



Safe Work Practices / Procedures / Instruction

CONFINED SPACE

Entry into and work in a confined space poses health and safety problems which may include:

- Presence or possible build up of a hazardous atmosphere
- Unexpected movement of equipment or materials
- Engulfment
- Explosive, toxic or oxygen deficient atmosphere

Work within a confined space must be carefully defined and planned ahead of the entry in order to identify all possible hazards and take appropriate preventive action.

Responsibilities

Where confined space work is to be performed, it is the responsibility of senior project personnel to ensure work to be performed has been adequately identified, planned and that all safety requirements have been implemented prior to work commencing.

The responsibility for safety, both at the time of entry and during the entire operation rests with the immediate supervisor. This includes action to continue with the implementation and administration of a safe work plan, ensuring the plan is adhered to and taking all necessary actions to eliminate or control the actual or potential hazards present.

Employee Training / Instruction

In addition to the supervisor training outlined in the H&S program, all supervisors or workers regularly involved in confined space entry shall receive competency training in confined spaces via an accredited organization, or through a program that has been recognized and accepted by Sonic Drilling Ltd. management. This training must be done every two years.

Pre – Job Instruction

The work to be performed shall be under the direction of a competent person thoroughly familiar with the hazards that may be encountered and has received all necessary training.

All workers connected with the performance of the work in the confined space shall before entering, be present at a job meeting to be trained on the hazards they may encounter, how the job will proceed, the precautions required and rescue methods needed in an emergency.

Personal Protective Equipment

Appropriate PPE e.g. clothing, gloves, boots, eye, face and respiratory apparatus shall be worn to meet the requirements of the job.



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Confined Space Entry Procedure

The following steps shall be used each and every time a confined space is entered by a worker. Where a client has specific confined space procedures for specific operations they will be followed so long as they offer equal or better protection.

Safety Planning / Hazard Assessment

When a Sonic Drilling Ltd. employee must enter a confined space, we as the employer shall appoint a competent person to:

Carry out a job hazard analysis (if one has not been completed) of the physical and chemical hazards to which the worker is likely to be exposed both upon entry and during work activities.

Specify the necessary tests to determine whether the worker would likely be exposed to any identified hazards

Job Safety Analysis

To prepare a safe work plan for the work to be performed, outline all actual and/or potential hazards and the controls used to reduce/eliminate them. Use the Sonic Drilling Ltd. job hazard analysis requirements.

Hazards to consider include:

Oxygen enrichment or deficiency	Flammable gas, dust, vapour
Combustible dust	Other hazardous atmospheres
Harmful substances	Hazardous energy, equipment
Engulfment, and/or entrapment	Other hazardous conditions

The procedure must also take the following controls into consideration:

Isolation, lockout, tagging of hazards	Controls of ignition sources
Movement of material	Ventilation and purging
Lighting	Alarms and communication methods
Means of access and egress	Personal protective equipment
Atmospheric testing requirements/frequency	Emergency equipment
Emergency response procedures	Warning signs/barricades
Training requirements	Additional safety procedures



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Energy and Equipment Lockout

The supervisor must arrange for the confined space to be checked to ensure that all blinding, blanking or other effective methods are used to prevent contaminants from entering the confined space.

Where purging is necessary to prevent the development of a hazardous atmosphere in the confined space, water and fresh clean air may be used. When this is completed then a further test shall be done to verify the atmospheric content prior to entry.

Before entry all power driven internal equipment and power sources shall be de-energized and locked out to ensure they cannot be operated.

Ensure adequate lighting and that power sources are intrinsically safe.

Ventilation

Where possible, clean-out doors or any other openings shall be positively locked open and the confined space thoroughly ventilated by a positive method of mechanical ventilation to introduce large quantities of fresh air.

Ensure the air introduced into the confined space is not accidentally contaminated with harmful substances before it enters the confined space.

Continuous ventilation with mechanical ventilation equipment shall be done where necessary to provide secondary protection in the event the work in progress produces contamination, heat or toxic fumes.

Appoint Safety Guard (attendant) / Set Up Communications

Ensure that a person for the guard duties is aware of their responsibilities

The guard is positioned at the confined space entrance and is equipped with the confined space procedure, permit, communications equipment and emergency equipment.

The guard must be capable of rescuing if required (without actual entry) and must be able to communicate constantly with the workers inside either visually or by radio.

The guard does not leave the post unless relieved by a qualified person. The supervisor must be notified by the guard of any dangerous situations that they become aware of. The guard will have basic first aid and CPR training, or be able to immediately contact someone in the vicinity who does.



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Sign In / Sign Out

It is the guard's responsibility to maintain a log system in the immediate area of the confined space. Workers entering the confined space must sign in and out and record the time of entry.

Communications

The supervisor must ensure that an adequate communications system is in place and/or visual contact can be maintained between the guard and the workers in the confined space.

Confined Space Permits

The supervisor will be responsible to ensure that all notifications and permits at the work site have been completed prior to entry. Ensure a written confined space work permit is completed and signed by a competent person and include as a minimum all of the following information:

1. The length of time for which the permit is valid (12 hour maximum)
2. The identity of each worker entering the confined space
3. The activity to be performed by the workers
4. The location of the confined space
5. The results of the atmospheric testing of the confined space both at the time the permit was issued and more often as required
6. The applicable precautions to protect the workers outlined in the plan

Atmospheric Testing

Prior to any entry being made, portable instrumentation for sampling of oxygen concentrations, explosive concentrations and potential airborne contaminants in the confined space shall be used by a competent person to determine atmospheric conditions.

When a job is stopped for any reason and workers have to re-enter after a prolonged work break, then testing shall be done again before entry if work permits are still in place.

Safe Work Practices for Confined Space Entry

Where work is to be carried out in a confined space the following will be considered when completing the Job Safety Analysis / Procedure:



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Types of Confined Spaces

Type 1 – safe atmosphere provided (no immediate atmospheric hazard)

Type 2 – hazardous atmosphere which can be made safe to enter

Type 3 – potentially explosive atmosphere

Type 4 – hazardous / unknown atmosphere on a continuous basis

Type 1 Entry – No Immediate Atmospheric Hazard

No Sonic Drilling Ltd. employee will be present in a confined space unless:

1. There is a means of exit from the parts of the confined space that are accessible to workers.
2. All mechanical equipment in the confined space is disconnected from its power source and locked out.
3. All pipes and other supply lines into the confined space whose contents are likely to create a hazard are blanked off.
4. A guard is stationed outside the confined space.
5. An emergency rescue procedure has been established.

The supervisor or competent designate shall test no less than once per shift and evaluate the confined space before a worker enters it to determine whether it is free of hazard to a worker while the worker is present in it and as often as necessary to ensure that it remains free of hazards.

Type 2 Entry – Atmospheric Hazard May Be Present

No Sonic Drilling Ltd. employee will be present in a confined space in which there is likely to be hazardous gas, vapour, dust, mist, smoke, fume or an oxygen content of less than 19.5% or more than 22.5% unless this section is complied with in addition to the requirements from Type 1 Entry.

The confined space will be purged and ventilated to provide an atmosphere that does not endanger workers, and measures necessary to maintain the atmosphere shall be taken.

When a worker is present in the confined space, a guard (attendant) shall be stationed outside it.

An emergency rescue procedure has been established. If the guard stationed outside the space is not adequately trained in CPR, a worker who is trained shall be readily available.

Type 3 Entry – Explosive Atmosphere May Be Present

No Sonic Drilling Ltd. employee will be present in a confined space that contains or is likely to contain explosive or flammable gas, dust, mist or vapour unless this section is complied with in addition to all requirements for Type 1 and Type 2 Entry.



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A worker may engage in cleaning or inspection activities that do not create a source of ignition in a confined space in which the concentration of explosive or flammable gas or vapour is not likely to exceed 50% of the lower explosive limit of the gas or vapour.

A worker may engage in cold work (work that doesn't generate heat or sparks) in a confined space in which the concentration of explosive or flammable gas or vapour is not likely to exceed 10% of the lower explosive limit of the gas or vapour.

Type 4 Entry – Atmosphere May Be Immediately Dangerous To Health and Life

A worker may be present in a confined space that is not purged and ventilated, or in a space which cannot be made adequately safe through ventilation if the following is done in addition to the requirements of Type 1, 2 and/or 3 Entries.

A worker in a confined space shall use suitable protective breathing apparatus and a full body harness securely attached to a rope whose free end is attached outside the confined space and is being held by a guard/attendant outside the space. The guard/attendant will be provided with an alarm.

A direct means of visual contact and communication between the worker in the confined space and the worker outside it will be provided.

A worker trained in CPR and able to perform rescue operations will be readily available outside the confined space while the worker is inside it. A local emergency response team should also be notified.

Entry into a Type 4 space requires written approval of management.

Job Completion

At the end of the job, a thorough check shall be made by the supervisor to ensure that no tools, equipment or possibly workers have been left behind. Double check and ensure that all personnel are accounted for before leaving the confined space.

Return the work permit to the responsible supervisor for finalization and to ensure that any locks etc. belonging to the crew are removed.

Documentation

All confined space documentation must be maintained at the Sonic Drilling Ltd. office for a period of no less than 2 years upon the completion of the job.

Confined Space Monitors

Confined space monitors can be obtained through Sonic Drilling Ltd. management. The standard atmospheric monitor utilized by Sonic Drilling Ltd. is a (make and model)_____.