. The ambient noise levels are monitored during day and night time (Recent monitoring reports are annexed) which reveals that the ambient noise level is with in prescribed standards.
v	A separate Environmental Management Cell equipped with full fledged laboratory facilities must be set up to carry out the environmental management and monitoring functions.	**Complied**. Environment Management cell is functional under Head HSE which is responsible for envirroment management, monitoring and compliance to regularity bodies.
vi	A copy of clearance letter shall be sent by the proponent to concerned Panchayat,ZilaParishad/Municipal Corporation,Urban Local Body and the localNGO,if any,from whom suggestions/representations,if any,were received while processing the proposal.The clearance letter shall also be put on the web site of the company by the proponent.	**Complied**. The communication of the enviromental clearance has been made to all the relevant stake holders by way of publishing the same in the leading news papers. The EC is also posted on the Web Site of ONGC as well as communicated to concerned panchayat and local authorities
vii	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions,including results of monitored data on their website and shall update the same periodically.It shall simultaneously be sent to the Regional Office of the MOEF, the respective Zonal Office of CPCB and the GPCB.The criteria pollutant levels namely;PM10,SO2,NOx,HC(Methane & Non-methane),VOCs(ambient levels as well as stack emissions)or critical sectoral parameters,indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain	**Complied**. The compliance of the stipulated environment clearance conditions,including results of monitored data are uploaded on our website (link - http://www.ongcindia.com/wps/wcm/connect/ongcindia/Home/Initiatives/HSE/Environmental_Clearance/) and updated periodically.It is sent to the Regional Office of the MOEF.The criteria pollutant levels namely;PM10,SO2,NOx,HC(Methane & Non-methane),indicated for the projects are monitored and displayed at the main gate of the rig.

viii	The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MOEF, the respective Zonal Office of CPCB and GPCB.The Regional Office of the this Ministry/CPCB/GPCB shall monitor the stipulated conditions.Environment Clearance and six monthly compliance status reports shall be posted on the website of the company.	**Complied**. The compliance of the stipulated environment clearance conditions,including results of monitored data are uploaded on our website (link - http://www.ongcindia.com/wps/wcm/connect/ongcindia/Home/Initiatives/HSE/Environmental_Clearance/) and updated periodically.It is sent to the Regional Office of the MOEF.The criteria pollutant levels namely;PM10,SO2,NOx,HC(Methane & Non-methane),indicated for the projects are monitored and displayed at the main gate of the rig.
ix	The environment statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules,1986,as amended subsequently,shall also be put on the website of the company alongwith the status of comliance of environment conditions and shall also be sent to the respective Regional Offices of the MOEF by e-mail.	**Complied**. After completion of exploratory drilling and if any oil and gas produced through it is subjected to the nearby production installion for processing and thus becomes part of that installation. All the Installations are operating under CCA from GPCB and accordingly environmental statement as per precribed form-V is filed annually. if no oil is found the well is abandoned and land restored as per company policy.
x	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the GPCB and may also be seen at Website of the Ministry of Environment and Forests at http./www.envfor.nic.in. This shall be advertised within seven days from the date of issue of the clearnance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional office.	**Complied**. Information regarding grant EC for the project was passed on to all stake holders and the same was advertised in two newspapers.
xi	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 commencing the land development work.	**Complied**. The details prescribed in condition regarding commencement of exploratory drilling are furnished in six monthly compliance to Regional Office MOEFCC, Bhopal.

18/7/2016

एम.ए.हसीब / M.A. HASEEB
महाप्रबंधक (भूभौमिकी)-प्रखंड प्रबंधक-I
GM (Geol.) - BM - I

PDCE

- G.P.C.B. Recognized Environmental Auditor (Schedule II)
- Evaluation of Environmental Management System (EMS) And Certification For Adequacy
- Treatability Studies

Shubh Enviro Research Lab

TEST REPORT

REPORT NO. : SERL/ONGC/CW-X/AAQM/MARCH/2016/01 Date of issue : 30-03-2016

Client	M/s. OIL AND NATURAL GAS CORPORATION LTD.
Address	Drilling Services, Ankleshwer Asset, Ankleshwer-393 010,Gujarat.
Work Order No. & Date	ANK/DS/P&C-Mech/Contracts/04/2014-15 & 26-02-2015

AMBIENT AIR QUALITY MONITORING REPORT

Sr. No.	DESCRIPTION	DATA
	Particulars of Sample	Station 1
1	Sample ID	366-AQ-03
2	No. of samples	1
3	Date and time of start of sampling	22-03-2016 & 11:30 hrs
4	Date and time of completion of sampling	23-03-2016 & 11:30 hrs
5	Duration of Sampling in hrs	24:00
6	Approx. ht. of sampling point in meter	~ 3.5
7	Sampled by	Mr. Vikram
8	Date of Analysis	24-03-2016

Sampling Procedure : As per IS : 5182 (Part V) - 1975 reaffirmed 2003, IS : 5182 (Part 23) - 2006 and CPCB guidelines

	Details of Sampling Station	
1	Location	CW-X (Mater village)
2	Distance from plant site, km	Inside plant
3	Wind direction	SW-NE
4	Average wind speed, Kmph	6.2

	Parameters Analysed	Unit	Test Method	Permissible Limits as per NAAQS 2009 (24 hrs)	Results
1.	PM_{10}	µg/m3	IS 5182 (part 23) 2006	100	81
2.	$PM_{2.5}$	µg/m3	EPA method- Gravimetric Method	60	38
3.	SO_2	µg/m3	IS 5182 (part II) : 2001	80	8
4.	NO_x	µg/m3	IS 5182 (part VI 2006)	80	19

Abbreviations: BDL-Below Detection Limit, µg-Microgram,

Chemist :

For SHUBH ENVIRO RESEARCH LAB

Authorized Signatory

Note : 1. This result listed refer only to the tested samples and applicable parameters.
2. Permissible limits are given by customer and included in the report upon request by customer
3. The opinions and interpretations contained in this report are based upon material and information supplied by customer
4. Perishable samples will be destroyed after testing, others after 7 days from the date of issue of the report, unless otherwise agreed with the customer or as required by applicable regulations
5. This report shall not be used as evidence in the court of law and cannot be used in part or full in any media without prior permission.

*** End of Report ***

Grow More

"Kamal Arcade", Shop No 3 & 4. Comm. Plot No C-3/3. Near State Bank of India. G.I.D.C . Ankleshwar - 393 002 Dist Bharuch Gujarat India ✆ 02646-224805 Website www.siddhigreen.com

- G.P.C.B. Recognized Environmental Auditor (Schedule II)
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- Treatability Studies

SHUBH

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TEST REPORT

REPORT NO. : SERL/ONGC/CW-X/NL/MARCH/2016/02 Date of Issue :30-03-2016

Client	**M/s. OIL AND NATURAL GAS CORPORATION LTD.**
Address	Drilling Services, Ankleshwer Asset, Ankleshwer-393 010,Gujarat.
Work Order No. & Date	ANK/DS/P&C-Mech/Contracts/04/2014-15 & 26-02-2015

Sample ID	366-NL-03
Location	**CW-X (Mater village)**
Date & Time of Monitoring	22/03/2016, & 11:20 to11:50hrs.
Measuring Instrument	Lutron make Noise Level Meter (Model No. SL4001)
	Frequency Weighing - A
	Time Weighing - Slow
Measured By	Vikram

Procedure:As per Work Instruction of Instrument and as per IS-9989(1981)RA-2001

SR. NO.	LOCATION	Noise Level, db(A)	
		Permissible Limit Day (6 am to 10 pm)(Note-2)	Day Results (avg.)
1	Near Main Gate	75	53
2	Near D.G. SET Operation (From 3 meter Distance)	75	80
3	Near mud pump Area	75	72
4	Near upper prowler	75	68
5	Near shale shaker	75	63

Chemist :

For SHUBH ENVIRO RESEARCH LAB

Authorized Signatory

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*** End of Report ***

Grow More

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TEST REPORT

REPORT NO. : SERL/ONGC/CW-X/ST/MARCH/2016/03

Date of Issue: 30-03-2016

Client	M/s. OIL AND NATURAL GAS CORPORATION LTD.
Address	Drilling Services, Ankleshwer Asset, Ankleshwer-393 010,Gujarat.
Work Order No. & Date	ANK/DS/P&C-Mech/Contracts/04/2014-15 & 26-02-2015

Sr. No.	DESCRIPTION	FLUE GAS STACK EMISSION ANALYSIS	
	Monitoring Location	CW-X (Mater village)	
	Particulars of Sample	Stack 1	Stack 2
1	Sample ID No.	366-FS-09	366-FS-10
2	Stack attached to	Carrier Engine -1	Carrier Engine - 2
3	Detail of APCM	-	-
4	Diesel Generator Capacity	-	-
5	Date & Time of sampling	22-03-2016,&11:50 hrs	22-03-2016,& 12:35 hrs
6	Date of Receipt	23-03-2016	23-03-2016
7	Date of Analysis start	24-03-2016	24-03-2016
8	Date of Complétion	24-03-2016	24-03-2016

Sampling Procedure : As per IS : 11255 (Part I) - 1985 reaffirmed 2003, IS : 11255 (Part 3) - 2008 and CPCB guidelines

	Details of Stack		
1	Stack Height	3 m	3 m
2	Stack Diameter	8 Inch	8 Inch
3	Temperature of Flue gas	95 °C	102 °C
4	Velocity of Flue gas	8.8 m/sec	8.5 m/sec
	Details of flue gas		
1	Type of Fuel	Diesel	Diesel
2	Rate of Consumption	80 Ltr/h	80 Ltr/h

	Parameters Analysed	UNIT	TEST METHOD	Permissible Limit (Note2)	Results	Results
1	PM	mg/Nm3	IS 11255(Part-1)-1985 (Gravimetric)	150	81	76
2	SO_2	ppm	IS 11255(Part-2)-1985	100	20	18
3	NOx	ppm	IS : 11255 (Part 7) - 2005	50	23	25
4	HC (as CH_4)	ppm	IS Method	15	12	11
5	CO	ppm	IS Method	23	11	10
6	H_2S	ppm	IS Method	100	BDL	BDL

Abbreviation: BDL-Below Detection Limit.

Chemist :

For SHUBH ENVIRO RESEARCH LAB

Authorized Signatory

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2.Permissible limits are given by customer and included in the report upon request by customer
3.The opinions and interpretations contained in this report are based upon material and information supplied by customer
4.Perishable samples will be destroyed after testing, others after 7 days from the date of issue of the report, unless otherwise agreed with the customer or as required by applicable regulations
5.This report shall not be used as evidence in the court of law and cannot be used in part or full in any media without prior permission.

*** End of Report ***

"Kamal Arcade", Shop No. 3 & 4, Comm. Plot No. C-3/3, Near State Bank of India, G.I.D.C., Ankleshwar - 393 002. Dist. Bharuch. Gujarat, India. ✆: 02646-224805 Website : www.siddhigreen.com

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TEST REPORT

REPORT NO. : SERL/ONGC/CW-X/ST/MARCH/2016/04 Date of Issue: 30-03-2016

Client	M/s. OIL AND NATURAL GAS CORPORATION LTD.
Address	Drilling Services, Ankleshwer Asset, Ankleshwer-393 010,Gujarat.
Work Order No. & Date	ANK/DS/P&C-Mech/Contracts/04/2014-15 & 26-02-2015

Sr. No.	DESCRIPTION	FLUE GAS STACK EMISSION ANALYSIS
	Monitoring Location	CW-X (Mater village)
	Particulars of Sample	Stack 3
1	Sample ID No.	366-FS-11
2	Stack attached to	GEN SET - 2 (Greaves - Grey)
3	Detail of APCM	-
4	Diesel Generator Capacity	-
5	Date & Time of sampling	22-03-2016, & 13:10 hrs
6	Date of Receipt	23-03-2016
7	Date of Analysis start	24-03-2016
8	Date of Completion	24-03-2016

Sampling Procedure : As per IS : 11255 (Part I) - 1985 reaffirmed 2003, IS : 11255 (Part 3) - 2008 and CPCB guidelines

	Details of Stack	
1	Stack Height	3 m
2	Stack Diameter	8 Inch
3	Temperature of Flue gas	136 °C
4	Velocity of Flue gas	8.3 m/sec
	Details of flue gas	
1	Type of Fuel	Diesel
2	Rate of Consumption	80 Ltr/h

	Parameters Analysed	UNIT	TEST METHOD	Permissible Limit (Note2)	Results
1	PM	mg/Nm3	IS 11255(Part-1)-1985 (Gravimetric)	150	74
2	SO_2	ppm	IS 11255(Part-2)-1985	100	21
3	NOx	ppm	IS : 11255 (Part 7) - 2005	50	27
4	HC (as CH4)	ppm	IS Method	15	11
5	CO	ppm	IS Method	23	13
6	H2S	ppm	IS Method	100	BDL

Abbreviation: BDL-Below Detection Limit.

Chemist :

For SHUBH ENVIRO RESEARCH LAB

Authorized Signatory

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5.This report shall not be used as evidence in the court of law and cannot be used in part or full in any media without prior permission.

*** End of Report ***

"Kamal Arcade", Shop No. 3 & 4, Comm. Plot No. C-3/3, Near State Bank of India, G.I.D.C., Ankleshwar - 393 002. Dist. Bharuch, Gujarat, India. ✆ 02646-224805 Website : www.siddhigreen.com

- G.P.C.B. Recognized Environmental Auditor (Schedule II)
- Evaluation of Environmental Management System (EMS) And Certification For Adequacy
- Treatability Studies

Shubh Enviro Research Lab

TEST REPORT

REPORT NO. : SERL/ONGC/CW-X/ST/MARCH/2016/05

Date of Issue: 30-03-2016

Client	M/s. OIL AND NATURAL GAS CORPORATION LTD.
Address	Drilling Services, Ankleshwer Asset, Ankleshwer-393 010,Gujarat.
Work Order No. & Date	ANK/DS/P&C-Mech/Contracts/04/2014-15 & 26-02-2015

Sr. No.	DESCRIPTION	FLUE GAS STACK EMISSION ANALYSIS	
	Monitoring Location	CW-X (Mater village)	
	Particulars of Sample	Stack 4	Stack 5
1	Sample ID No.	366-FS-12	366-FS-13
2	Stack attached to	Mobile Compressor	Mobile Welding Set
3	Detail of APCM	-	-
4	Diesel Generator Capacity	-	-
5	Date & Time of sampling	22-03-2016, &14:00 hrs	22-03-2016, & 14:45 hrs
6	Date of Receipt	23-03-2016	23-03-2016
7	Date of Analysis start	24-03-2016	24-03-2016
8	Date of Completion	24-03-2016	24-03-2016
Sampling Procedure : As per IS : 11255 (Part I) - 1985 reaffirmed 2003, IS : 11255 (Part 3) - 2008 and CPCB guidelines			
	Details of Stack		
1	Stack Height	3 m	2 m
2	Stack Diameter	4 Inch	3 Inch
3	Temperature of Flue gas	88 °C	88 °C
4	Velocity of Flue gas	8.5 m/sec	8.9 m/sec
	Details of flue gas		
1	Type of Fuel	Diesel	Diesel
2	Rate of Consumption	40 Ltr/h	20 Ltr/h

	Parameters Analysed	UNIT	TEST METHOD	Permissible Limit (Note2)	Results	Results
1	PM	mg/Nm3	IS 11255(Part-1)-1985 (Gravimetric)	150	81	75
2	SO_2	ppm	IS 11255(Part-2)-1985	100	18	20
3	NOx	ppm	IS : 11255 (Part 7) - 2005	50	24	16
4	HC (as CH_4)	ppm	IS Method	15	11	8
5	CO	ppm	IS Method	23	14	13
6	H_2S	ppm	IS Method	100	BDL	BDL

Abbreviation: BDL-Below Detection Limit

Chemist :

For SHUBH ENVIRO RESEARCH LAB

Authorized Signatory

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And Certification For Adequacy
Treatability Studies

Shubh Enviro Research Lab

TEST REPORT

REPORT NO. : SERL/ONGC/CW-X/ST/MARCH/2016/06 Date of Issue: 30-03-2016

Client	M/s. OIL AND NATURAL GAS CORPORATION LTD.
Address	Drilling Services, Ankleshwer Asset, Ankleshwer-393 010,Gujarat.
Work Order No. & Date	ANK/DS/P&C-Mech/Contracts/04/2014-15 & 26-02-2015

Sr. No.	DESCRIPTION	FLUE GAS STACK EMISSION ANALYSIS	
	Monitoring Location	CW-X (Mater village)	
	Particulars of Sample	Stack 6	Stack 7
1	Sample ID No.	366-FS-14	366-FS-15
2	Stack attached to	Mud pump - 1	Mud pump - 2
3	Detail of APCM	-	-
4	Diesel Generator Capacity	-	-
5	Date & Time of sampling	22-03-2016, &15:20 hrs	22-03-2016, & 16:00 hrs
6	Date of Receipt	23-03-2016	23-03-2016
7	Date of Analysis start	24-03-2016	24-03-2016
8	Date of Completion	24-03-2016	24-03-2016

Sampling Procedure : As per IS : 11255 (Part I) - 1985 reaffirmed 2003, IS : 11255 (Part 3) - 2008 and CPCB guidelines

	Details of Stack		
1	Stack Height	4 m	4 m
2	Stack Diameter	10 Inch	10 Inch
3	Temperature of Flue gas	98 °C	105 °C
4	Velocity of Flue gas	8.1 m/sec	8.3 m/sec
	Details of flue gas		
1	Type of Fuel	Diesel	Diesel
2	Rate of Consumption	120 Ltr/h	120 Ltr/h

	Parameters Analysed	UNIT	TEST METHOD	Permissible Limit (Note2)	Results	Results
1	PM	mg/Nm3	IS 11255(Part-1)-1985 (Gravimetric)	150	86	75
2	SO_2	ppm	IS 11255(Part-2)-1985	100	22	23
3	NOx	ppm	IS : 11255 (Part 7) - 2005	50	18	20
4	HC (as CH_4)	ppm	IS Method	15	12	10
5	CO	ppm	IS Method	23	13	11
6	H_2S	ppm	IS Method	100	BDL	BDL

Abbreviation: BDL-Below Detection Limit

Chemist :

For SHUBH ENVIRO RESEARCH LAB

Authorized Signatory

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Dist. Bharuch, Gujarat, India. ✆: 02646-224805 Website : www.siddhigreen.com

S.N. HIRPARA POLLUTION CONSULTANTS & ENGINEERS (P) LTD.

(LABORATORY DIVISION)

Regd. Office & Lab.: 706/A, 406/B, Center Point Building, New Civil Hospital Char Rasta,
Ring Road, Surat – 395 002. Gujarat, India. Email : sureshhirpara@yahoo.co.in
Tele fax : 0261 – 2460493-0261 – 2721401 M.: 98251 28836

14/03/2016

REF#SNH/LAB/ANALYSIS/ONGC-ANK/02/16

ANALYSIS REPORT

Name & Address of Industry : **Oil & Natural Gas Corporation Ltd., Ankleshwar Asset, Ankleshwar, Bharuch, Gujarat.**

Analytical Report of : Waste Water Sample of Well No. #PDCE, Rig No. CW-X
Drill Cutting Sample of Well No. #PDCE, Rig No. CW-X

Date/ Time of Sample Collection : 11/02/2016

Location of Collection : **Well No. #PDCE, Rig No. CW-X**

Sample Collected by : **S.N.Hirpara**

Date of Receipt of Sample : 08/03/2016

: TEST RESULTS:

Sr.No.	Parameters	GPCB Limit	Unit	Wastewater Sample Of Well No. #PDCE, Rig No CW-X PADRA	Drill Cutting Sample Of Well No. #PDCE, Rig No CW-X PADRA
	Date Of Sample Collection			11/02/2016	11/02/2016
				Results	Results
1.	Temperature	40	^{o}C	29	29
2.	pH	5.5-9.0	--	7.5	7.6
3.	Total Dissolved solid	2100	mg./L	2110	2108
4.	Suspended Solid	100	mg./L	90	91
5.	BOD_3 27 ^{o}C	30	mg./L	24	14
6.	COD	100	mg./L	97	98
7.	Oil & Grease	10	mg./L	5.3	4.7
8.	Phenolic Compounds	1.2	mg./L	ND	ND
9.	Sulphides	2.0	mg./L	0.2	0.5
10.	Sulphate	1000	mg./L	985	721
11.	Cr^{+6}	0.1	mg./L	BDL	BDL
12.	Total Chromium	1.0	mg./L	0.03	ND
13.	Chlorides	600	mg./L	589	591
14.	% Sodium	60	mg./L	52	51
15.	Zinc	2.00	mg./L	BDL	BDL
16.	Copper	0.2	mg./L	BDL	BDL
17.	Fluorides	1.5	mg./L	0.02	0.02
18.	Mercury	0.01	mg./L	ND	NIL
19.	Cyanides	0.2	mg./L	BDL	BDL
20.	Lead	0.1	mg./L	BDL	BDL
21.	Nickel	0.3	mg./L	BDL	BDL

Note: ND = Not Detected, BDL= Below Detectable Limit.

For **S. N. Hirpara Pollution Consultants & Engineers Pvt. Ltd.**

Sr. Chemist
Arti singh

Env. Engineer
Suresh Hirpara

VEXIL

Certificate

Oil and Natural Gas Corporation Limited

Ankleshwar Asset

Drilling Rig CW X

Services for Exploration and Production of Hydrocarbons

IVEXIL

ISO 14001:2004

Certificate

...poration Limited

...Exploration and Production of Hydrocarbons

ISO 9001:2008

VEXIL

Certificate

Oil and Natural Gas Corporation Limited
Ankleshwar Asset
Drilling Rig: CW-X
Gujarat
INDIA

... Occupational Health and Safety Management System ... the requirements ... OHSAS 18001:2007 ...

Drilling Services for Exploration and Production of Hydrocarbons

Certificate No: [illegible]
[illegible]

VEXIL

OHSAS 18001:2007

COPY NO.	

EMERGENCY RESPONSE PLAN

OIL AND NATURAL GAS CORPORATION LIMITED

ANKLESHWAR ASSET

DRILLING RIG- C W-10

Prepared by:MRR Mr.M.G.Srivastava CE (D) (Installation Manager)	Checked by: I/C HSE D/S Mr. Tryambak Kumar CE (D)	Approved By : MR Mr R.S.Shah GM(D) (Location Manager (D)
Signature :	Signature :	Signature :
Date : 05.01.16	Date : 05.01.2016	Date : 05/01/2016

INDEX

making tomorrow brighter

HEALTH, SAFETY & ENVIRONMENT POLICY

1. We are committed to maintain highest standards of Occupational Health, Safety and Environment Protection.

2. We shall comply with all applicable codes and requirements to promote Occupational Health, Safety and Environment protection.

3. We shall be always alert, equipped and ready to respond to emergencies,

4. We shall take all actions necessary to protect the integrity of the safety in order to avoid accidental release of Hazardous substances.

5. We shall enhance awareness and involvement in promotion of Occupational Health, Safety and Environment protection wherever we work and reside.

Objectives of Emergency Response

The objective of the plan shall be to reduce the probability of serious loss/damage to people, equipment, material, environment, process, reservoir, etc., utilizing combined resources of the Asset and the outside agencies, if required.

SCOPE OF EMERGENCY RESPONSE

Emergency is a sudden, undesirable occurrence, which has the potential to cause harm to people, equipment, material & environment and which requires immediate attention from all concerned setting aside all their normal/routine work.

Oil Mine Operation of ONGC is vulnerable to various kinds of natural and man made disaster e.g. Fire, Blow out, flood, cyclone, social disturbances, Environmental hazards etc.

It has been our endeavour to cover all the possible types of emergency situations, which can occur during operations at the Oil Mine at the Rig.

For all the emergency situations, specific action plans have been drawn for overall command, control and communication within the organizational setup. The emphasis is on specifying the personnel at different levels for taking various actions, which have been identified, as necessary for these emergency situations.

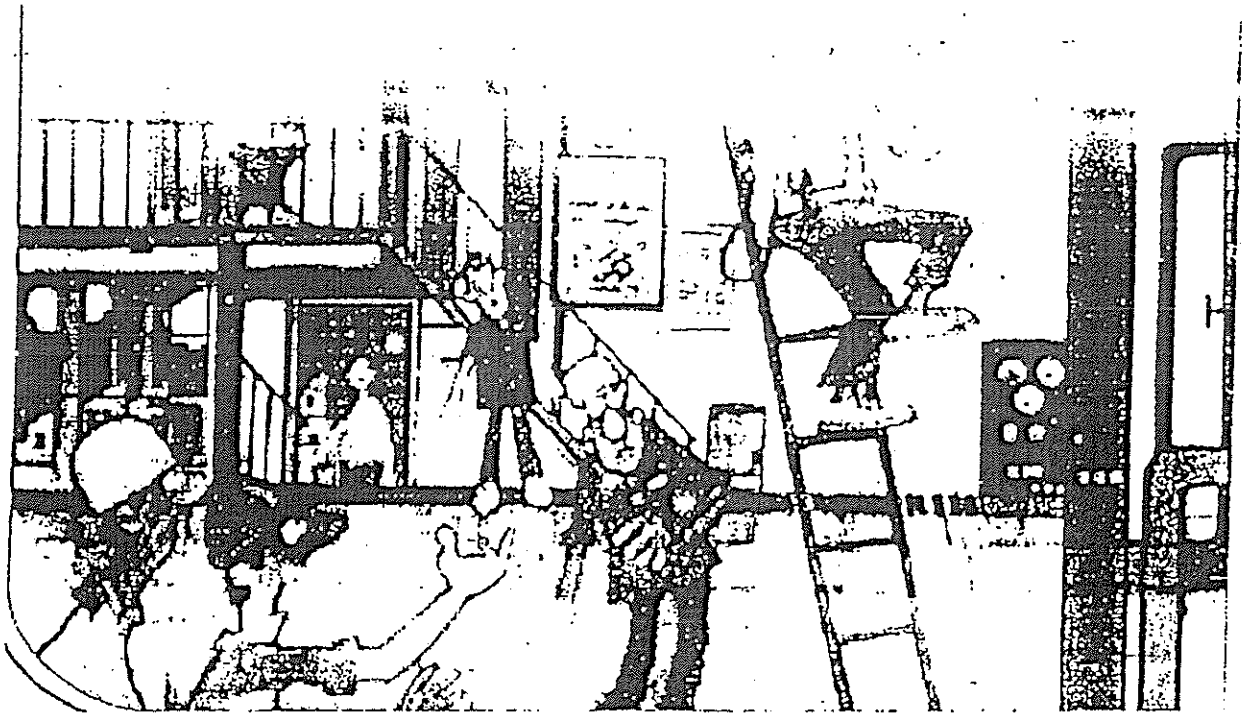
The telephone numbers and addresses of important persons have been incorporated for immediate communication in the event of emergency. It has also taken into account various facilities available on site as well as off site for their timely utilization to combat any such situation.

Thus this Emergency Response and Disaster Management Plan may help in minimizing the losses in terms of human lives and property and at the same time enable normal operations to be resumed as soon as possible.

Finally, since every emergency situation is unique in characteristics, the competent authority would decide the exact plan. This plan would, at best serve as a guide for drawing the exact plan.

This Emergency Response and Disaster Management Plan will be updated annually to incorporate changes taken place during the year.

ON-SITE EMERGENCY RESPONSE



TYPES OF EMERGENCIES:

i) On-Site Emergency: This class includes emergencies likely to be contained within the premises of ONGC and primarily can be mitigated by using its own resources but outside help cannot be ruled out.

ii) Off-site Emergency: This class includes emergencies likely to endanger people, equipment, material, environment within the installations and (or) in its vicinity areas. Control of such events may require combined resources of ONGC and outside agencies like Civil & Defence authorities, IPCL, GAIL, HPCL etc.

FOR DETAILS PLEASE REFER ASSET DMP

Following On-site Emergencies may be anticipated in ONGC's Oil & Gas Mines.

2.0 FACILITY EMERGENCIES:

2.1 FIRE/EXPLOSION :

Fire/explosion at work unit due to:

- Leakage of hydrocarbon from any joint
- Fire in office building / bunk house or other combustible material
- Grass fire
- Abnormal condition leading to sudden release of hydrocarbon

2.1.2 ELECTRICAL FIRE:

Electrical fire in switch yard / substation / transformer / cables / glands / Electrical equipments due to:

- Short circuit
- Use of non-approved equipment in hazardous area or due to disturbance in FLP features.
- Overloading of points and cables
- Bursting of transformer, switch gear etc.

2.2 FIRE IN STORAGE TANK:

Lightning spark, sudden release of pressure (explosion) in the tank due to operational fault or some other unforeseen reasons like human error etc. The fire may cause high risk.

2.3 BLEVE:

BLEVE (Boiling Liquid Expanding Vapour Explosion) is the sudden rupture of vessel/system containing liquefied flammable gas under pressure due to fire impingement.

- Excess pressure due to Malfunctioning of relief valves and high pipeline pressure, choking partially or fully.
- Weakening of steel of vessel.
- Heating of the internally welded surface of the vessel.
- Impact of missile that hits the vessel as a consequence of an adjacent BLEVE or other explosion.

2.4 LEAKAGE/BURSTING OF CRUDE/GAS PIPELINES:

Sudden leakage or blasting/exploding of crude/gas pipeline, gas storage reservoir due to corrosion, sabotage etc.

3.0 PORTABLE FIRE EXTINGUISHERS :

3.1 FIRE CLASSIFICATION :

Fire is classified in four following categories

1. Class-A : Fire involving ordinary combustible material e.g. wood, paper, cloth, raxine etc.
2. Class B : Fire in flammable liquids
3. Class C : Fire in flammable gases
4. Class D : Fire in metals e.g. Sodium, Potassium etc.

Portable fire Extinguishers are the first line of defence available at any location to extinguish fire. If used during incipient stage on fire, it will extinguish it completely. They are suitable to control small fire. Extinguishers mainly used are :

SR. NO.	TYPE OF EXTINGUISHER	CLASS OF FIRE			
		A	B	C	D
1.	WATER TYPE	S	-	-	-
2.	FOAM TYPE	-	S	-	-
3.	DRY POWDER TYPE	S	S	S	S
4.	CARBON DIOXIDE	S	S	S	S

S- SUITABLE

NOTE : Water & Foam Extinguisher should not be used in case of electrical fire, till circuit is live.

3.2 FIRE TYPE

a. Minor Fire: Fire where there is no system interference / shut down and duration to extinguish such fires is less than 15 minutes.

b. Medium Fire: Fires with measurable / considerable loss of property and where the time taken to extinguish the fire is from 15 minutes to 2 hours.

c. Major Fire: Fires where there is considerable loss of property (50 lacs and above) or human being or blow out fires.

3.3 METHOD OF OPERATION:

3.3.1 DRY CHEMICAL POWDER TYPE EXTINGUISHERS:

1. DCP 75 kg / 50 kg / 22.5 kg

a) Push the extinguisher up to 7-8 mt. distance from fire.

b) Uncoil the discharge hose.

c) Remove the safety pin & open the valve of CO_2 cylinder fully.

d) Press the squeeze grip or open the discharge valve and apply the powder in sweeping action at the base of fire.

e) The powder shall be applied in downwind direction.

2. DCP FIRE EXTINGUISHER 10 kg/5 kg

a) Carry the extinguisher near the fire.

b) Remove the safety pin & hit the plunger -with hard object

c) Direct the discharge tube toward the base of fire and apply it in sweeping action by pressing the squeeze grip handle.

3.3.2 CO_2 FIRE EXTINGUISHER:

a) Carry the extinguisher near to the fire.
b) Hold the discharge horn from its handle.
c) Remove the safety pin and open the discharge valve fully.
d) Apply the CO_2 by moving horn in sweeping action towards the base of fire.

Note: Do not be afraid of whizzing sound.

3.3.3 CHEMICAL FOAM EXTINGUISHER:

a) Carry the extinguisher near the fire.
b) Lift the T' shape handle and put it in the grove in locking position.
c) Lift the extinguisher and rotate it up & down to facilitate the mixing of chemicals.
d) Hold the extinguisher in inverted position (cap facing the bottom).
e) Direct the nozzle toward the vertical support near the fire.
f) Hitting the foam jet towards vertical surface will facilitate the spread of foam layer over burning liquid.

3.4 FIRST AID FIRE FIGHTING EQUIPMENTS at Drilling Rig (AS PER OISD-STD-189)

SL NO	Type of Area	Portable Extinguisher AS PER OISD	Portable Extinguisher Available at Rig
1.	Derrick floor	2 Nos. 10 kg DCP Extinguisher	
2.	Main Engine area (Caterpillar Engine 3 nos.)	1 No. 10 kg DCP Extinguisher for each engine	
3.	Electrical Motor/pump for water circulation for mud preparation	1 No. 10 kg DCP Extinguisher	
4.	Mud gunning pump area	1 No. 10 kg DCP Extinguisher for each mud gunning pump	
5.	Electrical Control Room	1 No. 6.8 kg CO2 1 No. 10 kg DCP Extinguishers for each unit	
6.	Mud mixing tank area/ Chemical laboratory	1 No. 10 kg DCP Extinguisher	
7.	Diesel storage area	1 No. 50 ltrs Mech foam Extinguisher 1 No. 50 kg DCP Extinguisher 1 Nos. 10 kg DCP Extinguisher 2 Nos. sand bucket or 1/2' sand drum with spade	
8.	Lube storage area	1 No. 10 kg DCP Extinguisher 1 No. Sand bucket stand	
9.	Air compressor area	1 No. 10 kg DCP Extinguisher	
10.	Fire pump area	1 No. 10 kg DCP Extinguisher	

11.	Near DIC office	1 No. Fire Extinguisher Shed with 3 Nos. 10 kg DCP Extinguisher and 2 Nos. sand bucket	
12.	Fire bell near bunk house	1 No	

4.0 EMERGENCY PROCEDURES:

In case of facility emergency: (Fire, Explosion, BLEVE, Leakage of gas/crude oil etc.) Refer fire contingency plan

5.0 KICK / BLOW OUT:

Kick (unintended flow of formation fluid in well bore during drilling or work over operation) if not handled properly will lead to Blow out (uncontrolled gushing of Oil & Gas). It is the worst situation, which may arise at oil wells during Drilling, Work over, Perforation, Reservoir Studies, production etc. Blow out may also result into fire and explosion, which may cause immense loss of life & property.

5.1 INDICATORS OF A KICK:

5.1.1 WHILE DRILLING:

a. Sudden increase in drilling rate.
b. Increase in return flow rate.
c. Increase in mud tank volume.
d. Decrease of pump pressure.
e. Increase of pump SPM.
f. Self flow with pumps off.
g. Increase in string weight due to lighter fluids in the hole.
h. At a quite later stage when the kick comes near surface, a great deal of surging and splashing of mud occurs.
i. Cutting size increase.

5.1.2 WHILE PULLING OUT:

a. Failure of the well to take mud equal to the metallic volume of pipes removed.
b. The well flows.

5.1.3 WHILE RUNNING IN:

a. Mud tank level will increase more than the steel volume of the pipe run in.
b. The well does not stop flowing during time gap between running in of one pipe stand and the other.

5.1.4 WHEN OUT OF HOLE:

a. The well flows.

5.2 CLOSING OF WELL

5.2.1 WHILE DRILLING:

a. Stop rotary.

b. Pick up Kelly to clear tool joint above rotary table.

c. Stop mud pump & super charger.

d. Check for self-flow. If positive, close the well by any of the following method depending on well situation.

SR. NO.	SOFT SHUT- IN	HARD SHUT- IN
A.	Open Hydraulic Control Valve (HCR) on choke line to give a free passage to mud. Adjustable choke to be kept partially open	Close BOP
B.	Close BOP	Open HCR Valve when choke is in fully closed position.
C.	Close Choke	Record stabilized SIDPP, SICP & pit gain.
D.	Record stabilized SIDPP, SICP & pit gain.	

5.2.2 WHILE TRIPPING:

a. Position tool joint above rotary table & set pipe in slip.

b. Install FOSV in open position and close it.

SR. NO.	SOFT SHUT- IN	HARD SHUT- IN
A.	Open Hydraulic Control Valve (HCR) on choke line to give a free passage to mud. Adjustable choke to be kept partially open	
B.	Close BOP	Open HCR Valve when choke is in fully closed position.
C.	Close Choke	Make-up Kelly & open FOSV.
D.	Make-up Kelly & open FOSV.	
E.	Record stabilized SIDPP, SICP & pit gain.	

5.2.3 WHEN STRING IS OUT OF HOLE

I. Close blind/shear ram.

II. Close adjustable/remotely operated choke and open HCR valve.

III. Record shut in pressure.

5.3 POSITIONING OF CREW

After hearing alarm, crew will be positioned as follows:

Assistant Shift-in charge	Assist Shift in-charge, shall be ready to handle brake.
Topman(I)	At choke manifold.
Topman(2)	At pumps
Rigman	At standpipe manifold and on derrick floor, keeping in touch with Shift-in charge.
Rig mechanic / Mechanical Incharge	Near the Engines awaiting directives from Shift-in charge.
Pump fitter	At pumps.
Electrician	Near BOP control unit.
Contractual worker	Near mud tanks.
Mud Chemist	On shale shaker tank.
Geologist, if present	At flow line/ mud logging unit.

5,4 BOP DRILLS

a) BOP drills should be conducted once a week with each crew.

b) Drill should be initiated at unscheduled times when operations and hole condition permits,

c) To conduct drill a kick should be simulated by manipulating primary kick Indicator such as the pit level indicator or the flow line indicator by raising its float gradually and checking for the alarm.

d) The reaction time from float raising to the designated crew member's readiness to start the closing procedure should be recorded and response time should not be more than 60 seconds.

e) Total time taken to complete the drill should be recorded and ic not be more than 2 minutes.

f) Following drills should be performed :

I, On bottom

II, Tripping

III. Drill collar in blow out preventer

IV. String out of the hole

3.5 STANDARD OPERATING PRACTICES FOR BLOWOUT
(CEIVED FROM HEAD-CMT-OPS, ONGC)

SR. NO.	ACTION	DETAILS OF ACTION	ACTION TO BE TAKEN BY
01.	Declaration of well "Out of Control'	If the I/C of the operation of the Rig feels the well is out of control and could not be brought under control through normal procedure, emergency should be declared.	DIC of the Rig
02.	Switch off the Power	Immediately after the Blow out is declared, switch off the Main power system, which can cause the ignition.	DIC of the Rig
03.	Ensure personal safety	Call all personnel from the Rig floor area. Ensure whether all the persons reported or not. If anybody is entrapped try to rescue.	DIC of the Rig
04.	First Aid	If anybody is injured, carry out the first aid and send him to the nearest hospital.	DIC of the Rig
05.	Communication to control room.	Report the Emergency to Base control room.	DIC of the Rig
06.	Communication to senior officers	Base control room has to communicate the Emergency to all the key personnel as per prepared list INCLUDES Asset Manager, Basin Manager, Surface & Sub-Surface Manager, Head Drilling Services/ Well Services/ Engg. Services, Fire, Safety, CMT, P&A, Head Security, District Collector, District Police, Nearest Police Station & Nearest Hospital.	Base control room
07.	Activation of SOP	Based on the information received and also after visiting the site, seeing the gravity of situation, SOP for dealing the emergency has to be activated.	Asset Manager
08.	Make water supply arrangements.	Make arrangement to connect water line/ spray water on the Well-Head, if the well not on fire.	I/C Fire services
09.	Relief Camps	People are to be evacuated from the premises of 1000 meters. If there is release of Toxic gas like H_2S, relief camps are to be organised with all facility for the evacuated people till the well is controlled.	Head HR
10.	Crude Oil Containment	Make trenches to collect the crude and subsequently transport to nearest GGS	Asset CMT Head
11.	Remove the Rig equipment	Remove all the rig equipment around the well-head to protect them from the danger of fire and also to create access to the well-head. Even if the well is on fire if any of the equipment not engulfed by the fire, attempt can be made to take out that equipment with utmost personnel safety. No risk should be ventured particularly with regard to personnel for taking out equipment.	Head RCMT of the Area
12.	Establish communication center	In-built communication room has to be mobilized and made operational.	Head RCMT of the Area

SR. NO.	ACTION	DETAILS OF ACTION	ACTION TO BE TAKEN BY
13.	Manning of communication center	Personnel should be deployed on round the clock basis to the communication centre at the problem site.	Head Info com
14.	Establish Base control room	Establish communication control room in the base with the following facilities- Telephone with STD & ISD, Fax, Computer Amenities etc. Control room should work on round the clock basis.	Head DS for Drilling Rigs / Head WS for Work over Rig / SMfor producing well Blowout
15.	Establish First Aid Centre	First aid centre & medical support has to be established.	Head Medical Services
16.	Trauma Care Centre	Nearest Trauma Care Centre should be alerted for receiving the emergency cases. ONGC should identify one Emergency Care Centre nearer to our operational areas and should have a sort of tie up for dealing our cases during emergency.	Head Medical Services
17.	Establish Office room	Bunk house type office, conference, store, Rest room etc., are to be mobilised and erected.	Head RCMT of the Area
18.	Cordoning of area.	Boundary has to be fixed all around the problem area and has to be declared as restricted area. This area has to be guarded with restricted entry. Temporary entry gates are to be organized and passes are to be issued to required personnel as advised by Head CMT and Asset Manager.	Head Security section
19.	Mobilise the Blowout Control equipment from RCMT	Blow out control equipment as directed by RCMT shcuild be mobilised.	LM (Logistics)
20.	Logistic support	Transport equipment for the mobilization of personnel, equipment, removal of debris etc., are to be provided as desired by Head-RCMT	LM (Logistics)
21.	Accommodation / Food /Beverages	A/C Accommodation for all CMT Experts at nearest possible location where Food and Beverages and washing facilities are available.	Head HR
22.	Workout the action plan for controlling blowout	Based on the condition of the well on the surface and sub-surface & the available data, workout step-by-step detailed action plan with bar charts.	Head CMT Operations
23.	Workout the equipment requirement	Workout the equipment requirement as per the action plan.	Head CMT Operations
24.	Insuranc e related metters	Reporting of incident to the under writers, also supplementation of required data to them, communication of other decision / advise etc., to Head CMT-ops., claims, pursue of claims.	A Rep. of Asset who deals with insurance related
25.	Dig water pits of capacity 5000 M^3	Dig the water pits of capacity 5000 M^3 preferably at the up wind side and 100-150 M away from the problem well.	LM (Works)
26.	Construct levelled Surface	A leveled surface with required hardening has to be provided at a place required by Head RCMT to place the office/rest/store room etc.	LM (Works)

SR. NO.	ACTION	DETAILS OF ACTION	ACTION TO BE TAKEN BY
27.	Make the pumping arrangements and fill water.	Dig pits as suggested by Head RCMT. Lay the pipe line, and arrange pumps to pump the water from the main source to water pits.	LM (Works)
28.	Install Fire Pumps	Install fire pumps, Monitors at required places and test them on load.	Head-RCMT
29.	Pin point the equipment which is not available with RCMT	From the list of 'equipment required', it is to be seen whether equipment available with RCMT or not. If not what are the equipments not available? From where they are to be mobilized? And by when? etc are to be worked out.	Head CMT Operations
30.	Mobilise / purchase/hire the equipment	As per the specific requirement of Head-CMT-operations mobilize/ purchase/ rent the required equipment (if at all required) .	Head MM
31.	Work out expertise requirement	As per the action plan made, workout expertise required for each operation also workout any expertise from outside if required.	Head CMT Operations
32.	Mobilize the experts	Mobilize the experts from the foreign company as desired by the Head CMT operations.	Head MM
33.	Specialized services	workout services required as per the action plan like Directional Drilling, snubbing, Coil tubing, WSS, Cementing, Freezing, Hot tapping etc.	Head CMT Operations
34.	Directional drilling	Find out Directional drilling services as desired by Head CMT operations can be provided by local team or not.	Head Drilling Services
35.	Hiring of Directional Drilling Services	If Head Drilling Services feels that Directional Drilling Services as required by HCMT cannot be provided at Asset level, Hiring of Directional Drilling Services to be carried out.	Head MM
36.	Snubbing services	Find out snubbing services required can be carried out by in-house snubbing unit or not.	Head CMT Operations
37.	Hire the Snubbing services	If snubbing unit need to be mobilized, mobilize the same as per the requirement of the Head CMT operations.	Head MM Asset
38.	Coil tubing/ WSS Services	Coil tubing / WSS services are to be provided as desired by Head CMT operations and specified in the action plan.	Head WSS Asset
39.	Cementing services	Cementing service / Equipment etc. to be provided as desired by Head CMT operations and specified in the action plan.	Location Manager (cementing)
40.	Action plan execution	Action plan should be executed as per Time schedule' planned, with required expertise, Equipment duly mobilised.	Head CMT Operations
41.	Safety during operations	Safety of the personnel, equipment etc are to be taken care with out compromise during control operations.	Head CMT Operations
42.	Monitoring of the plan	Action plan has to be monitored on day to day basis, constraints if any should be identified, discussed with concerned people to eliminate them	Head CMT Operations

SR. NO.	ACTION	DETAILS OF ACTION	ACTION TO BE TAKEN BY
43.	Press Briefing	Every day or once in three days press briefing are to be organized in consultation with Head CMT operations, Asset Manager.	Official Spokes-person of Corporate communication or his authorized representative.
44.	VIP Visits	VIP Visits should be planned in such a way that control operation should not be hampered and also safety of the VIPs should be taken seriously.	Asset Manager
45.	Review meeting	Review meeting with regard to progress, constraints if at all should be organized for every two days. All the responsible persons noted above should attend the meeting.	Asset Manager

6.0 MAJOR INJURY OR HEALTH EFFECTS/ ELECTRICAL SHOCK :

6.1 PREPARATION :

a. Installation manager will maintain & display a list of first aid trained personnel. At least two such personnel should normally be available in each shift.

b. At least two first aid kits will be maintained in appropriate locations by Installation Manager.

c. Installation Manager will maintain details of employees as follows:
   i. Name, designation, age, address, emergency contact nos.
   ii. Blood group
   iii. Known allergies
   iv. Special medical considerations (hypertension, diabetes etc.)

e. First Aid Chart for electrical shock should be displayed at Electrical control room.

f. All electrical equipments, tanks, skids, bunk houses etc. should be properly earthed. Earth resistance should be regularly measured. Earth pits and circuit breakers should be maintained.

6.2 RESPONSE:

a. In case of injury/sudden illness, intimate shift In-charge.

b. Installation Manager / Shift In-charge will intimate concerned Location Manager/ Area Manager with full details.

c. Switch off the supply immediately, in case of electrical shock.

d. Remove the patient from the source of danger.

e. Check the patient's breathing.

f. Restore natural breathing by artificial respiration, if breathing has ceased by trained persons. Provide other necessary first aid to the victim.

g. Call medical help immediately.

6.3 ON-SCENE:

a. First aid trained person will provide necessary first aid.

b. Other crew members will not crowd around injured person.

c. If serious, victim will be shifted in Ambulance/emergency vehicle to nearby hospital with escort.

d. First aider/ Doctor shall ensure that necessary medical equipment and facility is made available on the Ambulance/emergency vehicle during transit.

e. Following information should be provided to the hospital like:
   i Details of accident & symptoms exhibited by the sick or injured person.
   ii. First aid treatment administered on the site
   iii. Patients blood group
   iv. Known allergies
   v. Special medical considerations (hypertension, diabetes etc...)

f. As per rule 45-A of Mines Rules'1955

(I) Every person receiving an injury in the course of his duty shall, as soon as possible, report the same to an official. Where the person receiving an injury is not in a position to report the same to an official, it shall be the duty of the person who first comes to know of it, to report the same to an official. The official shall make such arrangements for rendering first-aid to the injured as may be required. If in the opinion of the official, the injury is of such nature as to require immediate attention by the medical practitioner, he shall arrange for the medical practitioner to be called.

(2) If an official who is required to carry a first aid outfit under rule 45 receives information about injury to a work person, he shall himself attend the injured person.

(3) It shall be the duty of the person-in-charge of the nearest first-aid station to render such first-aid to the injured person as may be necessary.

6.4 Reporting:

a. Formal accident report should be submitted by Installation manager to Mines Manager as early as possible, so as to enable Mines Manager to submit report to DGMS authorities within 24 hrs. in case of fatal & serious accident. Entry of accident has to be done in SAP also.

7.0 NATURAL DISASTER (CYCLONE, TORNADO, EARTHQUAKE, FLOOD, LIGHTNING ETC.)

7.1 PREPARATION:

a. Install all the guy ropes as per OEM recommendation on mobile rigs and check their condition regularly.

b. Do not keep any loose items on raised platforms which can fall during earthquake.

c. Keep all the dip hatches and other openings of storage tanks closed.

d. Check all the storm water channels and keep them clean.

e. All hazardous chemicals/POL should be stored under shed cover to protect them & to avoid their mixing with rain & flood water.

f. Hazardous waste should be stored under shed cover to avoid their mixing with rain & flood water.

7.2 NOTIFICATION:

a. Anyone hearing of a natural disaster warning or situation will shout & raise the siren.

Following actions are proposed to be taken to handle emergency situation created due to floods:

Sl. No.	Activity	Action by
1.	Clean all storm water channels & Oil-Water Sump (OWS)	Installation Manager
2.	Keep emergency ration like biscuits, instant noodles, milk powder, sugar, tea-coffee powder, mineral water bottles, rice, dal etc. sufficient for five days for crew.	Installation Manager (special advance may be provided for the purpose)
3.	Drill site accommodations at Muler, Gandhar, Dabka & North Gandhar to be equipped with extra ration before onset of monsoon for site people entrapped. DG set to be placed on raised platform for uninterrupted power supply.	Concerned camp in-charges
4.	Purchase of one raft (fixed or inflatable) with life jackets, nylon ropes, life rings, bamboos, powerful torch, first aid kit, walkie-talkie set etc. to be kept at Central Fire station, Gandhar.	I/c Security & fire in consultation with Head HSE
5.	Purchase of one emergency rescue van with high chasis all wheel drive equipped with small DG set, oxygen-acetylene set for cutting welding, one inflatable raft, ropes of different size & attachments, life jackets/ rings, emergency ration/ drinking water, radio communication facility, stretcher, first aid, portable lights, computer having maps, wells details, all contact nos. etc. (This van can be utilized in case of other emergency scenarios like pipeline fire, blowout, earthquake etc.)	I/c Security & fire in consultation with Head HSE
6.	Maps of operational area, showing our Installations, wells, rivers, streams, channels, roads including village & approach roads. Low lying areas and vulnerable Installations & wells during monsoon can be marked in the map.	Surface Manager/ Head HSE
7.	While preparing drill sites in low lying area for monsoon period, foundation of DG set, PCR, electrical equipment etc. to be raised to prevent water ingress.	Head Engineering Services
8.	Based on past experience of floods, suitable measures on Installations may be taken to raise foundation of DG set, electrical panel room, control room etc. to ensure uninterrupted power supply. Identified low lying areas should be raised while preparing Drill sites, so that site should not be submerged during flood in monsoon season.	Surface Manager/ Head Engineering Services
9.	Store sufficient quantity of HSD for DG set to run for 5 days	Installation Manager

Response & evacuation as given in procedure on natural disaster on page 18 of Emergency Response & Disaster Management Plan 2006 may be followed, which is reproduced below:

7.3 RESPONSE:

a. Installation Manager / Shift In-charge will intimate concerned Location Manager/Area Manager with full details.

b. Other crew members will switch off all engines and generators/ cut off power supply & take shut down, if required.

c. If situation demands, close the well from surface e or by operating sub surface safety valve, if installed.

d. In case of suspected spillage of crude oil/chemicals, follow procedure given in oil spill

7.4 EVACUATION:

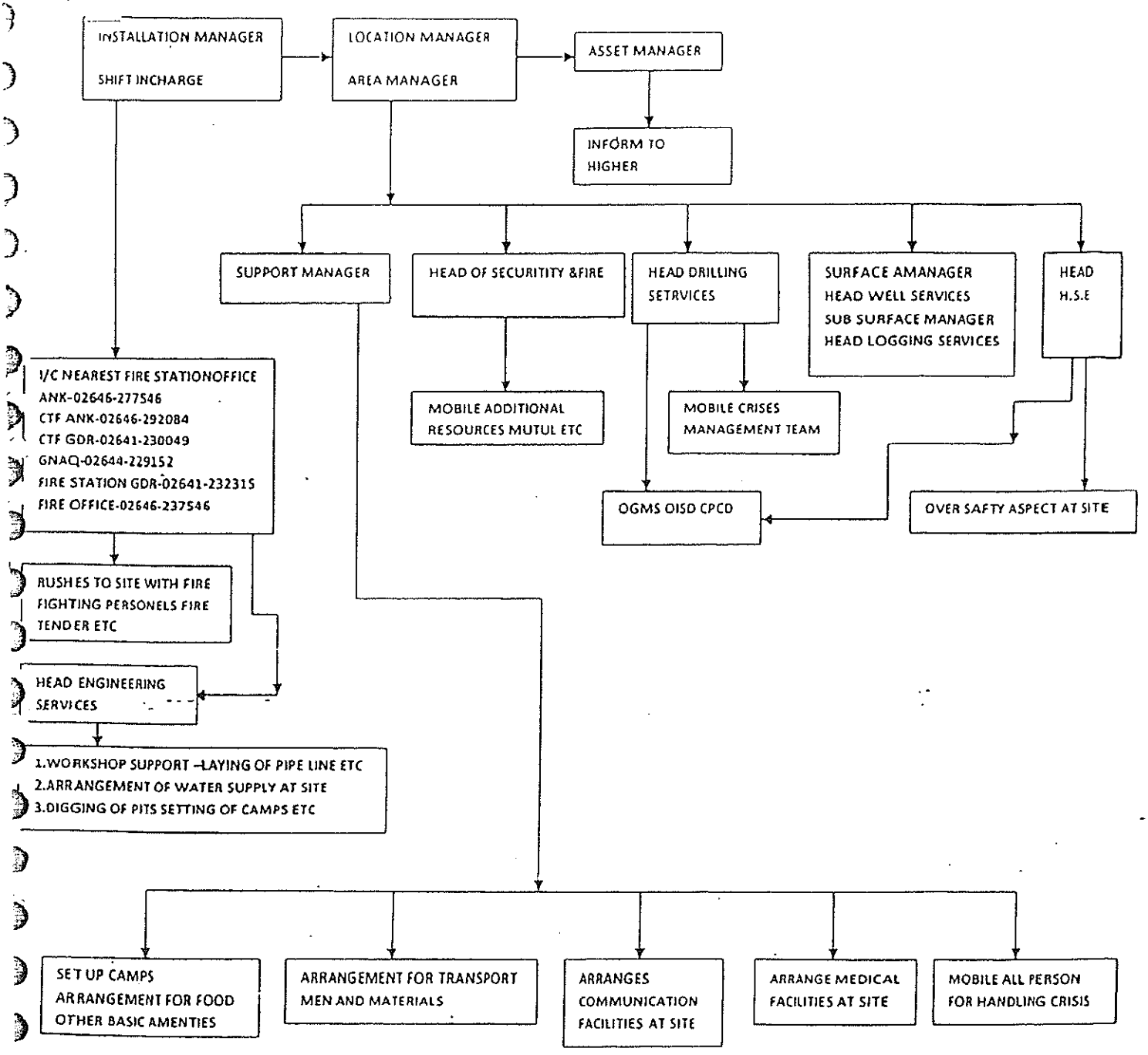
a. All personnel in the facility will evacuate to the predetermined assembly point.

b. The installation Manager (designated LCC) or the senior most officer available at scene will assume control of situation & will Head count the personnel to ensure that every one has evacuated safely.

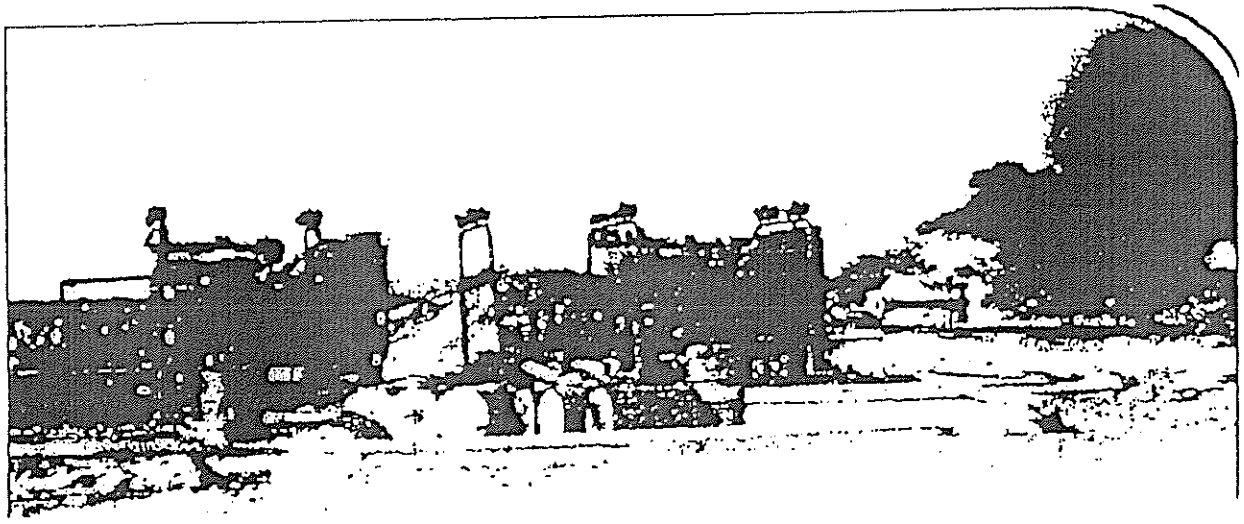
^ Keep in contact with control room for latest developments & instructions.

7.5 ALL CLEAR/ RECONSTITUTION:

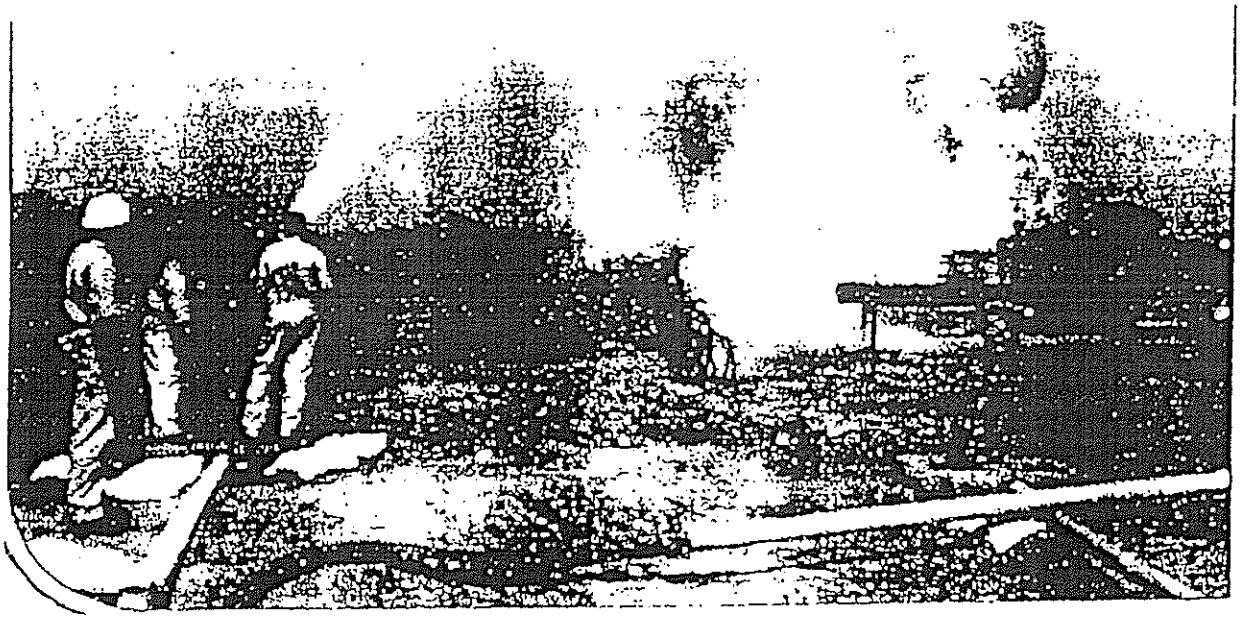
The Loss Control Coordinator or senior most officers present will give all clear signal, when the threat has passed & will ask personnel to return to the facility & begin clean -up activities.



DISPENSARY ONGC COLONY 02646-236082
ANK TOWN-02646-247031
BHARUCH-02642-243684



OFF-SITE EMERGENCY RESPONSE PLAN



OFF-SITE EMERGENCY PLAN

OBJECTIVES

1. Safeguarding lives and properties of general public
   with the help of local authorities.

2. Safe evacuation and rehabilitation of general public.

3. To workout strategy in short time to mitigate the
   disaster with the help of local authorities.

4. To minimize environment pollution due to disaster.

5. Restoration of normal or near normal condition.

1.0. INTRODUCTION & SCOPE:

1. ONGC activities are associated with certain types of hazards, which may occur due to internal as well as external factors. Main activities of ONGC are drilling of exploratory and development wells, work over operations, Production of Oil & Gas, transportation of crude oil & gas through pipeline/tanker etc. Though ONGC has fair amount of preparedness by way of on-site Disaster Management plan, yet there may be cases when magnitude of the disaster exceeds beyond the capability of ONGC. Moreover emergency may take place on pipeline, tanker outside ONGC's premises. Impact of the disaster may be felt on the general public. In such cases, it may be required to obtain the help of local authorities to assist ONGC to mitigate disaster situations.

2. The objective of preparing off site disaster plan is to provide ready information regarding various components & committees, which will be required to fight with off site disaster. Thus this plan will help in working out a strategy at minimum notice to effect evacuation and rehabilitation of the affected people.

3. The scope of this plan is to protect habitants and their property around ONGC's drill site and production installation's during release of crude oil and gas, fire due to blow out, explosion, rupture/burs ting of pipelines. Plan defines the involvement of local authorities to carry out any evacuation operation that may be required during these emergencies.

2.0 OFF SITE EMERGENCIES:

Following Off-Site Emergencies have been considered:

a. Leak of oil/gas from pipeline/tanker
b. Fire at leakage point
c. Explosion due to leak of oil/gas
d. Pilferage/damage to pipeline
e. Accident during rig/ tanker transportation
f. Travel emergency

3.0 EMERGENCY PROCEDURES:

Please refer Asset emergency response plan

IMPORTANT TELEPHONE NUMBERS

EMERGENCY TELEPHONE NUMBERS.FOR RIG CW-10

			Office	Residence
1	Nearest Fire station		CTF Ankleshwar 02646292084,9426613007	
2	Dispensary Ank. CITY		02646-247031	
3	Dispensary Bharuch	*	02642-243684	
4	Dr.Ahmad. A.I. ACMO-I/C,Med services		9428332974	02646-236081
5	Ambulance (Ank)	*	02646-247031	-
6	Ambulance (Bharuch)		02642-243684	
7	Mines Agent (D.M.R.Shekhar) GGM-Asset Manager	*	9428333111,237816	02646-236727
8	Mines Manager (Ahmad Javed)-GGM(D).HDS		9412993515 , 237600	02646-236009
9	Management Representative(MR) (R.S.Shah)-GM(D) LM (DS)	*	9428333122	02646-236499
10	Area Manager (A.S.Viredee) DGM(D)		9428332760	
11	I/C HSE-DS (Tryambak kumar) CE(D)		9428333266	02646-236639
12	Installation Manager (M.G. Srivastava) CE(D)		9428333988	
13	Installation Safety Officer (Upendra Mahaton) EE(M)		9428519529	
14	In charge Fire (A K Tripathi) DGM, I/C (Fire Section) H.A.Rathwa,Asst.Fire officer	*	09428333999 9428519684	02646-236145
15	Base Control Room(Ankleshwar)	*	02646-237900	
16	Base Control Room(Gandhar)	*	02641-232314, 09426613019	
17	Fire control Room (Ankleshwar)	*	02646-237333, 237546	
18	Fire control Room (Gandhar)	*	02641-232315,290301	
19	Fire station CTF ANK	*	02646-292084	
			02646-237333	

* AT EVERY RIG MOVEMENT DIC SHALL INFORM TO THE NEAREST FIRE STATION ABOUT THE CHANGE OF LOCATION.