**Tank Roof Rescue**

**(Low Angle)**

**Training Manual**

003-TM-TRR

Rev#4 Dec 4, 2019

This manual is intended for moving a stokes basket on tank stairs, not for vertical lifting using a davit arm or tripod.

**Pre-Planning**

Determine the maximum distance of patient travel that may be required. For example, the total length from anchor points to roof deck and length of stairs to the ground. (a 60’ high tank will have stairs longer than 60 feet. If using a 4:1 and controlling, it from the ground you will need 5x the stair length of rope.)

Ensure that the work does not include the potential of a worker falling from a height and becoming suspended. That will require a High Angle Rescue team that is out of the scope of this work.

Establish roles and responsibilities of each person and determine who will be the leader. Even if there are only two rescuers, select one person to be the lead. Example; who will remain with the patient in the stretcher and who will manage the 4:1 and at what end of the rescue device will it be operated from.

Determine the roles and responsibilities of all other SFM personnel that may be present as BAT, air testing, etc.

Enter this information on the SFM Tank Roof Rescue Safety Plan template.

There may be a Rescue Plan created by the client or one of their contractor’s, but a plan created by the SFM team still needs to be documented.

The SFM Rescue Plan will have the details of responsibilities and equipment.

 It will support but not deviate from any of the clients plans or policies.

**Inspection**

Inspect all equipment before the job starts and again when the job ends. If any equipment is suspect of potential failure during a rescue, tag it and remove it from service. Provide detail of what and where you see the problem area and deliver it to the Shop Manager.

This will include but not limited to discoloration, wear, frays, burns, fading, rips, stiffening, impact indicators on:

* Harness, rope, carabiners, pulleys, prusiks, lanyards

You will also need to thoroughly inspect the temporary anchor points before use. Is the railing or decking strong, secure and free of damage?

**Anchor points**

* Some tanks will have engineered anchor points such as enclosed floaters that have a tie off point at the centre of the external roof. Note: a roof above an internal floating roof is usually not designed to walk on. Those that are will have railing around the circumference and a slip resistant walkway.
* External floating roofs (the ones with out coned or geodesic roof) are designed to walk on.
* Most tanks will NOT have engineered anchor points. Select a portion of railing or decking that is secure. Keep in mind that the lower portion of a railing is usually stronger than the top section.
* Attach multiple anchor points if possible, for an additional level of safety
* Davit arm bases make good anchor points
* Chose the appropriate connection to the anchor using a cable or a nylon web choker
* For maximum strength, keep the angle of the choker to 45° or less

There is usually no engineered anchor available on a tank so choosing a temporary one is somewhat subjective to the rescuer. A good rule of thumb is if it looks like it could hold the weight of a car, use it.

**Rope bag**

* Each bag will have a laminated inventory card attached. Inspect the bag to ensure that everything required to conduct a rescue is there
* The pre-rigged 4:1 uses a prusik at the anchor end therefore the rescuer pulling the tail end should position themselves near the prusik is provide slack if required. Generally, the rope bag will be positioned at the high point anchor away from the patient at the low end.

If the job requires that the prusik be managed from the load end, reattach the prusik to opposite pulley and the appropriate line of the 4:1.

* Keep the bag and rope protected from snow and rain

**Fall Protection**

* Most tank roof extrication will occur with the rescuer protected by engineered railing
* Rescuers should wear fall protection harness for the event of the unexpected rigging is required outside of a barricaded platform

**Rope**

* Avoid having a section of rope laying on a walking surface where it can be stepped on
* Learn to tie some of the common knots that may be used. E.g. Figure 8, bowline etc.
* Use an edge protector where if the rope will be rubbing on the edge of a stair or catwalk
* Large carabiners and prusiks can be used to redirect the 4x1 to prevent it from rubbing on railing of spiral stairs

**Patient Care**

The mechanism of injury or the medical condition of the patient will determine how the rescue is carried out.

As a rescuer, you may be expected to provide the leadership to coordinate the movement of a patient to ground level. Don’t assume that anyone has called EMS. Assign someone to do that and tell them report back to you when they have.

Generally, a tank roof rescue is more likely required due to a medical issue as opposed to a worker injury.

The rescuer will need to access the patient and the surrounding hazards to determine the urgency of moving the person to the ground. For instance, if the worker has suffered from a fall there could be the possibility of spinal or neck injury. If there are no other hazards immediately present such as H2S or fire it would be best to not move the patient until EMS has stabilized using a collar and spine board.

If the injury occurred during a tank seal fire, life over limb would dictate that you need to move the patient now.

A medical issue that is affecting breathing or circulation would also require rapid movement of the patient to ground level.

Often the best first aid that you can provide is keeping the patient calm.

Talk to them and explain what you are doing and how you will be moving them.

Keep them warm and dry.

**Post Incident**

Following an actual rescue secure the scene for the investigation.

Following a work-related injury, OH&S will conduct their own investigation as well as the client.

Immediately following the rescue DO NOT move any of the rescue equipment used. Leave it where you last touched it. The entire area should be barricaded off with caution tape and only accessible to the investigators.

As soon as possible write down a statement of what you witnessed and what you did.

Do this before discussing the event with other workers.

Do not discuss the incident with members of the public or mention anything on social media.

Secure all forms, checklists and any other SFM documentation to be delivered to the SFM Operations Manager.

Provide copies to the client but do not give out the originals.

If you witness a serious injury or fatality it is important to attend a critical incident debriefing to ensure that good mental health is maintained. Your supervisor can arrange this through local resources such as Flagstaff Victim Services.

I\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Acknowledge that I have read and understand the contents of this Training Manual.

Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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