

# **Contractor Safety Manual**



**Central U.P Gas Limited**

**Kanpur**

**Year: 2020**

## Contents

| <b>Sr. No</b> | <b>Topic</b>  | <b>Page no.</b> |
|---------------|---|-----------------|
| 1             | Introduction  | 3               |
| 2             | Objective   | 4               |
| 3             | Scope   | 4               |
| 4             | HSE Policy of CUGL  | 4               |
| 5             | Contractor Selection  | 5               |
| 6             | HSE Management System   | 5               |
| 7             | HSE Plan  | 6               |
| 8             | Contractor HSE Organization & Responsibilities                                  | 6               |
| 9             | Safety Training & Toolbox Talk  | 9               |
| 10            | Issue of I card   | 10              |
| 11            | General Safety Requirement  | 10              |
| 11.1          | Safety Work Permit  | 10              |
| 11.2          | Work Site Safety  | 11              |
| 11.3          | Work Clothing   | 11              |
| 11.4          | Safety while Working at Height  | 12              |
| 11.5          | Gas Cutting & Welding   | 13              |
| 11.6          | Safety While Working with Machinery   | 15              |
| 11.7          | Safety in Confined Space  | 16              |
| 11.8          | Personal Protective Equipment   | 17              |
| 11.9          | Safety in Grinding Operation  | 18              |
| 11.10         | Electrical Safety   | 19              |
| 11.11         | Safety in Excavation work   | 20              |
| 11.12         | LCV Operation   | 21              |
| 11.13         | Safety in Radiography   | 22              |
| 12            | Disciplinary Action   | 23              |
| 13            | Accident/ Incident Reporting & Investigation                                    | 23              |
| 14            | Alcohol, illegal Drugs, Firearms  | 24              |
| 15            | Emergency Evacuation  | 24              |
| 16            | Housekeeping  | 24              |
| 17            | Fire Prevention & Protection  | 24              |
| 18            | Behaviour with Customer   | 25              |
| 19            | Environmental Requirements  | 25              |
| 20            | Legal Requirements  | 25              |
| 21            | Requirement of First Aid  | 25              |
| 22            | Annexure I- Work permit formats for CNG & PNG                                   | 26              |
| 23            | Annexure II- Specification of Rescue & maintenance pulley kit                   | 30              |
| 24            | Annexure III- Specification of Coverall   | 34              |
| 25            | Annexure IV — Specification of PPE's  | 35              |
| 26            | Annexure V- Accident Investigation Form   | 37              |
| 27            | Annexure VI- Close out report on HSE Performance related to various Contractors | 38              |
| 28            | Contractor certification  | 40              |
| 29            | Annexure - VII Selection Criteria for Suitable PPEs                             | 41              |

## **1.Introduction**

CUGL (Central UP Gas Limited), a joint venture between India's two Navratna companies, GAIL (India) Limited and Bharat Petroleum Corporation Limited came into existence on 25th February 2005. CUGL was constituted for developing City Gas Distribution project in Kanpur. Kanpur (Manchester of East) was also known as CWANPORE at the time of British India. This is famous industrial hub of North India. Later, CUGL has started City Gas Distribution Project for supplying Natural Gas to Domestic/Gen-set/Commercial/Industrial/Automobile sector in order to reduce pollution level in Bareilly & Jhansi also. At present CUGL is supplying PNG to Domestic/Gen-set/Commercial/Industrial sector in different areas of Kanpur, Unnao, Bareilly & Jhansi.

CUGL believe that HEALTH, SAFETY&ENVIORNMENT are inherent part of business. Company is making its best efforts to provide a safe and accident free environment for its employees, customers& society. Apart from providing an environment friendly fuel to the customers, the company uses best international practice in laying its infrastructure. The company make its best efforts to educate customers to handle the fuel.

The company makes a systematic approach to promote Health, Safety& Environment in and around. The company follows safety management as HSE Policy, Work Permit system, Personal Protection, Fire& Safety Education and Accident reporting investigation, Safety Audit and emergency preparedness etc. Safety Of our Customers is of prime concern to us for which we follow specific system approach.

CUGL strives to maintain a safe and healthy workplace for our partners and Contractor. CUGL is committed to protect health and safety of everybody involved with company's activities and protects the environment in a sustainable manner. Hence Health, Safety, and Environmental considerations are recognized as critical and integral to our core processes and our day to day activities. All Contractors must report any unsafe act/condition or environmental conditions which has or could have an adverse impact to human health or the environment. Contractors are to ensure the health and safety of their workers and any person likely to be affected by the workers actions. Contractors have the right to know about hazards and the means used to control or eliminate the hazards. Contractors have the right to participate in workplace safety activities and to refuse to work in an unsafe or environmentally detrimental condition.

This document provides all Contractors with the minimum Health, Safety and Environmental (HSE) standards required while working on and/or adjacent to Company premises. Non-compliance of HSE standards is treated the same as non-compliance with any contract provision and may result in work stoppage or Contractor removal from the premises. Repeated non-compliance may result in Contractor dismissal and contract termination.

CUGL requires that Contractors meet all guidelines outlined & Pre-Job Requirements, of this manual prior to commencing any work on Company premises/ Project site. As a part of this commitment, CUGL ensures that contractors are aware of its policies, standards and requires the contactors to comply with CUGL standards. It is the responsibility of the main contractors to ensure that all their sub-contractors fully comply with CUGL HSE requirements.

Contractor is responsible for complying with applicable Indian, State and local HSE regulations. Contractor must also comply with the requirements listed in the Contractor Safety Manual and any site-specific and/or business unit policies and procedures that are applicable in the scope of Work. It is the Contractor's continuing and absolute responsibility

for all aspects of Contractor safety on their jobsites during the execution of work. Contractors are important wing of CUGL& it is necessary that they know HSE norms and ensure healthy safety practices in CUGL.

## **2. Objective**

- To establish and communicate CUGL's HSE expectations to its external contractors.
- To encourage the contractor to align their HSE practices to meet the CUGL's HSE standards.
- To reduce the actual and potential risks from contractor activities this is essential to improve the overall CUGL's HSE performance.

The purpose of this standard is to establish, implement and execute a practical, sound and effective program for the prevention of incidents that cause or may cause injury to person or damage to property. These safety requirements have been designed to assist all Contractors, their supervisors and workmen to identify, evaluate, and subsequently adopt control measures in various activities or conditions to reduce the possibility of any undesired incident within their respective areas of contract responsibility.

## **3. Scope**

The requirement of this manual is applicable to all contractors working within CUGL's own, leased, managed, or associated assets / project sites and office premises. Contractors include short term, long term, Civil, Mechanical, Electrical and general to perform any job. All Contractors are required to ensure that they and their employees, Sub contractors, suppliers, vendors, and visitors, while on the job site or even off the job site, comply with the provisions of this standard.

## **4. HSE Policy of CUGL**

The management accepts the responsibility for Safety, Health & Environment Management of the company. The subject being a line responsibility, every employee has been made responsible and accountable for the protection of Safety, Health & Environment. The policy of company is as follows:

- To give topmost priority to Safety& Health of all the personnel, property and protect environment.
- To follow all applicable Codes, Standards & Safety practices in design, operation, maintenance and modifications to ensure HSE protection.
- All planning, discussions and actions confirm our commitment towards Safety, Health & Environment protection aspects.
- Safety Audit is carried out yearly and findings are documented for follow up actions so as to restore safe conditions.
- Each Employee is fully informed for strict compliance of safety orders/rules issued by the management.
- Health Check up of each employee is done annually.
- To train all employees in their respective areas of activities.
- Engineer In charges of projects ensure compliance of safety orders/rules & statutory requirements by contractors, transporters, visitors and other agencies related to contracts.
- Emergency drills are conducted every six months.
- Each employee is to abstain from unsafe acts and prevent unsafe conditions.

- It is compulsory for all employees to take active part on safety & health related activities on & off the job. Compliance of safety observations is done in most effective manner.
- To ensure compliance of Work Permit System.
- Use of Personnel Protective Equipments is compulsory while at work.
- Quality maintained in all areas of activities.
- To adopt such systems and methods so as to ensure continual improvement.
- Management ensures that efforts of each employee are directed to contribute for achieving excellence in Safety, Health, Work Environment, Quality and Productivity.

## **5. Contractor selection**

Selecting a qualified and skilled contractor is a major step toward achieving safe contractor performance. Proper framing of the scope of work, pre-qualification criteria, special contract requirement, experience profile of the contractor and its workmen/ supervisors etc is essential for proper selection of a contractor.

The contractor's safety standard can be judged by the following attributes:

- The contractor's safety commitment, as demonstrated by its own safety programs supported by their top management.
- Experience profile of the contractor, its supervisor and workmen.
- Past safety performance of the contractor as can be evaluated through old data tracking or through documentary evidence submitted by the contractor such as Accident data, Near-Miss data, safety violation during the job, system of safety training, hazard identification and mitigation plan, safety meeting, safety promotion program, safety enforcement and disciplinary action plan, safety standard available with contractor for similar jobs etc.
- Availability of safety equipment/ appliances with the contractor.
- Availability of qualified and skilled safety personnel with the contractor to monitor safety performance during the progress of the job.
- After completion of the work as per contract, performance towards Health, Safety & Environment of the contractor will be evaluated & contractor assessment form will be filled by the Engineer In-charge of CUGL as per format attached in Annexure VI. This form will be used in future during selection of contractor for job allocation.

## **6. HSE Management System**

Contractor must have a defined Health, Safety & Environmental Management system in place aligned to CUGL requirements and demonstrate that it is implemented effectively. It should typically cover the following elements

- Leadership & Commitment by higher management.
- HSE Policy
- Organization, Resources & Documentation related to HSE.
- Evaluation & Risk Management.
- Planning & Procedure.
- Implementation & Monitoring.
- Auditing & Review.

The contractor should have an HSE policy backed by their management's commitment to create a safe work environment. The policy should state the intention and methodology of

protecting the personnel at work site. Contractor shall demonstrate their HSE commitment in protecting the people, environment and assets by implementing the HSE Management system and various HSE programs that support their HSE Policy.

## **7. HSE Plans**

Prior to the commencement of contractual activity, the contractor shall submit a written Project-specific/Work Specific HSE plan to CUGL for review and approval. Contractor shall prepare the Project HSE plan addressing their work activities, hazards and risk controls, training needs identification, audits and safety promotional activities. Purpose of the project HSE plan is to provide assurance of effective working of the interface between the HSE Management Systems of CUGL and contractors at specific work I project level.

The Contractor's Project specific plan shall address the following:

- Title page
- Project title and brief scope of work
- Organization chart
- Hazard identification plan (clearly identifying project related HSE risks, control measures and persons responsible)
- Safety I Environmental policy and assignment of responsibilities
- HSE Training plan
- Management of sub contractors
- Safety inspections
- Safety reports and records
- Welding and cutting equipment
- Personal protective equipment
- Tools and portable power tools
- Ladders
- Electrical installation and equipment
- Cranes and rigging equipment
- Mechanical equipment
- Transportation
- Incident reporting and investigation
- Excavation
- Fire prevention
- First-aid facilities
- General safety rules
- Emergency response and evacuation procedures
- Environmental regulatory compliance requirements and compliance process
- Manual Handling
- Checklists

## **8. Contractor HSE Organization & Responsibilities.**

Contractor shall submit the HSE Organization chart with responsibilities to CUGL Fire & safety department and obtain approval prior to startup of job.

Typical requirement of Safety personnel

| <b>Employee strength (including subcontractor)</b> | <b>Minimum requirement of HSE Personnel.</b>   |
|--|--|
| No of Employee ≤ 25                                | 1 no. HSE Supervisor with background and knowledge of Fire & Safety.                     |
| No of Employee 25-50                               | 2 no. HSE Supervisor with background and knowledge of Fire & Safety + 1 no. HSE Engineer |
| No of Employee 50-500                              | 1 no. HSE Supervisor for every 25 employees+ 1 no. HSE Engineer for every 100 workmen    |

### **The minimum qualification for Contractor safety personnel-**

#### **HSE Supervisor-**

- Should be diploma holder in Engineering (Mechanical, Chemical, Electrical, Civil) and one-year industrial safety diploma course from recognized institute.

#### **HSE Engineer-**

- Should be degree holder in Engineering (Fire & Safety) or degree holder in Mechanical, Electrical, Civil or Chemical and one-year industrial safety diploma course from recognized institute.
- Having two years of experience as a Fire & safety officer/ Engineer in oil & gas or chemical industry,

#### **Responsibility of HSE Supervisor-**

The field HSE supervisor will assist the HSE Engineer.

This position is responsible for: -

- Ensuring all the workmen & supervisor with safety gears (Safety shoes, safety helmet, cover all & other job specific PPE's).
- HSE training (organize the training programs as per the training matrix).
- Daily workplace safety inspections (to identify unsafe acts, unsafe conditions and take necessary actions).
- Identification of hazards and environmental impacts.
- Inspection of PPEs, tools / lifting accessories / slings / ropes/web belts/ D-shackles etc. (visual inspection once in week for their soundness and validity).
- Maintain daily HSE logbook(site HSE observations and preventive actions taken).
- Checking availability of safety work permit & review of work permits as per permit conditions.
- Reporting of Near miss incident, first aid & other incident to HSE Engineer.
- Identifying and correcting unsafe behaviours at work site.

- Training to their staff, supervisor & workmen regarding the operation & maintenance of Fire fighting equipments.
- Daily toolbox talk must be conducted for the workmen.

### **Responsibility of HSE Engineer-**

Contractor's HSE Engineer assumes the lead safety position for the contractor organization and is responsible for monitoring and administering a pro-active safety program designed to provide assistance in recognizing, evaluating, and subsequently controlling or eliminating hazardous acts or conditions. He / She works in close coordination with CUGL HSE Management and in conjunction with his / her Principal employer assisting in the implementation of HSE programs. Broadly the responsibilities of HSE Engineer are:

- Administer appropriate safe work practices & procedures within the worksite.
- Ensure that necessary records are maintained as per applicable HSE regulatory requirements and reports are submitted to statutory bodies as per the timelines defined by them in the applicable acts / rules.
- Ensure that all mobile lifting appliances are subjected to third party inspections as per statutory requirement & records are maintained by the responsible dept.
- Promote a high level of safety awareness of the project among the staff/workers through orientation/refresher training programs.
- Site safety visit.
- Ensure the safety work permit system.
- Ensure Safety gears (safety shoes, safety helmet, Cover all & other job specific PPE's) by all the workmen & supervisor at job site.
- Certification & testing of Safety equipments & PPE's.
- Conduct Weekly Safety inspections, track performance and report trends to his/her site management.
- Maintain all HSE related records and files associated with the organization.
- Maintain pertinent information (i.e. phone number, locations) of Emergency Response Services, physicians, and hospitals.
- Lead and assist in accident & incident investigations to ensure all accidents and incidents are properly investigated including near miss incidents, first aid cases, all recordable cases, property damage, etc. & reporting to CUGL safety executive.
- Evaluate subcontractor safety programs and performance and ensure they comply with the statutory and HSE requirements
- Review the Supervisor HSE Logbooks.
- Training to their staff, supervisor & workmen regarding the operation & maintenance of Firefighting equipments.



## 9. Safety Training & Toolbox Talk



### Training

Before start of any job, all the contractor personnel must be trained in a language they understand before issuing I Card for working at CUGL premises & project site. The content of the training program should include the following:

- HSE management system of CUGL
- Safety standards and procedures relevant for carrying out jobs.
- Special precaution specific for a site I Work based on its hazard perception.
- Hands on training for use of fire extinguisher & PPE.
- Use of PPEs in general and any special PPE specific for a particular job.
- Emergency preparedness plans including evacuation plan of CUGL.
- Near miss & incident reporting.

This training is meant to make contractor and their employees familiar with existing safety practices of CUGL.

### Toolbox Talk

- Toolbox talks are quite effective means of communicating the workplace hazards and appropriate controls to the workers.
- It helps in better understanding and ensures proper controls to reduce the risks.
- Contractor supervisor shall deliver the toolbox talk in a reasonably peaceful area, before start of the activity.
- It should contain the brief work description, probable hazards, controls planned and mitigation measures to be taken.
- Use & benefits of PPE's & safety gears as per the job requirements.
- The duration of the toolbox talk should not exceed 15 minutes.
- A record for each toolbox talk should be maintained by the contractor indicating the topic and number of personnel attended.
- The environment of toolbox talk shall be supportive to clear doubt, if any, raised by workmen.
- The Contractor should ensure that Toolbox Talk are conducted on regular basis.

## 10. Issue of I Card

Issue of I card is more of a security issue than a safety issue. However, this system can also be used effectively for safety interventions. Following may be adapted to use the I card for safety controls:

- A photo I Card will be issued by the contractors for his supervisors/ workmen. Photo I card will contain identification marks and can be referred for future administrative controls.
- After imparting safety trainings, the I Card will be stamped as 'Safety Training given' or separate Safety Training card shall be issued by contractor to supervisor, Workmen and their employees. No contractor and their employees shall be allowed to enter inside the CUGL premises or project site for carrying out jobs unless the safety briefing has been given to them and stamping of, I card / Safety training certificate has been issued to them.
- The validity of such "Safety Training card" shall be maximum 1 year & the next due date for safety training shall be indicated in bold.

## 11. General Safety Requirement.

### 11.1 Work Permit System



The contractor Supervisors (or person in charge of the work) should ensure that:

- They have received training in the Safety work permit system as applied in that location
- The people working for them have received adequate instruction in the system
- They discuss the job fully with the person issuing the permit
- The workmen are briefed on the details of the permit including any potential hazards, and on all the precautions taken or to be taken.
- The precautions are maintained throughout the work activity
- The worker understands that if circumstances change work must be stopped and inform the supervisor.
- The work group stays within the limitations set on the permit (physical boundaries, type of work and validity time)
- On completion or suspension of the work the site is left in a safe condition and the permit issuer is informed & permit has been returned for closing.

Individuals working within the Safety work permit system should ensure that:

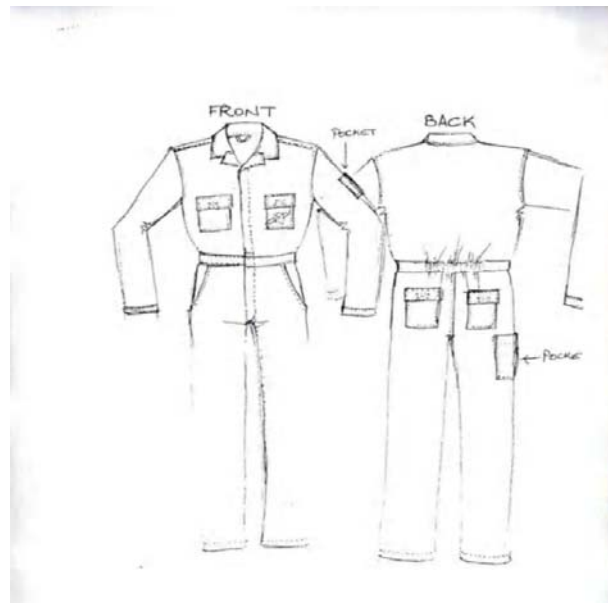
- They have received instruction and have a good understanding of the safety work permit system at the installation where they work

- They do not start any work requiring a permit, until it has been properly authorized and issued
- They receive a briefing from the supervisor on the particular task and they understand the hazards and the precautions taken or to be taken
- They follow the instructions specified in the permit. When they stop work, the site and any equipment they are using is left in a safe condition
- If in any doubt or if circumstances change, they must stop work and consult with their supervisor.
- Work Permit formats attached in Annexure –I

### 11.2 Worksite Safety

- It is the responsibility of each Contractor or his authorized I nominated representative to inspect each work area at the beginning of each shift, and periodically thereafter, to ensure safe working conditions are maintained.
- Contractor must provide good illumination for work to proceed safely.
- Contractor must ensure protection from severe weather conditions. (Extreme wind, lightning storms, extreme heat, extreme cold etc...).
- The Contractor needs to evaluate /consider the environmental extremes of the project, such as the ability of their workers to work in areas of excessive cold or heat.
- Based on that evaluation the Contractor must implement the appropriate procedures to provide a safe a work environment.

### 11.3 Work Clothing-



- Every contractor will provide to his worker & supervisor, mm two nos. Cotton Coverall, one safety helmet & one safety shoe every year for working at CUGL job site. The specification & design of “Cotton Cover All” is attached in Annexure III.
- Where hazards exist due to moving parts on machinery or equipment, clothing and hair must be maintained to avoid entanglement.
- Special work clothing must be worn where exposure to fire, extreme heat or cold, corrosive chemicals, electrical hazards, body impacts, cuts from handled materials or

other specialized hazards are possible. See the premises or business unit's site-specific requirements for any additional needs, such as Fire-Resistant Clothing (FRC). The Contractor is required to supply special work clothing, ensure it is in good condition and properly worn, when and where required.

#### **11.4 Safety while work at height: -**



#### **Ladder safety**

- The design of ladder shall confirm IS 3696 (Part 2): 1991. Makeshift ladders shall not be permitted.
- Metal ladder of aluminum alloy complying with the suitable grade of IS 617:1975.
- Ladder used at worksite should be capable to carry their intended load.
- Slip-resistant shoes, lashing or other effective means shall be used to avoid danger or slipping.
- Overall length of stock ladders shall not exceed 10m.
- The overall height of step ladders shall not exceed 6m.
- Step ladders shall be provided with an automatic locking device or spreader to hold it in open position.
- The overall length of the extension ladder shall not exceed 18m.
- No ladder having a missing, defective rung or one which depends for its support solely on nails, shall be used. Defective ladders shall be promptly and properly repaired or replaced.
- Special care should be taken while working near electrical line.
- Three-point contact while working on ladder shall be practiced.
- A ratio of 1:4 in distance of resting points in bottom and top ladder points shall be maintained for stability.

#### **Scaffold safety- Mobile scaffolding for temporary work**

- Scaffolds shall be braced by cross bracing or diagonal braces or both, for securing vertical members together laterally, and the cross braces shall be of such length as will automatically square & align vertical members so that the erected scaffold always plumb, square & rigid. All brace connections shall be made square.
- Platforms shall be tightly decked for full width of the scaffold and scaffold boards shall be secured against displacement. Platforms shall be provided with guard rail.
- The force necessary to move the mobile scaffolding shall be applied near or as close to the base as practicable and provision shall be made to stabilize the tower

during movement from one location to another. Scaffold shall only be moved on level floors free from obstructions and openings.

- The wheels or casters shall be provided with rubber or similar resilient tires.
- Workmen shall not be allowed to ride on the mobile scaffold.
- All materials shall be removed before mobile scaffold is moved.
- The mobile scaffold in use shall rest upon a suitable footing and shall stand plumb.
- The casters or wheels shall be locked to prevent any movement.
- Mobile scaffold shall also conform to the applicable provision of tube & coupler scaffolding.
- Special care should be taken while working with ladder & scaffold near electrical lines.
- Care shall be taken to see that no part of scaffold struck by moving equipments & no materials shall be dumped against it. Area should be barricaded while working near moving vehicle.
- Scaffold should be designed to carry intended load. Safety for G.I Installation & Maintenance work
- For working more than Ground + Three floor building height, rescue & maintenance pulley kit must be used. One maintenance pulley kit for each team & one rescue kit for three teams will be provided by contractor. The specification of rescue & maintenance pulley kit attached in Annexure- II.
- For working below the above-mentioned height, suspended working platform with lifeline (other than load carrying rope) & fall arrestor may be used. Working platform & others load carrying equipment should be designed in such a way that, it is able to carry the adequate load. Materials used for construction of working platform should be of good quality. Suspended working platform must be tested by third party before using it & it must be retested at every six months. All the equipments must be thoroughly checked before using it by the contractor or his representative. If any damage/cracks found the equipment, it must be discarded & checked by third party before using next time.
- All the safety gears & equipments must be visually checked by supervisor at site before using it.
- Stability of structure will be ensured by contractor or his representative (supervisor) for carrying the suspended load.
- Work permit must be obtained for working at height.
- All the workmen for working at height must be medically & physically fit.
- Training must be given to all the workmen about the use & maintenance of safety gears & equipments.

## **11.5 Gas Cutting & Welding**

### **Gas cutting**

- Oxygen has no smell, but whilst not inflammable itself, promotes & accentuates rapid combustion, hence it can be highly dangerous, particularly in confined spaces, where it may not dissipate quickly, because the addition of only a small amount of oxygen to the normal atmosphere can create a violent risk from any stray spark or welding flame.
- Acetylene is highly flammable and with air, forms an explosive mixture which can be set off by any spark, flame or heat in the vicinity. It is therefore essential that all

joints, especially on the gas cylinder, are tight; that the hoses themselves are in good condition and all the valves are turned off on completion of work.

- Liquefied Petroleum Gas (LPG) is a mixture of Butane & Propane. It is highly inflammable and heavier than air. It flows along floors & tends to settle in low spots, such as basements and pits. Thus, should be kept in mind to avoid accidental ignition or suffocation hazards. Only industrial LPG cylinders will be allowed for gas cutting operations.
- Acetylene cylinders are filled with a porous substance such as charcoal or kapok substances, which is soaked with acetone. Because of their design they should always be stored upright. The pressure in the cylinder is 250psi. Copper pipe must not be used for connecting hoses together, as copper & acetylene can form copper acetylides, which are sensitive explosive. Acetylene should not be used to cut silver also. Colour code of Acetylene cylinder is maroon.
- Oxygen is supplied in cylinders pressurized to 2200psi & painted in black colour.
- All cylinders shall be protected against excessive rise in temperature.
- Cylinders stored in the open shall be screened against the continuous direct rays of the sun.
- A serious accident may easily result if oxygen is used as a substitute for compressed air. Oxygen shall not be used in pneumatic tools, to blow out pipelines, to dust clothing or work, to create pressure or for ventilation.
- Oxygen cylinder & its parts should be free from grease, oil or any combustible materials.
- Fuel-gas cylinders shall be handled carefully, (rough handling, knocks or falls are liable to damage the cylinder, valve or safety device and cause leakage). Suitably designed equipment (trolley with chain for tying the cylinder) shall be used for transporting gas cylinders.
- Fuel- gas cylinder should be placed away from source of ignition.
- Regulators or automatic reducing valve shall be used only for the gas at pressure for which they are intended.
- Always double stage regulators shall be used with flash back arrestors.
- During gas cutting, Suitable PPE's should be worn.
- Blowpipe shall be shut off when not in use.
- Lighted blowpipe shall not be left on a bench or the floor as the force of flame may cause it to move.
- Work piece shall be clamped and not held by hand.
- Hoses shall be kept away from the working area to prevent contact with flames, heat, sparks or hot spatter.
- For cutting process SOP should be followed. SOP will be provided by concerned Engineer/ In charge of CUGL.
- Firefighting equipment should be kept nearby to use in case of fire.

## **Welding**

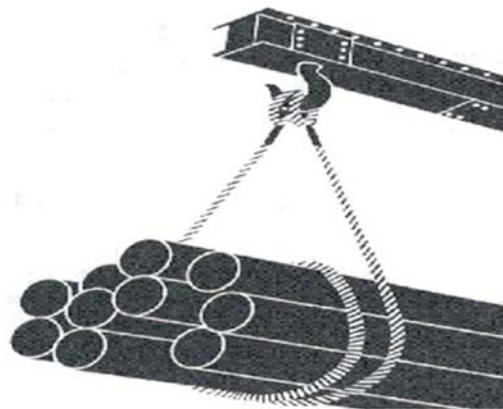
- All the moving & rotating parts of the welding equipment shall be guarded.
- In case of engine- run welding machines, refilling shall not be done while the machine is running and spilling of oil be avoided.
- All welding cable shall be of completely insulated, flexible type, joint free & capable of handling the maximum current requirement of the work in progress.
- Any current- carrying parts passing through the portion of the holder, which the welder grips in his hand shall be fully insulated against the maximum voltage

encountered to ground. Insulation of all, metallic or current carrying parts, including the jaws, which grip the electrodes, is recommended.

- Welding current should be returned to the welding machine by a single, cable from the work to the welding machine. Connection of a cable from the welding machine to a common conductor or structure on which the work rests, or to which the work is connected may be permitted.
- Pipeline containing gases or flammable liquids or conduits carrying electrical conductors shall not be used for a ground return circuit.
- Precaution shall be taken to prevent electric shock, where required ELCB/ RCCB to be used.
- Welding equipment shall always be maintained in safe working order. Periodic inspection shall be conducted.
- Either the work- piece shall be moved to a safe location for carrying gas cutting work or Combustible materials and flammable materials shall be removed from the workplace.
- If combustible materials that cannot be moved shall be protected from close contact with flame, heat, sparks or hot slag. Suitable guards or covers such as fire-retardant blankets shall be used.
- Fire extinguishers, fire buckets with water shall be kept nearby.
- Suitable PPEs should be used while welding.
- IS 818- 1968 Code of practices for safety & health requirements in Electric & Gas welding & cutting operations should be followed.
- IS 3016-1 965 Code of practices for fire precautions in welding and cutting operations should be followed.
- Welders shall be qualified in line with API 1104, or section IX of the ASME Boiler and Pressure Vessel Code. Requirements in ASME Boiler & Pressure Vessel Code, Section IIC and Section V or API 1104 shall apply for filler materials and nondestructive examination of welds. Welder re-qualification shall be required if the welder has not performed any welding for the welding process qualified for the past 6 months. (as per OISD 226).

#### **11.6 Safety While Working with Machinery- (Hydra, JCB, Crane, Tractor etc.)**

- All gears, pulleys, revolving shafts, couplings, belt Drives, chain drives and all other rotating and moving parts of machinery shall be effectively guarded unless they are so constructed, installed or placed as to be safe as if they were guarded.



- Fencing (Guard) of rotating, moving and other dangerous parts of machinery shall not be removed while the machinery is in use or in motion and when removed, it shall be replaced as soon as practicable and in any case before the machinery is again brought into use.
- No part of machinery, while in motion or in operation shall be examined, lubricated, adjusted or repaired except by authorized workmen.
- All the limit switches & safety devices should be in working condition. It must be checked about its working before using the equipment.
- Electric power shall be shut off and relevant fuses removed when repairs are carried out to any electric machinery.
- Where the machinery in use is mobile type and during the course of operation it has to shift its location frequently, one 10 kgs stored pressure type Dry chemical powder fire extinguisher shall be carried on the machine at a suitable position on the machinery so as to ensure its easy availability.
- Only competent and reliable persons shall be employed as drivers of earth moving and lifting machinery or as signallers to give signals to the driver.
- The Operators/ Drivers shall possess valid License.
- All the documents related to vehicle & legal document should be available with operator & should be presented when asked by CUGL representative.
- The driver shall not leave his cabin while the engine or motor is running or the load is suspended, and in no case, shall the machinery be left unattended, even for short periods, until all loads are removed.
- Before leaving the machine, the operator shall switch off the electric power supply or stop the engine apply appropriate motion brakes and locks to keep the machine in safe condition.
- No unauthorized person shall operate the machines.
- The driver/operator and signaller shall have good vision and undergo the medical test for vision once in a year.
- Hydra should be used only for lifting purpose; it must not be used to carry the load from one point to another point.

### 11.7 Safety in Confined Space-

⚠ WARNING

Confined space hazard.  
Follow confined space entry procedures.

SAFETY FIRST

Confined Spaces

A Confined space is a dangerous place

| <b>Oxygen Scale (in Confined Space Entry)</b> |                                   |                                |                        |                                |  |
|---|-----------------------------------|--------------------------------|------------------------|--------------------------------|--|
| 6%  | 14%                               | 16%                            | 19.5%                  | 21%                            | 23%  |
| Difficulty Breathing<br>Death in a minutes    | Faulty Judgement<br>Rapid Fatigue | Impaired Judgement & Breathing | Minimum for Safe Entry | Impaired Judgement & Breathing | Oxygen Enrichment<br>Extremely Fire Hazard |



Workplace, having restricted means of entry & exit and not designed for continuous human occupancy. Such as Steel valve chamber.

### **Hazards**

1. Oxygen deficiency
2. Flammable gas
3. Toxic gas (Carbon monoxide, Hydrogen sulphide, welding fumes)
4. Electricity
5. Mechanical Hazard

### **Safety requirement**

- Work permit must be obtained for working in confined space. Work permit for working in confined space will be issued at site after physical verification.
- Entrant, the employee who will physically enter the confined space to perform work, shall be explained about the hazards and the relevant precautionary measures related to confined space.
- There shall be an attendant employed and he shall be outside the confined space and monitor the entrants.
- All person entering a confined space shall wear Full- body harness with a lifeline where entrances are restricted to prevent normal removal of a person. In such cases, one end of the lifeline shall be with attendant to facilitate removal of person.
- Before the initial entry is made into any confined space the atmosphere shall be tested to determine whether it is safe for entering without wearing breathing apparatus or whether it is hazardous & require the wearing of breathing apparatus.

### **11.8 Personal Protective Equipment-**



- All the personal protective equipments should be of good quality & reputed make & shall have the national or international certification.
- All the required & appropriate/ suitable PPEs will be provided to his workers by his contractor. If the contractor does not provide the required PPEs to his workmen,

the job may be suspended. In case of urgent nature of job & depending upon the availability of PPE's with CUGL, the same may be provided by CUGL & the deduction will be made from the contractor's account.

### **Helmet**

- Safety Helmets are intended to protect the head from injuries caused by falling or flying objects, impacts, electrical shock, by bumping the head against a fixed object.
- A safety helmet should be worn by all persons at all times whenever there are overhead hazards.
- Safety helmets shall be certified to IS 2952 or internationally recognized such as CE.

### **Hearing Protection**

- The surest method of preventing occupational deafness is to reduce noise at the source by engineering methods. However, in certain workplaces, engineering methods may not be sufficient enough to reduce the noise level reaching the user below 85 dBA.
- In such workplaces, hearing protectors need to be used to reduce the amount of noise reaching the ears.
- Ear plugs should be used in high noise area. Eye & Face Protection
- Eye & face protection devices should be used whenever workmen are exposed to hazards, which could injure eyes and/ or face.

### **Hand & Arm Protection**

- Hand & arm protection is necessary to protect the workers from potential injuries like thermal & chemical burns, bruises, cuts, electrical shock and absorption of chemical through skin contact.

### **Foot Protection**

- Foot protection shall be used to protect the workers from the following injuries-
- Impact Injuries
- Compression injuries
- Electrical shocks
- Puncture
- Safety shoes should always be worn by all person whenever they are at CUGL worksite.
- Using of gumboots should be ensured whenever required.

### **Fall Protection**

Full body harness shall be used by all personnel when working or travelling in elevated area more than 1.5m above ground level or adjacent surface where a fall exposure exists.

Specifications of PPE are given in Annexure-IV.

### **11.9 Safety in Grinding Operation-**

- The wheels, which are properly labelled only, shall be used. Instruction given on the wheel must be followed.
- Grinding wheel shall never be used after its expiry date.

- Abrasive wheels shall carefully be inspected and shall not be used, if they are damaged any way.



- Wheel Guard shall be in position and fixed securely before starting the cutting- off or grinding operation. Grinding machine shall never be used without wheel guard.
- Wheel guard shall be oriented such that it prevents operator getting hit by broken pieces of wheel.
- PPEs required- Ear muffs, Gloves, dust mask, Leather apron or safety cloths, head cover, footwear.

### 11.10 Electrical Safety



- Proper size cable shall be selected based on the current rating to avoid over heating of cable.
- Double insulated three core/ four core cable only shall be used. Two core cables shall not be used.
- Cable must be joint free in hydrocarbon areas.
- Only metal clad and interlocked type combined switch plug- socket units shall be used. No loose wire shall be inserted in sockets without plugs.
- Cables shall be inspected before every use on all tools, lights and equipment.
- Insulation damaged cable will not be allowed for any work.

### 11.11 Safety in Excavation work-



- Valid work permit shall be obtained for any excavation prior to the job.
- Clearances from different department must be obtained for underground utilities. Common buried services found in a construction site are:
  - Water mains (Fire, Industrial and Common Services)
  - Electrical cables (High Voltage and Low Voltage, Permanent and Temporary).
  - Drainages and Sewers
  - Fuel pipes (Oil, Gas and Chemical).
  - Communication and Optic Fibre cables (Telephone and Instrumentation)
- Contractor/Subcontractor will be responsible for detecting, identifying and marking of all buried services on work area affected by the excavation operation.
- Comply with hazard controls listed in the permit.
- Area around the excavated pit must be barricaded with sufficient height by appropriate means like sheets etc. in case of Project site for construction of new CNG stations, building etc so that no disturbance to the adjacent & from the adjacent should be made.
- Deploy a competent supervisor at work site during the work execution.
- Safe means of access and entry / exit shall be provided for all the excavation.
- Excavation should be done in V shape to avoid collapse of soil.
- Excavation more than man height, escape route with two ladder & rope should be provided.
- Excavated material should be kept at least 1.5 m away from the top edge of excavation.
- No heavy equipment, vehicle is permitted near to the edge of the excavated area.
- Stop blocks will be used to prevent construction plants and equipment from coming too close to the edge of an excavation.
- Excavation pit adjacent to public access will be adequately illuminated.
- Continuous mechanical ventilation will be provided in deep excavation to prevent the buildup of toxic or explosive gases.
- Atmospheric monitoring will be carried out in advance of any work and throughout the duration where work is being performed in a deep and narrow excavation.
- Workers working in excavation pit will be briefed on the potential hazards involved, escape routes and the emergency and rescue procedures when the need arises.
- Adequate first aid and effective rescue equipment will be provided in close proximity to an excavation.
- Workers will be trained in basic rescue procedures such as removing unconscious and injured workers from an excavation.
- Excavation of depth exceeding man height will be adequately supported by shoring kit or other suitable means to avoid collapse.

- Workmen working for excavation will use all the required PPEs.
- Area around the excavation to be cleared of all debris.

### **11.12 LCV Operation.**

- LCV must be registered to carry CNG.
- LCV must be equipped with the necessary first aid, safety equipments to carry CNG.
- 02 nos. 10 KG DCP Stored Pressure type Fire Extinguishers and 02 nos. Traffic Cones, HAZCHEM sign & TREM card will be provided by CUGL for each LCV.
- Transporter or the owner must have full and adequate information about CNG.
- The driver must be trained in handling the dangers posed during transport of such goods.
- LCV must be equipped with the safety equipments for preventing fire, explosion or escape of CNG.
- LCV must be fitted with techno-graph — GPS system (an instrument to record the lapse of running time of the LCV; time speed maintained, acceleration, deceleration, etc.). GPS system should be available for monitoring at all the time and nonworking of GPS for any LCV will be construed as deviation in operation of LCV.
- LCV must be displayed with class label at its three sides as per statutory requirement.
- Class label must not obscure any other markings required to be displayed. The surface of the vehicle surrounding the label shall be of a colour that contrasts vividly with the background of the class label.
- The company and the transporter shall lay down the route of each trip and the driver shall be bound to take unless directed or permitted otherwise by the Police Authorities. A timetable shall be fixed for each trip to the destination and back with reference to the route so laid.
- The driver must undergo the course on driving of vehicle carrying hazardous goods from an institute recognized by the transport authority.
- A TREM (Transport emergency) card must be provided to the driver, which he shall keep in the cabin at the right-hand side of the dashboard so that it is available for ready use at the time of transportation.
- Display of EIP (Emergency information Panel) must be ensured with three sides of LCV vehicle.
- Driver shall observe at all times the directions necessary for preventing fire, explosion or escape of CNG while LCV is in motion, and when parked it must be at a place safe from fire, explosion and any other risk, and at all times the vehicle remains under the control and supervision of the driver or some other competent person above the age of 18 years.
- The Driver should be imparted Live Fire Fighting Training enabling him to handle any fire emergency before deploying for job.
- The Drivers shall wear Cotton uniform & safety shoes all the time on duty. Road safety sign & signals to be followed.
- Driver will not be allowed to work in drunken condition & alcohol/drugs are not allowed during the working hours.
- Contractor must ensure the safety of man and machine all the time. The contractor shall always remain liable to CUGL for any loss or damage caused to any building, plant, machinery of CUGL due to careless, negligent, inexperienced act or default of the contractor, his/their agents, representative or employees. CUGL shall be the sole judge as regards the quantum of loss or damage and it shall be entitled to deduct from the amounts payable hereunder to the contractor, the cost of repairs or the amount of loss or damages. Any third-party loss to life or property shall be the responsibility of

the LCV contractor. Any third-party loss of life or property resulted due to negligence of driver or fault of the vehicle shall be the responsibility of the LCV contractor.

- Duty Hours: Transporter shall maintain driver duty hours as per motor vehicle act and other statutory regulations. However, CUGL will levy penalty as per statutory norms where driver works beyond 16 hours in a day. Transporter shall submit attendance sheet and weekly roster of driver to CUGL on start of every month. The driver duty hours shall fulfil requirements of statutory regulations.
- Contractor shall take suitable Group Personal Accident Insurance Cover for taking care of injury, damage or any other risks in respect of his Engineers and other Supervisory staff who are not covered under other relevant clauses. The policy shall cover third party liability. The third party (liability shall cover the loss/ disablement of human life (person not belonging to the Contractor) and cover the risk of damage to other materials/ equipment/ properties during construction, erection and commissioning at site.
- The Contractor shall also arrange suitable insurance to cover damage, loss, accidents, risks etc., in respect of all his plant, equipments and machinery, erection tools & tackles and all other temporary attachments brought by him at site to execute the work.

Qualification of driver:

- Educational qualification: Minimum 8th Pass
- Driving License: The drivers MUST HAVE valid driving licenses issued by competent authority for driving medium/ heavy goods carrying vehicle.
- Hazardous goods driving certificate: The driver must have a valid certificate for driving hazardous goods vehicles from govt/ PSU approved training school/institute.
- Medical fitness: The drivers must be medically fit and shall have a certificate issued from registered doctor. The certificate shall be revalidated on annual basis or as per doctor's advice.

### **11.13 Safety in Radiography operation.**

- Site radiography needs to be done in an area where specific protection measures and safety provisions are in place, i.e. in an area designated as a controlled area.
- The boundary of the controlled area has to be demarcated; when reasonably practicable, this is done by physical means. This may include using existing structures such as walls, using temporary barriers, or cordoning the area with tape.
- Notices are displayed at the controlled area boundary at suitable positions. The notices bear the national radiation symbol, warnings and appropriate instructions in the local language.
- In all cases adequate warning is to be given. Visible or audible signals or both are used where a radiographic source is exposed, or an X ray machine is energized, and surveillance is compromised. The use of visible and audible signals will help to reduce the likelihood of accidental exposures to radiation.
- Before the start of radiographic work, the area is to be cleared of all people except for authorized personnel.
- The boundary should be clearly visible and continuously patrolled to ensure that unauthorized people do not enter the controlled area.
- Whenever it is possible to take advantage of existing shielding, such as walls, vehicles or shielded enclosures or similar structures to reduce radiation dose levels,

radiography personnel need to arrange the disposition of the equipment and parts within the shielding afforded.

- Personal dosimeters such as film dosimeters or direct reading dosimeters are to be worn when radiographers are working with ionizing radiation. A personal dosimeter is worn only by the radiographer to whom it is issued, and it is securely stored in a non-radiation environment when not being worn.
- Personal dosimeters are to be regularly assessed for the radiation to which they have been exposed, as required by the Regulatory Authority. Direct reading dosimeters have to be periodically assessed by the radiographers to monitor doses received during radiography.
- Storage facilities for radioactive are designed to restrict exposure, keep radiographic sources, exposure containers and control sources secure against theft or damage, and prevent any unauthorized persons from carrying out any actions which would be dangerous to themselves or the public. Clear warning notices are to be displayed at the storage facilities.
- A suitable storage facility for radiographic sources, exposure containers, control sources and ancillary equipment is one that provides protection from the prevailing environmental conditions. Resistance to fire is considered in constructing the storage facility in order to minimize loss of shielding and containment. The storage facility is to be located at a remote distance from corrosive and explosive hazards in line with the guidelines of sourcing Agency.

## **12. Disciplinary Action**

- If any Contractor allows workers to work in unsafe conditions or violates environmental permits or regulations, CUGL may remove the Contractor or any of its individual workers from Company premises or Penalty may be imposed to the contractor as decided by Engineer/ In charge of CUGL for that particular site.
- Immediate and permanent removal may occur if any of the following activities are observed:
  - Openly exhibits disregard, defiance, or disrespect for the safety program
  - Violates established safety or environmental rules, regulations, procedures or codes
  - Participates in fighting, violence, threats of violence, theft, or destruction of property
  - Possesses weapons including but not limited to firearms or knives not typically used in conjunction with normal work tasks.
  - Falsifying documents or information.

## **13. Accident I Incident Reporting and Investigation**

- The Contractor must immediately report all accidents/incidents and near misses to the Company Representative.
- The Contractor must investigate all accidents/incidents that result in, or have the potential to result in, injury or illness, property damage, process/product loss or harm to the environment.
- The investigative process must include the identification of root causes or causal factors that contributed to the occurrence. The Contractor must determine the necessary corrective actions and ensure closure/completion in timely manner. In addition to the Contractor's analysis/investigation, CUGL retains the right to conduct their own investigation for any illnesses, injuries, fatalities, incidents or near misses occurring on its premises.

- The Contractor must conduct the thorough investigation required by and submit a copy of the written report to the CUGL Representative, unless otherwise specified, within 48 hours of occurrence. Contractor must maintain injury logs for their respective workers.
- Incident Investigation format attached at Annexure -v

#### **14. Alcohol, illegal Drugs and Firearms**

Contractor must develop and enforce a policy that prohibits the possession, distribution, promotion, manufacture, sale, use, and use of illegal drugs, drug paraphernalia, controlled substances, alcoholic beverages and weapons by workers while on Company premises or during work at site.

#### **15. Emergency Evacuation**

- In the event of emergency, the Contractor and their personnel are to follow the direction of Company emergency action plan.
- Familiarize your workers with the emergency plan systems used at each specific work location. If any Contractor suspects that an emergency condition exists, they must immediately contact the CUGL Representative.

#### **16. Housekeeping**

- Good housekeeping is mandatory. Work areas must be kept neat, clean, and orderly.
- If a Contractor's work area is not kept clean, CUGL may have the area cleaned and charge the cost to the Contractor.
- CUGL may also stop work until the area has been cleaned.
- Keep work areas, passageways, fire exits, fire lanes, and stairs in and around the buildings and structures always clear of debris.
- Properly store all tools and equipments after use.
- Keep walkways free of cords, cables, obstructions, and debris.
- Changes in walkway elevations or dangerous depressions must be cleared marked with cones, barricade tape or other appropriate warning signs.
- Clean the work area daily and dispose of debris in dumpsters, or off site in accordance with the environmental regulations.
- Contractor must remove all unused material and equipment upon the completion of the work.

#### **17. Fire Prevention and Protection**

- CUGL utilizes the Hot Work Permit system for all working involving open flames, welding, cutting, grinding or brazing. A Fire Watcher is an individual who has been designated for monitoring the hot work site where open flames are present, where work on in-service equipment is being performed or where sparks have the potential for landing on adjacent in-service equipment. This individual must be capable of evaluating unsafe conditions and taking necessary actions to mitigate and communicate the conditions. The Fire Watcher shall have no other assigned duties while conducting this task.
- Obtain appropriate Work Permit from respective Control room to perform work activity.
- Make sure that fire fighting equipments are available near work area for emergency situation.



- Make sure that workers engaged in activities are capable to use of fire fighting equipments in case of fire or emergency.
- Smoking is not allowed near work locations or near flammable materials.

## **18. Behavior with customers**

- While dealing with customer (on the job on behalf of CUGL like- attending complaints, repair, while filling the CNG etc.) Contractor & his team, representative, supervisor & workmen should follow the dress code & behavior with the customers should be polite & soft.

## **19. Environmental Requirements**

- Contractors are required to comply with all applicable environmental laws, rules and regulations over the specific location of where work activities are being performed.
- Contractor must review and comply with all applicable environmental conditions, laws, regulations and Company requirements prior to the start and during work.
- Contractor must participate in and comply with all applicable work-specific environmental training prior to commencing work.
- Contractor shall use only approved access roads and stay within approved and designated working, staging, temporary use, and parking area boundaries.
- Contractor must handle, treat, characterize and dispose of all waste in accordance with all applicable federal and state/provincial regulations and any specific contract requirements, such as CUGL approval of the disposal site. Trash, debris, and other wastes shall not be burnt or otherwise disposed on site without proper permission. Waste materials must be secured while on the worksite.
- Contractor shall maintain a clean and safe worksite. Trash and debris will be collected at the end of each day & disposed of properly.

## **20. Legal Requirement**


- Contractors & their representative shall comply with all applicable health, safety & Environment legal requirement. For example- Factory Act-1948, PNGRB Guidelines, Gas cylinder Rules, BOCW Act & Rules etc.

## **21. Requirement of First Aid**


- First aid will be provided by CUGL for contract worker working at CNG stations, CUGL Offices & CUGL stores, however for the contract worker working at PNG sites, first aid will be provided by Contractor as per statutory requirement.

## 22. Annexure-I Work Permit Format


### CNG Hot Work Permit

|    |  | <b>Permit to work ( HOT WORK PERMIT )</b><br><small>(Permit to work for hot work involving welding, cutting &amp; flame cutting activities in a hazardous or explosive atmosphere. Issue 200-03002-000)<br/>                     * The form filling up the permit should be as per OISD's, standards every day.</small> |   | Drawn No. : <b>HWP-01</b><br>Rev. No. : <b>01</b><br>Eff. Date : <b>01 / 01 / 2014</b> |                 |   |   |   |   |   |  |
|---|--|---|---|--|-----------------|---|---|---|---|---|--|
| Form No. _____  | AMPM of _____ (Start)  | AMPM of _____   | Date _____  |  |                 |   |   |   |   |   |  |
| Valid from _____<br>Permission is granted to (Section/Contractor) _____<br>Agency of Work Exchange (OWE) _____<br>For the job (Job) _____<br>Location of work _____<br>Please check all <input checked="" type="checkbox"/> job work in the appropriate box.  |  |   |   |  |                 |   |   |   |   |   |  |
| <b>1) HAZARD IDENTIFICATION :</b>   |  |   |   |  |                 |   |   |   |   |   |  |
| <b>Sr. No.</b>  | <b>HAZARD IDENTIFIED</b>   | <b>EXISTING</b>   | <b>ISOLATED</b>   | <b>ACTION TAKEN</b>  |                 |   |   |   |   |   |  |
| 1   | Equipment electrically isolated and tagged   | Yes / No  | Yes / No  | FOR CASE studies refer Energy Isolation Work Permit                                    |                 |   |   |   |   |   |  |
| 2   | Tagging of isolation valves of changed gas lines   | Yes / No  | Yes / No  |  |                 |   |   |   |   |   |  |
| 3   | Mechanical Permit  | Yes / No  | Yes / No  |  |                 |   |   |   |   |   |  |
| 4   | Control Operator like Emergency Shutdown etc.  | Yes / No  | Yes / No  |  |                 |   |   |   |   |   |  |
| 5   | Proscribed Area  | Yes / No  | Yes / No  |  |                 |   |   |   |   |   |  |
| 6   | Water Gas / Other Flammable Gases  | Yes / No  | Yes / No  |  |                 |   |   |   |   |   |  |
| 7   | Flare and Tubing Isolation   | Yes / No  | Yes / No  |  |                 |   |   |   |   |   |  |
| <b>2) BEFORE SITE PREPARATION</b>   |  |   |   |  |                 |   |   |   |   |   |  |
| <b>Sr. No.</b>  | <b>PARTICULARS</b>   | <b>YES</b>  | <b>NOT IN COMPLIANCE</b>  | <b>REMARKS</b>   |                 |   |   |   |   |   |  |
| 1   | Workplace well fenced (Small works involving non-flammable and non-toxic liquid will not)  |   |   |  |                 |   |   |   |   |   |  |
| 2   | Working location in good condition and checked for safe location   |   |   |  |                 |   |   |   |   |   |  |
| 3   | Check for existing system connected to the equipment being worked  |   |   |  |                 |   |   |   |   |   |  |
| 4   | Portable equipment / Spares / Tools provided   |   |   |  |                 |   |   |   |   |   |  |
| 5   | Pipelines / Pipes / Insulated with nitrogen / Flaring system submitted to O&M Dept.  |   |   |  |                 |   |   |   |   |   |  |
| 6   | Communication Compliance in line with  |   |   |  |                 |   |   |   |   |   |  |
|   | 1. Work Procedures   |   |   |  |                 |   |   |   |   |   |  |
|   | 2. Time Schedule   |   |   |  |                 |   |   |   |   |   |  |
|   | 3. Hazards / Obstacles   |   |   |  |                 |   |   |   |   |   |  |
| 7   | Any other supporting documents e.g. permit to work for Energy Isolation/Control system etc required  |   |   |  |                 |   |   |   |   |   |  |
| 8   | Interruption to Contractors who call to O&M Dept. if applicable  |   |   |  |                 |   |   |   |   |   |  |
| <b>3) SPECIFIC PERG &amp; OTHER REQUIREMENTS</b>  |  |   |   |  |                 |   |   |   |   |   |  |
| <b>Sr. No.</b>  | <b>PARTICULARS</b>   | <b>YES</b>  | <b>NO</b>   | <b>REMARKS IF ANY</b>  |                 |   |   |   |   |   |  |
| 1   | Safety helmet  |   |   |  |                 |   |   |   |   |   |  |
| 2   | Reflective Jacket  |   |   |  |                 |   |   |   |   |   |  |
| 3   | Safety Shoes / Gumboots  |   |   |  |                 |   |   |   |   |   |  |
| 4   | Hard Capex   |   |   |  |                 |   |   |   |   |   |  |
| 5   | Ear Protection / Eye / Face Protection / Respiratory Protection  |   |   |  |                 |   |   |   |   |   |  |
| 6   | Tool Box (to be provided) / Tool Box Filled Form Submitted to O&M Dept.  |   |   |  |                 |   |   |   |   |   |  |
| 7   | Safety harness / Safety Belt   |   |   |  |                 |   |   |   |   |   |  |
| 8   | Area Cordoned off and Working Signages Displayed   |   |   |  |                 |   |   |   |   |   |  |
| Review the job, Job description, JAC Form, HSE Job Card and Safety Working Data available on job.<br><b>4) Atmosphere Monitoring Data</b>   |  |   |   |  |                 |   |   |   |   |   |  |
| <b>Particulars</b>  | <b>Test frequency</b>  | <b>Safe level</b>   | <b>Test Values (Preference if taken by the instrument / Engineer)</b> |  |                 |   |   |   |   |   |  |
| Oxygen  | Yes / No   |   | 0   | 1  | 2               | 3 | 4 | 5 | 6 | 7 |  |
| Natural Gas   | Yes / No   |   |   |  |                 |   |   |   |   |   |  |
| Others  | Yes / No   |   |   |  |                 |   |   |   |   |   |  |
| <b>5) Competent Person / Work Exchange (i.e. O&amp;M) for this permit is Engineer incharge of Projects / O&amp;M</b><br>Date _____ Name and designation of Competent Person/Work Exchange (Permit Received) _____ Signature _____   |  |   |   |  |                 |   |   |   |   |   |  |
| I have understood the above requirements and hereby agreed to abide by the above mentioned safety rules, however the terms I shall be available at the site for the entire duration of the job and shall ensure permit issued about the starting of the job accordingly.  |  |   |   |  |                 |   |   |   |   |   |  |
| <b>6) Authorisation: A working person for granting permission is Head-O&amp;M or Responsible Person deployed by the Dept. Head in Matter approved as from O&amp;M Dept.</b><br>Date _____ Name and designation of Competent Person/Work Exchange (Permit Received) _____ Signature _____  |  |   |   |  |                 |   |   |   |   |   |  |
| I have examined the job & I am satisfied that the work specified may be carried out subject to compliance with above conditions. If satisfactory test results, I have explained the safety & technical requirements to the competent person/Permit received. I may carry out the job as per the permit subject to the following if the checked as mentioned above.  |  |   |   |  |                 |   |   |   |   |   |  |
| <b>8) SPECIAL INSTRUCTIONS :</b>  |  |   |   |  |                 |   |   |   |   |   |  |
| 1   | Above mentioned Safety Preparations to be observed for entire duration of the work.  |   |   |  |                 |   |   |   |   |   |  |
| 2   | In case of fire alarm, all work must be stopped and existing fire must not be checked or attempted until alarm work stop and proceed to designated areas.  |   |   |  |                 |   |   |   |   |   |  |
| 3   | In case of lightning release, stop work and immediately advise concerned operator personnel.   |   |   |  |                 |   |   |   |   |   |  |
| 4   | Only certified vehicle / engines with spark arrestor and certified type of electrical equipment and tools are allowed in working areas.  |   |   |  |                 |   |   |   |   |   |  |
| 5   | For hot tapping, ensure continuous/sufficient flow in the line.  |   |   |  |                 |   |   |   |   |   |  |
| 6   | This permit must be available at work site at all the times.   |   |   |  |                 |   |   |   |   |   |  |
| 7   | No hot work shall be permitted unless the Engineer under heading 4 signs.  |   |   |  |                 |   |   |   |   |   |  |
| 8   | Welding activity where no hot work to be carried out may be permitted if combustible gases (e.g. up to 5% of lower explosive limit) & H <sub>2</sub> S will not be detected. Work may be permitted with LEL 1 upto 50%. The Oxygen level should be 19.5% and the concentration of toxic gases below the threshold limit. |   |   |  |                 |   |   |   |   |   |  |
| 9   | Additional instruction if any  |   |   |  |                 |   |   |   |   |   |  |
| Permit Issued on  | Additional Protection required if any  |   | Required  |  | Signature       |   |   |   |   |   |  |
| Date  | Yes  | No  | Required  | Not Required   | Invent Head O&M |   |   |   |   |   |  |
| <small>                         Note: 1) This permit is to quote/quote. Original one set (job) and other three copies are submitted with "OWP-1", "OWP-2" and "OWP-3" Modes on separate sheet cover of the page. One copy of the 30-day copy shall be retained (keep O&amp;M Dept.) permit copy 1 shall be retained by the permit issued and other copy no. 1 and 2 along with the sheet. (Approved by O&amp;M Dept.)<br/>                         2) This permit should be allowed/issued/returned with major details about all the hot work sites and one set for the work is being carried out in job conditions has to be the job done Permit copy 1 only permit. If the conditions that conditions are not safe enough for the work to be carried out, then the O&amp;M Permit issuing Authority to restore the safety conditions. All the work can be resumed.<br/>                         *When completed/terminated/Cancelled at _____ Place by _____ (With initials)                     </small> |  |   |   |  |                 |   |   |   |   |   |  |

# CNG Cold Work Permit-

| <br>CUCL  | <h2 style="margin: 0;">COLD WORK PERMIT</h2>  | Doc No. HSE/06<br>Rev No.: 01<br>Eff. Date: 01/10/2011 |                            |
|--|---|--|----------------------------|
| Permit No. <span style="font-size: 1.2em; font-weight: bold;">01551</span>   |   |  |                            |
| Valid from _____ AM/PM of _____ (Date) _____ AM/PM of _____ (Date)   |   |  |                            |
| Permission is granted to (section / contractor) _____  |   |  |                            |
| Name of Work Incharge (CUCL) _____   |   |  |                            |
| Nature of work _____   |   |  |                            |
| Location of work _____   |   |  |                            |
| (Please check following items and put <input checked="" type="checkbox"/> tick mark in the appropriate box)  |   |  |                            |
| S. No.   | HAZARD IDENTIFIED   | Done   | Not required               |
| 1  | Equipment / work Area inspected   |  |                            |
| 2  | Surrounding area checked, cleared and covered   |  |                            |
| 3  | Running water hose / portable extinguisher provided   |  |                            |
| 4  | Equipment blinded / disconnected / closed / isolated  |  |                            |
| 5  | Equipment properly drained / depressurized  |  |                            |
| 6  | Equipment / Pipeline properly steamed / purged  |  |                            |
| 7  | Proper ventilation and lighting provided  |  |                            |
| 8  | Gas test done / found gas free  |  |                            |
| 9  | Area Cordoned off (minimum 15 m in case of radiography)   |  |                            |
| 10   | Standby personnel provided from project/O&M/Contractor  |  |                            |
| 11   | Following personal protective equipment required (Check the items required)<br>Safety Helmet / Goggles / Safety Shoes / Boiler Suit / Dust Respirator /<br>Mask / Apron / Lifeline / Safety Belt / Arline / Film Badges / Dosimeter |  |                            |
| <b>SPECIAL INSTRUCTIONS</b>  |   |  |                            |
| 1  | In case of fire alarm / any emergency all work must be stopped. All personnel must leave work site and proceed to designated areas.   |  |                            |
| 2  | Remarks on toxic / hazardous chemicals, if any.   |  |                            |
| 3  | Alternate means of escape available / provided / not required   |  |                            |
| 4  | This permit must be available at work site at all times.  |  |                            |
| 5  | Additional items, if any:   |  |                            |
| Note: Job specific safety checklist must be attached with this permit, without checklist no permit should be issued. (The issuing authority is requested to ensure the same before signing on this permit.)  |   |  |                            |
| Date   | Name Receiver<br>(Work Incharge CUCL or Contractor Incharge)  | Signature  |                            |
| I have understood the above requirement and hereby agreed to abide by the above mentioned safety checks. Based on the same I shall be available of the site for the entire duration of the job and shall inform permit issuer about the starting of the job accordingly.               |   |  |                            |
| Date   | Issuer - O&M (Engineer incharge or CNG Station Manager)   | Signature  |                            |
| I have explained the safety & technical requirement at Height to the competent person/Permit Receiver. He may carry out the job as per the permit subject to the fulfillment of the above safety checklist.  |   |  |                            |
| Permit Extended up to:   |   | Additional Precautions required if any                 |                            |
| Date   | Time  |  | Signature                  |
|  |   |  | Receiver      Issuer - O&M |
| Note: a) This permit is in duplicate Original is in yellow and duplicate copy is in white color with "COPY" written on top right hand corner.<br>b) After completion of the job yellow copy shall be returned to issuer. White copy along with the book would be returned to HSE dept. |   |  |                            |
| Work Complete / stopped / area cleared at _____ AM/PM _____ (Date) by _____  |   |  |                            |
| (PLEASE RETURN PERMIT TO ISSUER)   |   |  |                            |

# Energy Isolation Work Permit



## PERMIT TO WORK FOR ENERGY ISOLATION

(Gas / Electrical Isolation for CNG Station)  
 \* Before filling up the permit please read the entire document very carefully \*

Doc. No. HSE-26  
 Rev. No. - 03  
 Eff. Date 5/11/2011

Permit No. \_\_\_\_\_  
 Valid from \_\_\_\_\_ AM/PM of \_\_\_\_\_ (Date) \_\_\_\_\_ AM/PM of \_\_\_\_\_ Date

Permission is granted to (Section/Contractor) \_\_\_\_\_  
 Name of Work Incharge (CUGL) \_\_\_\_\_  
 Permitted Hit/Work \_\_\_\_\_  
 Location of work \_\_\_\_\_

Please check with (✓) / (X) tick mark in the appropriate box.

**1) STEPS TO BE FOLLOWED TO DE-ENERGIZE THE SYSTEM**

**A) ELECTRICAL ISOLATION**

| Sr. No. | Check Point  | Lock No. | Tag No.         | Remarks |
|---------|--|----------|-----------------|---------|
| 1       | Isolate the main incomer in electric room. Put Lock & tag on it.   |          |                 |         |
| 2       | Isolate the main incomer of capacitor bank at electrical room. Put lock & tag on it.                           |          |                 |         |
| 3       | Before carry out the work at capacitor bank check for voltage with proper instrument & voltage should be zero. |          | Voltage Reading |         |
| 4       | Isolate main feeder for CNG compressor. Put Lock & tag on it.  |          |                 |         |
| 5       | Isolate main switch on compressor. Put lock & tag on it.   |          |                 |         |

**B) GAS ISOLATION (COMPRESSOR)**

|   |   |     |  |  |
|---|---|-----|--|--|
| 1 | Isolate the inlet gas isolation valve. Put lock & tag on it.  |     |  |  |
| 2 | Vent the gas in the compressor gradually & safely.  |     |  |  |
| 3 | Once the gas is completely vented isolate the discharge valve of the compressor. Put lock & tag on valve and note the pressure reading of following |     |  |  |
|   | 1) Suction Pressure   | Bar |  |  |
|   | 2) Discharge Pressure   | Bar |  |  |
|   | 3) Suction line Pressure  | Bar |  |  |

**C) GAS ISOLATION (DISPENSER)**

|   |  |     |  |  |
|---|--|-----|--|--|
| 1 | Isolate the main incomer in electric room. Put Lock & tag on it.   |     |  |  |
| 2 | Isolate the inlet valve of dispenser & tag it.   |     |  |  |
| 3 | Vent the gas in the dispenser gradually & safely.  |     |  |  |
| 4 | Once the gas is completely vented close the isolation valve/emergency valve of the dispenser and take down the pressure of the following |     |  |  |
|   | 1) Pressure in Side A  | Bar |  |  |
|   | 2) Pressure in Side B  | Bar |  |  |

**D) GAS ISOLATION (CASCADE)**

|   |  |  |  |  |
|---|--|--|--|--|
| 1 | Isolate the Outlet valve of cascade. Put Lock & tag on it. |  |  |  |
|---|--|--|--|--|

**2) Competent Person / Work Incharge i.e. CPM for taking the Energy Isolation permit is Engineer incharge of Projects/Station Incharge of O&M**

| Date | Name and designation of Competent Person/Work Incharge (Permit Receiver) | Signature |
|------|--|-----------|
|      |  |           |

I have understood the above requirement and hereby agreed to abide by the above mentioned safety checks. Based on the same I shall be available at the site for the entire duration of the job and shall inform permit issuer about the starting of the job accordingly.

**3) Authorization: Authorizing person for giving permission of Gas/Electrical Isolation for CNG station is Head O&M or responsible Person deployed by the Dept. Head (Must be from O&M dept.)**

| Date | Name and designation of Competent Person/Work Incharge (Permit Receiver) | Signature |
|------|--|-----------|
|      |  |           |

I have explained the safety & technical requirement for working Gas/Electrical Isolation for CNG Station to the competent person/Permit Receiver. He may carry out the job as per the permit subject to the fulfillment of the LOTO (Lock out tag out procedure) checklist as mentioned above.

**4) STEPS TO BE FOLLOWED TO ENERGIZE THE SYSTEM**

| Sr. No.  | Check Point   | Lock No. | Tag No. | Remarks |
|--|---|----------|---------|---------|
| <b>A) ENERGIZING THE COMPRESSOR</b>  |   |          |         |         |
| 1  | Remove lock and tag from the discharge valve of the compressor.   |          |         |         |
| 2  | Open the discharge valve and close the inlet valve. Remove the lock and tag from the inlet suction valve. Open the inlet valve. |          |         |         |
| <b>B) ENERGIZING THE CAPACITOR BANK/MAIN ELECTRICAL PANEL IN ELECTRICAL ROOM</b> |   |          |         |         |
| 1  | Remove the lock and tag of the main capacitor inductor. Switch ON the capacitor main inductor.                                  |          |         |         |
| 2  | Remove lock & tag of main incomer. Switch ON the main incomer.  |          |         |         |
| 3  | Remove lock & tag of main feeder of the compressor. Switch ON the feeder.   |          |         |         |
| 4  | Remove lock & tag of main switch from compressor electric panel. Turn the Switch ON.  |          |         |         |
| <b>C) ENERGIZING THE DISPENSER</b>   |   |          |         |         |
| 1  | Close the vent line valve and remove the tag on main inlet valve of the dispenser. Open the inlet valve.                        |          |         |         |
| 2  | Remove the lock & tag on the main switch / MCB and switch ON dispenser main inductor in electric room.                          |          |         |         |
| 3  | Open the isolation valve / emergency valve.   |          |         |         |

**E) SPECIAL INSTRUCTIONS**

- 1.0 Above mentioned Safety Precautions are to be observed for entire duration of the work.
- 2.0 Any isolation of energy system, mechanical, electrical, process, hydraulic and others can not proceed unless
- 2.1 Permit is issued with authorization by a responsible person. (Shall be the respective Department Head or Responsible Person deployed by the Dept Head)
- 2.2 The method of isolation and discharges of stored energy are agreed and executed by the Permit issuer and Permit Receiver
- 2.3 Any stored energy is discharged.
- 2.4 A system of locks and tags is utilized at isolation points
- 2.5 A test is conducted to ensure the isolation is effective
- 2.6 Isolation effectiveness is periodically monitored
- 2.7 Additional instructions if any.

**Note:**

- a) This permit is in Triplicate of Original one is in pink and other two copies are white in color with "COPY 1" & "COPY 2" Printed on top right hand corner of the page.
- b) This permit is valid only for the site only.
- c) After completion of the job pink copy shall be returned issuer (O&M Dept.) while Copy 1 shall be retained by the permit receiver and while copy no. 2 with the lock would be returned to HSE dept.

Work completed/Not completed as per \_\_\_\_\_ AM/PM of \_\_\_\_\_ (Date by) \_\_\_\_\_ (Work Incharge)

**NOTE: FOR EMERGENCY CONTACT P.T.O.**

## Laying & Testing work Permit

|   |   |                                 |
|---|---|---------------------------------|
|  | <b>PNEUMATIC TESTING REPORT PE LINE</b> | Form No.<br>CUGL/PRO/MDPE/00/04 |
|---|---|---------------------------------|

**Client:** - M/s Central U.P. Gas Ltd.

**PMC/TP:** - M/s

**Contractor:** - M/s

**Report No.** .....

**Location.** .....

**Details:-**

**Laying Drawing No.** .....

|                 |    |    |    |    |     |                   |
|-----------------|----|----|----|----|-----|-------------------|
| Pipe Dia (MM)   | 20 | 32 | 63 | 90 | 125 | Total Pipe Length |
| Pipe Length (M) |    |    |    |    |     |                   |

|    |                   |                           |    |                               |  |
|----|-------------------|---------------------------|----|-------------------------------|--|
| 1. | Testing Medium:   | Compressed air (oil free) | 5. | Pressure Gauge Make/ No:      |  |
| 2. | Testing Pressure: |                           | 6. | Gauge calibration valid upto: |  |
| 3. | Start Date:       |                           | 7. | Result:                       |  |
| 4. | Holding Time:     |                           | 8. | Line Pr. after release :      |  |

**Observation Chart:**

| S.No. | Time | Reading (Kg./cm <sup>2</sup> ) | S.No. | Time | Reading (Kg./cm <sup>2</sup> ) |
|-------|------|--------------------------------|-------|------|--------------------------------|
| 1.    |      |                                | 13.   |      |                                |
| 2.    |      |                                | 14.   |      |                                |
| 3.    |      |                                | 15.   |      |                                |
| 4.    |      |                                | 16.   |      |                                |
| 5.    |      |                                | 17.   |      |                                |
| 6.    |      |                                | 18.   |      |                                |
| 7.    |      |                                | 19.   |      |                                |
| 8.    |      |                                | 20.   |      |                                |
| 9.    |      |                                | 21.   |      |                                |
| 10.   |      |                                | 22.   |      |                                |
| 11.   |      |                                | 23.   |      |                                |
| 12.   |      |                                | 24.   |      |                                |

**Check List:-**

**Flushing**

Pipe cleared from water & debris: - Yes/ No

**Witnessed by:**

- |   |     |    |
|---|-----|----|
| 1. GI Sleeves/ Half round concrete sleeve properly installed: -                                       | Yes | No |
| 2. Isolation Valve plugged: -   | Yes | No |
| 3. Regulator piece properly clamped: -  | Yes | No |
| 4. Sand filling in GI/ Half round concrete sleeve and non-exposure of MDPE pipe/ Transition fitting - | Yes | No |
| 5. Isolation Valve in open condition with open end plugged-   | Yes | No |

|  |   |
|--|---|
| Sign:-<br><br>Name:-<br><br><div style="text-align: center; font-weight: bold;">Contractor</div> | Sign:-<br><br>Name:-<br><br><div style="text-align: center; font-weight: bold;">TP/PMC/CUGL</div> |
|--|---|

## **23. Annexure- II, Specification of Rescue & Maintenance Pulley Kit.**

### **RESCUE & EVACUATION SYSTEM (ASCENDER-DESCENDER):**

A unique multi-purpose system that provides functions including rescue and self-rescue, ascending and descending and positioning at height so that person always descends in control speed. It should have simple operation allowing just one person to control the rate of ascent or descent speed effortlessly by holding rope with just two fingers. For positioning, the unit should be able to locked-off with the Ascender handle. Reliable, simple and 2:1 hauling ratio provides a system with multi-purpose capability.

This set is a combination of:

The Modular Evacuation and Rescue System with Special Dynamic Braid Rope, Karabiner, Hooks, Ascending Handle, Full body Safety Sit Harness with front and back D anchoring, Rope Grab Device with Rope, Parapet Wall Anchor System.

Material of Construction: The entire components of the Set should be CE certified & manufactured as per EN I ANSI norms and the Parapet Wall Anchoring System should be ANSI/ OSHA certified. Copy of the certificates to be submitted to CUGL F & S Dept.

### **Items Specifications:**

a) The Evacuation and Rescue System of 100 M Range -Qty. - I Pc.

Portable, Easy to handle & Easy to install (Speedy implementation) to carry out rescue operation.

- Breaking of descending load is by the friction of the rope on the drum, while a ratchet gear facilitates ascension.
- During Descent or Ascent System can be stop effortlessly by simply holding control rope with Two Fingers.
- Maximum Permissible Load - 250 Kg
- Net Wt. of the Device not more than — 2 Kg (Without Rope)
- Pulley reduction Ratio - 2: 1
- Range—ICC mts
- Rope made from Polyamide Material — 9 mm diameter Braided Rope, Breaking Strength of Rope more than 1200 daN (Kgf)
- Rope should have Resistance to the Aging effect — long life of the product.
- Twist Lock Carabineer Hook with 18 mm opening minimum, made from High strength Steel with electro zinc plated. Breaking strength more than 2500 daN.
- Should be CE EN 341 class A and EN 1496 class B marked.

b) Ascention Handle - for easy Ascending — Qty. — I Pc.

- Clamp handle operating on Braided rope Diameter 8 to 13 mm.
- Abseiling on fixed rope
- Progression on oblic rope
- Body green anodized aluminum cut fold
- Should be CE EN 567 marked.

c) Full Body Safety Sit Harness with front and Back Anchoring—Qty — 1 Pc.

- One dorsal D-ring of forged alloy steel, One sternal D-ring for fall arrest, One ventral D-ring for rope access, Two lateral D-rings for work positioning
- Adjustable shoulder, thigh & chest straps
- Waist belt with 2 holder loops & rings at back
- Dual color scheme
- Soft padding on shoulder, waist & led straps
- Universal size
- Should be CE EN 361, 358 & 813 marked

d) The second line of protection - Rope Grab with 100 mts. Rope and Hooks. — Qty. — I Set

- Advanced blend of rope grab fall arrestors and anchorage line to operate as a second line of protection.
- Gravity locking & double security opening.
- 100 mts. long 12 mm Braided polyamide rope with more than 2000 Kgf Strength with karabiner — Test certificates to be provided.
- Should be EN 353-2:2002 marked

e) Second line of protection for Parapet Wall anchoring - 12mm Braided Rope Adjustable Lanyards with Hooks for anchoring — 10 Meters Length Strength more than 2000 Kgf. — Qty.— I Set

f) Parapet Wall Anchor — Qty. — I Set

- Non penetrating design does not penetrate the working surface reducing the possibility of damage
- Adjustment range to fit from 1' to 14.5' wide parapet wall. Fall arrest rated for one user.
- No tools required for installation.
- Breaking Strength more than 5,000 lbs. (2200 Kgf) and workable load more than 310 Lbs. (140 Kgs.)
- Safety Locking Pins with locking Arrangement
- Parapet Wall Strengthening System should be provided.
- Device Weight not more than 13 Kg
- Should be ANSI Z359.1 and OSHA marked

#### **MAINTENANCE PULLEY KITS (ROPE DESCENDER SYSTEM):**

A unique multi-purpose system that provides functions including rescue and self-rescue, ascending and descending and positioning at height. Its simple operation allows one person to control the rate of descent or ascent with the Ascender handle. For positioning, the unit can be locked-off with the Ascender handle providing a brake on the line. Need Secondary line of Protection.

Material of Construction: The entire components of the Set should be CE 0120 certified and manufactured as per EN norms.

a. Steel Screw Locking Karabiner — Qty — 4 Pcs.:

The MOC of Karabiner should be Steel of 10 mm dia round bar with opening of minimum 17 mm with weight not less than 160 gms, oval shaped and should be steel screw locking type confirming to EN 362: 2004 (Class B) and EN marked.

b. Work Positioning Lanyard — Qty — I Pc.: -

The rope should be of 12mm Braided Rope, ends should be stitched and covered with polyethylene protective sleeve, abrasion resistant with Karabiners provided at both ends for attachment, length should be 2 meters with breaking strength minimum 22 KN. The product should be EN 358 marked.

c. Grip Descender with 100 mts. long rope — Qty — I Set:

The grip descender made of high strength aluminum alloy with system strength more than 12 KN should be equipped with steel Karabiner for attachment with the harness of user. It should move along with the user climbing down and locks whenever the lever is set free or pressed towards the user's body. It should have double safety locking system. It should be capable of using on 10.5 mm dia and 11 mm dia Kernmantle rope of 100 mts. length. The weight should be not less than 350 gms. The product should be EN 341 marked.

d. Anchorage Web Sling — Qty — 2 Pcs.: -

Made of polyester (High tenacity polyamide) should be EN 795 marked with 1.2-meter length, 44 mm wide polyester having D-Ring at one end and textile loop on another end.

e. The second line of protection - Guided Type Fall Arrestor — Qty — I Pc.: -

- Advanced blend of rope grab fall arrestors and anchorage line
- Gravity locking & double security opening.
- 100 mts. long 12 mm Braided polyamide rope with more than 2000 Kgf Strength with karabiner
- Should be EN 353-2:2002 marked.

f. Full Body Sit Harness — Qty — I Pc.: -

One dorsal D-ring of forged alloy steel, One sternal D-ring for fall arrest, One ventral D-ring for rope access, Two lateral D-rings for work positioning

- Adjustable shoulder, thigh & chest straps
- Waist belt with 2 holder loops & rings at back
- Dual color scheme
- Soft padding on shoulder, waist & leg straps
- Universal size

Should be CE EN 361, 358 & 813 marked

g. Ascender—Qty— 1 Pc.:

- Clamp handle operating on Braided rope Diameter 8 to 13 mm.
- Abseiling on fixed rope
- Progression on oblique rope
- Body green anodized aluminum cut fold
- Should be marked with CE & EN 567 Standard.

h. Parapet Wall Anchor— Qty. —1 Set:

- Non penetrating design does not penetrate the working surface reducing the possibility of damage



- Adjustment range to fit from 1 to 14.5 wide parapet wall. Fall arrest rated for one user.
- No tools required for installation.
- Breaking Strength more than 5,000 lbs. (2200 Kgf) and workable load more than 310 Lbs. (140 Kgs.)
- Safety Locking Pins with locking Arrangement
- Parapet Wall Strengthening System should be provided.
- Device Weight not more than 13 Kg
- Should be ANSI Z359.1 and OSHA marked

## 24. Annexure III-

### Technical Specification of Coverall

|   |                      |
|---|----------------------|
| 1. Fibre Composition                          | 100% Cotton          |
| 2. Colour                                     | Blue                 |
| 3. Weave                                      | 3/1 Twill            |
| 4. Mass per unit area, mm.                    | 225 g/m <sup>2</sup> |
| 5. Tensile Strength, kg                       |                      |
| Warp  | 111+-5               |
| Weft  | 52+-5                |
| 6. Tearing Strength, N, mm,                   |                      |
| Warp  | 35                   |
| Weft  | 30                   |
| 7. Dimensional changes after washing, %, max. |                      |
| Warp  | 2                    |
| Weft  | 2                    |
| 8. Colour fastness to light                   | 4-5                  |
| 9. Colour fastness to washing                 |                      |
| Change in colour                              | 4                    |
| Staining                                      | 4                    |
| 10. Colour fastness to perspiration           |                      |
| Change in colour                              | 4                    |
| Staining                                      | 4                    |
| 11. Rubbing                                   |                      |
| Dry   | 4                    |
| Wet   | 4                    |
| 12. Ends/dm                                   | 460+-5               |
| 13. Pics/dm                                   | 250+-5               |
| 14. Count of Yarn                             | 20+-5% (Warp)        |
|   | 22+-5% (Weft)        |
| 15. Dye Chemical                              | Vat Dye              |

## 25. Annexure- IV

### Specification of PPE's

#### SAFETY SHOES

- Shoe- derby shoe occupational footwear as per ISO: 20347, anti static, high voltage resistant
- Upper leather- Buff Barton
- Sole- oil & skid resistant P.U
- Manufacture- shoe to be manufactured by direct moulded system after strobel lasting on lasts confirming to h fitting.
- Toe puff- good quality fibre thermoplastic.
- Lining- fabtexgreycolour
- Heel grip- leather lining
- Insole- antistatic
- Eyelets - 3 nos.
- Thread—nylon
- Electric resistant - 100 0 to 1000 MD
- High voltage - up to 15k volt
- Size-38to46(4to12)

#### Helmet, industrial safety (v-guard)

Advance vented protective cap with 4-point fas-trac suspension padded for comfort & helmet should have cooling vents for improved air circulation. Approval ANSI/ISEA Z89.1 .2009.

#### Helmet, chemical resistant HDPE

Safety helmet made of chemical resistant HDPE with structured brim designed for additional side, protection designed to take clip on accessories. Safety helmet made of chemical resistant HDPE with structured brim designed for additional side, protection designed to take clip on accessories.

**Ear plug** - high quality foam, non-irritant and allergy-free material, suitable for protection against long term, exposure to, medium noise levels. Corded in fluorescent orange colour.

**Chemical splash protective goggle-** Soft vinyl frame, high- impact polycarbonate lens, can be worn over prescription spectacles, indirect ventilation, approvals: VJTITST/1 /STRUCT/SP-834/2047/89

**Cotton hands gloves** - netted cotton gloves H.D.

**Safety goggles-** lens material -polycarbonate, spherical refractive power tolerance: - within0.06/m

Astigmatic refractive power tolerance: -within 0.06/m

Difference in prismatic refractive power

Tolerance: - horizontal base out0.75cm/m

Horizontal base-in=0.25cm/m

Vertical=0.25cm/m

Optical glass: -1

Maximum spectral transmittance in the ultraviolet: -313nm (0.0003%)

Maximum spectral transmittance in the ultraviolet: - 365nmclear:10%, smoked:0.30%

Luminous transmittance: -clear=74.4%-100% smoked=29.1-43.2%

Lens scale number: - clear=2-1 .2&2c-1 .2 smoked:5-2.5

Resistance to low impact energy of high-speedparticles: -with stands the impact of 6mm nominal diameter steel ball, weighing 0.86 gala speed of 45m/sec. The impact is carried out after conditioning the eye wear to temp.55degrees centigrade, and- 5 degrees centigrade. Weight: - 24 gms. Smoked lens filters out more than 99% of UV rays


**Gum boots** - full size gum boots with lining up to knee and anti- skid sole black color

### **Full body harness-**

Light weight full body harness easily adjustable, durable with specially designed seat strap for optimizing comfort and energy absorbing dorsal d-ring for user safety to be used for confined space entry and for protection against falling from height.

- Must ensure adequate distribution of fall impact to the various parts of human body
- Should have not less than 2-meter polyamide rope attached with self closing auto locking steel hook.
- Must have adjustable primary straps of not less than 44 mm polyamide webbing & secondary straps of not less than 20mm equipped with shoulder, waist & thigh straps differentiated by a different colour.
- Must have seat strap which must be ideally positioned for more comfort. Must be provided with two chest attachment textile loops and a dorsal attachment steel d-ring
- Must be provided with tool holder loops and rings.
- Must confirm to EN361 & EN358 standard and must submit a test certificate from authorized govt. Agency.
- The harness shall withstand a minimum 15 KN load when tested as per BIS3521.

## 26. ANNEXURE —V

|   |  |                   |                          |
|---|--|-------------------|--------------------------|
| <br>CUGL | <b><u>INCIDENT INVESTIGATION</u></b><br><b><u>FORM</u></b> | <b>Format no.</b> | <b>F02(f&amp;s-p-02)</b> |
|   |  |                   |                          |

Reference No.

**Central U.P GAS LIMITED**

**Date:**

**FIRE & SAFETY DEPARTMENT**

**INCIDENT INVESTIGATION REPORT**

1. Location/Site:
2. Date and time of Incident:
3. Incident Category:
4. Brief description of incident:
5. Cause of Incident:
6. Injured personnel:
  - Name
  - Nature of injury
  - Occupation
  - Company
  - Employee number
7. Loss I damage - estimated value (Assets and I or Environment):
8. Estimated period of installation I equipment shutdown:
9. Immediate action taken:
10. Persons I groups notified:
11. Other Parties informed:
12. Suggestions I Recommendations (if any):

**Name & Signature of Investigating Person**

## 27. Annexure -VI

### Close out report on HSE performance related to various contractors

Name of the work.....

Location.....

Duration of work: From ..... To.....

Date of successful completion.....

Report by: Name/Design. /Mob.....

Assessment Grade: A- Outstanding; B- Very Good; C- Good; D- Satisfactory; E-Not satisfactory

| Sr.No | Name of agency | Address | Agency owner | Tel. No | Overall Assessment Grade | Remark |
|-------|----------------|---------|--------------|---------|--------------------------|--------|
|       |                |         |              |         |                          |        |

### **Format for HSE Performance Assessment**

| Sr.No. | Parameters   | Performance | Marks 0—8<br>0-Worst / 8-<br>Excellent | Remarks, if any |
|--------|--|-------------|--|-----------------|
| 1      | Agency had its own HSE Mgmt. System aligned to CUGL requirements (Yes/No)          |             |  |                 |
| 2      | No. of induction programs conducted/HSE awareness or training programs done (Nos.) | ...../..... |  |                 |
| 3      | No. of HSE meetings done (Nos.)  | ...../..... |  |                 |
| 4      | No. of Toolbox meetings done (Nos.)  | ...../..... |  |                 |
| 5      | Using of appropriate PPE's &   | ...../..... |  |                 |
| 6      | following of Work Permit System.   | ...../..... |  |                 |
| 7      | No. of fatal accidents (Nos.)  | ...../..... |  |                 |
| 8      | No. of non-reportable accidents (Nos.) investigated/ Nos. reported (Nos.)          | ...../..... |  |                 |

|    |   |  |  |  |
|----|---|--|--|--|
| 9  | Follow of Legal compliances                   |  |  |  |
| 10 | Nos. of times Safety normsdeviated or penalty |  |  |  |
| 11 | Housekeeping                                  |  |  |  |
| 12 | Others (4 marks)                              |  |  |  |

**Performance assessment grade**

Grade: A (More Than 90), B (More Than 80); C (More Than 65); D (More Than 50), E (Less Than 50);

**Overall Remarks about assessment on HSE performance:**

**Overall HSE performance assessment (Grade A/B/C/D/E)**

Signature of Engineer In-charge (CUGL)

Name

Designation

Signature of HOD

Name

## **28. Contractor Certification.**

I/We hereby Certify that I/We have read and understood the CUGL Contractor Safety Manual and I/We will follow the HSE Standards while working at my job.

Signature with Stamp. Date

Name of Contractor



| 29. Annexure-VII SELECTION CRITERIA FOR SUITABLE PPEs  |               |                |             |                |                 |                                     |                    |                 |                 |                        |                         |
|--|---------------|----------------|-------------|----------------|-----------------|-------------------------------------|--------------------|-----------------|-----------------|------------------------|-------------------------|
| PPE / Job Activity   | Safety Helmet | Safety goggles | face shield | Welding helmet | Foot protection | Safety Harness / Fall arrest system | Hearing Protection | Hand Protection | Body Protection | Respiratory Protection | Protection against dust |
| Site Inspection  | ✓             |                |             |                | ✓               |                                     | ✓                  |                 |                 | ✓                      | ✓                       |
| GI Works   | ✓             | ✓              | ✓           |                | ✓               | ✓                                   |                    | ✓               |                 |                        | ✓                       |
| MDPE Works   | ✓             | ✓              | ✓           |                | ✓               |                                     | ✓                  | ✓               |                 |                        | ✓                       |
| Gas Line charging / Commissioning / Venting  | ✓             | ✓              | ✓           |                | ✓               |                                     | ✓                  | ✓               |                 |                        | ✓                       |
| Steel Line coating   | ✓             | ✓              | ✓           |                | ✓               |                                     |                    | ✓               |                 |                        |                         |
| Electro fusion   | ✓             | ✓              | ✓           |                | ✓               |                                     |                    | ✓               |                 |                        | ✓                       |
| Welding  |               |                |             | ✓              | ✓               |                                     |                    | ✓               | ✓               |                        |                         |
| Grinding / Cutting   | ✓             | ✓              | ✓           |                |                 | ✓                                   |                    |                 | ✓               |                        | ✓                       |
| Electrical Works   | ✓             |                |             |                | ✓               |                                     | ✓                  | ✓               |                 |                        |                         |
| Rigging  | ✓             |                |             |                | ✓               |                                     |                    | ✓               |                 |                        | ✓                       |
| Painting   | ✓             | ✓              |             |                | ✓               |                                     |                    | ✓               | ✓               |                        |                         |
| Working at Height above 1.8m   | ✓             | ✓              |             |                | ✓               | ✓                                   |                    | ✓               |                 |                        |                         |
| Excavation   | ✓             | ✓              |             |                | ✓               |                                     | ✓                  | ✓               |                 |                        | ✓                       |
| Odourant Dosing  | ✓             | ✓              |             |                | ✓               |                                     |                    | ✓               |                 | ✓                      |                         |
| Operation & Maintenance (CNG / PNG)  | ✓             | ✓              |             |                | ✓               |                                     | ✓                  | ✓               |                 |                        | ✓                       |
| <b>Note :</b><br># The selection of suitable PPE will be on the basis of Job safety Analysis/Site Inspection and Work Permit.<br># Requirement of Respiratory Protection i.e. Self Contained Breathing Apparatus is applicable for confined spaces only.<br># Safety harness / Fall arrest system is mandatory to use if the job height goes beyond 1.8 mts. |               |                |             |                |                 |                                     |                    |                 |                 |                        |                         |
| <b>Distribution List :</b><br># All CNG / PNG control room In charges.   |               |                |             |                |                 |                                     |                    |                 |                 |                        |                         |