

# Confined space entry

Standard



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## 1 Instruction

This instruction describes the minimum requirements to ensure that the hazards associated with entry into confined spaces during construction and civil work, or maintenance activities, on behalf of Ericsson, are being handled in a consistent and safe manner.

Due to complex and varied legal aspects, local building regulations, civil regulations and standards which apply to construction and maintenance activities, this standard focuses on the planning, implementation and management of the Occupational Health and Safety (OHS) aspects only.

Consideration shall be given to the size and complexity of individual projects.

Confined space entry activities shall never be done alone without a Stand-by Person.

## 2 Definitions

**Confined Space** - A confined space is an enclosed or partially enclosed space which:

- is not intended or designed primarily as a place of work,
- has limited or restricted means for entry or exit and is not designed for continuous occupancy,
- may have an atmosphere with potentially harmful contaminants, an unsafe level of oxygen or stored substances that may cause engulfment,
- contains or has a potential to contain a hazardous atmosphere,
- contains a material that has the potential for engulfing an entrant,
- has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
- contains any other recognized serious safety or health hazard, such as unguarded machinery, exposed live wires, or heat stress.

The following is a list of some areas that are confined spaces:

- access holes,
- pipes,
- silos,
- tunnels,
- sewer,
- cold storage room, and
- trenches.



**Hazard** - A hazard is any source of potential damage, harm or adverse health effects on something or someone.

**Risk** - The chance or probability that a person will be harmed or experience an adverse health effect if exposed to a hazard. It may also apply to situations with property or equipment loss, or harmful effects on the environment.

**Contaminant** - A contaminant is either a biological, chemical, physical, or radiological substance that becomes harmful for humans or living organisms, when accidentally or deliberately introduced to air, water, soil, or food.

**Flammable Range** - The range of flammable vapor or gas-air mixture between the upper (UEL) and lower (LEL) flammable limits is known as the 'flammable range', also often referred to as the 'explosive range'.

**Hot Work** - Welding, thermal or oxygen cutting, heating and other fire producing or spark producing operations that may increase the risk of fire or explosion.

**Safe Oxygen Level** - A minimum oxygen content in air of 19.5 percent by volume under normal atmospheric pressure (equivalent to a partial pressure of oxygen (pO<sub>2</sub>) of 19.8 kPa (148 mm Hg), and a maximum oxygen content in air of 23.5 percent by volume under normal atmospheric pressure (equivalent to a partial pressure of oxygen (pO<sub>2</sub>) of 23.9 kPa (179mm Hg).

At pressure significantly higher or lower than the normal atmospheric pressure, expert guidance should be sought.

NB: if it is necessary to enter any confined space where the air quality is suspected to be contaminated, the air quality must be tested prior to anyone entering the confined space and continuously monitored during the work.

**Stand-by Person** - A competent person assigned to remain on the outside of, and near, the confined space, capable of being in continuous communication with and to observe those inside, if practicable. In addition, where necessary initiates rescue procedures and operate, and monitor equipment used to ensure safety during entry and work in confined space.

### 3 Responsibilities

Managers are responsible for:

- Ensuring all confined spaces under their control have been identified.,
- Undertaking and documenting hazard and risk assessments for identified confined spaces.
- Selecting and implementing appropriate control measures.
- Establishing an entry permit system to prevent unauthorized entry.



- Ensuring only confined space trained personnel enter confined space.
- Ensuring emergency plan and procedure are developed, communicated, and tested, emergency exercise is conducted and involved workers joined, emergency materials are available.

### **3.1 Supervisor/Person in Charge of Work (PICW)**

Supervisor/PICW is responsible for:

- Identifying risks and hazards associated with confined space entry, and which administrative or engineering controls will be used to remove the existing or known risk.
- Ensuring that all personnel entering in a confined space are properly trained and informed of the hazards associated with confined space entry.
- Checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.
- Termination of the entry and cancels or suspends the permit as required.
- Ensure the number of team members and shall never allow working alone.

### **3.2 Employee/Contractor**

Employees/Contractors are responsible for:

- Taking all required training courses associated with confined space entry.
- Using all safety equipment and protective clothing for its intended purpose.
- Ensuring an entry permit is obtained prior to entry into a confined space.
- Following instructions as outlined by their manager and the permit approver.
- Reporting any concerns and issues while performing work.

### **3.3 Stand-by Person**

Stand-by Person is responsible for:

- Controlling the entry point by checking entry authorization with associated permit and training records of entrant.
- Maintaining the confined space attendant log.



- Monitoring and recording the space atmosphere regularly such as Oxygen level and flammable range.
- Ventilating the confined space according to safe working procedure based on local requirements.
- Communicating with the entrants working in the confined space.
- Actively engaging in emergency response.

## **4 Process**

### **4.1 Before entering a confined space**

- Conducting risk assessment for the specific confined space entry and establishing/confirming control measures. (refer to section 6).
- Assigning qualified persons to each role such as PICW(Supervisor), Employee(s) and Stand-by Person who ensure his/her adequate competence (see section 10) and medical fitness (refer to section 5) to the confined space entry.
- Selecting appropriate equipment and tools for the work and inspecting them to confirm their good order. (refer to section 9)
- Selecting applicable PPE and ensuring persons entering the confined space to be trained how to use it. (refer to section 8)
- Confirming safety level by appropriate atmospheric tests (i.e., oxygen deficiency, toxic substances, and explosive concentrations etc.) before entry in accordance with needs of the nature of workplace and local legal requirement.
- Providing entry permit to all persons intending on entering a confined space. (refer to 7)

### **4.2 During confined space entry work**

- Ensuring Stand-by Person to be on the outside of or near the confined space to take his/her role. (refer to section 3.3)
- Monitoring and recording the space atmosphere regularly such as oxygen level and flammable range in accordance with needs of the nature of workplace and local legal requirement.



## 5 **Medical fitness and response**

Only personnel who can ensure and confirm their fitness to work in confined spaces (or have passed the medical check according to local requirements), can enter a confined space. Additional checks shall be asked depending on the confined space conditions.

## 6 **Risk assessment and planning**

Project risk assessment shall be done prior to start of work and be included in the OHS Safety Plan.

Prior to entry into an area that has been identified as a confined space, the work to be conducted must be adequately identified. When the work has been identified, management must consider whether the work can be conducted outside the confined space. If it is determined that the work can be successfully completed without having to enter the confined space then the following procedure is not necessary.

Confined space risk assessment/check must be done prior to start working in confined spaces. The risk assessment shall include any emergency situations that may occur because of the work being undertaken. The emergency arrangements shall be specific to the activity being undertaken and to the time and date of entry.

It must be noted that a Stand-by Person must always be present whenever confined space work is being conducted.

## 7 **Entry permit**

An entry permit is required to be issued to all persons intending on entering a confined space. Confined space permit should be given only for a shift and needs to be reviewed every shift as conditions are often not stable in confined spaces.

Confined space entry permits shall include precautions and clear instructions for the safe entry and execution of work. Periodic checks during the permit are essential.

The person responsible for the direct control of work within a confined space (normally Supervisor and PICW on site) shall be issued with the entry permit. They are to record who enters the confined space. Entry permit shall be written and posted on the workplace and communicated to all team members.

The persons entering the confined space shall be informed, understand, and comply with the contents of the entry permit.



## 7.1 Entry permits mandatory content

- Name of permit space to be entered, authorized entrant(s), eligible attendants and individuals authorized to be entry supervisors.
- Space atmosphere test criteria and results.
- Tester's initials or signature.
- Name and signature of the person who authorizes entry.
- Purpose of entry and known space hazards.
- Measures to be taken to isolate permit spaces and to eliminate or control space hazard.
- Name and telephone numbers of rescue and emergency services and means to be used to contact them.
- Date and authorized duration of entry.
- Acceptable entry conditions.
- Communication procedures and equipment to maintain contact during entry.
- Additional permits, such as for hot work, that have been issued authorizing work in the permit space.
- Special equipment and procedures, including personal protective equipment and alarm systems.
- Any other information needed to ensure employee safety.

## 8 Personal Protective Equipment

Employees required to conduct work in a confined space shall wear the applicable required PPE and be trained in how to use the PPE.

### 8.1 Determination and selection of PPE

- Determination of acceptable PPE for a confined-space entry is based on an assessment of the hazards associated with the material, atmosphere, conditions that are normally in the space and the work being planned.
- Once the PPE and respiratory protection levels are specified, they must not be relaxed unless the hazards are reassessed and found to call for a lower level of protection by Issuer / Risk Assessment Team.





- Atmosphere improved by using forced ventilation must reach the stable level before the hazards are reassessed.
- If ongoing forced ventilation must be in place, the assessment must be conducted as if the ventilation were not present.
- Entrants shall wear air supplied respirators in oxygen deficient atmospheres, when toxics are beyond Threshold Limit Value (TLV) and where atmosphere within confined space is initially made safe, but there is a reason to believe that it may become unsafe during the period for which entry is authorized (e.g., from emission of fumes from sludge or deposits contained in the space or welding fumes).
- Under no circumstances chemical cartridge/canister type gas masks shall be used for confined space entry. Particulate respirators may be used if required.
- Manager/PICW shall ensure that, air supplied respirators (air mask or self-contained breathing apparatus) are in good condition, well maintained and inspected according to manufacturer's specifications.
- Manager/PICW shall ensure that, the breathing apparatus users are medically certified and trained to use breathing apparatus.
- In Immediately dangerous to life and health (IDLH) atmospheres, entrants shall wear Self-Contained Breathing Apparatus (SCBA), or airline mask attached with stand-by escape set. Rescue arrangements shall be readily available.
- Rescue kit and fire extinguishers shall be readily available.

## 9 **Equipment and tools**

All the equipment and tools (including lightening system) for being used in the confined space shall be selected according to local legal requirement and standard for ensuring they are suitable for the work environment and the task.

The equipment and tools shall be inspected prior to each use and regularly maintained following manufacturer's recommendation for ensuring they are in good order.

## 10 **Training**

Adequate technical competency must be confirmed for confined space entry supervisors, authorized confined space entrants, person who test or monitor atmosphere, stand-by personnel/attendant, and rescue personnel.

Only trained employees shall conduct work in confined spaces. Training record shall be maintained, certificates and appointments must be valid and up to date.



Upon the entry of a confined space employees shall be appropriately trained in the following:

- hazards of confined spaces,
- assessment of procedures,
- control measures,
- emergency plan and procedures; and
- selection, use, fit and maintenance of safety equipment.

Rescue training is critical, and the team shall have proper rescue training.

## 11 **Monitoring and review**

The OHS Safety Plan shall be updated and reviewed during and after project completion and submitted to the responsible manager(s).

Entry permit shall be reviewed periodically. Permit should be maximum one (1) shift and needs to be revised for every shift.

## 12 **Records**

All records shall be kept in accordance with the requirements of the OHS Safety Plan.

Entry permits shall be posted on site and be visible during the work. All permits shall be kept.

## 13 **Change information**

This is the first version of the standard.