PROCEDURE

CONFINED SPACE ENTRY

REVISION HISTORY

Revision No.	Issue Date	Amendment Description	Date Effective	Revalidated
00	26.05.2013	Newly Established	26.05.2013	25.05.2016
01	06.03.2016	CS Rescue Plan attached	06.03.2016	17.07.2017
02	17.07.2017	CS Definition revised	17.07.2017	16.07.2020
03	28.10.2017	Point 5.5.1 (b) modified	28.10.2017	27.10.2020
04	12.08.2018	Significant changes to structure, layout and content	12.08.2018	

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1. Internal Controls

1.1. VALIDATION

To assure Managements, Shareholders and External agencies confidence in the company's policies & practices, QATAR STEEL Internal Audit may verify, compliance with this procedure. HSE shall revalidate this procedure every three years to ensure that it continues to serve the purpose intended.

1.2. EMPLOYEE RESPONSIBILITIES

All employees of the company are required to observe the company's policy and procedures.

1.3. APPROVAL

This procedure and any amendments made thereto; require the following approvals.

AUTHORITY	DATE
Approved By **Mohammed Nasser Al – Hajri** **(Managing Director& General Manager)**	12 AUG 2018
Checked By **Alexander Stramrood** **(Manager –HSE Department)**	12 AUG 2018
Drafted By **Jacobus Theodorus Goosen** **(Head of Section – Safety)**	12 AUG 2018

This document has been reviewed by Document Controller. It complies with the requirements of policy 1.12.0.2.01.01 and it is considered ready for issue.

Signed By _____ **Date** 12 AUG 2018

2. Purpose

The purpose of this Qatar Steel Confined Space procedure is to establish the requirements for the identification, management and control associated with the entry into and performance of work in confined spaces. It is also intended to protect all individuals from the hazards of entry into confined spaces by limiting entry to authorized individuals (entrants) and by defining controls necessary to eliminate or mitigate all hazards when entering confined spaces. This procedure establishes the minimum requirements for confined space entry.

3. Scope

This procedure applies to all employees, contractors, vendors, visitors at the Qatar Steel site who perform or are involved with confined space entry. Each contractor shall ensure that its employees follow this procedure, as a minimum.

4. Definitions

Acceptable entry conditions: The conditions that must exist in a confined space to allow entry and to ensure that employees involved with a confined space entry can safely enter into, and work, within the space.

Attendant or Confined space watcher: An individual stationed outside a Permit Required Confined Space that monitors authorized entrants and who performs all of the attendants' duties assigned in this procedure.

Authorized entrant: An individual who has completed the Qatar Steel Confined Space Entry Training, is certified and authorized by the Department Manager to enter a permit space.

Authorized Gas Tester: a trained, certified and authorized Qatar Steel employee who has completed third party Gas Detection and Monitoring Training and is authorized by the department manager.

Blind: A blind is a device used to positively stop or prevent the flow of energy, fluid or gas through piping attached at a flanged connection via nuts and bolts and completely covers the bore of the opening. Blinds must comply with the Mechanical Integrity Group's minimum thickness guidelines

Blinding: The absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore.

Confined Space: Any space that has the following criteria:

a. Is large enough and so configured that an employee can bodily enter and perform

assigned work; and

b. Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, excavations (more than 1.2m deep) and pits are spaces that may have limited means of entry.); and

c. Is not designed for continuous employee occupancy.

And that has one or more of the following characteristics:

a. Contains or has a known potential to contain a hazardous atmosphere

b. Contains a material/gas/fluid that has the potential to engulf an entrant

c. Has an internal configuration such that an entrant could be trapped or asphyxiated

d. Contains any other recognized serious safety or health hazard.

Emergency: Any occurrence including any failure of hazard control or monitoring equipment or event internal or external to the confined space that could endanger entrants and equipment.

Entry: The action by which a person passes through an opening or manway into a confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

Entry Supervisor: The Executor responsible for determining if acceptable entry conditions are present at a confined space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating the entry. An Entry Supervisor may also serve as an Attendant or as Rescue Service as long as that person is trained and certified by a Third Party. He must also be equipped by his employer as required to fulfill his role.

Emergency Response Coordination Team (ERCT): A team of specially trained standby personnel, each with a specified role to undertake the coordination of emergency services support, who will respond to an emergency call out.

Executor must be a person who is trained, competent and authorized who is responsible for the work being completed as described in the Permit to Work. The Executor must ensure that the work being done has been adequately described so that all associated hazards and risks can be identified.

GFCI (ground fault circuit interrupter): A device that shuts off an electric power circuit when it detects that current is flowing along an unintended path, such as through water or a person.

Hazardous Atmosphere: An atmosphere where Oxygen concentration is below 19.5% or above 23.5% and / or flammable gases are present in excess of 0% LEL and / or toxic gases are present in excess of their Permissible Exposure Limits or Threshold Limit Value (PEL or TLV) when no mechanical or forced ventilation is used. See Appendix 5 for Values

Immediately dangerous to life or health (IDLH): Any condition that poses an immediate or delayed threat to life, that would cause irreversible adverse health effects, or that would interfere with an individual's ability to escape unaided from a permit space.

Isolation: A process by which a confined space is removed from service and protected by the complete and total containment of potentially harmful release of energy, fluid, gas or process hazardous materials and substances as determined in the HIRA, JSA or PSA or Method Statement (per the Work Permit Procedure 2.32.2.1.06.01) to ensure that it would be impossible to operate equipment and expose entrants due to the measures that are taken to isolate the energy and contain process substances.

a. Blinding
b. Misaligning or removing sections of lines, pipes, or ducts.
c. A double block and bleed system.
d. Lockout or tag out of all sources of energy.
e. Blocking or disconnecting all mechanical linkages.

Issuer: must be a person who is trained, competent and authorized to issue a Permit to Work after ensuring that all the hazards, associated with the work being done in that area, have been identified and all necessary safety precautions are being implemented to ensure that the work can be completed safely.

Occupational Exposure Limit (OEL): The maximum concentration of an air contaminant to which an employee can be safely exposed for an eight-hour period in one day (over a normal work life). This refers to the exposure limits cited either from OSHA Permissible Exposure Limit (PEL) or the 'ACGIH (American Conference of Governmental Industrial Hygienists) Threshold Limit Value (TLV); where there is a conflict of values, the more stringent of the two must be used.

Oxygen-deficient atmosphere: An atmosphere containing less than 19.5 percent oxygen by volume.

Oxygen-enriched atmosphere: An atmosphere containing more than 23.5 percent oxygen by volume.

Prohibited condition: Any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

Rescue service: The personnel designated to rescue entrants from permit spaces.

Testing: The process by which the hazards that may confront entrants of a permit space are identified and evaluated.

5. Procedure implementation

5.1. Basic expectation of this standard

No one shall enter a confined space unless;

- a risk assessment has been completed & adequate safety countermeasures like blinding, electrical isolation, etc. are in place;
- written authority is provided to and completed by, the person responsible for the direct control of the tasks (executor) in the Confined Space;
- the written authority includes any risk control measures or precautions necessary, including the number of entries required, for the safe entry and execution of the task;
- the executor is advised of, understand and comply with the requirements of the written authority;
- a record of their presence in the Confined Space is maintained;
- signs and protective barriers are erected to prevent entry of persons not involved in the tasks;
- confined space entrants, supervisors, attendants and rescue persons are appropriately trained and qualified;
- appropriate and sufficient arrangements have been made for the initiation of emergency response and, where necessary, rescue of persons from the Confined Space;
- permanent supervision is provided at the entry point (attendant).

5.2. Confined Space Review and Risk Assessment

It is mandatory that competent individuals assess the hazards and risks associated with Confined Space work prior to permit issue using the Qatar Steel HIRA and JSA procedure number: 2.32.2.1.03.01

Each Department will be responsible to conduct a review of all confined space work to determine whether the need to enter the space can be eliminated altogether or alternatively, the need to enter is reduced as far as possible.

Consider alternatives such as:

- Modify the confined space or work methodology such that entry is not required
- Have the work done from outside as much as possible or remove the parts outside the system for repair wherever feasible
- Modify the work scope such that the work can be done from outside
- Use of machinery to perform cleaning, clearing blockage etc.
- Use of remote cameras for inspection and monitoring
- Use of appropriate tools and equipment

There may be a need to develop other work-related procedures to perform jobs inside a confined space. Examples include specific isolation procedures, hot work procedures, etc. These procedures must be established by the department responsible for the work prior to entry to confined space.

5.3. Confined Space Identification

The ownership of the confined space lies with the User Department and they will be responsible to identify all confined spaces that workers may need to enter. The identification must be based on the definition of confined spaces, as per the confined space risk assessment.

Refer to Appendix I – Confined Space Identification and Control Flowchart

All Departments must demarcate the "Permit Required Confined Spaces" using a permanent label such as the attached image.

Figure 1: Confined Space signage permanently affixed to the vessel/tank

Although dimensions may vary depending on the size of the confined space as well as the point of entry, as a minimum, the size of the signage should be 30 cm x 20 cm and should be readable from a distance of 10 meters. If not visible, use a larger signage.

As a general guidance, the signage must be affixed or painted above every opening of the confined space where an entry may occur. For open tanks, this signage must be posted on outside wall where entry may occur. Where signage is on the door of the confined space opening, the signage may not be visible once the door/entry point is open. Provisions must be taken to ensure that the signage is clearly visible at all times.

5.4. Confined Space Register

All confined spaces shall be recorded in the Confined Spaces (CS) Register and shall be available to all workers on the site. The Confined Spaces Register shall contain the following information as a minimum:

- Register Number

- Confined Space Number (also the Procedure Number)
- Location of Confined Space
- Equipment Number (where available)
- Frequency of Entry
- Date Assessed
- Risk Level
- Picture of Confined Space showing entry point
- Relevant P&ID number

Each Department will be responsible for the maintenance of the Confined Space Register.

See Appendix 3 for an example of a CS Register.

5.5. Barriers

The User Department will be responsible to ensure all confined space entry points are locked or have barriers or guards installed preventing unauthorized entry.

Pedestrian, vehicle, or other activities will be barricaded as necessary to protect entrants from external hazards.

5.6. Warning Signs

The User Department will be responsible to post warning signs at all entry points into all confined spaces. Entry points shall be sign-posted with a danger sign forbidding entry to unauthorized personnel

Figure 3: Warning sign to prevent unauthorized entry while CS entry work is being performed

5.7. Confined Space Hazards

The hazards associated with each confined space shall be identified and documented. Hazards to be considered prior to entry into a confined space shall include, but are not limited to, the following:

- Suffocation (lack of oxygen, presence of toxic gases)

- Poisoning (presence of toxic gases or fumes)
- Chemical Hazard
- Moving parts
- Fire (flammables and ignition sources)
- Explosion
- Drowning
- Burial under solids or liquids - engulfment
- Electrocution
- Radiation
- Burning and scalding
- Falls, trips and slips
- Noise
- Temperature, either high or low
- Hot-work environment
- Traffic Hazards (People & Vehicles)
- Falling objects
- Any other hazard, specific to a particular confined space.

Where a hazard is identified the relevant Permit Executor is responsible to ensure that a Confined Space Risk Assessment is undertaken to determine whether there is a risk associated with that hazard before carrying out work involving entry into a confined space. This assessment shall be in writing and take into account at least the following:

- The nature of the confined space
- The work required to be done including whether it is necessary to enter the confined space
- The range of methods by which the work can be done
- The hazards involved and the associated risks
- The actual method selected and the proposed plan
- The means of entry to and exit from the confined space and
- The emergency and rescue procedures.

If the risk assessment identifies a risk to health or safety arising from work involving entry into the confined space, the relevant Executor must ensure that the risk is eliminated or mitigated

A record of the confined space risk assessment and the confined space procedure must be attached to the relevant Permit to Work.

5.8. Confined Space Entry Permit

Before issuing a Confined Space Entry permit, the Issuer and Executor shall jointly consider whether the work can be carried out without entering the confined space. Refer to section 6.2 for examples.

Where the need to enter a confined space is identified the Issuer is responsible to ensure that prior to any work being carried out in a confined space:

- the permit is completed correctly;
- the persons involved in the work are advised of, understand and comply with the content of the entry permit; and
- the workers have current confined space training.

The Confined Space Entry Permit must:

- only apply to one confined space;
- be valid for one shift only and can be revalidated. per work permit procedure.
- list the confined space that the permit applies to;
- list the measures to control risk for the confined space;
- list the names of any workers approved to enter the confined space;
- list the names of workers as they enter and leave the confined space;
- list the name of the worker assigned to play the role of Attendant;
- list the period of time that the permit is in operation; and
- list the results of the atmospheric and gas testing within the confined space;

The Entry Permit shall specify preparations for entry such as:

- Physical isolation including the isolation of mechanical, hydraulic, pneumatic and process systems;
- Permissible exposure limits;
- Steam isolation and process gas or fluids – double block and bleed;
- Electrical isolation;
- Cleaning and purging;
- Decontamination;
- Testing of the atmosphere;
- The use of personal protective equipment; and
- Briefing of the worker(s) carrying out the work and the Attendant(s).

See Appendix 2 for Permit Application flowchart and Appendix 4 for a Permit template.

6. Working in the Confined Space

The Issuer must ensure that no person enters a Confined Space without an authorized Confined Space Entry Permit. Once the permit has been issued the accountability passed to the executor for the duration of the permit validity.

6.1. Isolation of Confined Spaces

The Executor must ensure that all the risks associated with work in a confined space in relation to the introduction of any substance or condition from or by any plant, equipment or services connected to the space; or the activation or energizing in any way of any plant, equipment or services connected to the space is eliminated.
Follow the provisions of the Qatar Steel Energy Isolation and Lockout Procedure

Isolation describes the measures used to prevent:

- the introduction of contaminants or conditions through equipment such as piping, ducts, vents, drains, conveyors, service pipes and fire protection equipment;
- the introduction of hot or cold conditions;
- the activation or energizing of plant, equipment or services which may be external to, but still capable of adversely affecting, the confined space (such as heating or refrigerating methods);
- the activation or energizing of machinery in the confined space; and
- the use of electrical equipment;

Hazards that may arise from operation of some protective services in an occupied confined space, such as fixed fire extinguishing systems, should also be considered.

Before entry is permitted to any confined space which itself can move, or where shafts, agitators, blades and other moving equipment is within the confined space, the dangers of their free movement should be considered, and control measures implemented.

For entry into confined spaces, gas and fluid pipes must be either physically disconnected, a blank or a full pressure slip plate inserted, or isolation by a double block and bleed valve arrangement, or the source of fluid removed. However, if the entire system of which the confined space forms part of, is effectively isolated (e.g. during a shutdown) locking and padlocking of valves may be sufficient.
Issuers shall ensure that the entire system is effectively isolated and gas tested & sign the permit accordingly.

6.2. Purging

The Executor must ensure, in relation to work in a confined space, that purging or ventilation of any contaminant in the atmosphere of the space is carried out prior to entry.
As a guidance, purging shall be done to replace at least four volumes of the vessel using fresh air.

Where there is a likelihood of flammable gas, any electrical equipment including portable blowers shall be of explosion proof (EX) type and must be grounded.

6.3. Atmospheric Testing

The Issuer shall determine and record the gases to be measured and the frequency of repeating the test or the need for continuous monitoring. The minimum requirement shall be CO, O_2%, LEL% and H_2S ppm once at the beginning of shift/work.

Gas testing must be done by a competent AGT before any work starts and should be rechecked as specified on the Confined space permit.

The atmosphere inside the confined space vessel must be tested as near as possible to the time of entry and repeated as required by the work permit or when conditions change, or after a significant break in work activity. The recommended time interval is within 30 minutes of entry initially and every hour thereafter. Best practice is to test continuously while there are persons within the confined space

The Executor shall witness or satisfy himself, that actual gas test has been done before accepting the permit. The Executor has the right to refuse the permit if proper gas test was not done. For critical entries (ex. first entry to process vessels, inert entry, etc) the executor shall accompany the AGT up to the manway. The Executor shall ensure that:

- the atmosphere of the confined space has a safe oxygen level;
- the concentration of any atmospheric contaminant in the space is reduced to or below the OEL for that contaminant;
- the confined space is not subjected to any extremes of temperature.

The air movers, blowers and A/C units in the confined spaces shall be turned off for a minimum of 5 minutes before conducting any atmosphere, heat stress, or containment testing. This will help ensure an accurate reading.

Where it is not possible to provide a safe oxygen level, or atmospheric contaminants cannot be reduced to safe levels, **no person may enter the confined space** without a Self-Contained Breathing Apparatus**.**

When testing atmospheres that may be stratified, the atmosphere should be tested at different levels to ensure a representative result is obtained.

Testing and monitoring of the confined space atmosphere or the potential for later release of contaminants, may require the need for continuous monitoring and testing. In such cases, the Issuer must specify this on the Confined Space permit and the Executor should plan to monitor (continuously or at specific intervals) the atmosphere within the confined space.

The atmospheric concentration of any substance for which a recognized exposure limit exists requires monitoring. These readings will be taken when the permit is issued. If the initial (or subsequent) reading is 10% the OEL of toxic substances, additional readings will be taken at least every 4 hours until the permit is complete. If the initial reading is zero, additional readings are not necessary unless there are conditions or activities within the confined space that could create a change in condition.

When personnel are in a confined space, the atmosphere shall be continuously monitored for O_2, CO, H_2S and Flammable Gas by the Executor. All personnel must exit the confined space immediately if conditions exceed requirements listed in this procedure.

It is mandatory that at least one entrant wear a continuous gas monitoring device at all times while inside the confined space. Based on the risk assessment, there may be a need to have more than one device inside the confined space.

If there is a risk of fire or explosion in a confined space the Executor must ensure that no source of ignition from within or outside the space is introduced to the space and a Hot Work Permit completed. In such cases, where hot work may be performed inside a confined space, the gas test shall indicate 0% LEL.

If the concentration of any flammable contaminant in the atmosphere of the space is equal to or greater than 10% of its LEL, the Executor must ensure any employee is removed immediately from the space.

The Executor must ensure that where the risk assessment indicates a risk to health and safety, no person enters a confined space unless the attendant is present outside the confined space.

6.4. Communication

Continuous communication between the attendant and those inside the confined space must be achieved. Depending on the conditions existing in the confined space, communication can be achieved by a number of means, including voice, radio, hand signals, ropes and other appropriate means. It is mandatory to use intrinsically safe devices where the presence of flammable gas is possible.

The entry permit, including the Entrants access control sheet and all other documentation, shall be displayed at the entry point to the confined space. Where there are multiple entries and exit points, signs should be posted at each which identifies the entry point where the permit is displayed.

Consideration should be given to the environment that the permit will be used in to ensure that the entry permit remains legible.

6.5. Revalidation

The entry permit may need to be re-validated according to the Qatar Steel Work Permit procedure if the following happens:

- a change in the person responsible for the direct control of the work in the confined space;
- a change in the atmosphere inside the confined space
- a change in the work to be performed that introduces a new hazard not addressed by the existing permit; or
- new precautions are required.

If there is a break in work continuity or if all entrants exit the confined space, a gas test needs to be conducted by the AGT.

The work in the confined space must be carried out as specified in the permit and all the required precautions must be strictly followed.

The Issuer and Executor shall ensure that appropriate rescue and first aid procedures and provisions are planned, established and rehearsed especially for high risk areas based on the risk assessment.

6.6. Emergency Response Readiness

Due to the risks associated with Confined Space entry the need to rescue and retrieve personnel may arise. Planning and preparation using risk assessment tools must be completed to ensure emergency response readiness is established prior to entry. Considerations will be given to:

i. what could go wrong,
ii. what equipment must be on hand,
iii. who will perform the rescue, and
iv. if one or more trained and competent individuals should be standing-by to assist in case of emergency.

6.6.1. Rescue Plan

i. A Rescue Plan shall be prepared for all Permit Required Confined Space entries.
ii. Fire and Rescue Section shall lead the Rescue Plan development, based on information supplied on the Permit Required Confined Space Assessment, a site visit, and seek input from following individuals as necessary:
    a) Permit Issuer
    b) Executor
    c) Emergency Response Coordination Team

iii. The Rescue Plan shall be attached to the Confined Space Entry Permit posted at the entry point and discussed with all entrants in the Tool Box Talk prior to entry.
iv. Rescue from vertical entry into a Confined Space that is more than 1.5-meter deep shall be done using mechanical retrieving device. Mechanical retrieving device shall be readily available for immediate use and its location shall be stated in the Rescue Plan.
v. Initiating emergency response by means of summoning help, emergency phone number, and radio number shall be documented in the Rescue Plan.
vi. Rescue Plan shall be provided with a unique number by Fire and Rescue Section and shall be indicated in the CSE by the Executor.

6.6.2. Non Entry Rescue

i. To facilitate non-entry rescue, retrieval systems or methods shall be used by authorized entrant; enters a Permit Required Confined Space (as stated in the Rescue Plan), unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. Retrieval systems shall meet the following requirements:

   a) Each authorized entrant shall use a full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level or above the entrant's head, or at another point which the employer can establish which presents a profile small enough for the successful removal of the entrant.

   b) The other end of the retrieval line shall be attached to a mechanical retrieval device or fixed anchor point outside the permitted space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary. A mechanical device shall be available to retrieve personnel from vertical type permit spaces more than 5 feet (1.52 m) deep.

   c) Rescue preparations to be inspected and cleared by Fire and Rescue Section before first entry

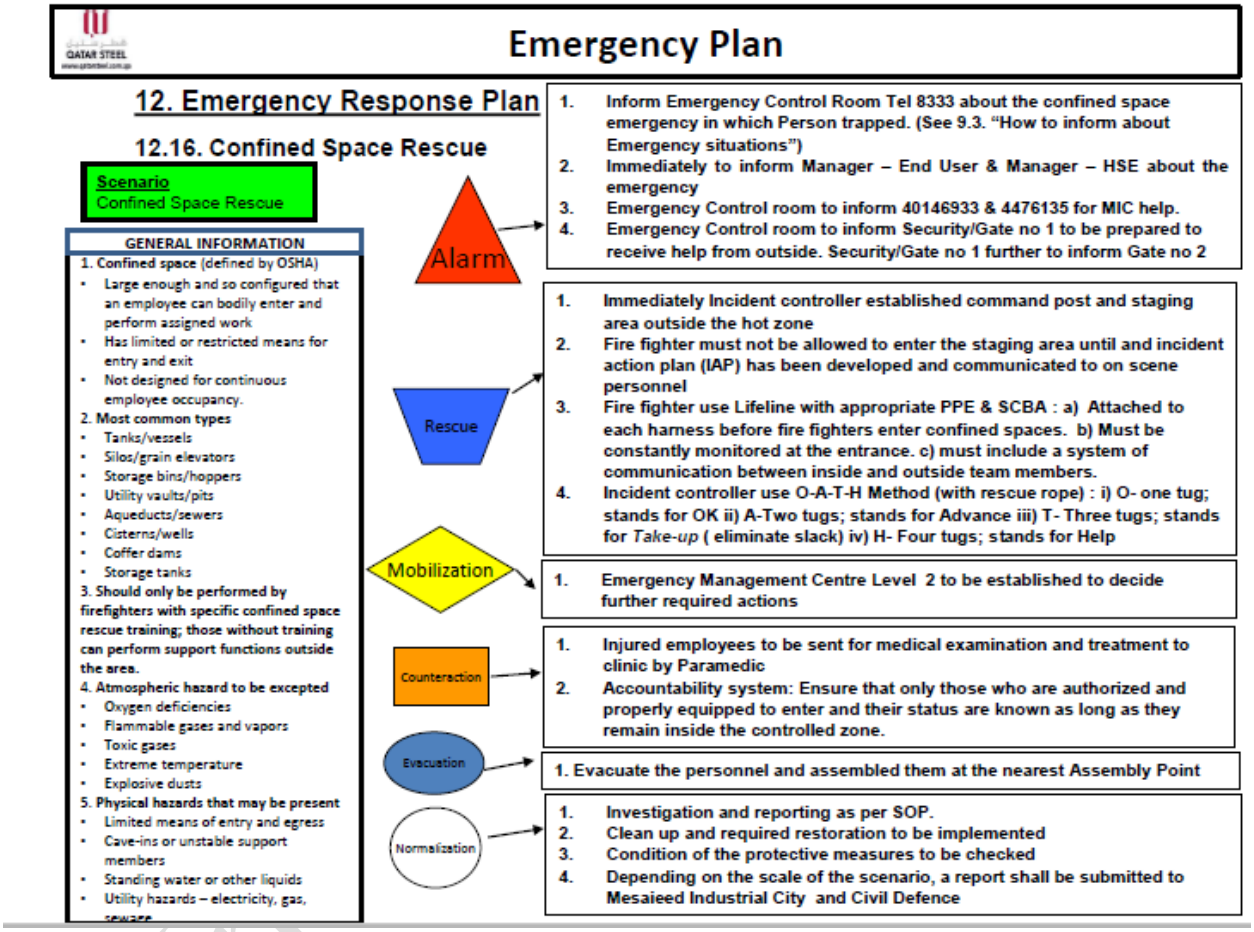
ii. Determination of whether retrieval equipment would increase the overall risk of entry shall be based on the following guidelines:

   a) A confined space with obstructions or turns that prevent pull on the retrieval line from being transmitted to the entrant does not require the use of a retrieval system.

   b) A confined space from which an employee being rescued with the retrieval system would be injured because of forceful contact with projections in the space does not require the use of a retrieval system.

c) A confined space that was entered by an entrant using an air supplied respirator does not require the use of a retrieval system if the retrieval line could not be controlled so as to prevent entanglement hazards with the air line.

6.6.3. Emergency Plan



6.7. Respiratory Protective Equipment

Respiratory Protective Equipment must only be used as a last resort when all other control measures in the hierarchy of controls are either inadequate or impractical, or when there is an emergency situation that requires rescue personnel to enter the confined space.

Respirators are devices that allow persons to breathe safely without inhaling harmful levels of toxic gases or particles or where an oxygen deficient atmosphere exists.

It is important that appropriate respirator be selected based on:

- Type and properties of contaminants present;

- Hazard and level of exposure;
- Exposure time;
- Work activity;
- Level of protection needed; and
- Characteristics and limitations of the respirator equipment.

There are mainly three types of respiratory protective equipment that are commonly used;

- Self-Contained Breathing Apparatus (SCBA)
  - SCBA supplies its own air from a tank independent of surrounding air. This provides reliable protection against harmful environment. There are limitations due to capacity of the air tank as well as physical limitation to perform work.
- Airline Respirator
  - When SCBA is not physically practical, an airline respirator can be used. The air is supplied from a large tank which is located outside the confined space. The limitation is the entanglement or potential damage to the airline.
- Air Purifying Respirator
  - This is basically a filter system to remove contaminants form breathing air. There are several types of cartridges that can be used and these do not provide any protection against oxygen deficiency.

6.8. Completion of the Work

At the completion of the work, the confined space must be closed and the permit returned to the Issuer and closed. The Executor and Issuer must ensure and acknowledge that work in the confined space has been completed and that all workers involved in the work have left the space before authorizing the return to service of the confined space.

7. Training Requirements

7.1. Employees and Contractors

- All new employees and contractors must receive an overview of Confined Space hazards and risks during the induction process.
- All new employees and contractors, who are required to complete confined space entry shall receive certified Confined Space training before completing confined space entry.
- All employees and contractors shall receive Confined Space awareness training at commencement of employment.

Training in Confined Space entry, having regard to all relevant activities related to entering and working in confined spaces, shall include:

- the nature of any hazard and risk associated with the space;
- perform confined space assessments;
- requirements for the issue of entry permits;
- design and lay-out of the workplace;
- manage and /or supervise persons working in or near confined spaces, including any contractors;
- maintain equipment used for and during confined space entries;
- the selection, use, fit, testing and storage of any personal protective equipment;
- emergency response and rescue plans and equipment; and
- permit to work and isolation procedures.

7.2. Refresher Training

All confined space entrants, executors and issuers shall receive full Confined Space Training, including practical assessment and be assessed as competent *before* any confined space entry.
All confined space entrants, executors and issuers shall receive annual refresher training as follows:

- Following completion of full practical confined space assessment, complete a theory based confined space refresher training course;
- Every two years complete a full Confined Space Practical Training assessment;
- Any personnel deemed Not Yet Competent shall be referred to their direct line manager to determine an appropriate training plan.

7.3. Permit Issuers

Permit Issuers shall be formally trained in confined space hazards, Permit to Work and Isolation Procedures and authorized in writing by the Department Manager to process and issue Confined Space Permits.

8. Responsibilities

8.1. Department Manager

Is responsible for:

- the implementation of this procedure and to ensure that all Issuers and Executors have received training in the Permit to Work system.
- ensuring trained, competent and authorized Persons are appointed.
- defining the scope of each authorization clearly
- providing a list of authorized persons.
- ensuring that the requirements of this procedure are communicated to contract and project personnel working onsite.

8.2. Contractors

It is the responsibility of Contractors to ensure all their personnel and sub-contractors understand and comply with this procedure whilst working on site.

8.3. Executor

The Executor shall coordinate the confined space entry task. This shall include:

- Ensure all team members are trained and competent to perform their role
- Review the Confined Space Procedure and Permit in conjunction with the workers performing the work in confined space
- Verify isolations of all energy sources as identified in the confined space procedure
- Ensure the Emergency Response Plan details have been completed.
- Ensure all team members comply with requirements on all confined space permits
- Sign Confined Space permit and any other Permits
- Accept the Confined Space Permit on behalf of a work team or themselves
- Place/remove isolation locks and flags
- Complete job or if the job is not finished, inform the issuer so the permit closed with isolations in place.
- Sign off permit and any other permits.

8.4. Team Members

- Complete a confined space risk assessment on the Confined Space Permit in conjunction with Executor.

- Understand and comply with the requirements of the written authority to enter that is the Confined Space Permit.
- Sign permit as "Request to Enter" and any other permits that are required
- Sign on and off the Entry / Exit log on the permit.

8.5. Authorized Gas Tester

- An Authorized Gas Tester, who has been trained, tested and certified by Approved Third Party, shall carry out the gas test using an approved and calibrated gas meter. Only senior field operators or above of Operation Department can be certified for this purpose.
- Validity of certification shall be renewed every 2 years. The Division Superintendent shall maintain a record of Certified Gas Testers and apply for timely renewal or new Authorizations.
- Gas tests are MANDATORY for confined space entry. An Authorized Gas Tester of the issuing department shall fill Section F: Gas Test of Confined Space Permit to record results of Oxygen concentration, Combustible, Toxic Gases and other gases as applicable to the location of work.
- Procurement of gas meter is the responsibility of the permit issuer's department. QS Safety approval shall be obtained during finalization of specifications and procurement of the gas meter (portable monitor).
- The Department Manager shall ensure that meters to measure the gases present in his area are available in 'ready to use' condition, with the required accessories, and they are sent for timely calibration. Service records shall be maintained. Defective meters shall be withdrawn and sent for repairs. Replacements shall be arranged immediately.
- Gas meters shall be calibrated and certified by TP & QS Safety. Next calibration due date shall be marked. (Follow manufacturer's instructions for self-calibrating smart instruments.)
- Operations Shift Supervisor shall test gas meters at the beginning of the shift and condition logged (ex. meter no.1 – satisfactory, meter no.2 – O2 sensor defective).

8.6. Attendant or Confined Space Watcher

All Confined Space entries require an Attendant at each point where entrants enter and or exit the Confined Space.
Attendant duties shall include:

- To document their Name, Staff No, Radio No (if applicable), Date and duration of job (by writing Start and End time with initial).
- To remain outside the entry point of the Confined Space and shall not enter the Confined Space for any reason.
- Not to leave until all entrants have exited or relieved by another Attendant. The change in Attendant shall be communicated to the Permit Issuer; CSE Permit shall be revalidated with the required sign-off of the field copy.
- An entry board shall be arranged and managed to coordinate the entry and exits of all the authorized entrants.
- Be in continuous, visual, audible (e.g. whistle), mechanical (rope) or radio contact with entrants as discussed and agreed in JSA.
- Ensure the gas detector is ON, and listen for alarm. Record the readings of the gas detector in Section F of the CSE Permit Form as required by the established testing frequency.
- Any alarm in the gas meter shall require the Attendant to ensure that the job is stopped and entrants are evacuated.
- Track personnel entering and leaving a Confined Space, verify that entrants record their entry/exit on CSE Log Sheet.
- Control the number of entrants as per the maximum number of entrants limited in the JSA.
- Initiate emergency response when necessary.
- Order entrants to exit the Confined Space in the event of an emergency, and account for all entrants.
- Notify entrants to exit the Confined Space in the event of a change in entry conditions.
- Barricade the entry point and post "Do Not Enter" tag at all entry points when the job is complete or work is stopped for scheduled breaks.
- At least one of the entrants (typically the first entrant to the Confined Space) shall be provided with a direct reading instrument that measures Oxygen, flammable (LEL), Carbon Monoxide (CO) and Hydrogen Sulphide (H_2S) concentration.
- Communicate all hazards and mitigations associated with the Confined Space and the concurrent works planned inside the Confined Space with all entrants.
- In the event of an injury or collapse of a worker in the confined space, the attendant’s primary duty is to raise the emergency alarm and if possible, provide assistance, first-aid, resuscitation, and to inform control room and operator as well as the area in charge.
- Must not enter the confined space.

- Must never leave the entry point (unless it is to raise the emergency alarm).
- Must monitor the time and every 30-60 minutes of continuous entry (frequency to be decided at the time of permit application based on risk assessment) call for the atmospheric readings and record these on the permit.
- The attendant must have a valid First Aid certificate and CPR.

8.7. Issuer

- Physically check and test all isolation points as identified on the permit and procedure.
- Review the Confined Space Permit and Risk Assessment in conjunction with the Executor.
- Determine with the Executor when, what and how often atmospheric tests need to be completed.
- Ensure that the atmosphere has a safe oxygen range where it is possible to do so.
- Communicate Confined Space entry, area and equipment hazards to Executor.
- Issue Permits to Work (PTWs) and to the executor.
- Have the emergency response plan demonstrated by the confined space team.

8.8. Emergency and Rescue Personnel

Whenever possible, non-entry rescue methods should be considered. Where rescue must involve entry into the confined space, the safety of the rescuers must be assured.
No shortcuts of established safe rescue procedures will be tolerated in an effort to "speed up" the rescue.

Rescuers must:

- Be provided with and be trained to use the personal protective equipment and rescue equipment necessary for making rescues from confined spaces.
- Be trained to perform the assigned rescue duties. Each member of the rescue service shall also receive the training required for entrants.
- Practice making confined space rescues at least once every 6 months by means of simulated rescue operations in which the rescuers remove dummies, mannequins, or persons from the actual confined spaces or from representative confined spaces.
- Be trained in basic first-aid and in cardiopulmonary resuscitation (CPR). At least one member of the rescue service holding current certification in first aid and in CPR shall be available.

9. Records

The Permit Issuer shall keep and maintain;

- entry permits for at least 6 months

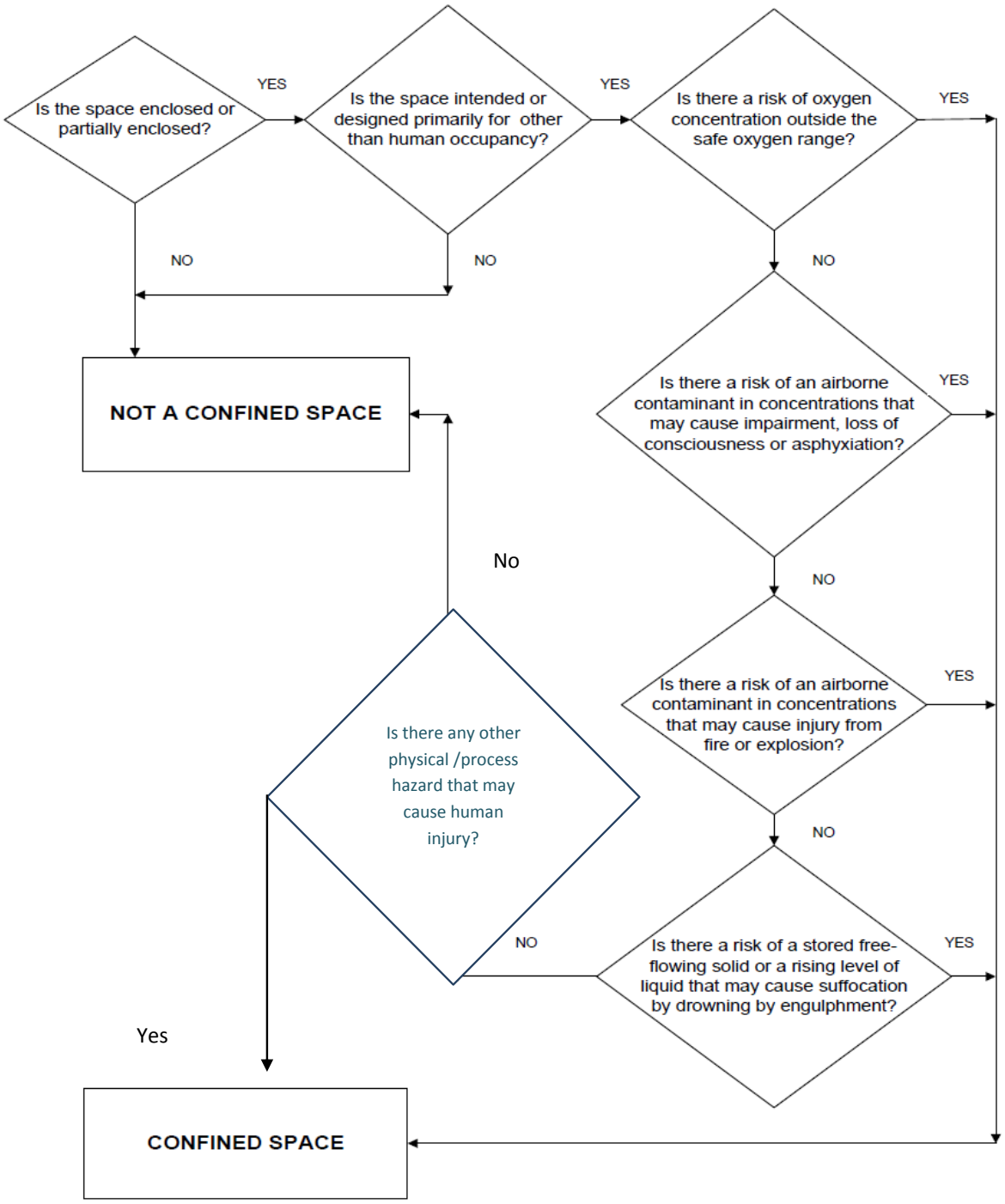
The HSE Manager shall keep and maintain;

- the current recorded Confined Space Risk Assessment Form for work in a confined space for five years from the time of their validity; and
- Training records for the term of the employee's employment, unless longer periods are necessary, as in the case of heath surveillance being required.

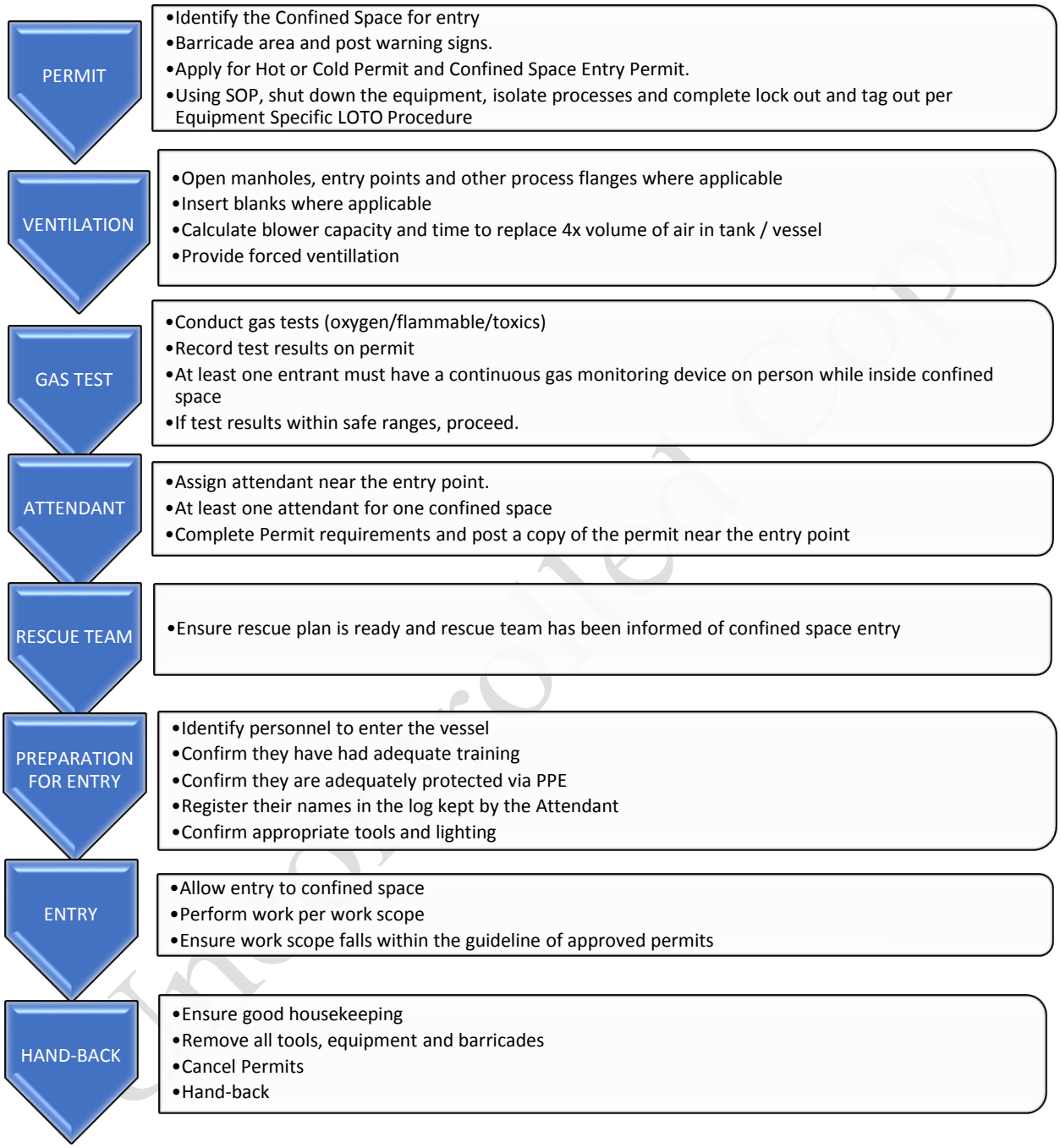
10. Field Audit / Verification

The site designated HSE Manager must conduct field verification audits at regular intervals while work is being performed inside the confined space.

11. Appendix 1– Confined Space Applicability Flowchart



12. Appendix 2 – Permit Application flowchart



13. Appendix 3 – Confined Space Register template - COR/HSE/SE/F-015-00
14. Appendix 4 – Confined Space Permit Form - COR/HSE/SE/F-003-00
15. Appendix 5 – Threshold and Permissible Exposure Limits - COR/HSE/SE /F -058 -00
16. Appendix 6 - CS Checklist - COR/HSE/SE/F-013-00
17. Appendix 7 - CS Access Control - COR/HSE/SE/F-012-00
18. Appendix 8 - CS Energy Isolation - COR/HSE/SE/F-014-00
19. Appendix 9 – Rescue Plan Template - COR/HSE/SE/F-063-00
20. Onsite Rescue plan - COR/HSE/SE/F-059-00