McCRORY ENGINEERING, INC.

Confined Space Entry Program

The definitions and procedures listed below are not considered a substitute for any provisions of the Occupational Safety and Health Act of 1970 or for any standards issued by OSHA.

1.0 Purpose

This section provides information and instruction necessary to evaluate and control the entry into potentially hazardous atmospheres which may be encountered in confined spaces of tanks. The objectives of this program are to identify confined spaces, prohibit unauthorized entry, establish procedures for authorized entry and work within confined spaces and to comply with OSHA confined spaces standard.

2.0 Definitions

2.1 Confined Space – a confined space that has one or more of the following characteristics:

1. is large enough and so configured that an employee can bodily enter and perform work;

2. has limited or restricted means for entry or exit;

3. is not designed for continuous employee occupancy;

4. These spaces may include, but are not limited to, underground vaults, tanks, storage bins, pits, diked areas, vessels and silos.

2.2 Permit Required Confined Space - refers to those spaces that meet the definition of a "confined space" and pose health or safety hazards, thereby requiring a permit for entry. A permit-required confined space is one that meets the definition of a confined space and has one or more of these characteristics:

1. Contains or has the potential to contain a hazardous atmosphere;

2. Contains a material that has the potential for engulfing an entrant;

3. Has an internal configuration that might cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section;

4. Contains any other recognized serious safety or health hazards.

2.3 **Attendant** – an individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the employer's confined space program.

2.4 **Authorized Entrant** – an employee who is authorized by the employer to enter a confined space.

2.5 **Entry** – the action by which a person passes through an opening 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.

2.6 **Entry Permit** – the written or printed document provided by the employer to allow and control entry into a confined space.

2.7 **Entry Supervisor** – the person 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 entry.

2.8 **Hazardous Atmosphere** – an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury or acute illness from one or more of the following causes:

1. flammable gas, vapor or mist in excess of 10% of its lower flammable limit (LFL);

2. airborne combustible dust at a concentration that meets or exceeds its LFL;

3. atmospheric oxygen concentration below 19.5% and above 23.5%;

4. any other atmospheric condition that is immediately dangerous to life or health.

2.9 **Inerting** – the displacement of the atmosphere in a confined space by a noncombustible gas to such an extent that the resulting atmosphere is non-combustible.

2.10 **Isolation** – the process by which a confined space is removed from service and completely protected against the release of energy and material into the space.

2.11 **Permit System** – a written procedure for preparing and issuing permits for entry and for returning the permit space to service following termination of entry.

2.12 **Rescue System** – the personnel designated to rescue employees from confined spaces.

2.13 **Retrieval System** – the equipment used for non-entry rescue of persons from confined spaces. Examples include: retrieval line, chest or full-body harness. Equipment is not required after space has been purged, tested and has 2 exit points.

2.14 **Testing** – the process by which the hazards that may confront entrants of a confined space are identified and evaluated. Testing includes specifying the tests that are to be performed in the confined space.

3.0 Introduction

If a decision is made to have personnel enter permit spaces, it is then necessary to develop and implement a written confined space entry program.

4.0 Control Measures

The specification of the acceptable entry conditions will ensure that all hazards that could have been reasonably expected to be found have been addressed. With the acceptable entry conditions specified, entry conditions have been restricted to only those which are safe. An example would be limiting the atmospheric concentration of a flammable gas or vapor to 10% of the lower flammable limit.

Isolating the confined space removes serious hazards. These hazards could include filling systems, exposed energized electrical parts or mechanical equipment inside the space.

Purging and ventilating the space will help to remove atmospheric hazards, such as flammable gases and vapors or toxic materials, that are immediately dangerous to life and health concentrations.

Even though conditions prior to entry may be acceptable, there is always the possibility that those conditions can change. Therefore, it is necessary to ensure that acceptable entry conditions are maintained throughout the entry operations.

This process would include testing of the atmosphere inside the space and inspections to ensure that isolation of the space is not compromised.

5.0 Equipment

Compliance with the various requirements of this program will make it necessary for certain types of equipment to be available for use before and during entry operations. The exact equipment required for a particular entry will be determined by the specifics of that entry.

Types of equipment used during confined space entry:

1. Testing and monitoring equipment, examples below:
    a. Ventilating equipment;
    b. Communication equipment (cell phone, emergency alarms and radio)
    c. Personal protection equipment;
    d. Lighting equipment to enable employees to see well enough to work safely and exit quickly in an emergency.
2. Barriers and shields
3. Equipment, such as ladders, for safe ingress and egress, as needed.
4. Emergency equipment.

6.0 Testing

Testing should be done to determine if acceptable entry conditions are established before entry and maintained throughout the entry operations. The testing required will depend on the hazards associated with a particular entry. Testing could include atmospheric or temperature measurements, or testing of electrical circuits to ensure they are de-energized.

Once acceptable entry conditions are established and entry begins, the testing must continue during the course of the entry operations to ensure those conditions are maintained. The frequency of this testing will be determined by the hazards present.

When atmospheric testing is required, various tests must be performed in the order specified by the OSHA standard. The order is oxygen content first, flammable second and toxic materials third. This order is based on the fact that some flammable gas and vapor detectors do not function properly if the oxygen content is below a specific level. Acceptable conditions are oxygen content between 19.5% and 23.5%, combustible gas concentration less than 10% lower flammable level.