OGDCL

SAFETY HANDBOOK

For Oil & Gas Development and Production Leases

This handbook is intended as reference only. It is not all encompassing. Ask your Location HSE Representative/ Coordinator for more detailed information. The specific HSE Management System procedures are available in the latest revision of OGDCL's Integrated HSE System Manual.

Occupational Health, Safety, Environment & QA/ QC Department

Occupational Health, Safety, and Environment

Policy Statement and Commitment

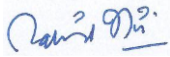
As a responsible Corporate Citizen, OGDCL attaches greater significance to HSE system with a view to promoting a culture and attitude of compliance for the safety & wellbeing of our manpower, community and the environment. We resolutely believe that responsibility for health, safety, and environment cannot be delegated, it is a shared responsibility across our company.

We believe in good HSE performance that can ultimately contribute to business success. By supplying energy, we fundamentally support economic development and help to improve quality of life of people. Our activities also generate jobs, investment, infrastructure and revenues for governments and local communities. In carrying out all our activities, hence we ensure welfare of the indigenous communities, protection of ecosystems and safety of our workforce.

As we continue our exploration and production activities basing our growth on a sound foundation of technical and financial prudence, we are supporting health, safety, and environment initiatives by:

Best Practices & Culture	We shall promote a positive culture based on improving HSE performance.
Legal & Regulation Compliance	We shall commit to HSE excellence in all activities wherever we operate and comply with relevant laws and regulations, and adhere to applicable standards and procedures.
Safe Workplace	We shall endeavor to take every reasonable and practicable step to eliminating hazards, practices and behaviors that could cause accidents, injuries or illness and damage to nature & properties.
Ethical Responsibility	We shall take resolute measures to reinforce that all employees share an ethical responsibility in embracing no smoking and no drugs policy.
Environment	We shall take proactive steps and strive towards conservation of the environment, implementing controls to eliminate pollution and environmental harm.
Resource & Engagement	We shall provide training and resources for workforce to maintain safe systems of work.
Emergency	We shall ensure that Location Emergency Response Plans are in place to deal with and recover from emergencies and shall notify timely all relevant stakeholders during the emergencies.
Continuous Improvement	We shall Integrate HSE management into all aspects of the organization by leveraging on people, process and technology.
Lines of Responsibility	We shall employ contractors who aspire to the high HSE standards at all times, and recognize that HSE is everyone's responsibility.
Results	We shall continue to address the impacts of our operations by focusing on the Leading Indicators. We shall report publicly and annually on HSE performance, measured against objectives and targets.

We strive to be good Corporate Citizen in every community in which we operate. Through observance and encouragement of this policy, we aim to assist in protecting the environment and the overall wellbeing of all of our stakeholders, specifically, our employees, clients, shareholders, subcontractors, and communities.



Managing Director/ CEO

We hereby uphold our commitment to HSE Policy.

ED Production 17/5/2016

ED Petroserv 17/5/16

ED Services

ED Exploration 17/5

ED Finance 18/5/16.

ED JV

ED HR/Admin 17/5/16

The following safety precautionary guidelines will be strictly enforced to ensure the safety of our people at all Locations and our communities. Everyone who works for or on behalf of OGDCL is responsible for their own safety and the safety of those around them; however, senior management is accountable for timely communicating, training, implementing, and devising system of auditing for these precautionary guidelines to assure continuity in the compliance and performance.

Important:-

Although embedded in each of these precautionary guidelines, it is important to emphasize that:

- Work will not be conducted without a pre-job risk assessment and a safety discussion appropriate for the level of risk.
- All persons will be trained and competent in the work they conduct.
- Personal protection equipment will be worn as per risk assessment and minimum site requirements.
- Emergency response plans, developed through a review of potential emergency scenarios, will be in place before commencement of work.
- Everyone has an obligation to stop work that is unsafe.

Workforce Responsibilities:-

- It is the responsibility of every workforce member to read this Safety Handbook.
- It is the responsibility of every workforce member to comply with the precautionary guidelines in this Safety Handbook.
- It is the responsibility of every workforce member to work safely and to promote positive safety culture.
- It is the responsibility of every workforce member to attend and participate in scheduled safety meetings.
- It is the minimum responsibility of every workforce member to report all hazards, unsafe work procedures and conditions to the Location InCharge and HSE.
- It is the responsibility of every workforce member to report all accidents and nonconformities to the Location InCharge and HSE.

LIST OF CONTENTS

GUIDELINES

ANNEXURES

GUIDELINE 01
PERMIT TO WORK

Before conducting work that involves confined space entry, work on energy systems, ground disturbance in locations where buried hazards may exist, or hot work in potentially flammable & explosive environments, a permit must be obtained that:

- defines scope of work
- identifies hazards and assesses risk through JHA and Risk assessment methodology.
- establishes control measures to eliminate or mitigate hazards
- links the work to other associated work permits or simultaneous operations
- is authorized by the responsible person(s)
- communicates above information to all involved in the work
- ensures adequate control over the return to normal operations

GUIDELINE 02
PERSONAL PROTECTIVE EQUIPMENT

- Every person engaged in the operations and every other person who may be exposed to the risk of injury, poisoning or disease arising from the operations should be provided with appropriate PPE.
- No person should be allowed to work in a field boundary unless he is wearing a suitable coverall, safety helmet, and safety shoes which should be provided by the Location Management.
- A sufficient stock of PPE shall be maintained in each Section in order to ensure immediate supply as and when need for the same arises.
- No person should be allowed to enter any place where toxic vapors are present or there is deficiency of oxygen unless he has been provided with and is wearing a breathing apparatus of suitable type.
- No person should be allowed to work on a manned installation unless the installation is equipped with a communication system, an emergency communication system according to the nature of emergency, emergency detection and response system.
- All PPE shall be maintained, cared and stored as required in the manufacturer, supplier or user instructions or as the training requires.
- For the purposes of compliance, PPE shall be inspected, cleaned, and maintained at regular intervals so that the PPE provides the requisite protection.
- The contaminated PPE which cannot be decontaminated shall be disposed of in a manner that protects employees from exposure to hazards.

GUIDELINE 03
WORKING AT HEIGHTS

Ladders will be used for access only; working from a ladder will not be permitted. Short duration working from Step Ladders may be authorized by the Location Management providing the user has produced a safe method of use. Working at heights of two meters (6 feet) or higher above the ground cannot proceed unless:

1. a fixed platform is used with guard or hand rails, verified by a competent person(s) or ...
2. fall arrest equipment is used that is capable of supporting at least a 2275 kg (5000 lbs) static load per person and has:
   - a proper anchor mounted, preferably overhead
   - full body harness using double latch self locking snap hooks at each connection
   - synthetic fiber lanyards
   - shock absorber
3. fall arrest equipment will limit free fall to two meters (6 feet) or less, a visual inspection of the fall arrest equipment and system is completed and any equipment that is damaged or has been activated is taken out of service
4. person(s) are competent to perform the work

Where it is not practicable to provide a standard working platform and the working height indicates a potential fall, safety harnesses must be worn.

GUIDELINE 04
SCAFFOLDING

- All scaffolding must be manufactured/ erected as per applicable Standards.
- When erecting/ dismantling scaffolding a securely attached safety harness and where appropriate inertia reel must be used. 100% Tie-off is required at all times.
- In addition to the main guard rail, an additional guardrail may be required such that the gap between the toe-board and main guardrail does not exceed 470mm and all boards must be secured, without causing a tripping hazard.
- Scaffolding must not be disturbed or altered by any unauthorized persons. Where alterations are required, the Authorized Scaffolders must be contacted who will carry out the work under competent supervision using experienced Scaffolders.
- Where materials are to be positioned on scaffolding the supervision must ensure that the scaffolding is not overloaded.
- Before use, scaffolding shall be inspected by an authorized scaffold inspector who shall complete a "scaffold tag" and secure it in a prominent position at the base of all ladder access points.
- No scaffold may be erected which impedes normal access or can be accidentally struck by moving equipment without prior consultation with the Location Management so that a safe system of work can be agreed.
- No one should be permitted to erect or carry scaffolding near live overhead electrical cables, or equipment.

GUIDELINE 05
ENERGY ISOLATION

Any isolation of energy systems; mechanical, electrical, process, hydraulic and others, cannot proceed unless:

- the method of isolation and discharge of stored energy are agreed and executed by a competent person(s) in compliance with the applicable Lock-out Tag-out (LOTO) standards
- any stored energy is discharged
- a system of locks and tags is utilized at isolation points
- a test is conducted to ensure the isolation is effective
- isolation effectiveness is periodically monitored

GUIDELINE 06
CONFINED SPACE ENTRY

Entry into any confined space cannot proceed unless:

- all other options have been ruled out
- permit is issued with authorization by a responsible person(s)
- permit is communicated to all affected personnel and posted, as required
- the Emergency response and medical evacuation procedure for the particular confined space is communicated to personnel concerned
- all persons involved are competent to do the work
- all sources of energy affecting the space have been isolated
- testing of atmospheres inside confined space is conducted, verified and repeated as often as defined by the risk assessment
- Electrical lighting for use in confined spaces shall not exceed 24 volts. Powered hand tools used in confined spaces shall, be air operated. Where this is not possible, all such tools shall be equipped with a deadman's switch
- stand-by person is stationed or buddy system is in place
- unauthorized entry is prevented

GUIDELINE 07
LIFTING OPERATIONS

Lifting operations utilizing cranes, hoists, or other mechanical lifting devices will not commence, unless:

- an assessment of the lift has been completed and the lift plan including appropriate, lift method and equipment has been determined by competent person(s)
- operators of powered lifting equipment are trained and certified for that equipment
- rigging of the load is carried out by competent person(s)in compliance with the safe lifting procedure
- lifting devices and equipment has been third party certified for use within the last 12 months
- lifting accessories must be color coded for the visual and easy identification and distinction of safe and discarded ones.
- load does not exceed dynamic and/or static capacities of the lifting equipment
- any safety devices installed on lifting equipment are operational and must not be overruled
- all lifting devices and equipment have been visually examined before each lift by competent person(s)
- it is ensured that the minimum clearance distance from the energized power lines is 10 ft for upto 50 KV load and 15 ft for over 50 to 200 KV load.

GUIDELINE 08
MOBILE CRANES

- All cranes must carry relevant test certificates and thorough examination reports, together with the manufacturer's handbook.
- Only persons who are competent and authorized by the Location Management shall be allowed to operate cranes.
- Crane duty charts (Load Radius Tables) must be displayed on or be available in the crane for easy reference, in English, and a language understood by the operator. In addition, the Crane Manufacturers Operating and Erection manuals must be available on site.
- All cranes shall be fitted with:
  - A reverse warning audible alarm.
  - Load Radius Indicator.
  - Automatic Safe Load Indication.
  - Crane hooks with Safety Catches
- all of which must be serviceable.
- The assembly, rigging and de-rigging of any crane components, including fly jibs, shall only be done under the supervision of a competent lifting supervisor. An approved risk assessment, together with the manufacturer's erection procedures must be in place covering rigging activities for the equipment.
- No crane shall travel with a suspended load.
- Outriggers, when installed, must always be used. (Unless authorized in writing by Location Management).

GUIDELINE 09
GROUND DISTURBANCE

Work that involves a manmade cut, cavity, trench or depression in the earth's surface formed by earth removal cannot proceed unless:

- hazard identification and risk assessment of the work site is completed by the competent person(s).
- all underground hazards, i.e., pipelines, electric cables, etc., have been identified, located and if necessary, isolated.

Where persons are to enter an excavation:

- a confined space entry permit shall be issued if the entry meets the confined space definition
- ground movement is controlled and collapse is prevented by systematically shoring, sloping, benching, etc., as appropriate
- excavated soil to be stacked a minimum distance of one meter from the edge of the excavation edge
- personnel to keep clear of machinery whilst it is in operation, minimum distance of 5 meters
- ground and environmental conditions are continuously monitored for change

GUIDELINE 10
WORKING WITH ELECTRICITY

Electrical works must not be considered as safe, unless the following safety guidelines must not be adhered with:

- Electrical cords and electrical plugs regularly inspected to reduce the risk of electrical fires and keep away from sources of heat and water.
- Good quality of electrical plugs, receptacles, wiring, and extension cords utilized. All electrical installations must conform to the relevant safety standards and hazardous area / zone classification, and all machinery and equipment must be effectively earthen.
- Shut down all electrical appliances before leaving the offices/ rooms.
- Have defective appliances checked by an electrician.
- All worn cords and plugs discarded immediately.
- Electrical cables must be adequately insulated and protected against mechanical damage. Portable electrical appliances should be all insulated or double insulated.
- Proper protective junction box used to connect the cables.
- Electrical isolations and de-isolations should be made by competent/ authorized persons only. Work on live lines must be avoided wherever possible.
- While undertaking digging excavation work, the possibility of a buried electric or instrument cable should always be considered.
- The condition of the insulation between live/neutral and live/earth conductors, and the resistance of the earth circuit should be checked once a quarter.
- Circuit breakers and fuses must be correctly and adequately selected so that they can withstand rated peak current.

- Fuses must be inserted in the live conductor and replaced, when ruptured.
- Place and maintain sufficient quantity (in light of the applicable legal and best practices standards) of appropriate type of fire extinguishers close by.
- Earthing resistivity maintained in the range 0.1 ohm to 1.5 ohm.

GUIDELINE 11
WORKING WITH PRESSURE

Working with pressurized equipment is always potentially dangerous and must not be considered as safe unless:

- Person(s) attempting to pressurize or depressurize equipment should be familiar with the hazards involved and procedures required.
- Sudden changes of pressure can cause noise, severe vibration and shock loads.
- All valves controlling the operation must be opened or closed slowly. "Whip Checks" or hose safety lanyards, and or tie-downs must remain in place until all stored pressure, or energy, has been relieved.
- During the pressurization of equipment, all unnecessary personnel should stay out of the immediate area until the operation is completed. Barriers or signage will be posted to prevent unauthorized personnel from entering the area. This is to avoid possible injury due to equipment failure.
- No attempt must be made to locate high-pressure leaks by feeling with the hands.
- Flange bolts shall be loosened and the flange carefully separated before removing the bolts.
- Pressure Equipment such as grease guns; paint spray guns; high-pressure jetting equipment; and shot blasting equipment shall be directed away from the body and away from other personnel in the area.

GUIDELINE 12
SAFE STORAGE OF PRESSURIZED CYLINDERS

- Pressurized cylinders must be secured in an upright position.
- Valve protector caps must be in place when cylinders of compressed gas are moved or stored.
- Oxygen and fuel cylinders must be stored 20ft apart, or be separated by a non- combustible barrier.

GUIDELINE 13
WORKING IN NOXIOUS AND FLAMMABLE GASEOUS ENVIRONMENT

Working in noxious and flammable gaseous environment must not be considered as safe, unless following safety guidelines adhered with:

- No one should enter or be permitted to enter any cellar, sump, pit or any confined place or hazardous area or the area where a leakage has been detected, fire has gutted, or flare or explosive material has become accidentally extinguished unless a test therein by competent person indicates that the area is gas free.
- Where any test shows the concentration of flammable gas to exceed 20% of its lowest explosive limit, the supply of electrical energy should be cut off immediately from all cables and apparatus lying within 25 meters of the installation and all sources of ignition should also be removed from the said area. Normal work should not be resumed unless the area is made gas free.
- Strict prohibition of work at all work places where concentration of hydrogen sulphide is found to exceed the limit of 20 ppm, all persons in that place and other likely to be effected should be evacuated and the place should be immediately cordoned off with warning signs so as to prevent persons inadvertently entering the same. All corrective measures should be taken under the supervision of the competent person(s) appointed by the manager and no person should be readmitted until that working place has been inspected by the manager or a person appointed by him in that behalf.
- Reports of withdrawal, evacuation and re-admittance should be recorded in a paged book.

- During the time corrective measures are being taken all persons should wear suitable breathing apparatus.
- Suitable detectors should be installed at appropriate locations to detect and measure continuously the concentration of inflammable and obnoxious gases in the atmosphere.
- All gas and fire detectors should be calibrated and certified according to the manufacture's specifications and record thereof should be maintained.
- The detection mechanism should be so installed so as to allow monitoring from a central control room and should give automatic audible and visual signals in case the concentration of obnoxious and flammable gases exceeds their prescribed safer limits.

GUIDELINE 14
SAFE HANDLING OF CHEMICALS

The handling, storage and segregation of chemicals is not considered as safe, unless the following safety guidelines must not be adhered with:

- Flammables must not be stored with the Oxidizing agents; Corrosive chemicals; Common alkalis (bases); Materials susceptible to spontaneous heating and/or explosions and Substances that react with air or moisture to create heat.
- All the chemicals should be handled and stored in a safe manner so as to avoid injury or adverse impact on the health of persons handling the chemicals.
- MSDS (Material Safety Data Sheets) of all the chemicals in use or stored are available at all times.
- Eyewash showers should be provided close to the areas where chemicals are handled or stored.
- The eyewash showers should be installed or constructed in such a manner that it should deliver the water at optimal human temperature.
- The chemical containers should be conspicuously labeled with chemical name, its physical and chemical properties, manufacturer's name, storage temperature, expiry date and chemical hazards.
- No person should be allowed to handle the chemicals unless he is wearing suitable protective gears.
- The persons handling the chemicals should be made aware of the materials they are using and the dangers they face if they mishandle these materials.
- Avoid storing flammables in direct sunlight or near other heat sources; eliminate all sources of ignition.
- Keep the area dry and cool.
- Use explosion-proof refrigerators designed for chemical storage when chemicals require extra cool temperatures.

- Provide adequate ventilation to prevent the accumulation of large amounts of vapor.
- Cabinets must be labeled; FLAMMABLE – KEEP FLAME AWAY OR NO NAKED FLAME.
- Vent openings must be sealed with bungs according to manufacturer's instructions. However, if the cabinet is vented, it should be vented from the bottom directly outdoors.
- Storage rooms have specific construction and ventilation requirements. Applicable regulatory and other requirements must be reviewed for additional storage requirements.
- Store flammable materials in a designated and approved fireproof cabinet or storage rooms but not with flammable liquids. Flammable solids such as sulfur, calcium carbide, and white phosphorus can ignite in the presence of air or oxygen and continue to burn until the material is spent.

GUIDELINE 15
WELDING

- Welding shall not be started unless permit is issued with authorization by a responsible person(s); job hazard assessment of the work site is completed by the competent person(s); and is communicated to all affected personnel and posted, as required.
- Welding units shall be in good condition, properly maintained, and earthed.
- Isolation switches on welding units shall be readily accessible.
- Terminals and live components shall be adequately protected.
- Cables shall be frequently inspected to ensure the insulation is intact.
- Damaged cables or electrical holders shall be properly repaired or replaced.
- The welding return cable shall be secured onto the work piece. If this is not practical it shall be as near as possible.
- Proper cable connectors shall be used when connecting runs of cables.
- Welders shall wear:
  - Face and eye protection with correct grade of filter.
  - Welders' gauntlets (long gloves).
  - Long sleeved heavy cotton overalls.
- Welders shall wear safety helmets at all times, except when it is agreed as impractical, and written permission is granted by the Location Management, subject to mitigation of hazard, i.e. no work overhead, or shielded from falling objects.
- Welding areas should whenever possible be screened off using Flame Retardant Blanket or other suitable material.

GUIDELINE 16
MAN RIDING BASKET

(Only applicable with the permission of Location Management)

- When the carriage of personnel by crane is required, the man riding basket must be suitably tested and have a current test certificate and clearly marked "Man Riding Only". All wire ropes and other attached lifting equipment must also have a valid certificate.
- All cranes used for carrying personnel must be provided with a deadmans handle facility to ensure that the brake is applied when the control lever is released. Crane hooks must be fitted with safety catches or equivalent and the operator must be in his cabin at all times.
- At no time shall the crane be allowed to be used in a free fall situation. Cranes must have power lowering capabilities for carrying men.
- Limit devices must be fitted to the cranes to ensure that the carrier cannot be raised above the over hoist limit of the crane. The limit switch must be tested, daily, before raising persons in the baskets.
- All workforce members using man riding basket must be secured to the crane hook by a safety harness. The safety harness must be secured to the master link of the supporting sling or to the hook of the crane.

GUIDELINE 17
COMPRESSED AIR

- All air receivers and compressors shall be in good condition and properly maintained.
- Air receivers shall be individually identified and marked with their safe working pressure.
- Air receivers shall be accompanied by a valid test certificate which shall be kept on site and shown to the Location's Representative before bringing the vessel onto site.
- All air receivers must be fitted with a properly set pressure relief valve.
- Air receivers shall be examined and the pressure relief valve tested by an independent examiner.
- All compressed air fittings shall be wired and/or restrained to prevent them from whipping should the coupling separate.
- Only hose clamps designed for compressed air service shall be used. Worm drive clips are not acceptable.
- Whip arrestors must be fitted to all compressed air hose couplings.
- Compressed air must never be used for purposes other than the intended.
- Nozzles used for air blowing must be fitted with a dead man's valve.

GUIDELINE 18
MECHANICAL EQUIPMENT

- Unauthorized personnel must not operate, interfere or tamper with plant or equipment.
- Every dangerous part of machinery shall be securely guarded.
- Any guards removed for maintenance or repair purposes must be replaced before the machine is set in motion.
- No mobile plant (mechanically propelled vehicles) shall carry passengers unless a proper fixed seat is provided, except when the equipment is specifically designed for standing personnel.
- Mobile plant (mechanically propelled vehicles) must be parked on firm level ground when unattended, the engine stopped, brakes on and any load or attachment lowered to the ground and the keys left in the ignition.
- No mechanical plant or equipment shall be sited on or operated on any area without the permission of the Location Management.
- All items of mobile plant (mechanically propelled vehicles) shall be fitted with a reverse warning audible alarm (seat belts and roll over protection).
- All drivers/ operators of mobile plant (mechanically propelled vehicles) shall strictly obey the instructions of the site security, traffic regulations and speed limits.
- All mobile equipment (mechanically propelled vehicles) shall be inspected by a competent person prior to use on site. Equipment considered being unsafe, shall not be allowed access.
- All mobile plant for use in live activity areas, or during the start up and commissioning phase, must be fitted with exhaust Flame Arrestors.

GUIDELINE 19
MANANGEMENT OF CHANGE

Work arising from temporary and permanent changes to organization, personnel, systems, process, procedures, equipment, products, materials or substances, and laws & regulations cannot proceed unless a Management of Change process is completed, where applicable, to include:

1. a risk assessment conducted by all impacted by the change.
2. development of a work plan that clearly specifies the timescale for the change and any control measures to be implemented regarding:
   - equipment, facilities and process
   - operations, maintenance, inspection procedures
   - training, personnel and communication
   - documentation
   - authorization of the work plan by the responsible person(s) through completion

GUIDELINE 20
DRIVING SAFETY

1. All categories of vehicle, including self propelled mobile plant, must not be operated unless:
   - Vehicle is fit for purpose, inspected and confirmed to be in a safe working order.
   - Number of passengers does not exceed manufacturer's design specification of the vehicle
   - Loads are secure and do not exceed manufacturer's design specifications or legal limits for the vehicle
   - Seat belts are installed and worn by all occupants
   - Safety helmets are worn by riders and passengers of motorcycles and similar types of vehicle
2. Drivers must not be authorized to operate vehicle unless:
   - They are trained, certified / licensed and medically fit to operate the class of vehicle
   - They are not under the influence of alcohol or drugs, and are not suffering from fatigue
   - They do not use hand-held cell phones and radios while driving (best practice is to switch off all phones and two-way radios while driving)
3. All vehicles shall be equipped with the following standard emergency equipment:
   - fire extinguisher that is approved for the type vehicle, and
   - approved first aid kit.
4. Only designated personnel shall operate a company vehicle.
5. Hitchhikers may not be given rides in a company vehicle.

GUIDELINE 21
HOUSEKEEPING

Loose tools and equipment scattered around the work area are the cause of many accidents and injuries. The area should be kept clean of oil spills excess or unnecessary tools and equipment with the following points:-

- Clean up spills promptly and properly.
- Place garbage and waste materials in appropriate containers.
- Walk ways, passages, and doorways should be kept clear of obstructions and free from mud and water.
- Provide recommended light intensities to all working areas.
- Watch for hazards such as boards with nails, pieces of pipes, electrical wires, grease and oil, etc.
- All offices and workshops should be kept clean and clear of scrap.
- Manholes, open hatches and loose grating create tremendous hazardous. Always keep openings covered or place guards or barriers around them.
- Store material or equipment securely, neatly and in a place where they do not hinder operations.
- Dispose of waste material in designated containers.
- Use soaps and cleaners provided for cleaning skin. Solvents should not be used.
- Avoid unnecessary contacts with hydrocarbons, chemicals and explosives.
- Change oil-soaked clothing. It may cause skin irritation and is a fire hazard.

GUIDELINE 22
SMOKING

- Smoking should be prohibited and not allowed in offices, working areas, stores and public gatherings.
- 'No Smoking' signs should be posted in areas where smoking is prohibited.
- Smoking should be only permitted outside the restricted areas designated as 'Smoking Area" but should be discouraged as a policy matter.

GUIDELINE 23
HEALTH AND HYGIENE

The following guidelines must be complied with to maintain healthy and hygienic occupational environment among workforce:

(Catering & Hygiene)

- Dining tables should be covered with metal sheets.
- Floors, walls, and ceilings should be cleaned at least once a day.
- Food should be thawed in the refrigerators free of vermin.
- Water used for cooking should be of same standard as drinking.
- Food should be cooked in metal cooking pot which be immediately cleaned after every meal.
- The food once cooked should be kept hot at 63^0 Celsius or above.
- Dishes and eating utensils should be washed thoroughly with hot water containing detergents.
- Raw food should be kept separate from the cooked food.
- Food should be transported in a food container and not mixed with other goods.
- Food container should be cleaned immediately after being emptied.
- The food container should be marked 'Food Only'.
- The waste and spillage should be cleared immediately.
- Food should not be stored on the floor, but on suitable shelves.
- Detergents, soaps, insect killers and other chemical products should be stored in a separate location.
- Food handlers should have clean, short or netted hair and clean short finger nails, regular bathing habits and clean cloth wearing of closed shoes is mandatory (no sandal or slippers).

- Food handlers with skin, nose, throat problem or suffering from colds, diarrhoea or vomiting should report immediately to the medical Rep. and should not be allowed to handle until clearance.
- Hands should be washed with soap after using the toilets or cleaning a spill, or even after smoking etc.

(Catering Crew Hygiene)

- Catering crew must be free of contagious diseases, cuts, sores, and colds when handling and preparing food.
- Kitchen staff should get examined often for their hygiene.
- Kitchen staff should wash their hands, properly scrubbing with soap and water, prior to handling of food, after handling uncooked food and using the toilet.
- Kitchen staff should keep their nails and hair short.
- Kitchen staff should report on duty in clean proper clothes (uniform, cook's cap,& hair nets.)
- Kitchen and dining facilities whether in tents or mobile units should have the same requirements for cleanliness and sanitation.

(Hygiene on Living Quarter)

- Floors should be kept clean and washed with disinfection at least once a day.
- Spills should be cleaned immediately.
- Bed rooms should be tidied - kept neat and clean.
- Bed sheets and pillow cases should be systematically changed whenever the person occupying the bed is replaced, or at least one a week.
- Towels should be installed in the vicinity of the wash basins and liquid soap should be provided for washing of hands at communal places to avoid multiple contacts and spread of vectors.

GUIDELINE 24
INSTRUCTIONS FOR ANNUAL TURN AROUND (ATA) OF PROCESSING PLANTS

In order to execute Annual Turn Around (ATA) safely, following safety instructions must followed before hand:-

- Updated P&IDs, PFDs, etc. shall be available on site & ER Post.
- All Producing Wells shall be closed, locked out and tagged out.
- Complete system shall be depressurized.
- All gas lines shall be purged with an inert gas (like Nitrogen) and made free from hydrocarbon.
- All crude oil lines shall also be purged with an inert gas (like Nitrogen) or flushed with clean water.
- Stock level of oil shall be minimized up to dead level, where possible
- All oil storage tanks shall be isolated from the system and their in-out valves closed/ locked out/ tagged out.
- Stock level of LPG shall also be minimized up to dead level.
- All LPG storage bullets shall also be isolated from the system and their in-out valves closed/ locked out/ tagged out.
- Oil, sludge and oily water shall be removed from the TPI/ API/ CPI areas to make these free from inflammable material.
- Bins/ containers placed at the sample points shall be removed away from the plant's hazardous zones.
- Every oil spill and oily soil shall be removed/ controlled in the plant premises.
- Housekeeping of plant area shall be maintained. Inflammable material like cotton rags, grass, bushes, paper etc. shall be removed from the plant premises.
- Hot oil shall be drained and system shall be cooled down.

- Propane circuit shall be depressurized and purged with an inert gas (like Nitrogen) if welding cutting is required at this circuit.
- Propane accumulator shall be isolated from the circuit and its in-out valves closed/ locked out/ tagged out if welding cutting is required there.
- In-out valves of major equipment (like Vessels, Columns, K.O drums, Separators etc.) shall be closed and isolated from the system.
- All equipment/ units shall be turned off other than the exceptional ones required for power generation. Emergency power generator shall be readily available/ on standby.
- All electric motor breakers shall be turned off/ tagged out/ locked out or racked out.
- All slippery areas and oily area shall be cleaned and dried while tripping hazards shall be pre-checked and cleared.
- Proper scaffolding arrangements shall be predetermined for work at height.
- All lifting equipment like crane, fork lifter, sling, web sling, shackle, eye bolt etc. shall be inspected prior to use.
- Trained, qualified and certified workforce shall be hired for the execution of ATA activities.
- System shall be in place to achieve compliance of PTW and JHAs.
- Fire suppression systems shall be in perfectly ready mode and area operators shall be vigilant.
- Emergency response post, fire tender and ambulance shall be ready to combat any emergencies.
- Each ATA job/ activity shall be carried out under the supervision of competent person to ensure the quality of work within the prescribed timeframe.

GUIDELINE 25
INSTRUCTIONS FOR PRODUCTION, TESTING AND WORKOVER

- Location Management shall adhere to well testing and workover programs which should be designed to mitigate potential impact on environmental resources and the community.
- Location Management shall identity and protect aquifers, which are an underground source of drinking water, or other aquifers, which may be used by the community for drinking or agricultural use.
- Location Management shall not allow any formation fluid (oil, condense or water) to flow uncontrolled. If during an emergency, however, the formation fluid is released, the flow should be directed to a flare pit, emergency pit or flare stack at a site and safe distance.
- Location Management shall not release produced water into the environment (through percolation, land application, and discharge to surface water) if such release may adversely affect soils, surface water, groundwater, organisms or wildlife.
- In wetlands or coastal areas, extra precautions shall be taken to ensure that unburned hydrocarbons are not released into the water. If the test site is in the vicinity of a river, unburned hydrocarbons should not be allowed to flow into the river.
- Evaporation ponds permitted for storage or disposal of produced water, with the exception of emergency saltwater pits are required to be lined - except where the Management has conclusively demonstrated through an EIA or IEE that the pit cannot cause pollution of surrounding agricultural land nor pollution of surface or subsurface water.
- Evaporation ponds used for disposal of production water shall be constructed to prevent vertical and horizontal seepage.

- Evaporation ponds shall be properly fenced to avoid any incident or injury.
- Location Management shall ensure that possible presence of H2S in produced fluids is properly noted.
- Location Management shall take additional measures to ensure that minimal or no hazardous materials are used during the well completion and that procedures are in place to prevent spillage of completion fluids (often acids) during the completion operation.
- Location Management shall implement appropriate zone isolation procedures. Packers, for instance, should be properly set to seal off production horizons from other zones to preclude vertical contamination of other zones including groundwater aquifers.
- Location Management shall segregate hazardous wastes from non-hazardous wastes. Hazardous wastes must be stored, managed and disposed in a safe manner which will not cause harm to humans, animals, or environmental resources.

GUIDELINE 26
INSTRUCTIONS FOR SITE RESTORATION

Location Management must restore disturbed areas (from seismic, drilling or production activities) to approximately pre-existing conditions, subject to agreement with the landowner, DGPC and concerned EPA that desirable development features may be retained. Pit sites should be restored to their pre-existing condition after the pits serve their purpose.

Specific Guidelines are as follows:

Drilling and Production Sites

- The Location Management should upon completion of production or drilling activities, and where DGPC, local authorities and landowner agree the facilities have no future use, return the well site to its previous condition.

Pit Closure

- Within 12 months after drilling, unlined drilling pits should be closed by trench burial method.
- Within 6 months after drilling, lined pits containing hazardous materials should be closed through encapsulation with a geomembrane cap. Pits not containing hazardous wastes may be closed by mixing and filling.
- Other types of pits (such as flare and workover pits) should be closed within 30 days after use.

Seismic Survey Areas

- After drilling and loading the shot-hole, it should be backfilled with cuttings or another authorized material.
- Trash, debris, pin flags, and signs from seismic survey activities should be picked up.
- Campsites should be left clean with no refuse or open sump left behind.

GUIDELINE 27
INSTRUCTIONS FOR OPEN AUCTION

While opting for an Open Action of critical items, Press Tender would be advertised as per company policy based on the a) the justification explicitly showing ineffectuality of the items and b) proper value determination of the items by a Committee. This would be mandatory for the following category of items:

- **Operational:** Weary assemblies and spares of engines, pumps, generators, pipes of different sizes, welding plants, rig mast structures, production tubing and other valued electrical and mechanical assets.
- **Support:** Unserviceable support vehicles including Ambulance, Dozers, Trailers, Bouzers, Fork Lifters, and Cranes.
- **Product related:** Used Chemicals/ Oil and Sludge collected from the separators/ pipelines/ tanks.

GUIDELINE 28
INSTRUCTIONS FOR USE OF NITROGEN

Nitrogen has many uses on process facilities, including the inert-gas blanketing of tanks, equipment purging, and as a carrier for catalyst regeneration. Oxygen contamination of the nitrogen system could render it ineffective as an inert-purge medium, thus creating flammable mixtures. The availability of nitrogen in large volumes in many facilities allows for it to be used as an emergency source of instrument air. But this strategy can have serious consequences. Instrument air systems often vent or leak into confined areas — the presence of nitrogen could create a serious breathing hazard. The following guidelines be considered when using nitrogen to back up the instrument air supply:

- Do not allow permanent connections between the nitrogen system and either the plant or instrument air systems.
- Utility nitrogen stations should be clearly marked and have special connectors and hoses which are not common to any other system. Universal air hose connections (crow's foot) should not be used in nitrogen service.
- Locations where backup nitrogen is being used should be monitored and alarmed for low oxygen concentration; signs and barriers should be installed.
- Once the problem with the instrument air system has been resolved, the nitrogen to instrument air cross connection must be removed.

ANNEXURE A
MINIMUM APPROACH DISTANCE

The closest distances an employee is permitted to approach an environmentally sensitive area or an energized or a grounded object in terms of safety are mentioned below:

From Environmental Perspective

Activity	Recommended Safe Distance
New access tracks	50m from all surface water sources; 100m from cultural sites (including graveyard and shrines); 100m from villages
Campsite	500m from communities, cultural sites (including graveyard and shrines) and surface water bodies
Soak pits (sanitary pits and biodegradable garbage pits)	300m from all surface/ground water sources
Burn pit	500m from communities
Installation of new tube wells	500m from existing wells
Up holes	30m from water wells; 50m from houses; 100m from canals; 50m from reptiles' hole; 50m from birds' nests
Exploration & production facilities should be installed	300m from protected areas; 200m from culturally sensitive sites
Drawing ground water from the wells or springs	At least 50m from sources of contamination.

From Safety Perspective

Activity	Recommended Safe Distance
Distance from which moving equipment (e.g. crane boom) must not be operated within an organized power line	Power line voltage – nominal kV, alternating current / Distance (feet) Up to 50 — 10 More than 50 to 200 — 15 More than 200 to 350 — 20 More than 350 to 500 — 25 Erect an elevated warning line, barricade, or line of signs, in view of the operator.
Minimum horizontal working distances to overhead power lines	Minimum 10m at both sides
Personnel to be kept clear of civil works machinery whilst it is in operation	At minimum distance of 5m
Distance between crane boom and Riggers	Barricaded around swing radius. (Keep visual contact with helpers at all time + Install audible signals on cranes)
Between Product Storage Tanks (Crude Oil/ Condensate/ Gasoline, LNG and LPG)	25m, 35m and45m respectively (in wind speed of 4 m/s)
Explosives (for shot holes) should not be used down hole within;	100m of any building, pipeline, wellhead, and water bore or pastoral fixture
Explosives (magazine) to be stored	More than 20 feet of a flammable material, stove, furnace, open fire or flame
Oxygen and Fuel cylinders to be stored with each other or be separated by a known combustible barrier	20 feet apart

Vibrators and other surface energy sources to be operated	More than 20m of any gas or oil pipeline or building
Up holes used for a down hole geophone and weight drop as an energy source are drilled	No closer than 20m from any pipeline or well
Work permit required for Excavation	If excavation required below 4 feet depth
Work permit required for Work At Height	6 feet height or above
Safety harness should be worn for work	6 feet height or above (if guard rails not available)
Use of Scaffold	For working at 1.5m height or above
Work permit required for Hot Work Operations	On or near operational process areas or within 50 feet of flammable/ combustible materials, fumes, battery storage or charging areas (Fire hazard must be removed, covered with a fire-resistant/ insulating material or otherwise protected.) Within 100 feet of explosives of powder magazine or explosive storage area
Distance between ladder and wall	1:4 rule or 75 degree angle from wall (structure)
Fire extinguishers/ hydrants must be present	25 to 75 feet from flammable materials/ substances
Distance between two workers in a workplace/ workshop	10 feet
Minimum width required for a walk way	27 inches or three planks (The height of top grail from platform= 42 inches)
First aid box in a workplace	6 to 8 feet from the nearest worker
Distance between	20 to 30m

fire water pump and fire water reservoir in a workplace	
Distance among vehicles and workers in a workplace	Workplace is to provide separate pedestrian and vehicle traffic routes
Flow line	Laid to a distance of 90m cross-wind or down-wind from the well
Bleed-off line to be directed to a flare pit	At least 90m from the drilling well
Distance of installation or operation of flame type equipment	Not to be less than 90m from a well-head tank
Distance of heater or treater	Not to be less than 90m from wellhead
Perforating operations shall not be performed while any transmission set (radio/telephone) is in operation	Within 90m of the well and or perforation truck
All open fires shall be extinguished & no one shall be allowed to smoke	90m from the well
All energized electric installations & wiring should be flameproof & properly insulated	90m around the well
Flare pit or stack	Not less than 90m horizontally cross-wind or down-wind from the wellhead
Displaying of warning notices in hazardous areas	90m radius
Provision of hydrants with fog nozzles & adequate lengths of hose pipes	At a distance of not less than 90m from each vulnerable point
Air or Gas drilling: Installation of one remote control valve	15m from well floor

in air or gas supply line	
Electrical equipment/ fittings installed or operated shall be of flame proof or intrinsically safe construction	Within a radius of 15 meters of Zone 0 (Class 1 Div 1)
Maintenance apparatus and all sources of ignition shall be removed while noxious and flammable gas is present (detected)	Within 25 meters

Note: *The above list is not exhaustive/ final.*

ANNEXURE B

STANDARDIZED COLOR CODING

Pipeline Color Code Identification Band System and Labeling System:

- This shall be complied where the following apply:
  - Pipe contents are hazardous, or could generate hazardous conditions.
  - The pipe serves a safety purpose, as part of hazard prevention or emergency response.
  - Flow must be redirected, shut off, or adjusted to allow for maintenance or other expected work.
  - The pipe or its contents could affect the procedures followed during an emergency.
- Standardization shall be accomplished in all facilities as follows:-

The Band System:

- All process equipment and pipe work apart from Fire Fighting System shall be finished in either Light Grey or White along its entire length as the decorative color (the base color or ground color).
- The fluid contents of all flow-lines shall be identified by tapes which are appropriately colored; the nature of the pipe contents shall be identified by means of a Color Code Identification Band System (CCIB).
- Ground colors shall be provided on the full pipe section; whereas color band width to be 25 mm up to 25 mm.
- When double color bands exist on the pipeline, then a proportional width of 4:1 to the next color band is provided.
- These color bands are provided at suitable locations such as:
  - At the beginning and termination points
  - At 25m intervals (up to 50m in case of headers)
  - At change in flow direction points and flow diversion locations.

- At locations where the pipe enters the plant or exits from the boundary.

- Color Code Identification Band System (CCIB) is given below:

Type of Fluid	Identification Band Color
Water (Raw;Potable;Storm;Treated;Produced)	Green
Steam	Crimson Red
Firefighting	Signal Red
Oils (Combustible Liquids)	Dark Brown
Chemicals	Orange
Gases (Gaseous or Liquefied)	Yellow
Acids & Alkalis	Purple
Air (Utility; Service, Instrument)	Light Blue
Process Effluents (Drain;Vent;Flare)	Black

- The additional use of Colored Labels giving the full or abbreviated product description, temperature, pressure, and other details necessary to identify any potential hazard, together with the appropriate visual aids and hazard pictorial symbols, shall be applied where deem appropriate.
- In addition to being Color Coded, each process sub-system, pipeline and valve shall be individually identified by marking them in accordance with the Equipment Identification and Tag Numbering System.
- The line number and the flow direction shall be stenciled on each pipe section and pipeline together with the CCIB, to provide the pipe work with unique traceability.

The Labeling System

- The labels shall be placed on pipes:
  - Adjacent to all valves and flanges
  - Adjacent to all changes in pipe direction
  - On both sides of wall, floor or ceiling penetrations
  - Every 50 feet on straight runs of pipe (or every 25 feet in congested areas)

- A color code based on the type of hazard posed by a pipe's contents. The labeling color code shall be:
  - Water: White text on green text box
  - Steam: White text on crimson text box
  - Fire quenching fluids: White text on red text box
  - Combustible fluids: White text on brown text box
  - Toxic and corrosive fluids: **Black** text on orange text box
  - Flammable fluids: **Black** text on yellow text box
  - Acidic fluids: White text on purple text box
  - Compressed air: White text on blue text box
  - Process effluents: White text on black text box

ANNEXURE C
COLOR CODE FOR COVERALL AND HARD HAT/ SAFETY HELMET

Color of Coverall	Recommended Categories for Use
Grayish Blue	OGDCL Officers
Red	Firefighting Crew
Dark Blue	OGDCL staff members; laborers (other than Officers)
Not specified	Contractors shall comply as per their own company's policy

Note:- *All Coverall Uniforms shall be Fire Retardant.*

Color of Safety Helmet	Recommended Categories for Use (for working in PPE required areas)
White	OGDCL Officers (Location ICs, Sectional ICs, Engineers, etc.)
Yellow	OGDCL staff members; laborers (other than Officers)
Green	HSE Reps. (Engineers/ Officers)
Red	Firefighting Crew
Blue	Employees of Contractors / Sub-contractors working at site
Brown	Welders or workers taking up high heat or high voltage jobs
Grey	All types of Guests/ Visitors

Note:- *In addition to color coding, the selection of the helmets shall be made with the intention a) to reduce the force of impact of falling objects, b) to reduce the force of impact resulting from a blow which may be received off center or to the top of the head and c) to reduce the danger of contact with exposed high-voltage electrical conductors.*

ANNEXURE D

COLOR CODING FOR MAINTENANCE OF LIFTING GEARS

- Lifting equipment comprises lifting appliances (equipment performing the lifting), lifting accessories (devices that connect the load to the lifting appliance 'GEARS') and lifted equipment (e.g. containers, baskets, etc). All shall be marked with the Working Load Limit (WLL) and Safe Working Load (SWL).
- An equipment register, including maintenance records and evidence of certification to be available with Operator.
- Following are some of the items used as gears in lifting activities;

Wire rope slings	Chains and chain slings	Man-made fibre slings	Shackles
Beam- and Plate clamps	Eye bolts & swivel rings	Hoist rings	Turnbuckles
Wedge sockets	Lifting harnesses	Drill pipe elevators	Casing elevators
Bail arms	Spreader beams	Hooks	Load cells
Pad eyes and bolts	Rigging screw	Pallet hook	

- Color coding shall be an add-on for visual inspection and confirm the following aspects;
  a) an inspection has been carried out;
  b) whether or not inspection is current; and
  c) to determine the inspection results by being able to link back from the physical evidence to the records.
  d) Location ICs shall ensure that all portable, circulating & fixed lifting equipment and accessories for lifting, after thorough examination, are color coded to give visual indication of their certification and fitness status:-

Color Code	Period
Green	Lifting accessories, which have been inspected and found fit for purpose should be color-coded for a maximum six months.
Yellow	Lifting accessories, which inspection is due after lapse of 06 months shall be stored separately and clearly marked/ color coded and returned for re-inspection, certification and color coding.
Red	Crimson red color to denote equipment "unsuitable for the job" shall be applied. The crimson red color code shall also be used for discarded or rejected lifting gears that need to be kept in material storage for non-prescribed period of time.

ANNEXURE E

ASSURED GROUNDING COLOR CODES

- All cords and current carrying conductors used with the portable power tools shall be protected by either a Ground Fault Circuit Interrupter (GFCI) or an Assured Grounding Program.
- Following Assured Grounding Color Code Calendar shall be used (each new year):

January	**February**	**March**
April	**May**	**June**
July	**August**	**September**
October	**November**	**December**

Note:- The colors in the form of "taped bands" shall be pasted on the wire near the plug.

ANNEXURE F

LOCKOUT COLOR CODING

- Lockout and Tagout (LOTO) devices shall be singularly identified; shall be the only device(s) used for controlling energy; and shall not be used for other purposes.
- Tags shall not be required if locks are otherwise "indelibly" marked so as to identify the person(s) to whom the lock belongs.
- For each Section/ Department, Locks shall be unique-color-coded to assist in identifying users.

Note: *The authorized person applying a lock shall keep the key for that lock in his possession until the lock is removed. No employee should be able to open a lock attached by someone else.*

ANNEXURE G

HAZARDOUS AREA CLASSIFICATION

The classification of areas shall be made an essential design consideration: A thorough analysis shall be undertaken by the responsible designers, chemical or electrical engineers to a) acquire such equipment which is to not create sources of ignition capable of igniting these mixtures and b) determine the correct hazardous locations classification. Process areas at the design phase shall be divided into Zones or Divisions as mentioned below according to the likelihood of a potentially explosive atmosphere being present:

Zone Classification	Definition Of Zone Or Division	Division Classification
Zone 0 (gases)	An area in which an explosive mixture is continuously present or present for long periods **Typically 1000 hr/year**	**Class I Division 1 (gases)**
Zone 1 (gases)	An area in which an explosive mixture is likely to occur in normal operation **Typically 10-1000 hr/year**	**Class I Division 1 (gases)**
Zone 2 (gases)	An area in which an explosive mixture is not likely to occur in normal operation but in accidental events or abnormal operation of equipment **Typically 1-10 hr/year**	**Class I Division 2 (gases)**

Note: *Intrinsically Safe/ explosion proof equipment, apparatus and gadgets shall be used in Zone 0&1.*

ANNEXURE H

EXPLOSION PROOF PROTECTION UNDER ATEX DIRECTIVE

Ex Code		Description	Standard	Area	Use
Flameproof	d	Equipment construction is such that it can withstand an internal explosion and provide relief of the external pressure via flamegap(s) such as the labyrinth created by threaded fittings or machined flanges. The escaping (hot) gases must sufficiently cool down along the escape path that by the time they reach the outside of the enclosure not to be a source of ignition of the outside, potentially ignitable surroundings.	IEC./EN 60079-1	Zone 1 if gas group & temp. class correct	Motors, lighting, junction boxes, electronics
Increased Safety	e	Equipment is very robust and components are made to a high quality	IEC/EN 60079-7	Zone 2 or Zone 1	Motors, lighting, junction boxes

Pressurised/purged	**p**	Equipment is pressurised to a positive pressure relative to the surrounding atmosphere with air or an inert gas, thus the surrounding ignitable atmosphere can not come in contact with energized parts of the apparatus. The overpressure is monitored, maintained and controlled.	IEC/EN 60079-2	Zone 1 (px or py), or zone 2 (pz)	Analysers, motors, control boxes, computers
Encapsulated	**m**	Equipment components of the equipment are usually encased in a resin type material	IEC/EN 60079-18	Zone 1 (Ex mb) or Zone 0 (Ex ma)	Electronics(no heat)
Sand/Powder/Quartz Filled	**q**	Equipment components are completely covered with a layer of Sand, powder or quartz	IEC/EN 60079-5	Zone 2 or Zone 1	Electronics, telephones, chokes
Oil Filled	**o**	Equipment components are completely submerged in oil	IEC/EN 60079-6	Zone 2 or Zone 1	Switchgear

Intrinsically safe	**i**	Any arcs or sparks in this equipment has insufficient energy (heat) to ignite a vapour Equipment can be installed in ANY housing provided to IP54. A 'Zener Barrier', opto-isolator or galvanic unit may be used to assist with certification. A special standard for instrumentation is IEC/EN 60079-27, describing requirements for Fieldbus Intrinsically Safe Concept (FISCO) (zone 0, 1 or 2)	IEC/EN 60079-25 IEC/EN 60079-11 IEC/EN60079-27	'ia': Zone 0 & 'ib': Zone 1 'ic: zone 2	Instrumentation, measurement, control
Non Incendive	**n**	Equipment is non-incendive or non-sparking. A special standard for instrumentation is IEC/EN 60079-27, describing requirements for Fieldbus Non-Incendive Concept (FNICO) (zone 2)	IEC/EN 60079-15 IEC/EN 60079-27	Zone 2	Motors, lighting, junction boxes, electronic equipment

ANNEXURE I

COLOR CODING FOR WASTE DRUMS/CONTAINERS/BINS

Designated waste drums, containers, bins, etc with specific labels shall be placed as Collection Method for the Waste Generating Areas. Color coding of drums, containers, bins, etc. for various types of wastes is to be as follows:

Waste Type	Bin Color
Hazardous Waste	**Red Color**
Food Waste	**Green Color**
Wood Waste	**Brown Color**
Glass Waste	**Yellow Color**
Plastic Waste	**Blue Color**
Metal Waste	**Grey Color**
Paper Waste	**White Color**

ANNEXURE J

COLOR CODING FOR WORK PERMITS

- Following types of work permits shall generally be in use:-

Permit	Background Colour
Cold Work Permit	Blue Colour
Sour/Hot Work permit	Red Colour
Electrical Work Permit	Green Colour
Confined Space/Vessel Entry Work Permit	Grey Colour
Radiography Work Permit	Yellow Colour
Excavation & Civil Work Permit	Brown Colour
Working at Height Permit	Pink Colour
Vehicle Entry Permit	Purple Colour

ANNEXURE K

COLOR CODING FOR HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS)

The four bars shall be color-coded, using the modern color bar symbols and the number ratings as follows:

0 = Insignificant hazard;
1 = Slight hazard;
2 = Moderate hazard;
3 = High hazard; &
4 = Extreme hazard

Type of Hazard	HMIS Color Bar
Health	**Blue**
Flammability	**Red**
Physical Hazard	**Orange**
Personal Protection	**White**

Note: *The color bar is not for emergencies and is used to convey broader health warning information.*

ANNEXURE L

TYPES OF PERSONAL PROTECTIVE EQUIPMENT (PPE)

Category A: The Basic PPE shall include a) Coverall/ Dangri, b) Warm Jacket/ Leather Jacket, c) Safety Shoes, d) Safety Glasses, e) Hard Hat, f) Ear Muffs and g) Cotton Gloves.

Category B: The Specific PPE shall include a) Gloves (Leather, Chemical Resistant, and Latex), b) Face Shields (Welding Shields and Goggles), c) Flame Resistant Clothes, d) Long Safety Shoes, e) Gas Mask, f) Chemical Apron and f) Safety Harness.

Category C: The Emergency PPE shall include complete Turnout Gear / Fire Kit (Fire Suit), SCBA/30 min., Air-Purifying Respirator (APR), and Safety Vests / Clothing with Reflective Material designed for high nighttime visibility.

ANNEXURE M

LOWER EXPLOSIVE OR FLAMMABLE LIMIT (LEL/LFL) AND UPPER EXPLOSIVE OR FLAMMABLE LIMIT (UEL/UFL) CHART

Material	LEL (%/Vol)	UEL (%/Vol)	TLV/TWA (ppm)	IDLH (ppm)	Density (Air = 1.0)
Acetone	2.5	12.8	750	2,500	2.0
Acetylene	2.5	100.0	-A-	-A-	.9
Ammonia	15.0	28.0	25	300	0.6
Benzene	1.2	7.8	1.0	500	2.6
Butane	1.6	8.4	800	-U-	2.0
n-Butyl Acetate	1.7	7.6	150	1,700	4.0
Diborane	0.8	88.0	0.1	15	1.0
Ethane	3.0	12.5	-A-	-A-	1.0
Ethanol	3.3	19.0	1,000	-U-	1.6
Ethyl Acetate	2.0	11.5	400	2,000	3.0
Ethyl Ether	1.9	36.0	400	1,900	2.6
Ethylene Oxide	3.0	100.0	1	-C-	1.5
Gasoline (100 Octane)	1.4	7.6	300	-U-	3-4.0
Heptane	1.05	6.7	400	750	3.5
Hexane	1.1	7.5	50	1,100	3.0
Hydrogen	4.0	75.0	-A-	-A-	0.1
Isopropyl Alcohol	2.0	12.0	400	2,000	2.1
Methane	5.0	15.0	-A-	-A-	0.6
Methanol	6.0	36.0	200	6,000	1.1
Methyl Ethyl Ketone	1.4	11.4	200	3,000	2.5
Pentane	1.5	7.8	600	15,000	2.5
Propane	2.1	9.5	1,000	2,100	1.6
Propylene Oxide	2.3	36.0	20	400	2.0
Styrene	0.9	6.8	50	700	3.6
Toluene	1.1	7.1	50	500	3.1
Turpentine	0.8	?	100	800	4.7
Vinyl Acetate	2.6	13.4	10	-U-	3.0
Vinyl Chloride	3.6	33.0	1.0	-C-	2.2
Xylene	0.9	6.7	100	900	3.7

LEL	Lower Explosive Limit
UEL	Upper Explosive Limit
PPM	Parts Per Million
TLV/TWA	Threshold Limit Value/Time Weighted Average
IDLH	Immediately Dangerous to Life or Health
Density	< 1.0 = lighter than air
	> 1.0 = heavier than air
A	Asphyxiant
C	Carcinogen
U	Data Not Available

Material	TLV/TWA (ppm)	IDLH	LEL (ppm)	LEL (%/Vol)	Density (Air=1)
Acetone	750	2,500	25,000	2.5	2.0
Ammonia	25	300	160,000	16.0	0.6
Benzene	1.0	-C-	12,000	1.2	2.6
Butane	800	-U-	16,000	1.6	2.0
n-Butyl Acetate	150	1,700	17,000	1.7	4.0
Carbon Dioxide	5,000	40,000	N/C	N/C	1.5
Carbon Monoxide	25	1,200	125,000	12.5	1.0
Chlorine	0.5	10	N/C	N/C	2.5
Ethylene Oxide	1	-C-	30,000	3.0	1.5
Ethyl Ether	400	19,000	19,000	1.9	2.6
Gasoline	300	-U-	14,000	1.4	3-4.0
Heptane	400	750	10,500	1.05	3.5
Hexane	50	1,100	11,000	1.0	3.0
Hydrogen Cyanide	10	50	56,000	5.6	0.9
Hydrogen Sulfide	10	100	40,000	4.0	1.2
Isopropyl Alcohol	400	2,000	20,000	2.0	2.1
Methyl Acetate	200	3,100	31,000	3.1	2.6
Methanol	200	6,000	60,000	6.0	1.1
Methyl Chloride	50	2,000	81,000	8.1	1.8
Methyl Ethyl Ketone	200	3,000	14,000	1.4	2.5
Methyl Methacrylate	100	1,000	17,000	1.7	3.5
Nitric Oxide	25	100	N/C	N/C	1.0
Nitrogen Dioxide	3	20	N/C	N/C	1.6
Pentane	600	15,000	15,000	1.5	2.5
n-Propyl Acetate	200	1,700	17,000	1.7	3.5
Styrene	50	700	9,000	.9	3.6
Sulfur Dioxide	2	100	N/C	N/C	2.2
1,1,1-Trichloroethane	350	700	75,000	7.5	4.6
Toluene	50	500	11,000	1.1	3.2
Trichloroethylene	50	1,000	80,000	8.0	4.5
Turpentine	100	800	8,000	0.8	4.7
Vinyl Chloride	1.0	-C-	36,000	3.6	2.2
Xylene	100	900	9,000	.9	3.7

LEL	Lower Explosive Limit	UEL	Upper Explosive Limit
PPM	Parts Per Million	TLV/TWA	Threshold Limit Value/Time Weighted Average
IDLH	Immediately Dangerous to Life or Health	Density	< 1.0 = lighter than air > 1.0 = heavier than air
C	Carcinogen	N/C	Not Combustible

ANNEXURE N

NATIONAL ENVIRONMENTAL QUALITY STANDARDS (NEQS) (SELF MONITORING AND REPORTING BY INDUSTRY) RULES 2001, SRO 528(1)/2001

1. Quarterly basis, monitoring of Effluents for the given parameters and reporting to provincial EPA:

(i) Flow
(ii) pH = 6 – 9
(iii) Temperature Increase = < 3 C
(iv) BOD5 = 80 mg/l
(v) COD = 150 mg/l
(vi) TSS = 200 mg/l
(vii) TDS = 3500 mg/l
(viii) Oil/Grease = 10 mg/l
(ix) Phenol = 0.1 mg/l
(x) Chloride = 1000 mg/l

2. Quarterly basis, monitoring of Emissions for the given parameters and reporting to provincial EPA:

(i) CO = 800 mg/Nm3
(ii) Hydrogen Sulphide = 10 mg/Nm3
(iii) PM10 = 300 mg/Nm3
(iv) SOx = 400 mg/Nm3

(Based on one percent sulphur content in fuel oil.)

(v) NOx = 130 nanogram per joule of heat input

3. Annual basis, monitoring of Diesel Vehicle Exhausts:

(i) CO = 4.0 g/kWh [ECE R-49] for Trucks and Buses + Large good vehicles + Older Vehicles
(ii) HC = 1.1 g/kWh [ECE R-49] for Trucks and Buses
(iii) HC = 7.0 g/kWh [ECE R-49] for Large good vehicles and Older Vehicles
(iv) NOx = 7.0 g/kWh [ECE R-49 for Trucks and Buses
(v) NOx = 1.1 g/kWh [ECE R-49] for Large good vehicles and Older Vehicles
(vi) PM = 0.15 g/kWh [ECE R-49] for Trucks and Buses + Large good vehicles + Older Vehicles

4. Annual basis, monitoring ambient air quality (due to flare/ vent):

Sulphur Dioxide (SO_2)	Annual Average* = 80 ug/m^3 24 hours** = 120 ug/m^3	Ultraviolet Fluorescence method
Oxides of Nitrogen as (NO)	Annual Average* = 40 ug/m^3 24 hours** = 40 ug/m^3	Gas Phase Chemiluminescence
Oxides of Nitrogen as (NO_2)	Annual Average* = 40 ug/m^3 24 hours** = 80 ug/m^3	Gas Phase Chemiluminescence
O_3	1 hour = 180 ug/m^3	Non dispersive UV absorption method
Suspended Particulate Matter (SPM)	Annual Average* = 400ug/m^3 24 hours** = 550ug/m^3	High Volume Sampling, (Average flow rate not less than 1.1 m^3/minute)
Respirable Particulate Matter.PM_{10}	Annual Average* = 200ug/m^3 24 hours** = 250ug/m^3	B Ray absorption method
Respirable Particulate Matter. $PM_{2.5}$	Annual Average* = 25 ug/m^3 24 hours** = 40 ug/m^3	B Ray absorption Method
Lead (Pb)	Annual Average* = 1.5 ug/m^3 24 hours** = 2 ug/m^3	ASS Method after sampling using EPM 2000 or equivalent Filter Paper
Carbon Monoxide (CO)	8hours** = 5 mg/m^3 1 hour** = 10 mg/m^3	Non Dispersive Infra Red (NDIR) method

* Annual arithmetic mean of minimum 104 measurements in a year taken twice a week 24 hourly at uniform interval.
** 24 hourly /8 hourly values should be met 98% of the time in a year. 2% of the time, it may exceed but not on two consecutive days.

5. Quarterly basis, monitoring noise levels:

Noise –dB(A) Leq* 55 (Day Time); 45 (Night Time)	Residential Camp Area
Noise –dB(A) Leq* 75 (Day Time); 65 (Night Time)	Engine Hall, Plant Premises

1. Day time hours: 6.00 a.m to 10.00 p.m.
2. Night time hours: 10.00 p.m. to 6.00 a.m.
3. Silence zone: Zone which are declared as such by the competent authority. An area comprising not less than 100 meters around hospitals, educational institutions and courts.
4. Mixed categories of areas may be declared as one of the four above-mentioned categories by the competent authority.

*dB(A) Leq: Time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

6. National Standards for Drinking Water Quality

#	Properties/ Parameters	Standard Values
Bacterial		
1.	All water intended for drinking (E.Coli or Thermotolerant Coliform bacteria)	Must not be detectable in any 100 ml sample
2.	Treated water entering the distribution system (E.Coli or thermotolerant coliform and total coliform bacteria)	Must not be detectable in any 100 ml sample
3.	Treated water in the distribution system (E.coli or thermotolerant coliform and total coliform baceria)	Must not be detectable in any 100 ml sample. In case of large supplies, where sufficient samples are examined, must not be present in 95% of the samples taken throughout any 12-month period.

Physical		
4.	Colour	≤ 15 TCU
5.	Taste	Non objectionable/ Acceptable
6.	Odour	Non objectionable/ Acceptable
7.	Turbidity	< 5 NTU
8.	Total Hardness as $CaCO_3$	< 500 mg/l
9.	TDS	< 1000
10.	pH	6.5-8.5
Radioactive		
11.	Alpha Emitters bq/L or pCi	0.1
12.	Beta emitters	1
Chemical		
	Essential Inorganics	*mg/Litre*
13.	Aluminum (Al) mg/l	≤0.2
14.	Antimony (Sb)	≤0.005
15.	Arsenic (As)	≤0.05
16.	Barium (Ba)	0.7
17.	Boron (B)	0.3
18.	Cadmium (Cd)	0.01
19.	Chloride (Cl)	<250
20.	Chromium (Cr)	≤0.05
21.	Copper (Cu)	2
Toxic		
	Toxic Inorganics	*mg/Litre*
22.	Cyanide (CN)	≤0.05
23.	Fluoride (F)*	≤1.5
24.	Lead (Pb)	≤0.05
25.	Manganese (Mn)	≤0.5
26.	Mercury (Hg)	≤0.001
27.	Nickel (Ni)	≤0.02
28.	Nitrate (NO3)*	≤50
29.	Nitrite (NO2)*	≤3
30.	Selenium (Se)	0.01
31.	Residual chlorine	0.2 – 0.5 at consumer end 0.5-1.5 at source
32.	Zinc (Zn)	5.0

7. Light Intensity

To assess whether lighting is sufficient in workplace, following light intensity ranges are used. Employees should understand the effects of lighting on their health and safety. In particular, they need to understand visual fatigue: its causes, prevention, symptoms, and recovery techniques.

Task/ Area	Range of Luminance (Lux)
Emergency lighting (at floor or tread levels) in exits, exit routes, stairs, and underground walkways	At least 10 (on average)
Simple visual tasks e.g. lobby area; washrooms; loading into trucks	30 – 100
Medium visual tasks e.g. bookkeeping; filing; material receiving and packing areas	300 – 1000
More visually demanding tasks e.g. QC/ inspection; proofreading; workshops/ machine work	3000 – 10000

ANNEXURE O
EMERGENCIES LEVELS

Basic Level Emergency	It is an emergency state in which an incident occurs which may not cause the normal operations to be shutdown. There is no immediate potential threat to the safety of personnel, assets, environment, and operations. Emergency equipment available on site can control this type of emergency situation. For e.g. • An injury or illness without Lost Workday Injury (LWI); • Minor fire; • Minor spill; • Electrical shock; • Person becomes unconscious in confined space. **Note:** For Basic Level Emergency condition, there is no need to gather at muster point.
Level – 1 Emergency	It is an emergency state in which an incident or series of Incidents which may cause the normal operations / activities to be temporary suspended or shut down. This emergency results an immediate potential threat to the safety of personnel, assets, environment, and operations. This type of emergency can be control by Emergency Team Member. The following conditions define as Level-1Emergency (but not limited to): • An injury or illness which result Lost Workday Injury (LWI); • Moderate fire; • Moderate spill; • Small contained fire or explosion; • Electric shock/ electrocution; • Toxic/ H2S leakage; **Note:** Gather at respective muster point in case of Level-1 Emergency.

Level- 2 Emergency	An emergency state in which an incident or series of incident may result in serious injury/ fatality, significant fire/ explosion, major equipment damage, gas / oil release, loss of controlled substance to the environment for which external support services may be required. The following condition defines as Level-2 Emergency (but not limited to): • An injury or illness that may result in Lost Workday Injury (LWI) or poses a health threat to personnel; • Property or Equipment damaged due to the significant fire or explosion; • Excessive H_2S emission; • Major fire/ explosion; • Major chemical / oil spills; • Bomb threat; • Natural disaster **Note:** Rush outside the plant boundary through emergency exit gate in case of Level-2 Emergency.

IMPORTANT CONTACT NUMBERS

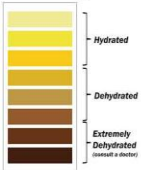
#	Designation	Contact #s		
		Office	Residence	Cell

Oil & Gas Development Company Ltd.

HSE INDUCTION FOR FIELD VISITORS

[to be placed or posted in every guest room]

1. Please note that the major hazards of this field/ location are of physical, chemical, and biological nature.
2. Therefore, visitors are expected to comply with all SAFETY/ ENVIRONMENT/ EMERGENCY signs and use of PPE where required.
3. In case of any emergency, inform Duty Officer by dialing 'xxx'.
4. Actions in the event of Fire or Fire Alarm:
   - If fire is detected, inform Duty officer.
   - If fire alarm sounds; Switch off any electrical/ gas appliance in use; Close doors/ windows.
   - Evacuate through the nearest Fire Exit and proceed to Muster Point.
   - Do not attempt to gather your personal belongings.
   - Do not go to the places other than the Muster Point.
   - Return to the office/ plant/ camp when allowed by Security Administrator.
5. Only use the designated areas for smoking.
6. Visitor's responsibilities towards Environment:
   - Do not litter; Use the designated waste bins.
   - Switch off the lights, fan, air conditioner, and heater when not needed.
   - Report any spark in the switch boards and water leakage in the toilets.
   - Do not use tap water for drinking.
7. Please avoid wearing open shoes or sandals while going out of the camp/ field area, since presence of snakes or poisonous insects cannot be ruled out. In case of snake/ insect bite, please call medical emergency at xxx. Necessary medicines are available at field.
8. Illegal drugs, weapons and explosives are prohibited within office/ plant/ camp premises.
9. While using toilets, you may consult the following Dehydration Chart to check your dehydration levels through urine color:



For further information contact
Tel.: +92-51-9202882; Ext.: 2827; Email: mubashir_abbas@ogdcl.com