

COMPLIANCE OF CONDITIONS IN ENVIRONMENTAL CLEARANCE

(COMPLIANCE REPORT)

Environmental Clearance No. J-11011/102/2012-IA II(I) dated 22.08.2013

Well Nos.: LMCS

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	As proposed, no drilling shall be carried out within 10 km distance from Thol Wild life sanctuary.	Complied. As proposed the exploratory well LMCS was not drilled in the environmental sensitive zone (SEZ) of THOL wild life sanctuary as has been notified vide SO 3202 (E), dt: 18.10.2013. The extent of eco-sensitive zone has been modified by MoEFCC vide notification dt: 09.02.2015 and it now ranges from 0.308 km to 2.244 km from the boundary of the sanctuary.
3	Gas produced during testing shall be flared with appropriate flaring booms. The flare system shall be designed as per good oil field practices and Oil Industry Safety Directorate (OISD) guidelines. The stack height shall be provided as per the regulatory requirement and emissions from stacks will meet the MoEF/ CPCB guidelines	Complied. If any quantity of gas is produced during testing there is a provision of flaring in place which is in accordance to OISD guidelines and as prescribed by CPCB vide its letter dt: 27.04.2016. 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.
4	Ambient air quality should 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 PM ₁₀ , PM _{2.5} , SO ₂ ,NO _x , 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.
5	Mercury should 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
6	Approach road should be made pucca to minimise generation of suspended dust.	Complied. Approach road to drill site are made of metalls to minimise generation of suspended dust during transportation of rig equipment, etc..In case of this well approach road of dimension 1050 m x 4.0 m was constructed.
7	The company should make the arrangement for control of noise from the drilling activity Acoustic enclosure should be provided to DG Sets and proper stake height should be provided as per CPCB guidelines.	Complied. Acoustic 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. In view of this the condition may be considered as Complied .
8	Total water requirement should not exceed 50 M3/day and prior permission should be obtained from the competent authority.	Complied. During the drilling activity the water consumption was approx. 35 m3 per day on an average.

9	<p>The Company should construct 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 should be created for oil contaminated and non-oil contaminated. Effluent should be properly treated and treated waste water should confirmed to CPCB standards.</p>	<p>The garland drains are not constructed to prevent run off any oil contaminating waste as all the vulnerable processes 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 accumulate 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 above the same may be considered as Complied.</p>
10	<p>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 of TSDF should be submitted to Ministry's Regional Office at Bhopal.</p>	<p>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.</p>
11	<p>Good sanitation facility should be provided at the drilling sites. Domestic sewage should be disposed of through septic tank/soft pit.</p>	<p>Complied. Domestic sewage is disposed through adequate septic tanks and soak pits</p>
12	<p>Oil spillage prevention scheme should be prepared. In case of oil spillage/contamination, action plan should be prepared to clean the site by adopting proven technology. The recyclable waste (oily sludge) and spent oil should be disposed of to the authorized recycler.</p>	<p>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. Recyclable hazardous waste like Spent oil, POL barrels etc. are recycled centrally through authorised re-cyclers.</p>
13	<p>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.</p>	<p>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.</p>
14	<p>The company should take necessary measures to prevent fire hazards, containing oil spill and soil remediation as needed. Possibility of using ground flare should be explored. At the place of ground flaring, the overhead flaring stack with knockout drums should be installed to minimize gaseous emissions during operation.</p>	<p>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 i.e. "Hot Work Permit" system. As mentioned above in point 12, 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. 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.</p>

15	The company shall develop a contingency plan for H2S release including all necessary aspects from evacuation to resumption of normal operations. The workers should 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 Anand district.
16	On completion of drilling, the company have to plug the drill wells safely and obtain certificate from the environment safety angle from the concerned authority.	Complied. On completion 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.
17	Blow Out Preventor(BOP) system should be installed to prevent well blowouts during drilling operations.BOPmeasures during should 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.
18	Emergency response plan(ERP) should 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)
19	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.
20	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.
21	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).
22	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.
23	Restoration of the project site should be carried out satisfactorily and report should be sent to Ministry'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.
24	Oil content in the drill cuttings should be monitored by some Authorised agency and report should 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).
25	Under Enterprise Social Commitment (ESC),sufficent budgetary provision should 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
26	An audit should be done to ensure that the Environment Management Plan is implemented in totality and report should 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.
27	A social audit shall be carried out for the whole operatio area with the help of reputed institute like Madras Institute of Social Science etc.	Complied. CSR shemes for social areas around the work centers of ONGC are usually rendered through reputed 3rd parties which keep on auditing on the progress of the CSR project.

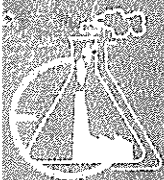
28	All personnel including those of contractors should be trained and made fully aware of the hazards,risks and controls in place.	Complied. MVT(Mines Vocational Training) are imparted to all contractual workers before deployment at site. MVT trainings are specially designed to develop competence and skill of employees including contractual employees w .r.t risk management
29	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.
30	Company should prepare operating manual in respect of all activities.It should cover all safety & environment related issues and system.Measures to be taken for protection.One set of environment manual should be made available at the drilling site/project site.Awareness should be created at each level of the management.All the schedules and results of environment monitoring should 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 consolidated 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. Permission for 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 environment management, monitoring and compliance to regularity bodies.
vi	A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad/Municipal Corporation, Urban Local Body and the local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the web site of the company by the proponent.	Complied. The communication of the environmental 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 along with the status of compliance 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 installation for processing and thus becomes part of that installation. All the Installations are operating under CCA from GPCB and accordingly environmental statement as per prescribed 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 clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the 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.

Sujit Kumar Sen
18.07.16.

For Block Manager-II
on tour/leave



Ref. - ECS/225/E/16-17

Date:-16/04/2016

ANALYSIS REPORT OF FLUE GAS EMISSION MEASUREMENT

Name and Address of Industry : LMCS, GANDHINAGAR
 ONGC LTD.,
 AHMEDABAD

Installation :Drilling Rig -CW-VIII

Date of Sample Collection : 13/04/2016

Source : D. G. Set - I

SR. NO.	PARTICULARS	UNIT	OBSERVATION
1.	STACK HEIGHT	Feet	9.0
2.	STACK DIAMETER	Inch	8.0
3.	STACK TEMPERATURE	C	159.0
4.	AV.VELOCITY OF FLUE GASES	Mtr/Sec.	15.3

RESULTS

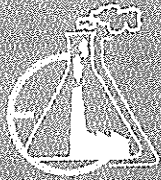
SR. NO.	PARTICULARS	UNIT	RESULTS	Max. Permissible as per GPCB Norms
1.	AV. CONCENTRATION OF PARTICULATE MATTER	Mg/Nm ³	89.0	150
2.	CONCENTRATION OF SO ₂	Mg/Nm ³	18.4	100
3.	CONCENTRATION OF NO _x	Mg/Nm ³	10.8	50
4.	CONCENTRATION OF HCl	Mg/Nm ³	1.4	15
5.	CONCENTRATION OF CO	Mg/Nm ³	15.7	150
6.	CONCENTRATION OF VOC	Mg/Nm ³	ND	Nor Specified in CCA

ND-Not Detected

B
 ANALYST



A
 ENVIROCHEM CONSULTANCY SERVICES



Ref.- ECS/226/E/16-17

Date:-16/04/2016

ANALYSIS REPORT OF FLUE GAS EMISSION MEASUREMENT

Name and Address of Industry : LMCS. GANDHINAGAR
 ONGC LTD.,
 AHMEDABAD

Installation : Drilling Rig -CW-VIII

Date of Sample Collection : 13/04/2016

Source : D. G. Set - II

SR. NO.	PARTICULARS	UNIT	OBSERVATION
1.	STACK HEIGHT	Feet	8.0
2.	STACK DIAMETER	Inch	7.0
3.	STACK TEMPERATURE	C	161.0
4.	AV.VELOCITY OF FLUE GASES	Mtr/Sec.	15.2

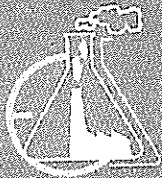
RESULTS

SR. NO.	PARTICULARS	UNIT	RESULTS	Max. Permissible as per GPCB Norms
1.	AV. CONCENTRATION OF PARTICULATE MATTER	Mg/Nm ³	97.0	150
2.	CONCENTRATION OF SO ₂	Mg/Nm ³	18.5	100
3.	CONCENTRATION OF NO _x	Mg/Nm ³	10.3	50
4.	CONCENTRATION OF HC	Mg/Nm ³	1.4	15
5.	CONCENTRATION OF CO	Mg/Nm ³	16.2	150
6.	CONCENTRATION OF VOC	Mg/Nm ³	ND	Not Specified in CCA

ND-Not Detected

B
 ANALYST

A
 ENVIROCHEM CONSULTANCY SERVICES



Ref.- ECS/227/E/16-17

Date:-16/04/2016

ANALYSIS REPORT OF FLUE GAS EMISSION MEASUREMENT

Name and Address of Industry : LMCS. GANDHINAGAR
ONGC LTD.,
AHMEDABAD

Installation : Drilling Rig-CW-VIII

Date of Sample Collection : 13/04/2016

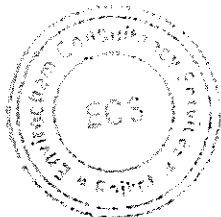
Source : Elgi. Compressor -I

SR. NO.	PARTICULARS	UNIT	OBSERVATION
1.	STACK HEIGHT	Feet	6.0
2.	STACK DIAMETER	Inch	7.0
3.	STACK TEMPERATURE	C	153.0
4.	AV. VELOCITY OF FLUE GASES	Mtr/Sec.	14.2

RESULTS

SR. NO.	PARTICULARS	UNIT	RESULTS	Max. Permissible as per GPCB Norms
1.	AV. CONCENTRATION OF PARTICULATE MATTER	Mg/Nm ³	84.0	150
2.	CONCENTRATION OF SO ₂	Mg/Nm ³	15.7	100
3.	CONCENTRATION OF NO _x	Mg/Nm ³	9.6	50
4.	CONCENTRATION OF HC	Mg/Nm ³	1.3	15
5.	CONCENTRATION OF CO	Mg/Nm ³	9.5	150
6.	CONCENTRATION OF VOC	Mg/Nm ³	ND	Not Specified in CCA ND=Not Detected

B
ANALYST



A
ENVIROCHEM CONSULTANCY SERVICES



Ref.- ECS/228/E/16-17

Date:-16/04/2016

ANALYSIS REPORT OF FLUE GAS EMISSION MEASUREMENT

Name and Address of Industry : I.MCS. GANDHINAGAR
 ONGC LTD.,
 AHMEDABAD

Installation : Drilling Rig- CW-VIII

Date of Sample Collection : 13/04/2016

Source : Elgi. Compressor -II

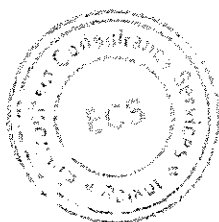
SR. NO.	PARTICULARS	UNIT	OBSERVATION
1.	STACK HEIGHT	Feet	6.0
2.	STACK DIAMETER	Inch	7.0
3.	STACK TEMPERATURE	C	158.0
4.	AV.VELOCITY OF FLUE GASES	Mtr/Sec.	15.3

RESULTS

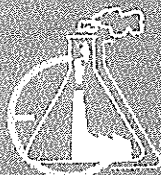
SR. NO.	PARTICULARS	UNIT	RESULTS	Max. Permissible as per GPCB Norms
1.	AV. CONCENTRATION OF PARTICULATE MATTER	Mg/Nm ³	89.0	150
2.	CONCENTRATION OF SO ₂	Mg/Nm ³	17.6	100
3.	CONCENTRATION OF NO _x	Mg/Nm ³	10.5	50
4.	CONCENTRATION OF HC	Mg/Nm ³	1.3	15
5.	CONCENTRATION OF CO	Mg/Nm ³	14.5	150
6.	CONCENTRATION OF VOC	Mg/Nm ³	ND	Not Specified in CCA

ND-Not Detected

B
 ANALYST



A
 ENVIROCHEM CONSULTANCY SERVICES



Ref.- ECS/229/E/16-17

Date:-16/04/2016

ANALYSIS REPORT OF FLUE GAS EMISSION MEASUREMENT

Name and Address of Industry : LMCS, GANDHINAGAR
ONGC LTD.,
AHMEDABAD

Installation : Drilling Rig -CW-VIII

Date of Sample Collection : 13/04/2016

Source : Mud Pump Engine

SR. NO.	PARTICULARS	UNIT	OBSERVATION
1.	STACK HEIGHT	Feet	11.0
2.	STACK DIAMETER	Inch	7.0
3.	STACK TEMPERATURE	C	149
4.	AV.VELOCITY OF FLUE GASES	Mtr/Sec.	13.8

RESULTS

SR. NO.	PARTICULARS	UNIT	RESULTS	Max. Permissible as per GPCB Norms
1.	AV. CONCENTRATION OF PARTICULATE MATTER	Mg/Nm ³	87.0	150
2.	CONCENTRATION OF SO ₂	Mg/Nm ³	15.2	100
3.	CONCENTRATION OF NO _x	Mg/Nm ³	10.4	50
4.	CONCENTRATION OF HIC	Mg/Nm ³	1.2	15
5.	CONCENTRATION OF CO	Mg/Nm ³	11.6	150
6.	CONCENTRATION OF VOC	Mg/Nm ³	ND	Not Specified in CCA

ND=Not Detected

B
ANALYST



A
ENVIROCHEM CONSULTANCY SERVICES



Ref.- ECS/230/E/16-17

Date:-16/04/2016

ANALYSIS REPORT OF FLUE GAS EMISSION MEASUREMENT

Name and Address of Industry : LMCS. GANDHINAGAR
ONGC LTD.,
AHMEDABAD

Installation : Drilling Rig - CW-VIII

Date of Sample Collection : 13/04/2016

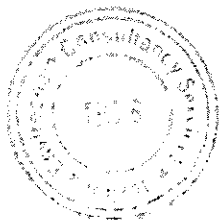
Source : Rig Engine

SR. NO.	PARTICULARS	UNIT	OBSERVATION
1.	STACK HEIGHT	Feet	8.0
2.	STACK DIAMETER	Inch	6.0
3.	STACK TEMPERATURE	C	166.0
4.	AV. VELOCITY OF FLUE GASES	Mtr/Sec.	14.4

RESULTS

SR. NO.	PARTICULARS	UNIT	RESULTS	Max. Permissible as per GPCB Norms
1.	AV. CONCENTRATION OF PARTICULATE MATTER	Mg/Nm ³	91.0	150
2.	CONCENTRATION OF SO ₂	Mg/Nm ³	17.9	100
3.	CONCENTRATION OF NO _x	Mg/Nm ³	10.2	50
4.	CONCENTRATION OF HC	Mg/Nm ³	1.4	15
5.	CONCENTRATION OF CO	Mg/Nm ³	15.3	150
6.	CONCENTRATION OF VOC	Mg/Nm ³	ND	Not Specified in CCA ND-Not Detected

B
ANALYST



A
ENVIROCHEM CONSULTANCY SERVICES



Ref.- ECS/52/E/16-17

Date:-16/04/2016

REPORT OF AMBIENT AIR MONITORING

Name and Address of Industry : LMCS, GANDHINAGAR
ONGC LTD.
AHMEDABAD

Installation : Drilling Rig -CW-VIII

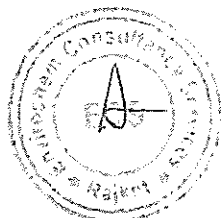
Date of Sample Collection : 13/04/2016

SR. NO.	PARTICULARS	UNIT	RESULTS				Permissible Limits $\mu\text{g}/\text{m}^3$
			A	B	C	D	
1.	WIND DIRECTION	--	SW to NE	SW to NE	SW to NE	SW to NE	--
2.	AV. WIND SPEED	Kms./Hrs	12.8	11.5	15.0	17.6	--
3.	AV. FLOW RATE DURING SAMPLING	$\text{m}^3/\text{min.}$	1.1	1.1	1.1	1.1	--
4.	CONCENTRATION OF PM_{10}	$\mu\text{g}/\text{m}^3$	56	49	51	67	100
5.	CONCENTRATION OF $\text{PM}_{2.5}$	$\mu\text{g}/\text{m}^3$	42	37	39	45	60
6.	CONCENTRATION OF SO_2	$\mu\text{g}/\text{m}^3$	10.8	9.2	9.6	10.4	80
7.	CONCENTRATION OF NO_x	$\mu\text{g}/\text{m}^3$	4.2	3.8	4.0	4.5	80
8.	CONCENTRATION OF HIC	$\mu\text{g}/\text{m}^3$	ND	ND	ND	ND	160
9.	CONCENTRATION OF CO	$\mu\text{g}/\text{m}^3$	704	681	694	718	5000
10.	CONCENTRATION OF VOC	$\mu\text{g}/\text{m}^3$	6.9	5.5	5.8	7.2	Not Specified in CCA

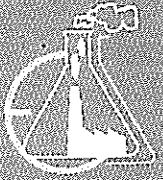
Location of Sampling:

- A. Nr. D. G. Set - I
- B. Nr. Office Room
- C. Nr. Staff Room
- D. Nr. Flare Stack

B
ANALYST



R
ENVIROCHEM CONSULTANCY SERVICES



Ref.- ECS/53/E/16-17

Date:-13/04/2016

NOISE LEVEL MONITORING REPORT

Name and Address of Industry : LMCS, GANDHINAGAR
ONGC LTD.,
AHMEDABAD

Installation : Drilling Rig -CW-VIII

SR. NO.	LOCATION	TIME	RESULTS In dB	GPCB LIMITS In dB
1.	Near D.G. Set (Running)	12:55	89.6	-----
2.	Near Compressor (Running)	13:20	87.8	-----
3.	Near Boundary	14:10	65.2	-----

B
ANALYST



A
ENVIROCHEM CONSULTANCY SERVICES



Ref.- ECS/53/AE/16-17

Date:-13/04/2016

NOISE LEVEL MONITORING REPORT

Name and Address of Industry : LMCS, GANDHINAGAR
ONGC LTD.,
AHMEDABAD

Installation : Drilling Rig -CW-VIII

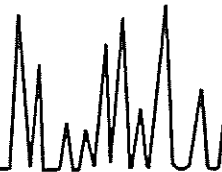
SR. NO.	LOCATION	TIME	RESULTS In dB	GPCB LIMITS In dB
1.	Near D.G. Set	22:20	62.9	70
2.	Near Compressor	22:40	63.5	70
3.	Near Mud Pump	22:15	62.4	70
4.	Near Office Block	23:00	57.8	70
5.	Near Boundary	23:10	62.9	70

Remarks :-

B
ANALYST



A
ENVIROCHEM CONSULTANCY SERVICES



TEST REPORT

Report No. GL/C.160701021
Sample Submitted By Oil & Natural Gas Corporation Ltd.,
Asset HSE, Room No:607, 6th Floor,
Avani Bhavan, ONGC, Chandkheda, Ahmedabad-380005,
Gujarat.
Sample Described as Drill Cutting
Mode of Packing Sample Packed in Plastic Bag
Sample Condition Satisfactory
Marking Sample No : 1, Well LM#239, Drilled Depth of 1400 mts- 1450 mts
Analysis Date 01/07/2016


Date of Receipt 01/07/2016
Reference No. NM
Batch No. NM
Mfg.Date NM
Exp.Date NM
Sample Qty.: 500 gm
Report Date 04/07/2016

Sl.	Test Name	Results	Method of Test
1	Oil %	0.07	AOAC 19th Edition
2	Mercury (as Hg) mg/kg	N.D.(D.L.=0.05)	GL/SOP/I-120

N.M.= Not Mentioned, N.D.=Not Detected, D.L.=Detection Limit

Date of Issue : 04/07/2016

For GUJARAT LABORATORY


Hemal Darji
Autho. Signatory

End of Report

Note:

- The Result refer only to the tested sample & applicable parameters, Endorsement of products is neither inferred nor implied.
- Total liability of our institution is limited to the invoice amount/testing charges.
- This report is not to be reproduced wholly or in part and cannot be used as an evidence in the court of law and should not be used in any advertising media without our special permission in writing.
- Sample drawn & submitted by the party for analysis unless otherwise stated.
- Gujarat Laboratory maintains strict confidentiality of all the analysis and test results and customer supplied product and will not reveal this information to third party unless required by the statutory or legal requirement.
- Subject to Ahmedabad Jurisdiction.
- Perishable samples will be destroyed after testing, others after three weeks from the date of issue of the report, unless otherwise agreed with the customer.
- The sample is accepted by us subject to our general conditions of services which is displayed at reception notice Board & is also available on request. Attention is drawn to the limitation of liabilities; indemnification and jurisdictional issues etc defined therein.
- Customer requested for the above test only.

TEST REPORT

Report No. GL/C./160701022
Sample Submitted By Oil & Natural Gas Corporation Ltd.,
Asset HSE, Room No:607, 6th Floor,
Avani Bhavan, ONGC, Chandkheda, Ahmedabad-380005,
Gujarat.
Sample Described as Drill Cutting
Mode of Packing Sample Packed in Plastic Bag
Sample Condition Satisfactory
Marking Sample No : 2, Well LM#239, Drilled Depth of 1500 mts- 1550 mts
Analysis Date 01/07/2016
Report Date 04/07/2016


Date of Receipt 01/07/2016
Reference No. NM
Batch No. NM
Mfg.Date NM
Exp.Date NM
Sample Qty.: 500 gm

Sl.	Test Name	Results	Method of Test
1	Oil %	0.08	AOAC 19th Edition
2	Mercury (as Hg) mg/kg	N.D.(D.L.=0.05)	GL/SOP/I-120

N.M.= Not Mentioned, N.D.=Not Detected, D.L.=Detection Limit

Date of Issue : 04/07/2016

For GUJARAT LABORATORY


Hemal Darji
Autho. Signatory

End of Report

Note:

- The Result refer only to the tested sample & applicable parameters, Endorsement of products is neither inferred nor implied.
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- Customer requested for the above test only.

TEST REPORT

Report No. GL/C./160701023
Sample Submitted By Oil & Natural Gas Corporation Ltd.,
Asset HSE, Room No:607, 6th Floor,
Avani Bhavan, ONGC, Chandkheda, Ahmedabad-380005,
Gujarat.
Sample Described as Drill Cutting
Mode of Packing Sample Packed in Plastic Bag
Sample Condition Satisfactory
Marking Sample No : 3, Well LM#239, Drilled Depth of 1814 mts- 1829 mts

Date of Receipt 01/07/2016
Reference No. NM
Batch No. NM
Mfg.Date NM
Exp.Date NM
Sample Qty.: 500 gm


Analysis Date 01/07/2016
Report Date 04/07/2016

Sl.	Test Name	Results	Method of Test
1	Oil %	0.06	AOAC 19th Edition
2	Mercury (as Hg) mg/kg	N.D.(D.L.=0.05)	GL/SOP/I-120

N.M.= Not Mentioned, N.D.=Not Detected, D.L.=Detection Limit

Date of Issue : 04/07/2016

For GUJARAT LABORATORY


Hemal Darji

Autho. Signatory

End of Report

Note:

- The Result refer only to the tested sample & applicable parameters, Endorsement of products is neither inferred nor implied.
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- Customer requested for the above test only.



DRILLING RIG CW-8

**EMERGENCY RESPONSE
PLAN
RIG CW-VIII
AHMEDABAD ASSET**

BASED ON DISASTER MANAGEMENT PLAN

**DRILLING SERVICES
AHMEDABAD ASSET:
AHMEDABAD**



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INTRODUCTION:

LOCATION

The base office of Drilling services, Ahmedabad is located at AVANI BHAVAN, CHANDKHEDA, Ahmedabad - 382424. It has presently six rigs, mainly operating in Ahmedabad Drilling Mine.

AIRPORT

Ahmedabad is about 15 kms away from Ahmedabad ONGC Complex.

RAILWAYS STATION

Ahmedabad falls on Ahmedabad- Delhi main line and is about 12 kms from ONGC office complex.

ROAD

ONGC office complex is situated on Ahmedabad- Mehsana State High way, SH # 41.

OBJECTIVE:

An Emergency Response Plan (ERP) is required to meet the requirements of Regulation 51.A of Oil Mines Regulations, 1984. A well-constructed ERP could prevent a minor incident from becoming a disaster, save lives, prevent injuries, and minimise damage to property and the environment. The new plan represents an all-hazards approach that encompasses the multitude of possible crises - from natural disasters to acts of terrorism - that might face an Installation. The plan describes how the Installation will respond to emergencies that would suddenly and significantly affect our organization. The plan includes the following:

- Save lives and protect the health and safety of the employee, responders, and recovery workers;
- Prevent an imminent incident, including acts of terrorism, from occurring;
- Protect and restore critical infrastructure and key resources;
- Conduct investigations to resolve the incident
- Protect property and mitigate damages and impacts to individuals, communities, and the environment;
- Specific procedures to respond to, mitigate and recover from emergencies;
- The chain of command in an emergency within the organization and its links with local emergency response units;

*DRILLING RIG CW-8*

- Defined roles and responsibilities for those assigned to respond in an emergency.

SCOPE:

The purpose of this Emergency Response Plan is to establish an organizational structure and procedures for response to major emergencies. It assigns the roles and responsibilities for the implementation of the Plan during an emergency following the incident command system model. This Plan has been prepared to address all types of emergencies in a coordinated and systematic manner. This Plan is designed to maximize human safety and preservation of property, minimize danger, restore normal operations of the Installation, and assure responsive communication to all appropriate parties. This plan envisions the cooperative efforts of many groups internal and external to the Installation.

BRIEF DESCRIPTION OF RIG:

The rig CW-8 was commissioned on 26TH AUG 1990 in ONGC at Ankleshwar and was deployed in Ahmedabad on 1ST JUNE 1994 . This is a trailer mounted, self driven Drilling rig. Rig is having capacity of 204Tonnes and Mast height of 118 ft.

Brief of rig equipments as under:

Date of Commissioning	26 th Aug 1990
Capacity of Rig	204 tons
Mast Height	118 feet
Rig Engine	CAT-3412
Torque Converter	CLBT - 6061
Draw Works	KB-700
Rotary Table	GD - 27 ½"
Mud Pump Engine	CAT - D-399
Mud Pump	PZ-9
Generator Engine	GREAVES TBD3V12MK-1
BOP Accumulator	KOOMEY M-80
BOP	N L SHAFER

Other Safety Equipments available at the rig are detailed below (Including but not restricted to):

- Crown-O-Matic
- Floor-O-Matic
- Twin stop device.
- Emergency Pneumatic Brake.
- Trip tank.
- Top-man Escape Device
- Portable Fire Extinguishers/Sand Buckets/Fire Bell
- Online Gas Detection system & MVT
- First Aid Box



- Emergency Vehicle with stretcher facility
- BOP
- Emergency Shut-down Valve/ switch.
- Remote BOP Controls.

EMERGENCIES FOR DRILLING RIG:

1. KICK (ERP NO-1)

INDICATION OF KICK:

WHILE DRILLING:

1. Sudden increase in drilling Rate.
2. Return mud flow increase.
3. Mud tank volume increase.
4. Pump SPM increase
5. Self flow
6. Increase in string weight (Hook Load) due to lighter fluids in hole.
7. At a quite late stage when the kick comes near surface, a great deal of surging and splashing of mud occurs.

WHILE PULLING OUT:

1. Failure of the well to take mud/ brine equal to the metallic volume of pipes/ tubings removed.
2. The hole flows.

WHILE RUNNING IN:

1. Mud tank level will increase more than the steel volume of the pipes/ tubings run in.
2. The holes do not stop flowing during time gap between running in one pipe stand and the other.

**WHEN OUT OF HOLE --**

1. The well flows.

Note: As soon as any one of the above mentioned indication is observed, shift in charge should immediately take action for kick control as stipulated in closing well as per DMP (Page No 43: Clause 5.2)

CLOSING OF WELL (WHILE DRILLING)

1. Stop rotary.
2. Pick up Kelly to clear tool joint above Rotary table.
3. Stop mud pumps & super charger
4. Check for self flow, if +ve
5. Open HCR (Hydraulic Control Valve) on choke line when choke is in fully closed position.
6. Close BOP (Preferably Annular Preventer).
7. Record stabilized pressure, SIDPP (Shut In Drill Pipe Pressure), SICP (Shut In Casing Pressure), Pit gain.

WHILE TRIPPING:

1. Position tool joint above Rotary Table & set pipe in slip.
2. Install FOSV (Fully Open Safety Valve) in open position on D/P (Drill Pipe) and close it
3. Open HCR valve/manual valve when choke is fully closed.
4. Close BOP (Preferably Annular Preventer)
5. Make up Kelly & Open FOSV (Fully Open Safety Valve)
6. Record SIDPP, SICP & Pit gain.

POSITIONING OF CREW:

After hearing alarm, crew will be positioned as follows:

Assistant Shift-in-	Assist Shift-in-charge, shall be ready to handle brake
---------------------	--



DRILLING RIG CW-8

charge	
Topman (1)	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 In-charge	Near the Engines awaiting directives from Shift-in-charge.
Shift mechanic	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.

BOP DRILLS:

Following drills should be performed & record to be maintained:

- i) Pit drill.
- ii) Trip drill

RECORDED KICK DATA AFTER WELL SHUT-IN

SHUT-IN DRILL PIPE PRESSURE (SIDPP) =() Kg/cm²

SHUT-IN CASING PRESSURE (SICP) =() Kg/cm²

PIT VOLUME INCREASE =() M3

2. FIRE (ERP NO-2)

In drilling rig fire may break out at diesel tank, POL store, engine house, electrical panel, bunk house, wellhead, shale shaker area if gas cut mud is circulated. The method of operation of portable fire fighting equipment and its location are given below.

METHOD OF OPERATION OF PORTABLE FIRE EXTINGUISHER:

i) DCP 50 KG

- a) Push the extinguisher up to 7-8 ft distances from fire.
- b) Uncoil the discharge hose.

*DRILLING RIG CW-8*

- c) Remove the safety pin & open the valve of DCP 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 downward direction.

ii) DCP FIRE EXTINGUISHER 10 KG

- a) Carry the Extinguisher near the fire.
- b) Remove the safety clip & 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.

iii) CO₂ FIRE EXTINGUISHER:

- a) Carry the extinguisher near to the fire.
- b) Hold the discharge horn from it handle.
- c) Remove the safety pin and open the discharge valve fully.
- d) Apply the CO₂ by moving horn in sweeping action towards the base of fire

Note: Do not be afraid of whizzing sound.

FIRE FIGHTING EQUIPMENT AT DRILLING RIGS (AS PER OISD-STD-189)

Sl No	Type of Area	Portable Fire Extinguisher
1.	Derrick floor	2 Nos. 10 kg DCP Extinguisher
2.	Carrier Engine area (Caterpillar Engine 2 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.	Electrical Control Room	1 No. 6.8 kg CO ₂ Extinguisher. 1 No. 10 kg DCP Extinguisher.
5.	Mud mixing tank area/ Chemical laboratory	1 No. 10 kg DCP Extinguisher
6.	Diesel storage area	1 No. 50 kg trolley DCP Extinguisher 2 Nos. 10 kg DCP Extinguisher
7.	oil storage area	1 No. 10 kg DCP Extinguisher
8.	Air compressor area	1 No. 10 kg DCP Extinguisher
9.	Fire pump area	1 No. 10 kg DCP Extinguisher
10.	Near staff room.	1 No. Fire Extinguisher/Shed with 5 Nos. 10 kg DCP Extinguisher and 5 Nos



DRILLING RIG CW-8

		6.8 kg CO2 Fire Extinguisher
11.	Fire bell near assembly point .	1No.

ACTION PLAN FOR FIRE FIGHTING

GENERAL:

As soon as fire is noticed, shout "FIRE" "FIRE" "FIRE" or "AAG" "AAG" "AAG". Try to eliminate the fire by using proper portable fire extinguishers.

DIC:

He should ensure regularly the working status of fire equipments / its maintenance through fire section and see that they are kept in their respective places as per the need. As soon as, the fire accident is reported, rush to site and take charge of the situation. Inform Mines Manger besides Area Manager as well Fire Manager.

SHIFT INCHARGE:

If situation demands sound "Hooter" fitted on rig floor ; call on the nearest Fire Services and Hospital attending doctor. Inform Installation Manager / Field Manager / Surface Area Manager. Give instructions to the assembled staff and get the best out of them.

DRILLING OFFICIALS:

Remove other inflammable materials to the safer distance. Remove important documents to a safer place. The first aid trained persons should be ready to give first aid to the injured persons and move them to the hospital if required. Get well acquainted with the location of the wells.

ELECTRICAL OFFICIALS:

No naked flame should be allowed. Generator should be stopped. Electrical lines are required to be de-energized. See that uninterrupted supply of water from tube well to the fire services.

MECHANICAL OFFICIALS:

Get the instruction from the Shift Incharge to act accordingly to stop the equipments and ready to carry out repair jobs if required like pump problems of fire services etc. Help production officials in removing inflammable materials.

**TRANSPORT OFFICIALS:**

The driver must see that all vehicles are parked at a safer distance. See that approach road is clear for fire services vehicle to the approach the accident site.

SECURITY AT GATE:

To prevent unauthorized entry of persons / vehicles inside the area of responsibility and also to ensure no abnormal activity by unauthorized persons is allowed. Overall security in the area concerned is the responsibility of Security / SRP as per manning system and register to be maintained for persons present.

FIRE OFFICIALS:

On arrival they fight fire with the assistance of site staff in extinguishing the fire. If the situation still proves to be beyond control, then the help from the nearest agencies could be taken. Outer agencies shall be actively assisted and guided by the asset fire services in overcoming the situation.

FIRE CONTROL ROOM

A fire control room will be set up for smooth functioning of fire fighting/rescue operations at the site of incident. Manager (F.S)/One fire officer or senior most person of fire section will be I/C of that control room. Mean while one Fire officer will take charge of Control Room of Central Fire Station to assist/ back support for required fire equipments /man power. In charge control room of Central fire Station will be responsible for arranging of manpower and equipments if required at site.

3. HYDROGEN SULFIDE (H₂S) (ERP NO-3)

Hydrogen sulfide is a colorless, flammable, extremely hazardous gas with a "rotten egg" smell. It occurs naturally in crude petroleum, natural gas, and hot springs. Industrial activities that can produce the gas include petroleum/natural gas drilling and refining, wastewater treatment, coke ovens etc. Hydrogen sulfide can also exist as a liquid compressed gas.

HAZARDOUS PROPERTIES OF H₂S GAS

Hydrogen sulfide is heavier than air and may travel along the ground. It collects in low-lying and enclosed, poorly ventilated areas. For work within confined spaces, use appropriate procedures for identifying hazards, monitoring and entering confined spaces. The primary route of exposure is inhalation and the gas is rapidly absorbed by the lungs. People can smell the "rotten egg" odour of hydrogen sulfide at low concentrations in air. However, with continuous low-level exposure, or at



high concentrations, a person loses his ability to smell the gas even though it is still present (olfactory fatigue). This can happen very rapidly and at high concentrations, the ability to smell the gas can be lost instantaneously. Therefore, **DO NOT** rely on your sense of smell to indicate the continuing presence of hydrogen sulfide or to warn of hazardous concentrations. In addition, hydrogen sulfide is a highly flammable gas and gas/air mixtures can be explosive. It may travel to sources of ignition and flash back. If ignited, the gas burns to produce toxic vapours and gases, such as sulfur dioxide. Contact with liquid hydrogen sulfide causes frostbite. If clothing becomes wet with the liquid, avoid ignition sources, remove the clothing and isolate it in a safe area to allow the liquid to evaporate.

HEALTH EFFECTS OF H₂S EXPOSURE

Hydrogen sulfide is both an irritant and a chemical asphyxiate with effects on both oxygen utilization and the central nervous system. Its health effects can vary depending on the level and duration of exposure. Repeated exposure can result in health effects occurring at levels that were previously tolerated without any effect. Low concentrations irritate the eyes, nose, throat and respiratory system (e.g., burning/tearing of eyes, cough, shortness of breath). Asthmatics may experience breathing difficulties. The effects can be delayed for several hours, or sometimes several days, when working in low-level concentrations. Repeated or prolonged exposures may cause eye inflammation, headache, fatigue, irritability, insomnia, digestive disturbances and weight loss. Moderate concentrations can cause more severe eye and respiratory irritation (including coughing, difficulty breathing, and accumulation of fluid in the lungs), headache, dizziness, nausea, vomiting, staggering and excitability. High concentrations can cause shock, convulsions, inability to breathe, extremely rapid unconsciousness, coma and death. Effects can occur within a few breaths, and possibly a single breath.

PROTECTION AGAINST H₂S EXPOSURE

Before entering areas where hydrogen sulfide may be present:

1. Air must be tested for the presence and concentration of hydrogen sulfide by a qualified person using air monitoring equipment, such as hydrogen sulfide detector tubes or a multi-gas meter that detects the gas. Testing should also determine if fire/explosion precautions are necessary.
2. If the gas is present, the space/area must be ventilated continually to remove the gas.
3. If the gas cannot be removed, the person entering the space/area must use appropriate respiratory protection and any other necessary personal protective equipment, rescue and communication equipment.



ENTERING DANGEROUS H₂S ATMOSPHERES

A level of H₂S gas at or above 100 ppm is immediately dangerous to Life and Health (IDLH).

Entry into IDLH atmospheres can only be made using:

- 1) A full-face piece pressure demand self-contained breathing apparatus (SCBA) with a minimum service life of thirty minutes, or
- 2) A combination full-face piece pressure demand supplied-air respirator with an auxiliary self-contained air supply. If H₂S levels are below 100 ppm, an air-purifying respirator may be used, assuming the filter cartridge/canister is appropriate for hydrogen sulfide.
- 3) A full-face piece respirator will prevent eye irritation. If air concentrations are elevated, eye irritation may become a serious issue. If a half mask respirator is used, tight fitting goggles must also be used. Workers in areas containing hydrogen sulfide must be monitored for signs of overexposure.

NEVER attempt a rescue in an area that may contain hydrogen sulfide without using appropriate respiratory protection and without being trained to perform such a rescue.

4. CHEMICAL EMERGENCIES (ERP NO-4)

Chemicals are a natural and important part of our environment. Under certain conditions, chemicals can be poisonous or have a harmful effect on health. Some chemicals, which are safe, and even helpful in small amounts, can be harmful in larger quantities or under certain conditions.

HOW YOU MAY BE EXPOSED TO A CHEMICAL

1. Breathing the chemical.
2. Swallowing contaminated food, water.
3. Touching the chemical, or coming into contact with clothing or things that have touched the chemical.

Remember, you may be exposed to chemicals even though you may not be able to see or smell anything unusual.

MAJOR CHEMICAL EMERGENCIES

A major chemical emergency is an accident that releases a hazardous amount of a chemical into the environment. Accidents can happen in highways during transportation and at installation during use. These accidents sometimes result in a fire or explosion, but many times you cannot see or smell anything unusual.



EVACUATION

Authorities may decide to evacuate an area for your protection. It is important to stay calm, listen carefully and follow all instructions.

CHEMICAL POISONING

There are several symptoms of chemical poisoning whether by swallowing, touching, or breathing:

- Difficulty breathing
- Changes in skin color
- Headache or blurred vision
- Dizziness
- Irritated eyes, skin, throat
- Unusual behavior
- Clumsiness or lack of coordination
- Stomach cramps or diarrhea

4.1 SULPHURIC ACID (ERP NO-4.1)

Routes of Entry

1. Inhalation
2. Contact
3. Ingestion

Effects of Exposure

1. Irritates eyes, nose, throat, dental erosion, skin and eyes, burn. Causes deep burn to tissue. Very dilute solution causes dermatitis. Exposure causes bronchitis.

Personal Protective Equipment.

1. Rubber gloves, safety goggles, acid proof overalls.
2. Provide safety shower, eyewash fountain, and self-contained breathing apparatus.

Handling and Storage Precautions

1. To be stored in non-corrosive non-metallic containers.
2. Add acid to water gradually for dilution.
3. Store away from incompatible material.



Fire

1. Use dry chemical powder, carbon dioxide.

First Aid Measures

1. Wash eyes and affected area of body with plenty of water immediately.
2. Give milk of magnesia, water and soda water or cold milk to drink if ingested.

Spill

1. Wash with running water.
2. Neutralise with lime in case of large spills.

4.2 REFRIGERATED LIQUID NITROGEN (ERP NO-4.2)

Routes of Entry

1. Inhalation

Effect of Exposure

1. Inhalation can cause asphyxiation, if atmosphere does not contain oxygen; dizziness, unconsciousness, or even death can result. Contact of liquid with skin or eyes causes frostbite burns.

First Aid

1. INHALATION: Remove to fresh air; apply artificial respiration if breathing has stopped; call physician.
2. EYES: Treat for frostbite burns caused by liquid.
3. SKIN: Treat for frostbite; soak in lukewarm water.

Personnel Protective Equipment

Safety glasses or face shield; insulated gloves; long sleeves; trousers worn outside boots or over high-top shoes to shed spilled liquid; self-contained breathing apparatus where insufficient air is present.

Fire

Extinguish fire using agent suitable for type of surrounding fire. Cool all affected containers with flooding quantities of water. Do not use water on material itself. Apply water from as far a distance as possible

Spill



Attempt to stop leak if without undue personnel hazard. Do not use water on material itself.

4.3 SODIUM HYDROXIDE (Caustic) (ERP NO-4.3)

Routes of Entry

1. Inhalation
2. Skin
3. Ingestion & Eyes

Effects of Exposure

1. Inhalation: Causes small burns to upper respiratory tract & lungs, mild nose irritation.
2. Skin: Remove contaminated clothes & shoes. Wash the affected area with plenty of water.
3. Ingestion: Causes severe damage to mucous membrane, severe scarring or perforation may occur.
4. Eyes: Severe damage. Skin: Causes severe burns

First Aid

1. Inhalation: Remove the victim from exposure. Support respiration, give oxygen, if necessary.
2. Ingestion: Give water or milk followed by dilute vinegar or fruit juice. Do not induce vomiting.
3. Skin: Wash the affected area with plenty of water and soap.
4. Eyes: Wash with plenty of water for 15 mins. Seek medical aid immediately.

Personal Protective Equipment.

1. Avoid contact with solid or liquid.
2. Provide side covered safety goggles, face shield, filter or dust-type respirator, rubber shoes and rubber hand gloves.

Handling and Storage Precautions

1. Keep in a cool, dry and well-ventilated place.

Emergency Procedure

1. Keep the containers cool by spraying water if exposed to heat or flame.

Spill

Sweep and collect without making dust. Wash the surface with plenty of water and soap.



5. OIL SPILLS (ERP NO-5)

Oil spills occur despite prevention efforts. Oil spills happen on land, working floors and on equipments.

PREVENTING OIL SPILLS

- To have sufficient storage facilities to prevent the discharge of all kind of oil.
- To have adequate facilities for production testing of well.

RESPONSE TECHNIQUES

A number of advanced response mechanisms are available for controlling oil spills and minimizing their impacts on human health and the environment.

Mechanical method is the primary line of defense against oil spills at CW-8. In this process, collecting trays are used beneath the leaking points of any equipment. After that the source of leakage is rectified.

6. EARTHQUAKE (ERP NO-6)

DURING AN EARTHQUAKE:

INDOOR SAFETY:

- Run towards open space and away from rig mast.
- Stay away from hanging objects and other large furniture that could fall. Watch for falling objects.
- Grab something to shield your head and face from falling debris and broken glass.
- If the lights go out, use a battery-operated flashlight. Don't use candles, matches, or lighters during or after the earthquake. If there is a gas leak, an explosion could result.

OUTDOOR SAFETY :

If outdoors, move away from rig mast utility wires. If possible shut off all the engines and running equipments. Once in the open, stay there until the shaking stops.

AFTER AN EARTHQUAKE:

Be prepared for additional earth movements called "aftershocks." Although most of these are smaller than the main earthquake, some may be large enough to cause additional damage.

**INJURIES:**

- Do not attempt to move injured or unconscious people unless they are in immediate danger from live electrical wires, flooding, or other hazards.
- Stop a bleeding injury by applying direct pressure to the wound. If you are trapped, try to attract attention to your location.

CHECKING UTILITIES:

An earthquake may break gas, electrical, and water lines. : (1) Inspect all oil ,gas line thoroughly (2) shut off the main gas & oil line valve, if any leakage observed.; (3) do not turn any electrical appliances or lights on or off; (4) report the leak to authorities.

- If electric wiring is shorting out, shut off the electric current at the main box.
- If water pipes are damaged, shut off the supply at the main valve.

7. FLOOD (ERP NO-7)**IN OPERATIONAL AREA:**

The shift Incharge or Incharge of the affected site should take stock of the situation and avoid occurrence of major mishap by keeping the well in safe position and stopping operations depending on the requirements of the situation. He should use judicious judgments while taking such action in consultation with senior officers available at site.

DURING FLOODS:

- Don't enter into floodwaters; it could be dangerous.
- Stay away from sewerage line, gutters, drains, culverts etc.
- Be careful of snakes. Snakebites are common during floods.
- Stay away from electric poles and fallen power-lines to avoid electrocution.
- Don't use wet electrical appliances. Get them checked before use.
- Use boiled and filtered drinking water.
- Keep all drains, gutters near your plant clean.
- Stagnation of water can breed vector/water-borne diseases. In case of sickness, seek medical assistance.
- Use bleaching powder and lime to disinfect the surrounding.



8. EXTREME HEAT (HEAT WAVE) (ERP NO-8)

WHAT IS EXTREME HEAT?

Temperature over 10 degrees or more above the average high temperature for the region and last for several weeks are defined as extreme heat. Excessively dry and hot conditions can provoke dust storms and low visibility. Droughts occur when a long period passes without substantial rainfall. A heat wave combined with a drought is a very dangerous situation.

DURING HOT WEATHER

- Drink Plenty of Fluids.
- Don't drink liquids that contain alcohol, or large amounts of sugar—these actually cause you to lose more body fluid. Also avoid very cold drinks, because they can cause stomach cramps.
- Replace Salt and Minerals you lose in sweat by beverage.
- Wear Appropriate Clothing and Sunscreen to protect yourself from sun.
- Schedule Outdoor Activities Carefully, if you are not accustomed to working or exercising in a hot environment, start slowly and pick up the pace gradually.
- Stay Cool Indoors, if at all possible.
- Monitor the condition of your co-workers and have someone do the same for you. Heat-induced illness can cause a person to become confused or lose consciousness.
- Try to adjust to the Environment.
- Avoid hot foods and heavy meals—they add heat to your body.
- Limit sun exposure during mid-day hours and in places of potential severe exposure such as beaches.

WHAT TO DO

- Get the victim to a shady area.
- Cool the victim rapidly using whatever methods you can. For example, place the person in a cool shower; spray the victim with cool water from a garden hose; sponge the person with cool water; or if the humidity is low, wrap the victim in a cool, wet sheet and fan him or her vigorously.
- Monitor body temperature, and continue cooling efforts until the body temperature drops to 101-102°F.
- Get medical assistance as soon as possible.
- Lightweight clothing .



9. EXPLOSIVE THREAT (ERP NO-9)

IF THERE IS AN EXPLOSION:

- Take shelter against your desk or a table.
- Check for fire and other hazards.
- Take your emergency supply kit if time allows.

IF THERE IS A FIRE:

- Crawl low if there is smoke
- Use a wet cloth, if possible, to cover your nose and mouth.
- Use the back of your hand to feel the upper, lower, and middle parts of closed doors.
- If the door is not hot, brace yourself against it and open slowly.
- If the door is hot, do not open it. Look for another way out.
- If you catch fire, do not run. Stop-drop-and-roll to put out the fire.
- Go to a previously designated Assembly point.

10. RIOT (ERP NO-10)

WHAT IS RIOT

A public disturbance involving an act or acts of violence by one or more persons part of an assemblage of three or more persons, which act or acts shall constitute a clear and present danger of, or shall result in, damage or injury to the property of any other person or to the person of any other individual .

IF YOU TRAP IN RIOT CONTROL AGENT SUCH AS IRRITANTS, TEAR GAS ETC.

CLINICAL EFFECTS

The main effects of riot control agents are pain, burning, and irritation of exposed mucous membranes and skin.

Eye: Contact with agent produces a sensation of conjunctival and corneal burning and leads to tearing, blepharospasm, and conjunctival injection. The severe blepharospasm causes the lids to close tightly and produces transient "blindness," an effect that could inhibit the recipient's ability to fight or resist. Because these compounds are solids it is possible for a particle or clump to become embedded in the cornea or conjunctiva to cause tissue damage.

Nose and mouth: Contact with the delicate mucous membranes of the nose produces a burning sensation, rhinorrhea, and sneezing; a similar burning sensation accompanied by increased salivation occurs after contact with the



mouth.

Airtract: Inhalation causes burning and irritation of the airways with bronchorrhea, coughing, and a perception of a "tight chest" or an inability to breathe. An inhaled irritating compound might be expected to exacerbate a chronic pulmonary disease such as asthma, emphysema, or bronchitis.

Skin: Contact with skin causes a tingling or burning sensation and may cause erythema, particularly if the skin is raw or freshly abraded (e.g., shortly after shaving). Under conditions of high temperature, high humidity, and high concentration of agent there may be more severe dermatitis starting with erythema hours after exposure and followed by vesication.

Gastrointestinal tract: Gastrointestinal effects usually do not occur with most riot control agents, although there may be retching or vomiting if the agent concentration is high, if the exposure is prolonged, or if the individual is sensitive.

Cardiovascular: A transient increase in heart rate and blood pressure has occurred in people immediately prior to an exposure to a riot control agent or immediately after onset of exposure. The heart rate and blood pressure returned essentially to pre-test ranges while exposure continued and may have been caused by the anxiety or the initial pain rather than to a pharmacological effect of these agents. This "

Oral ingestion: Children if eat riot control agent may cause diarrhea and abdominal cramps (antacids used as therapy).

Lethality: The agent used in excess, may cause deaths in people who refuse to exit a confined space.

MEDICAL TREATMENT

The effects of exposure to these agents under the usual field conditions usually are self-limiting and require no specific therapy. Most will disappear in 15-30 minutes, although erythema may persist for an hour or longer.

Eye: The eye should be carefully flushed with water or saline and impacted particles should be sought. General care consists of a topical solution (many are available) to relieve the irritation and topical antibiotics. An ophthalmologist should be consulted for further evaluation and care.

Pulmonary: These agents may exacerbate chronic disease or unmask latent disease. Bronchospasm with wheezing and mild distress hours continuing after exposure may occur in a latent asthmatic and more severe effects and respiratory distress may occur in one with chronic bronchitis or emphysema. Treatment includes oxygen administration (with assisted ventilation, if necessary), bronchodilators if bronchospasm is present, and specific antibiotics dictated by the results of sputum studies. A specialist skilled in the treatment of inhalational injury should be consulted early.

Skin: The early erythema requires reassurance, but no specific therapy unless



severe and prolonged more than an hour or two. The later-onset erythema, precipitated by a larger exposure in a hot and humid atmosphere, is usually more severe and less likely to resolve quickly; it may require the use of soothing compounds such as calamine, camphor, and mentholated creams.

GENERAL PRECAUTION

- i) Keep contact with control room.
- ii) Stay inside boundary of operational area.
- iii) Avoid assemblage if on the way to drillsite.
- iv) Do not allow entering unknown person to restricted area.
- v) Keep important telephone numbers, such as police, fire, paramedics, and medical centers
- vi) Store plenty of water and food.
- vii) Do not listen rumour.

11. CYCLONE (ERP NO-11)

BASIC SAFETY PRECAUTIONS TO BE TAKEN:

- Pay attention to community warning systems. Pass on the information to others.
- Do not listen or spread rumours- follow information from the official sources.
- Fasten loose items of monkey board and mast.

INCASE OF A WARNING OF A CYCLONE OF SEVERE INTENSITY:

- Bring the string to safe position.
- Stay inside bunkhouse.
- Do not take shelter in weak shed.

DURING AND AFTER THE CYCLONE:

- Do not use electric appliances; if wet.
- Beware of fallen power-lines, loose wires hanging from poles to avoid electrocution, damaged buildings and trees.

12. LIGHTNING (ERP NO-12)

WHAT IS LIGHTNING?

Lightning is a big charge of electricity that can reach from clouds to the ground or to other clouds. It can start fires and it is strong enough to hurt or kill people. Lightning also helps nature by putting nitrogen in the ground for plants to use.

**PERSONAL LIGHTNING SAFETY TIPS:**

PLAN in advance your evacuation and safety measures. When you first see lightning or hear thunder, activate your emergency plan. Now is the time to go to a building or a vehicle. Lightning often precedes rain; so don't wait for the rain to begin before suspending activities.

IF INDOORS:

Avoid water. Stay away from doors and windows. Do not use the telephone. Take off headsets. Turn off, unplug, and stay away from appliances, computers, power tools. Lightning may strike exterior electric and phone lines, inducing shocks to inside equipment.

- Injured person does not carry an electrical charge and can be handled safely. Apply First Aid procedures to a lightning victim if you are qualified to do so.
- **KNOW YOUR EMERGENCY TELEPHONE NUMBERS.**

LIGHTNING SAFETY FOR OUTDOOR WORKERS:

Lightning safety awareness is a priority at every outdoor facility and operation. The following steps are suggested:

- **SAFE** evacuation sites include:
 - Fully enclosed metal vehicles with windows up.
 - Substantial buildings.
 - Low ground -- seek cover in clumps of bushes.
 - Trees of uniform height, such as in a forest.
- **UNSAFE SHELTER AREAS** include all outdoor metal objects, like power poles, fences and gates, high mast light poles, metal bleachers, electrical equipment, mowing and road machinery. **AVOID** solitary trees. **AVOID** water. **AVOID** open fields. **AVOID** high ground and caves.
- If caught outside during close-in lightning, immediately remove metal objects (including baseball cap), place your feet together, duck your head, and crouch down low in baseball catcher's stance with hands on knees.
- Wait a minimum of 30 minutes from the last observed lightning or thunder before resuming activities. Be extra cautious during this phase, as the storm may not be over.

People who have been struck by lightning do not carry an electrical charge and are safe to handle. Apply first aid immediately if you are qualified to do so. Get emergency help promptly.



13. BEE AND WASP STINGS (ERP NO-13)

The common insects that cause medical problems are bees (including the domestic and wild honey bee), wasps and ants. Although most stings cause only minor medical problems, some stings may cause serious medical problems and even death.

BEE AND WASP STINGS CAUSES

- Allergic reaction: This happens in certain people whose immune systems are overly sensitive (or allergic) to the venom. When they get stung, their body may overreact to the venom, and an allergic reaction may happen throughout their body.
- Other complications: Insect stings in non-allergic people, though perhaps painful, usually do not cause serious problems. However, multiple stings may cause serious complications (such as muscle breakdown or kidney failure) and, rarely, even death in non-allergic people.

BEE AND WASP STINGS SYMPTOMS

The severity of a sting is determined by a number of factors. The type of insect, the location of the sting, the number of stings, and the allergic sensitivity of the victim can all affect the outcome. Medical problems from bee and wasp stings are given below:

- Local reactions (only the part of the body near the sting is affected)
- Immediate pain, redness, swelling, and itching at the sting site may occur.
- A large (greater than 4 inches across) local reaction may develop over the next 12-36 hours.
- A bacterial skin infection, although uncommon, may also begin during the first 12-36 hours (or even after the first few days).
- These may cause an enlarging area of redness at the sting site. It may be difficult to tell a local skin reaction and a local bacterial skin infection apart.
- Systemic or allergic reactions (parts of the body away from the sting are affected)
- Hives (raised itchy bumps on the skin) and itching all over the body
- Swelling of the mouth or throat or both
- Wheezing
- Shortness of breath or other difficulty breathing
- Nausea
- Vomiting
- Anxiety
- Chest pain
- Low blood pressure (weakness or fainting)
- Difficulty speaking



Prevention

Some, but not all, stings can be prevented. It is especially important that people known to be allergic to certain insects make an effort to avoid those insects.

Ways to avoid stings include the following:

- Avoid known areas of concentration such as hives and nest.
- Do not molest hives and nests.
- If flying insects are around, leave the area and refrain from swatting at them.
- Avoid activities outdoors with sugary drinks, brightly colored clothing, and strong fragrances or perfumes because some insects may be attracted to them.
- Wear long pants and long-sleeved shirts because they may also provide some protection.



DRILLING RIG CW-8

ANNEXURE

ANNEXURE



FIRST AID

CUTS OR LACERATIONS TREATMENT

- Most bleeding can be stopped with direct pressure and time (rest and elevation are also helpful).
- Cleaning with a gentle soap and water helps to reduce the chance of bacterial infection.
- Antibiotic ointment and a sterile gauze bandage will help to protect the wound from further infection and water loss until a scab forms.

BEEES AND WASP STING TREATMENT

Although most stings can be treated at home, some will require more medical care.

- Go to a hospital's emergency department if a large localized reaction (greater than about 10 inches in diameter) occurs, evidence of infection (increasing pain, swelling, redness, drainage of pus or fever) is present at the sting site, or any symptoms last for more than a day or 2.
- If it has been more than 10 years since your last tetanus booster, contact your doctor about getting a tetanus immunization.

BROKEN BONE TREATMENT

- Monitor for shock, breathing and pulse.
- Have the victim lie flat.
- Elevate the victim's feet 8 to 12 inches.
- Cover the victim with a blanket or other item to keep him warm.
- Remove clothing covering the wound. Cut clothing away or rip at seams, if necessary.
- To protect yourself against possible disease.
- Use many layers of gauze pads to apply direct pressure to the wound to stop the bleeding.
- Cover the wounded area with a clean cloth or dressing.
- Continue to apply pressure as long as the wound bleeds. Add new dressings over existing ones.
- For a broken arm, make a sling out of a triangular piece of cloth. Place the forearm in it and tie the ends around the neck so the arm is resting at a 90° angle.
- Check the pulse in the limb with the splint. If you cannot find it, the splint is too tight and must be loosened at once.
- Check for swelling, numbness, tingling or a blue tinge to the skin. Any of these signs indicate the splint is too tight and must be loosened right away to prevent permanent injury



- Do not try to set a broken bone yourself or try to push a protruding bone back under the skin.
- Immobilize the injured limb
- Apply ice to the injured area to help reduce swelling and inflammation, unless there is an open wound.

TREATMENT FOR BURN

For First Degree Burns:

- Cool the area right away. Place the affected area in a container of cold water or under cold running water. Do this for at least 5 - 10 minutes or until the pain is relieved. This will also reduce the amount of skin damage. (If the affected area is dirty, gently wash it with soapy water first.)
- Do not apply ice or cold water for too long a time. This may result in complete numbness leading to frostbite.
- Keep the area uncovered and elevated, if possible. Apply a dry dressing, if necessary.
- Do not use butter or other ointments (Example: Vaseline).
- Avoid using local anesthetic sprays and creams. They can slow healing and may lead to allergic reactions in some people.
- Call your doctor if after 2 days you show signs of infection (fever of 101 degrees F or higher, chills, increased redness, swelling, or pus in the infected area) or if the affected area is still painful.

For Second Degree Burns (that are not extensive and less than 3" in diameter):

- Immerse the affected area in cold (not ice) water until the pain subsides.
- Dip clean cloths in cold water, wring them out and apply them over and over again to the burned area for as long as an hour. Blot the area dry. Do not rub.
- Do not break any blisters that have formed.
- Avoid applying antiseptic sprays, ointments, and creams.
- Once dried, dress the area with a single layer of loose gauze that does not stick to the skin. Hold in place with bandage tape that is placed well away from the burned area.
- Change the dressing the next day and every two days after that.
- Prop the burnt area higher than the rest of the body, if possible.



Call your doctor if there are signs of infection (fever of 101 degrees F or higher, chills, increased redness and swelling, and pus) or if the burn shows no sign of improvement after 2 days.

FIRST AID TREATMENT FOR CHEMICAL BURNS

A chemical burn can be minor or life threatening, but proper treatment can reduce the chance of infection and the damage caused by contact with the chemical.

- Remove any affected clothing or jewelry from the injury. Use lots of cool running water to flush the chemical from the skin until emergency help arrives. The running water will dilute the chemical fast enough to prevent the injury from getting worse.
- Use the same treatment for eye burns and remove any contact lenses. Be careful to flush the eye from the nose outward.
- If no large amount of clean water is available, gently brush the chemical off the skin and away from the victim and you.
- If the chemical is on the face, neck, or shoulders, ask the victim to close his eyes before brushing off the chemical.
- Cover the wound very loosely with a dry, sterile or clean cloth so that the cloth will not stick to the wound. Do not put any medication on the wound. Seek medical attention immediately.

SNAKE BITES TREATMENT

Call for emergency assistance immediately if someone has been bitten by a snake. Responding quickly in this type of emergency is crucial. While waiting for emergency assistance:

- Wash the bite with soap and water.
- Immobilize the bitten area and keep it lower than the heart.
- Cover the area with a clean, cool compress or a moist dressing to minimize swelling and discomfort.
- Monitor vital signs.
- Apply a bandage, wrapped two to four inches above the bite, to help slow the venom. This should not cut off the flow of blood from a vein or artery - the band should be loose enough to slip a finger under it.
- A suction device can be placed over the bite to help draw venom out of the wound without making cuts. These devices are often included in commercial snake bite kits.

WARNING SIGNS OF A HEART ATTACK:

In some, but not all, cases, the body will send warning signs that indicate a heart attack. These include:



- Uncomfortable pressure, fullness, squeezing, pain, or discomfort in the center of the chest that lasts for more than two minutes. This pain may be persistent, or may go away and return.
- Pain or discomfort that spreads to the shoulders, neck, or arms
- Pain, sweating, nausea, or shortness of breath.
- Any chest discomfort that causes anxiety or concern
- Any chest discomfort that is accompanied by lightheadedness, fainting, or dizziness
- Any of the above symptoms that disappear with rest, then return with exertion
- Unexplained weakness or fatigue
- Palpitations, cold sweat, or paleness

Pain that lasts for 10 to 15 minutes while you are resting should also be evaluated immediately. If you, or someone you know exhibits any of the above warning signs, act immediately.

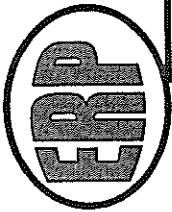
HEAD INJURY TREATMENT

- Apply an ice pack to the injured area to reduce swelling or bruising. Change it every 15 to 20 minutes for an hour or two. Do not put ice directly on the skin. To make an ice pack:
 - Put ice cubes into a plastic bag with a little cold water and seal it. Wrap it in a clean towel and apply to the bump or bruise.
- Cover an open cut with gauze and first aid tape or a band-aid.
- Take only clear liquids until vomiting has stopped for six hours.
- Resume normal activities once you know there is no serious head injury.

FIRST AID FOR ELECTRIC SHOCK

- Switch off the current, if possible, by removing the fuse or switching off the circuit breaker.
- Do not touch the person who is in contact with electricity.
- If you can't turn off the source of current, use a board, wooden stick, rope or other non-insulating device to pull the victim away from the source of the electric current. Make sure your hands and feet are dry and you are standing on a dry surface.
- If it is safe for you to touch the victim:

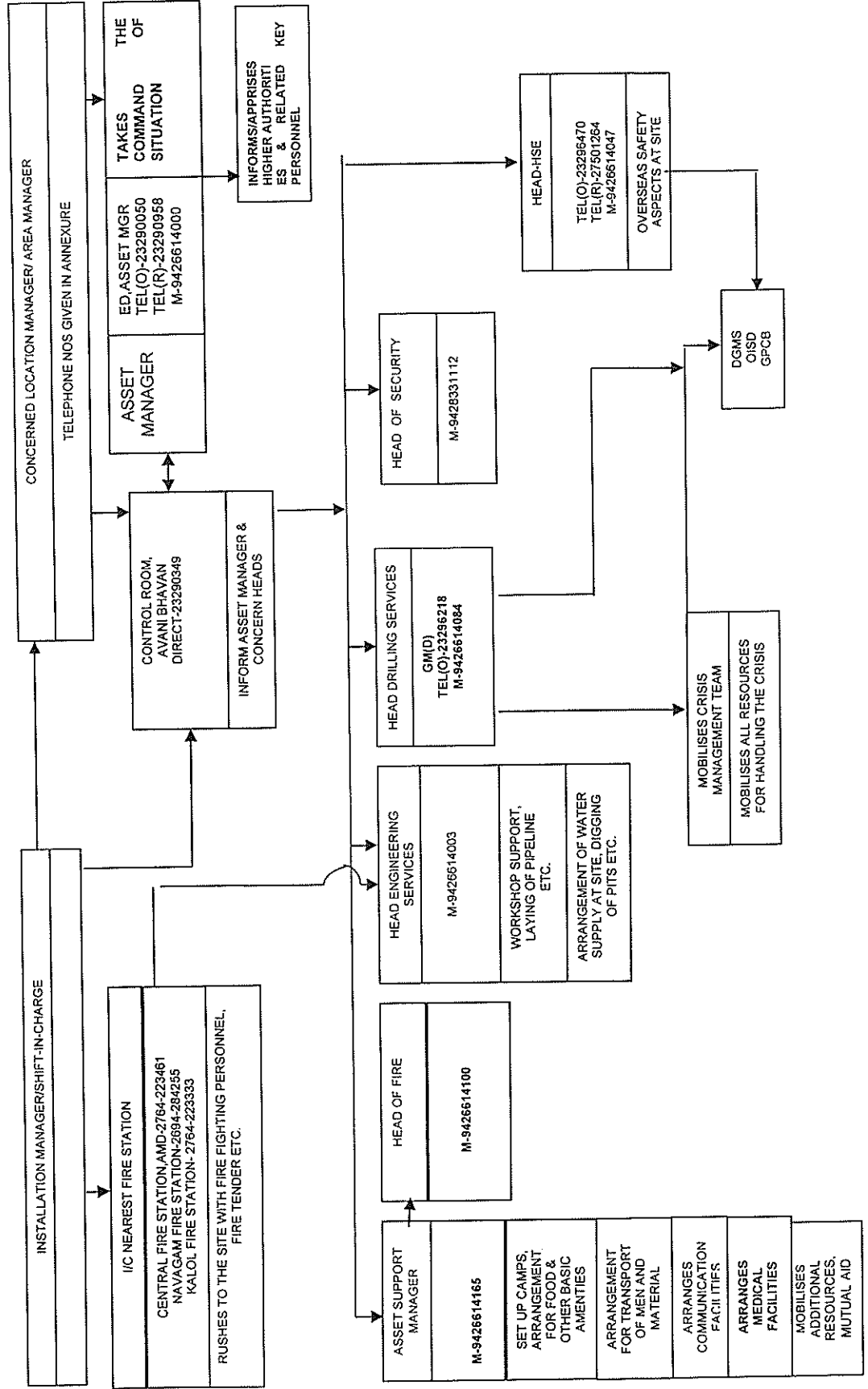
Check for heartbeat and breathing. Feel for a pulse along the neck, under the earlobe, on the chest or on the wrist. Watch the rise and fall of the chest to see if the person is breathing. If there is a heartbeat, but no breathing, immediately start rescue breathing.

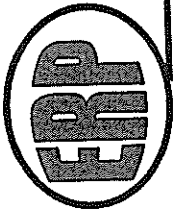


DRILLING RIG CW-VIII

ANNEXURE

INFORMATION & ACTION FLOW CHART (ON-SITE) DURING EMERGENCY (FROM SITE TO BASE)





DRILLING RIG CW-VIII

ANNEXURE

KEY PERSONNEL OF DRILLING SERVICES, AHMEDABAD

AS ON NOV-2013

SRL	NAME	DESG	MOBILE NO.
1	SHRI P.K.MISHRA	GM(D) HDS	9426614084
2	AJAY BHARGAV	GM(D), LMDS	9426614005
3	D K DEB	GM(CMTG), LM CMTG	9426614217
4	K C TRIVEDI	DGM(D), OP MGR	9426614061
5	S. SEHGAL	DGM(M), Tech. Sup. Mgr.	9428331137
6	HARENDRA KUMAR	DGM(E)	9426614506
7	K N YADAV	CE(D), Area I/C	9428330221
8	A.R.PATEL	CE (D) I/C CMT	9426614077
9	C.B.PATEL	CE (D) I/C DTYS	9426614377
10	A.K.SINGH	CE (D)- I/C HSE, DS	9426614476