



MANAGEMENT SYSTEM MANUAL

7.8.5 Confined Space Rescue

Originator:

Hank Ayers

Approved By:

Timothy Twomey

1. Purpose

The purpose of this procedure is to establish the guidelines to be followed when conducting a confined space rescue.

2. Responsibility

Responsibility for confined space rescues ultimately rests with the Master. The Master will usually designate an on-scene coordinator "Scene Leader" to oversee the procedure, usually the Chief Mate or the Chief Engineer.

3. General

Confined space entry shall be carried out in accordance with SMM 7.8.1 Confined Space Entry.

A rescue situation is determined to occur whenever the person(s) in the confined space has requested assistance, become injured, disoriented or unresponsive. In any of these cases, there shall be no further entry into the space until a Scene Leader is present and all care has been taken to assess the scene and mitigate risk to the rescuers. A primary goal is to prevent the need to conduct multiple rescues because the rescuers were ill prepared to deal with the hazards of entering a confined space.

Every rescue situation will be unique and will have to be handled accordingly with dependence on the following: nature of accident, vessels location (at sea or in port) location/space involved, disposition of victim(s), manpower available and equipment available, atmospheric conditions of space, need for rapid extrication etc.

If the incident occurs in port, every attempt will be made to contact shore side assistance (fire-rescue) to assist, guide or conduct the rescue operation as time permits.

Confined Space Entry personnel shall be trained in the use of shipboard gas meters as required by Chief Engineer.

The ship shall train onboard personnel as Competent Persons when training and personnel are available. Suggested shipboard personnel to be trained as Competent Persons are Chief Engineer, First Assistant Engineer and Chief Mate. Others may be trained when training spaces are available.



MANAGEMENT SYSTEM MANUAL

7.8.5 Confined Space Rescue

Originator:

Hank Ayers

Approved By:

Timothy Twomey

4. Procedures

Three Types of Confined Space Rescue:

- Self-Rescue
- Non-Entry Rescue-external
- Entry-Rescue- internal

Self-Rescue

When the victim is able to identify the hazard(s) and self-extricate with no assistance from rescue personnel. Many times self-rescue involves the evacuation of a space when an entrant feels ill, dizzy etc. and recognizes this could potentially be the result of poor atmospheric conditions.

Non-Entry Rescue-external

As the name implies this involves rescuing a victim(s) from outside of the space. For this type of rescue to be possible the victim would have donned a harness with a retrieval system in place (pulleys, ropes) prior to entering the space or is able to don a harness that is passed to them without the need for rescue personnel to enter the space.

Entry-Rescue-internal

Internal rescue represents the most risk to the rescuers as they need to enter the hazardous space. This type of rescue needs to be well planned and coordinated due to the utilization of a considerable amount of equipment such as; harnesses, ropes, block and tackles, back boards, stokes litter, neck collars, radios, flashlights, O2/Gas meter, SCBA's, Breathing Air cart, other medical equipment etc.

ESTABLISH THE SCENE

The Chief Mate or Chief Engineer shall assume role of Scene Leader as appropriate and begin an immediate "size-up" and "scene survey" of the situation while isolating the immediate hazard area and denying entry to all non-rescue personnel.

- Identify hazards "SCENE SURVEY"
- Develop a rescue plan and whether a Non-entry(external) or Entry(internal) rescue is required.



MANAGEMENT SYSTEM MANUAL

7.8.5 Confined Space Rescue

Originator:

Hank Ayers

Approved By:

Timothy Twomey

- Whether rescue will be conducted horizontally or vertically.
- Keep Bridge/Captain informed of conditions, actions, and needs during all phases of the rescue operation including possible medical interventions.

SIZE-UP

- Gather information to determine what happened to the best of your abilities. Was this a result of a fall, asphyxiation, structural failure etc.? Look for clues on the scene to determine what happened and determine if hazard(s) are still present.
- Assess the immediate and potential hazards to the rescuers.
- Isolate immediate hazard area, secure the scene and clear scene of all non-essential personnel.
- Establish communications with victim(s) if they are conscious and determine if *Non-Entry* rescue is possible.
- Assess on-scene capabilities, anchor locations (for rigging rescue/taglines) etc. and determine the need for additional resources and equipment. Utilize ships Emergency Squad to retrieve needed equipment as appropriate.

SECONDARY ASSESSMENT

- Gather information about the confined space; layout etc. utilizing ships drawings showing possible entry and egress locations if applicable.
- Determine what products if any may be stored in the confined space i.e. Hazmat.
- Determine known hazards present in the confined space; atmospheric, mechanical, electrical, etc.
- Assess the structural stability of the confined space if damage occurred.

Pre-entry Operations

MAKE THE RESCUE AREA SAFE

Hazard Assessment / Atmospheric Monitoring

- Chief Engineer or Chief Officer should utilize Oxygen content /Gas meter to determine atmospheric condition of space.



MANAGEMENT SYSTEM MANUAL

7.8.5 Confined Space Rescue

Originator:

Hank Ayers

Approved By:

Timothy Twomey

- Atmospheric monitoring shall be done continuously and readings shall be logged at frequent intervals to identify any changes in the environment. Log shall be kept by someone other than Scene Leader.
- Implement Lock-Out / Tag-Out procedure if necessary due to potential electrocution hazards.
- Take appropriate measures to ensure the structural stability of the confined space if damage has occurred.
- Any product/liquid that is in or flowing into the confined space must be secured or removed if possible.

Ventilation

- With assistance from the Engineers determine if fixed ventilation systems are available in the space or whether or not remote ventilation equipment (ie blowers, fans etc) may be utilized to provide a safer environment for the victim(s) or rescuers.
- If ventilation measure are taken be sure to monitor atmospheric conditions inside and outside of the space (where rescuers are staged) with Oxygen/Gas meter to note any changes in the atmospheric conditions of the space.

Equipment

- Personal Protective Equipment (PPE) may include hardhat, gloves, proper footwear, goggles and or turnout gear depending on the situation.
- Supplied Air Breathing Cart w/ SKA-PACKS or Self-Contained Breathing Apparatus (SCBA) shall be utilized by all entry and back-up personnel. The air cart is the breathing apparatus of choice since it is less cumbersome than an SCBA. If an SCBA must be used, personnel shall maintain line of sight and exit the confined space prior to low air alarm activation. Spare SCBA bottles shall be staged at the scene. Time of entry into the space shall be noted.
- Air monitoring device that monitors oxygen levels, flammability, and toxicity shall be carried by the entry team.
- Intrinsically safe communication equipment (UHF radios) shall be utilized by entry personnel.
- Intrinsically safe lighting equipment and/or flashlights/ headlamps shall be utilized by entry personnel.



MANAGEMENT SYSTEM MANUAL

7.8.5 Confined Space Rescue

Originator:

Hank Ayers

Approved By:

Timothy Twomey

- A retrieval system shall be readied and in place if applicable. This may include a vertical or horizontal haul system constructed of ropes, pulleys, and other hardware, with a minimum of a 2:1 mechanical advantage.

Entry Operations

MAKING A SAFE ENTRY

The Scene Leader shall be responsible for entry operations. The rescue plan will be discussed by Chief Mate, Chief Engineer, Captain/Bridge, Rescue Team, Support personnel and victim(s) prior to commencing operation. The Scene Leader shall ensure that all personnel operating in the confined space and the area immediately surrounding the confined space are accounted for and wearing appropriate PPE as applicable.

- A. Prior to entry, advise entry team and back-up team (if manpower and equipment permit) on the following:
 - Anticipated hazards within the confined space.
 - The space being entered including the configuration (if known).
 - The rescue plan.
 - The back-up plan.
 - Time limits for the rescue operation (SCBA bottle capacity, victim disposition etc.)
 - Medical considerations for victim (C-Collar, backboard application to victim etc.)
- B. Consider the use of rescuer tag-lines with the understanding that tag-lines may create an entanglement hazard.
- C. Maintain constant communication with the entry team via voice and or UHF radio as applicable.
- D. Entry personnel shall continually monitor atmospheric conditions inside the confined space in regards to oxygen level, flammability, and toxicity via portable meter.
- E. Locate victim(s).



MANAGEMENT SYSTEM MANUAL

7.8.5 Confined Space Rescue

Originator:

Hank Ayers

Approved By:

Timothy Twomey

VICTIM REMOVAL

- A. Upon reaching victim, conduct a primary survey and initiate C-spine precautions. NOTE: due to the configuration of the confined space, optimum C-spine precautions may not be possible and should be addressed as soon as possible.
- B. When possible, provide respiratory protection for the victim(s). Rescuers *shall not* administer pure oxygen to a victim(s) in a confined space that has a potentially flammable atmosphere and rescuers *shall not* remove their breathing apparatus and give it to the victim(s).
- C. Conduct a secondary survey of the victim(s) looking for immediate life threatening injuries. If conditions permit, entry personnel should attempt to treat serious injuries prior to removal, while considering that it may be more appropriate to remove the victim(s) from danger prior to treatment.
- D. Properly package the patient for removal from the confined space as appropriate. This may include using a backboard, stokes basket, KED device or rescue harness. Secure any loose webbing buckles, straps, or device that may hinder the extrication process.
- E. Rescuers should not allow the victim between the rescuer and the point of egress except in situations where it is necessary for one rescuer to pull the victim while another rescuer pushes the victim.

TREATMENT

Immediately upon egress, if necessary the victim(s) shall be transferred to the Ships Hospital where the **Tempus Telemedicine device** is standing by for patient arrival. **Tempus Telemedicine** medical service shall be utilized depending on level of care needed.

*Note: If the victim has been contaminated from a product inside the confined space, a thorough decontamination/wash down of the victim should be conducted prior to transporting to the hospital.



MANAGEMENT SYSTEM MANUAL

7.8.5 Confined Space Rescue

Originator:

Hank Ayers

Approved By:

Timothy Twomey

TERMINATION OF RESCUE

- Ensure personnel accountability.
- Remove all tools and equipment used in the rescue/recovery.
- If entry personnel and/or equipment have been contaminated, proper decontamination procedures shall be followed prior to returning to service.
- Consider a Post Incident Critique as applicable and as timing permits.

5. Documentation

An Incident or Accident report shall be entered into NS as appropriate along with a follow up CAR once the investigation of the incident or accident is completed.