



Person in the Water Procedures Manual

Version: 1.0

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1.0 Our Commitment

At Squamish Terminals, we are committed to the establishment, continuous improvement and promotion of a safe and healthy workplace, within the standards of our industry and in compliance with legislative requirements. We are committed to the prevention of accidents and the protection of all our resources, including employees, visitors and physical assets.

2.0 Purpose

The purpose of this procedures manual is to ensure that safety and emergency procedures are followed in the event that a person falls into the water and requires rescue. Most importantly is maintaining sight of a person in the water while maneuvering to recover the person safely and as quickly as possible.

3.0 Legislation

The employer must consider the following Occupational Safety and Health Act (OSHA) regulations in supporting or retrieving a Person in the Water.

4.0 Background

Due to recent incidents where persons have fallen into the water, the National Maritime Safety Association (NMSA) Technical Committee developed generic Person in the Water (PIW) safety guidance. Terminal specific PIW plans should be developed taking into consideration the unique conditions, equipment, water temperatures and currents found at each terminal. Terminals should have safe work procedures in place that minimize or prevent persons from falling into the water. When persons are engaged in work along an "unguarded edge" where there is a hazard of falling into the water (e.g. line handling) appropriate Personal Floatation Devices (PFDs) should be worn and properly fastened.

5.0 Employee Safety

5.1. Safety Equipment & Procedures

All personnel are required to be familiar with emergency procedures including the locations of assembly areas and muster stations. Site specific safety information includes but is not limited to the following:

- No employees should work alone when working near the water.
- If there are only 2 people working near the water, employees are required to carry a 2 way radio which shall remain on the dock and not on the person. The radio should be tested for communication with the First Aid Attendant, Security Guard, Foreman or other planned contact.
- Whenever there is work being done near the water, life rings and pool hooks should be moved to where they are easily accessible by employees.
- Employees are expected to be aware of their surroundings before commencing work and shall ensure that their Foreman is aware of where they are working.
- Any questions regarding safety equipment or emergency procedures shall be directed to the Foreman or Operations Superintendent.

5.2. Potential Hazards

Employees must take the necessary precautions to avoid the following potential hazards:

Fall hazards	Falls from the same level, from the dock into the water or from ladders.
Lines under tension	Slack lines can suddenly become tight, lines under tension can get caught and suddenly release or can break.
Mobile equipment pulled into water	Mobile equipment can be inadvertently pulled into the water by ship's winches. Consequently, personal vehicles, lift trucks or any other equipment not specially modified to handle lines (e.g. equipped with breakaway or quick-release devices) must NOT be used to pull lines.
Overhead hazards	Ship's lines thrown ashore. Gangways being lowered.
Equipment movement	Employees must be aware of maritime handling equipment as well as other equipment (e.g. ships and their gear and other heavy equipment involved in terminal operations). Employees must ensure that all duties are protected from other equipment and personnel.
Current, wind and suction	Various forces that can act on a ship, or on its lines, causing unexpected movement.
Propellers and thrusters	Lines in the water can foul propulsion systems, causing unexpected tension or potential damage due to fouling.

5.3. Accidents & Incidents

Employees are responsible for reporting all accidents and incidents immediately to the Foreman or Superintendent. Accident reporting protocol includes but is not limited to the following:

- An accident is an event that causes personal injury and/or damage to equipment or property.
- An incident is any event that could have resulted in personal injury and/or damage to equipment or property (also referred to as a "near miss").

5.4. Emergency Reporting

Emergencies include life threatening injuries from a fall, head trauma, severe burns or uncontrollable bleeding; persistent or sudden chest pains, breathing emergencies, severely altered level of consciousness; person in the water; fire; hazardous material spill or bomb threat.

Employees reporting emergencies must provide the following information to Emergency Response Services:

- Nature of the emergency
- Terminal location
- Location of the incident within the terminal

Do not hang up as additional information may be required. Contact security, if on duty, and arrange for a person to meet the emergency responders at the terminal entrance and escort them to the scene.

5.5. Hazard Reporting

Employees are required to report any 'thing' or 'circumstance' to the Foreman or Superintendent that is likely to be hazardous to the health or safety of employees.

5.6. Injury Reporting

Employees are required to report every accident or other occurrence arising in the course of or in connection with the employee's work that has caused injury to the employee or to any other person.

Injuries should be reported immediately to First Aid, if on duty, or the Foreman or Superintendent. If the injury occurs at work and is treated elsewhere, or if the condition worsens, seek medical attention and emphasize to the treating physician that the injury occurred at work. The employee must then contact the employer to report the injury.

5.7. Effects of Cold Water Immersion

Sudden immersion in cold water, i.e. below 15°C (average water temperature in Howe Sound varies between 8°C - 15°C), is very dangerous; and should be avoided if at all possible. A person who suddenly falls into cold water experiences four stages of physical response. Over half of the immersion-related deaths occur during the first two stages of immersion.

Stage 1: Cold Shock

On initial immersion, there is a large inspiratory gasp followed by a four-fold increase in pulmonary ventilation, i.e. severe hyperventilation. This on its own can cause small muscle spasms and drowning. Along with this, there is a massive increase in heart rate and blood pressure. These latter cardiac responses may cause death, particularly in older, less healthy people. These effects last for the first two to three minutes. Death from cold shock is not uncommon. The severity of the effects of cold shock is directly proportional to the water temperature, peaking between 10-15°C.

Stage 2: Short-term immersion or swimming failure

Death at this stage, between three and thirty minutes after immersion, appears to affect those who try to swim. Ability to swim in warm water is no indication of how well a human can swim in cold water. There are several common threads in these types of accidents:

- The victims were good swimmers
- The water was cold
- Death occurred within a matter of only minutes - much too early for hypothermia to set in
- They were all healthy people
- They were often in shallow water
- The accidents occurred within feet of the shore.

It is for this reason that personal floatation devices (PFDs) must be worn, properly fitted and secured at all times.

Stage 3: Long-term immersion or hypothermia

After thirty minutes or more of immersion, death may occur from hypothermia. The reason for this is that water has a specific heat 1000 times that of air and a thermal conductivity of about 25 times that of air. Thus, when a body is immersed in water below body temperature (37°C), it will inevitably cool to hypothermic levels at a rate dependent on:

- Temperature differential
- Clothing insulation
- Rate of agitation of the water
- Body heat production produced by shivering and exercise
- Ratio of body mass to surface area
- Subcutaneous fat thickness
- State of physical fitness
- Diet prior to immersion
- Physical behaviour and body posture in the water

As the deep body temperature falls, humans lapse into unconsciousness. Death may occur in two ways - drowning through incapacitation, and cardiac arrest.

Stage 4: Post-rescue collapse

Up to twenty percent of immersion deaths occur during extraction from the water, or within hours after rescue. Cause of death at this stage is collapse of arterial blood pressure leading to cardiac arrest. When rescuing a cold water victim beware of post rescue collapse (up to several hours after) by assisting the victim to become dry and warm. Keep him or her still until medical treatment arrives.

5.8. Person in the Water Rescue

The following is some general guidance based on the National Maritime Safety Association Generic Person In Water (PIW) Recovery Guide.

A fall into the water may be a matter of life or death. The person may be conscious and can assist in their own rescue, unconscious or unable to assist in their own rescue.

1. Notification

When a person falls into the water immediate notifications must be made to:

- Supervision
- Management
- Emergency responders
- Vessel personnel (as required)
- Passing vessels (as required)

Simply calling 9-1-1 may not always be the best or only number to call. Additional contact information for professional Emergency Response Services (EMS) includes but is not limited to the following:

Emergency Response Services	Office / Non-Emergency	Emergency
Squamish RCMP	604-892-6100	9-1-1
Fire Department	604-898-9666	9-1-1
Ambulance	604-872-5151	9-1-1
Coast Guard – Marine Emergencies Rescue Coordination Centre	N/A	1-800-567-5111

The person reporting the incident should state the nature of the response, the facility name, berth, and physical address for land response. Also, provide the name of vessel or specific terminal landmark for Emergency Response Services coming from the water side to enable a water response. Identify a specific gate address for ingress to the facility. The name and call back number for the person in charge of the terminal response should be provided to all Emergency Response Services.

2. Maintain Visual Contact

- At least one person should keep the PIW in sight at all times. This should be their only duty.
- Maintaining visual contact with the PIW may require: a flashlight, or other lighting resources (crane lighting, etc.). **There is a rechargeable waterproof LED spotlight in the Ship First Aid Box**

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which is located under the white tent on Berth #2 (pictured below). This is critical after dark or when there is water current in the area. This will assist Emergency Response Services to locate the PIW for fastest extraction.



3. Keep the person afloat

- Throw all available floatation devices at hand to the PIW to provide floatation, and allow them to keep their head above water. Use terminal and vessel equipment which is readily available.
- Lifelines or ring buoys with heaving lines should be used to keep the PIW from drifting away and to help pull the PIW to safety.

4. Direct individual to means of retrieval

- If the PIW is conscious, uninjured, and can swim, direct the PIW to the floatation device and swim/pull the PIW to the emergency ladder (fixed or portable) for extraction/stabilization.
- If the PIW is injured and cannot swim, throw all available floatation devices to the PIW to ensure continued floatation and to help stabilize the PIW for Emergency Response Services extraction.

5. Support or retrieve the unconscious PIW

- Ideally, all water extractions should be made by Emergency Response Services. It is imperative to maintain spinal alignment when lifting an injured person to minimize the risk of paralysis or death. Emergency Responders have this training and the specialized equipment to stabilize and safely lift a person.

- If a person is unconscious, or otherwise cannot keep their head above water, an immediate decision must be made to retrieve the victim before Emergency Response Services personnel arrive and attempt to stabilize the victim's airway or retrieve the victim before Emergency Response Services personnel arrive.

NOTE: It is never recommended that an untrained, non-Emergency Response Services person enter the water to retrieve an injured person. However, if a trained person does elect to go into or near the water to effect retrieval,

- They should be wearing a PFD and should be reached using a retrieval pole (similar to a pool hook) which are located on the tie up walkways.
- The victim's head should be supported above the water as a priority. Extraction of a person from the water can be very dangerous, not only the victim, but others as well. It may be best to stabilize the victim in the water and wait for Emergency Medical Services to arrive. The victim's head should be supported above the water as a priority.

6. Control the Area and Direct the Emergency Response Services to the Incident

- Ensure the terminal entrance access is unimpeded and/or open an alternate entrance. Ensure Emergency Response Services know where to go. Flashing lights on gates or security vehicles may help guide Emergency Response Services to the proper location more quickly.
- Designate and position personnel at the entrance of the facility to meet and guide Emergency Response Services to the incident site. Make sure adequate personnel are assigned at the entrance to guide additional Emergency Response Services (secondary units) arriving at a later time.
- Keep the area adjacent to the extraction point clear so the Emergency Response Services can carry out the proper emergency response to extract the PIW from the water.
- Keep in contact with the Emergency Response Services to provide any required assistance of dockside equipment (crane, top pick, etc.).
- Position someone on the dock to direct emergency responders arriving from water.

5.9. Proper use of life buoy

1. Ensure the rope is attached.
2. Hold the rope. Throw using an underhanded/sidearm technique. Do not throw the life buoy at the person, but past them, and pull it towards them.
3. Instruct the person to grab the life ring.
4. Drag the person to the nearest ladder and tie the rope off to the bull rail.

5.10. Proper fitting and use of a personal floatation device (PFD)

A PFD differs from a life jacket in that it is more comfortable to wear, but is not designed to turn the wearer's face up in the water.

- PFDs should fit snugly, and must always be done up. Undone, the wearer may slip out of the PFD as soon as he/she hits the water. It is almost impossible to do up a PFD while submerged.
- The PFD should not ride up. If a wearer's stomach is larger than the chest, ride-up may occur.
- The PFD should keep the wearer's chin out of the water.
- Older foam PFDs and lifejackets may lose buoyancy and may have to be replaced.