

Fall Rescue for Rig Work

PARTICIPANT MANUAL
VERSION 20.1





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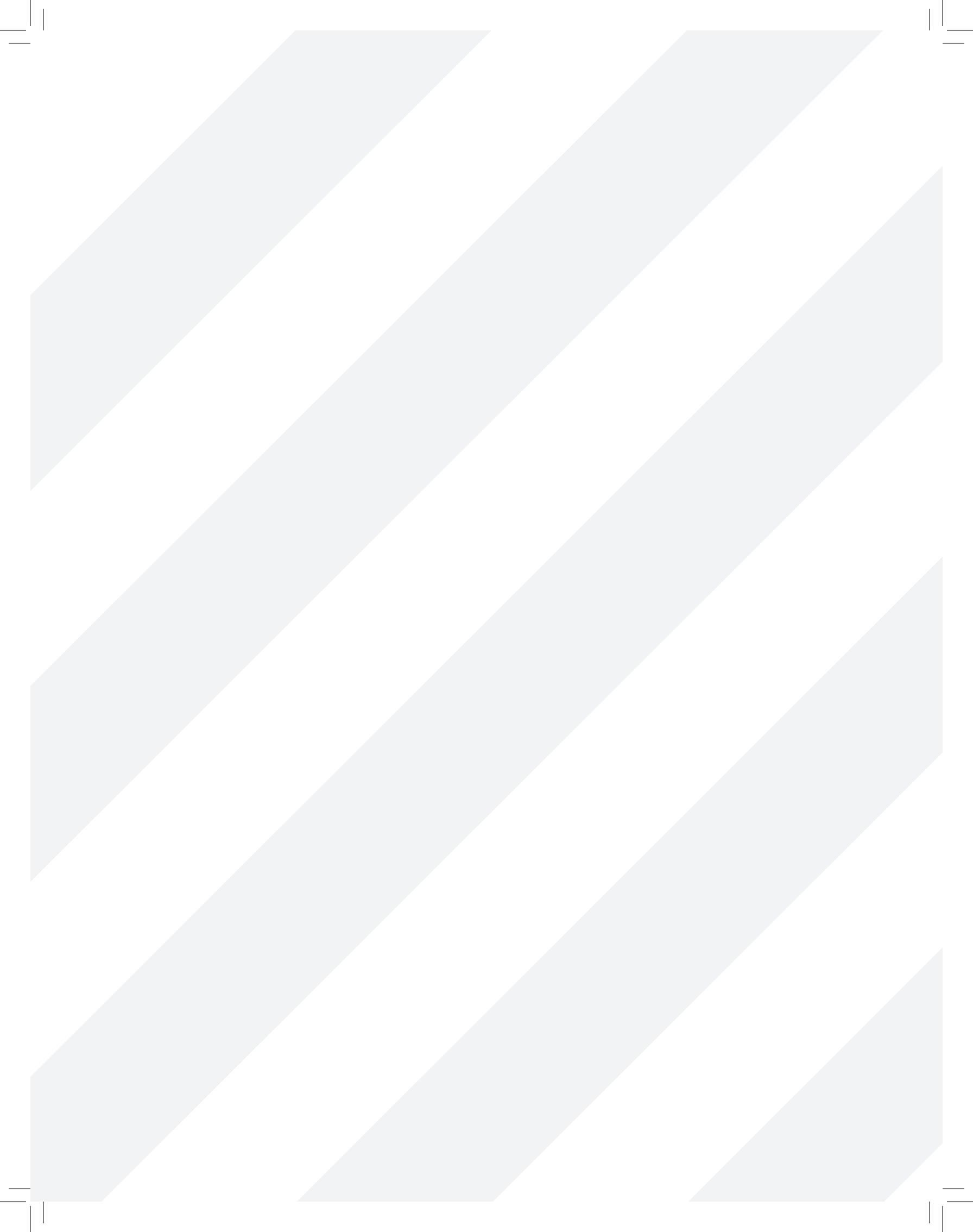


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PREFACE

INTRODUCTION

This Participant Guide contains information about Fall Rescue operations and is intended to function as a support document to be used during the course, and as a reference guide any time you want to review the process. The content of this course is general. You are responsible for knowing the applicable legislation, policies and procedures for your specific company and operations.

PREREQUISITES

To take this course, participants must have already completed the Energy Safety Canada program Fall Protection for Rig Work.

Related Training

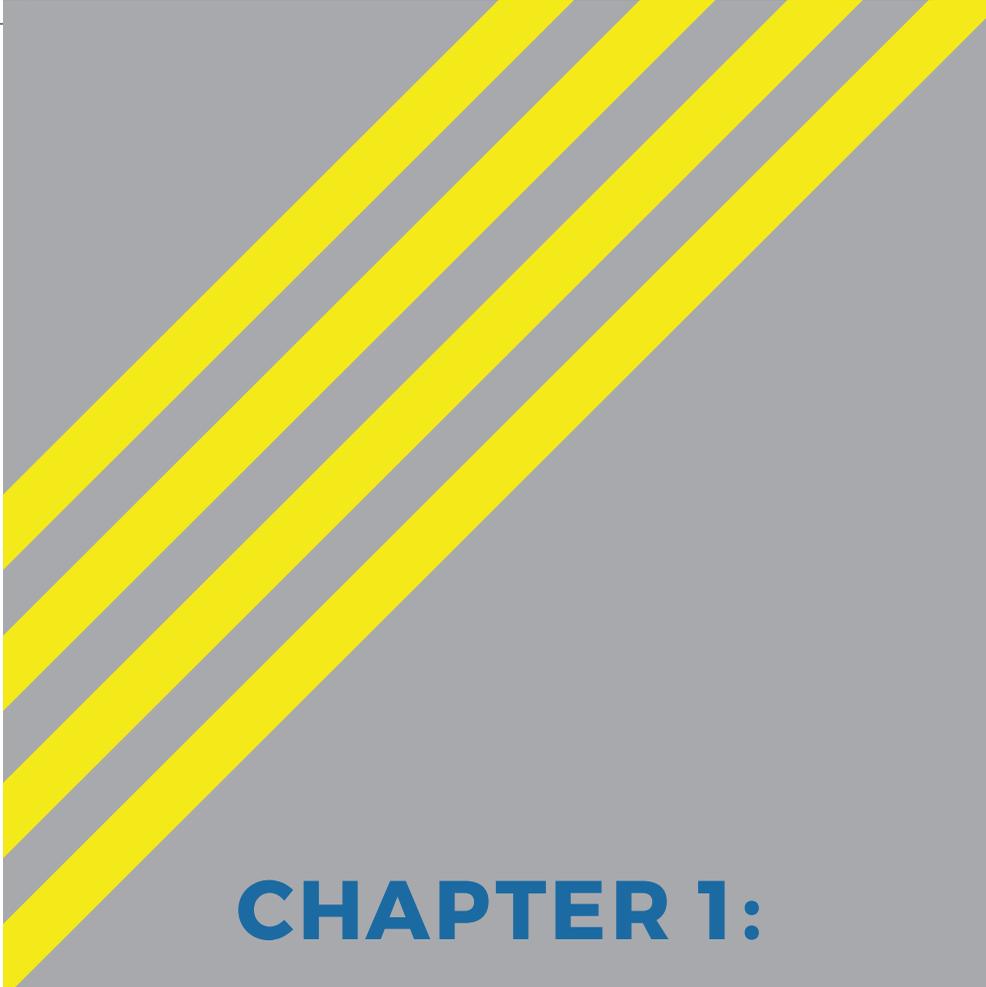
Related training includes:

- » Hazard Assessment
- » Standard First Aid
- » Evacuation

OUTCOMES

At the conclusion of this course, the participants will be able to:

- » Describe the process for Fall Rescue operations
- » Describe the role of site and casualty assessments during Fall Rescue operations
- » Describe principles, roles and equipment applicable to Fall Rescue operations
- » Explain post-incident activities that meet regulatory requirements
- » Conduct simulated Fall Rescue operations according to the principles, standards and procedures learned in this course



CHAPTER 1:

Fall Rescue Operations Overview



OUTCOME

Describe the process for Fall Rescue Operations.



OBJECTIVES

1. Explain the steps in Fall Rescue operations.
2. Compare the steps in Fall Rescue operations to your work experience with Fall Rescue situations.

FALL RESCUE OPERATIONS

As required by AB OH&S Part 7 of the Code your company is responsible for developing an Emergency Response Plan (ERP). During a rescue operation, every second counts. Knowing the steps and procedures to follow in a rescue will save valuable time, reduce panic, and lead to a successful rescue. The following are the critical steps in Fall Rescue operations.

- » Protect casualty/rescuer
- » Raise suspended casualty
- » Raise/lower to safe level
- » Transfer to care

Fall Rescue Procedures

- » Sound alarm – first person on scene, may be any worker on site
- » Shut down non-essential systems – mechanical equipment and/or rig systems not required for the rescue
- » Assemble rescue team – at pre-determined locations: doghouse or muster point
- » Assess – rescue team lead performs:
 - Site assessment
 - Casualty assessment
- » Select rescue option – based on the rescue plan, the situational information gathered and discussion with the team
- » Brief Rescuers – team lead ensures Rescuers understand roles and responsibilities to perform the rescue operation
 - Roles and responsibilities – assign roles to rescue team
 - Communication plan – assign team member to notify emergency response, other rig workers, company authorities, other contractors, etc.
- » Gather equipment – prepare equipment required to conduct rescue operation

NOTE: Ensure regular inspections and inventory is conducted so your equipment is complete and ready for use.

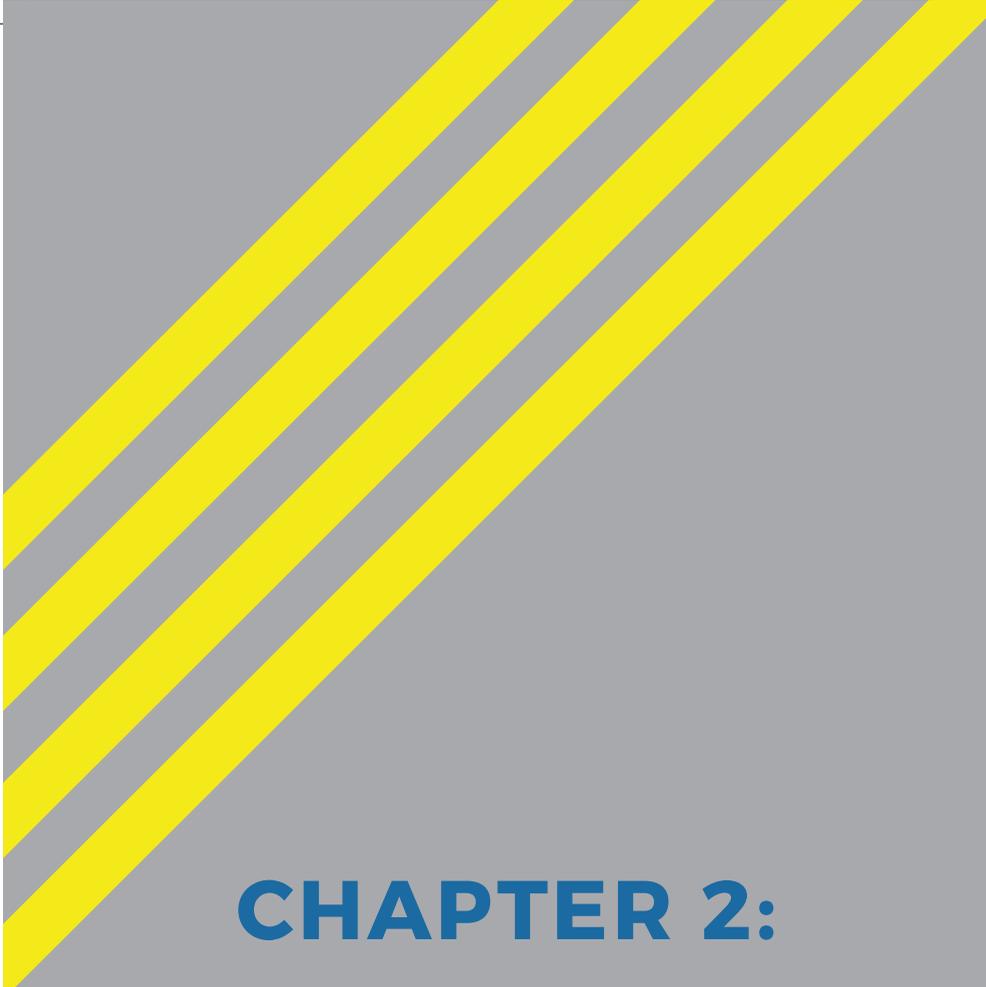
- » Conduct and monitor rescue operations
- » Secure and evacuate casualty
- » Transfer of casualty care
- » Conclude and debrief
 - Inspect rescue equipment
 - Conduct post-rescue site inspection
 - Complete paperwork
 - Participate in investigation as required
- » Return to normal operations – upon approval of company representative, site supervisor, OH&S, RCMP, etc.

ACTIVITY

1. Are you aware of your company's Fall Rescue and Emergency Response Plan?

2. Describe the roles involved in Fall Rescue and describe your role.

3. What makes you trust these plans in the event of an incident? Discuss equipment and personnel.



CHAPTER 2: **Assessment**



OUTCOME

Describe the function of site and casualty assessments during rescue operations.



OBJECTIVES

1. Identify and give examples of site-specific hazards during rescue operations.
2. Describe casualty assessment procedures for rig rescue operations.

Assessment plays a significant role during a rescue. These main assessments are required:

- » Site (situation specific, i.e., identify hazards and immediate danger for workers)
- » Rescuer needs – PPE, Equipment (workers become Rescuers)
- » Casualty condition

SECTION 1: SITE ASSESSMENT

In an emergency, the worksite must be assessed in keeping with government legislation, company policies and regular safety practices. The assessment will include the identification of site hazards.

- » In an emergency situation, it is very important to conduct a site assessment because there is a chance more people might be at risk. During emergencies, confusion might be heightened; people may rush in to help when it's not safe to do so and may become part of a larger problem instead of part of a solution. Clear, organized rescue procedures and options prevent this from happening and are the best means of dealing with any incident.
- » The first step in assessing the site is to identify the situation specific hazards. This involves determining the safety level at the scene. If it's unsafe to go to the worker, do not put yourself at risk, for example, exposure to H₂S, fire, or an explosive environment. Rescuer Safety is the number one priority.

The table on the next page is an example of a tool that could be used by a worker (an assigned rescue team member) when assessing a site during a rescue situation.

Table 2-1: Identification of Site Hazards During a Rig Rescue Operation

ITEMS/AREAS TO CHECK	ON THE RIG	ON THE LEASE	CONTROLS OR CONSIDERATIONS
Equipment	<ul style="list-style-type: none"> » Loose items » Moving parts » Blocking access or walkways 	<ul style="list-style-type: none"> » Loose items » Lines » Obstacles near walkways or access points » Secure vehicles 	<ul style="list-style-type: none"> » Loose items on rig need to be secured, if in rescue zone » Shut down any unnecessary equipment during rescue operations
Power lines	<ul style="list-style-type: none"> » Check for proximity to rescue operations 	<ul style="list-style-type: none"> » Check for proximity to rescue operations 	<ul style="list-style-type: none"> » Move or de-energize electrical lines close to rescue operations
Site conditions	<ul style="list-style-type: none"> » Slippery surfaces » Icy conditions » Extreme weather (wind, thunderstorms, rain or snowfall) » Extreme temperatures 	<ul style="list-style-type: none"> » Small leases » Muddy or soft leases » Deep ditches » Extreme weather (wind, thunderstorms, rain or snowfall) » Icy conditions » Extreme temperatures 	<ul style="list-style-type: none"> » Any number of conditions can affect a rescue operation » Depending on the conditions affecting the rescue operation, ongoing monitoring may be required
Fire	<ul style="list-style-type: none"> » Check all possible locations 	<ul style="list-style-type: none"> » Look or smell for signs 	<ul style="list-style-type: none"> » Report and take control actions
Gas release – unintentional	<ul style="list-style-type: none"> » Immediate evacuation 	<ul style="list-style-type: none"> » Evacuate to safe place 	<ul style="list-style-type: none"> » Report and take control actions
Multi-use site	<ul style="list-style-type: none"> » Check for other operations that could impact or be affected by rescue operations 	<ul style="list-style-type: none"> » Check for other operations that could impact or be affected by rescue operations 	<ul style="list-style-type: none"> » Other stakeholders need to be informed of rescue operations underway, if affected by activities or if evacuation is required
Other hazards	<ul style="list-style-type: none"> » Debris (tools, pipe, dust, etc.) » Distractions (3rd party hazards, confusion) 	<ul style="list-style-type: none"> » Debris (tools, pipe, dust, etc.) » Distractions (3rd party hazards confusion) 	<ul style="list-style-type: none"> » Report and take control actions

After the site has been assessed and any hazards identified and mitigated, the rescue operation will proceed.

ACTIVITY

1. Give specific examples for the types of hazards on the rig and the lease that you have experienced.

2. What “Other Hazards” can you add to that item/area?

3. How does Casualty Condition and Location affect rescue? assessment?

- If yes, where is it located? Who uses it?

SECTION 2: CASUALTY ASSESSMENT

Working around a rig is dangerous and incidents occur despite best intentions and adherence to safety practices. Every day, rig workers face the risk of falling. The table below gives some examples of fall hazards.

Life over Limb

Fall rescue decisions are made in the best interest of any casualty. If life-threatening injuries or situations are encountered such that leaving the casualty in the location will lead to further injury or death, the casualty is to be moved first to a safe location before assessment and first aid can occur. This is the “Life over Limb” rescue principle.

Beyond treatments covered in standard first aid, medical decisions should only be made by qualified medical personnel.

Fall Hazards and Rescue Situations

Rig workers routinely perform tasks where there are specific fall hazards that can result in an injury requiring a specific type of rescue. For example, a worker up on the derrick with a badly twisted ankle would need different assistance than an uninjured worker that had slipped off a wet ladder and is able to self-rescue. Therefore, it is critical to perform a casualty assessment before implementing any Fall Rescue operation.

After the site has been assessed, casualty assessment may be done in phases. If the fallen worker can respond or is accessible by a Rescuer, casualty assessment must begin immediately. This initial information is conveyed to the rescue Team Leader and used to determine what first aid and rescue operation is required.

If the casualty can be moved to the ground, the rescue operation is carried out. Once on the ground and secured, the casualty assessment continues.

Casualty Assessment Procedure

Standard first aid outlines the steps given below when assessing the casualty’s condition as much as the worker’s consciousness and ability to communicate allows.

Table 2-2: Rig Tasks with Fall Hazards

RIG TASKS WITH FALL HAZARDS (REQUIRING FALL PROTECTION)	TYPES OF RIG RESCUE SITUATIONS
<p>Accessing the derrick from rig floor</p> <p>Working in/on the derrick</p> <p>Working from the monkey board</p> <p>Rigging out/up the rig floor</p> <p>Working in/on the substructure</p>	<ul style="list-style-type: none"> » Worker in an arrested fall, uninjured but able to perform self-rescue » Worker in an arrested fall, uninjured but unable to perform self-rescue » Worker in an arrested fall, injured and requires rescuing from: <ul style="list-style-type: none"> • Rig floor • Monkey board • Derrick • Rig sub-structure • Other locations on lease » Worker(s) in an arrested fall, uninjured or injured, evacuation required because of situation or potential safety risk (e.g., blowout)

- » **Step 1:** First try to communicate verbally with the fallen worker. If they respond, start the primary assessment. This will establish the airway status, breathing, circulation and level of consciousness. Ask them their name, what happened, and if anything hurts. Move the casualty to a safe location, if possible (consider “Life over Limb,” and assume head, neck or spinal injury).
- » **Step 2:** If they are unresponsive and can be safely reached, tap the casualty hard on the collarbone while not moving their neck or head. If they are still unresponsive, inform the ground personnel and await instructions. If unresponsive and unreachable, inform the ground personnel and await instructions.

Primary Assessment

Standard first aid practice varies, and it is the responsibility of every rig worker to follow the first aid procedures according to the jurisdiction one is working in.

- » Check and deal with the following according to your first aid training:
 - Airway
 - Breathing
 - Circulation

The casualty’s conditions might change drastically at any time after the initial assessment, so continuously monitor their vital signs until medical professionals arrive or they are evacuated.

Table 2-3 presents a series of actions to take to assess the nature and seriousness of the casualty.

BASIC STEPS TO FOLLOW	YES	NO	IF NO, THEN DO THE FOLLOWING:
1. Ensure the scene is safe before assessing a casualty, i.e.: the Life over Limb principle is covered for both casualty and Rescuer » In a fall, assume the casualty has suffered head, neck or spinal injuries	<input type="checkbox"/>	<input type="checkbox"/>	» Follow the ERP to secure scene or evacuate » Relocate casualty, if possible » Leave casualty where he is and treat simply and monitor
2. Communicate verbally with casualty. Ask: » Their name » What happened » If there are any injuries » Can they move limbs	<input type="checkbox"/>	<input type="checkbox"/>	» Determine if casualty is breathing » Tap casualty hard on the collar bone » SHOUT for help
3. Begin primary assessment, if unresponsive	<input type="checkbox"/>	<input type="checkbox"/>	» Prepare for rescue of casualty with or without assistance, based on communication with casualty
4. Airway open? (suspect blockage if head, neck or face injury)	<input type="checkbox"/>	<input type="checkbox"/>	» Open and clear airway using standard first aid practice
5. Breathing normal? (look, listen, feel for air flow)	<input type="checkbox"/>	<input type="checkbox"/>	» Start CPR
6. Circulation normal? (check for bleeding, shock)	<input type="checkbox"/>	<input type="checkbox"/>	» If bleeding, apply direct pressure » Start CPR, if required
7. Prepare casualty for rescue and evacuation – is casualty ready for transport?	<input type="checkbox"/>	<input type="checkbox"/>	» Follow rescue plan, procedures, methods to ready casualty for evacuation

Important Casualty Assessment Considerations

The casualty's life and well-being are a priority and determine how the casualty assessment will unfold. Whether it is immediate treatment to deal with serious injuries, or immediate evacuation of the casualty, the rescue team will adapt to the situation.

Treating Before Moving If Necessary

If the casualty is seriously injured in particular ways, they might need to receive immediate first aid before they can be moved to the ground. If necessary to perform first aid at height, the key element is to open the airway and ensure it remains open.

ACTIVITY

1. Have you ever been involved in a casualty assessment? If so, what was your role?

2. Have you ever been involved in a fall and/or casualty incident? If so, what was your role?

3. Where are the following items located on your work site:

- First Aid kit
- Rescue equipment

CASE STUDY

A Derrickhand falls from the monkey board. There were high gusts of wind before the fall, and it appears some blowing debris might have caused the Derrickhand to become distracted while tripping out, resulting in being hit by the pipe and falling from the monkey board. Fall protection arrests the fall, but leaves the Derrickhand injured and hanging by his harness.

This happens on a night shift and the high winds have caused a light tower to blow over and hit the derrick.

The Driller sees what happened and calls the alarm. The crew immediately assembles at the muster point. A company representative is immediately notified and the Driller begins gathering information needed to conduct the rescue. This includes ensuring the casualty is assessed and the site is secured.

The crew sees the fall and checks on the Derrickhand while moving to the muster point. They give the information to the Driller. The Derrickhand said he was hit by something and fell. The Derrickhand added that his head, arm and shoulder hurt a lot.

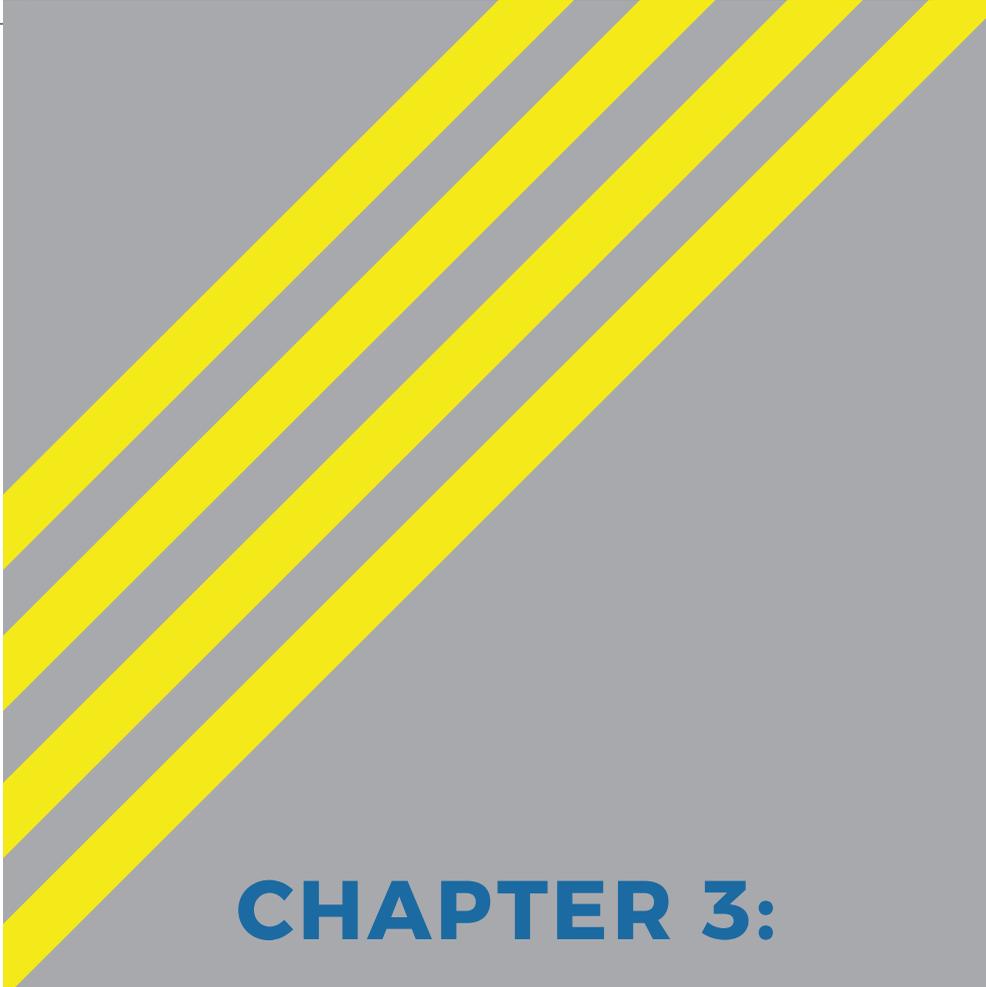


The Driller then assigns a worker to safely monitor the Derrickhand's condition from nearby, while the rescue is carried out. This worker now reports the Derrickhand seems to be bleeding from the head. Motionless in the harness, strong gusts are blowing the Derrickhand against the rig structure. It's difficult to see from below because of the dark and dust. The lighting below the monkey board isn't working either. The Derrickhand's head also seems to be slouched downward and he is no longer responding to questions. The crew has also informed the Driller of possible hazards affecting the rescue operation.

ACTIVITY

1. Describe and explain the site assessment for this scenario.

2. Describe and explain the casualty assessment for this scenario.



CHAPTER 3:

Fall Rescue Operations



OUTCOME

Describe principles, roles and equipment applicable to Fall Rescue operations.



OBJECTIVES

1. Outline rescue principles applicable to rescue operations.
2. Describe rescue team roles and responsibilities.
3. Identify and explain the use of Fall Rescue equipment.

RESCUE PRINCIPLES

Regardless of the type of rescue or evacuation required, the following rescue principles should always be considered first:

- » Act quickly, time is of the essence when a worker is suspended or injured after a fall arrest. Rescuers often refer to the “golden hour” in the rescue or evacuation of a casualty as a critical timeline. The golden hour refers to the optimal time in which to get a seriously injured person to a medical facility and treated. A prompt rescue is even more important when on a remote rig because of the additional evacuation time that might be required.
- » Follow a pre-determined rescue plan that includes safe work procedures and pre-rigged or available fall arrest and lifting equipment that all workers are familiar with, E.G., Self-retracting lifelines (SRLs) and Tugger Lines or winch, should also be in place and used.
- » Use the simplest and safest means possible. The most timely, efficient and practical. Complicating things or passing over safety protocol during a rescue might result in dropping a casualty or injuring a Rescuer. Setting up complicated block-and-tackle systems and rigging rope belay systems can result in disastrous consequences when used by workers who do not practise them regularly or who are not adequately trained.
- » Rescuers must always protect themselves first. Follow safety precautions, including the use of fall arrest equipment, when trying to assist a suspended worker.

- » Establish and maintain effective communications. Fall Rescue is a team activity. Clear and constant communication between the Rescuer(s) and the Winch Operator is critical to ensure a safe rescue. The use of pre-established hand signals or radios is always recommended.

Rescue Team

Workers assigned to the rescue plan and team must be selected based on competencies needed in emergency response situations. The roles and

responsibilities of each person on the rescue team must be defined (see table below) and members of the team could include*:

- » Rescue Team Leader-Rig Manager
- » Winch Operator-Driller
- » Spotter/Tagline Operator-Floorhand
- » Rescuer(s) at Height-Motorman/Floorhand
- » Ground Personnel-Leasehand

*Positions assigned to team roles may vary

Table 3-1: Roles and Responsibilities of Rescue Team

RESCUE TEAM	ROLES AND RESPONSIBILITIES
Team Leader	<ul style="list-style-type: none"> » Establish the plan » Coordinate the team » Ensure that all workers on site are aware of the rescue » Assign duties to the Rescuers and other team members » Take charge of the rescue operations Contact the appropriate on-site and off-site emergency service providers, including EMS, police and fire Contact the appropriate regulators, OHS and head office, as required » Other: _____
Winch Operator	<ul style="list-style-type: none"> » Follow the instructions of the Team Leader » Select and assemble the required equipment » Determine the casualty's condition » Carry out the rescue » Other: _____
Rescuer(s) at height	<ul style="list-style-type: none"> » Follow the instructions of the Team Leader » Select and assemble the required equipment » Determine the casualty's condition » Carry out the rescue » Other: _____
Spotter/Tagline Operator	<ul style="list-style-type: none"> » Follow the instructions of the Team Leader » Watches the rescue from a safe, visible vantage location » Communicates with the Team Leader the progress of the rescue, any changes and needed rescue equipment » Informs the Rescuers of the arrival of equipment, any hazards to avoid » Raises or lowers a tagline to keep the casualty from swinging into objects » Other: _____
Other Team Members (Ground Personnel)	<ul style="list-style-type: none"> » Follow the instructions of the Team Leader » Assist the Rescuers, as required » Select and assemble equipment, if required » Handle communications, if required » Other: _____

Every incident will be unique, requiring flexibility from the rescue response team.

Fall Rescue

Fall Rescue consists of:

- » Use of a pre-engineered (mechanical) rescue system (rope or winch) to assist:
 - An unharmed worker to be safely lowered
 - An injured worker who may require some type of stabilization before being lowered, depending upon the seriousness of the injury
 - An unresponsive worker with or without visible injury
- » There are stabilization options for an injured worker with:
 - Mild injuries
 - Severe injuries
 - Possible neck or spine injuries-stretcher, spine board

Training

It is the employer's responsibility to provide training for their workers on their companies specific components.

- » Formal and on-site training are critical to ensure that workers will be able to perform a rescue in an emergency
- » Refresher training (rescue drills) must also be scheduled to ensure retention
- » Training should occur in a controlled environment with backup fall protection always in place

Inspection

- » Equipment must be inspected according to manufacturers' specifications, legislation, and company policies
- » Inventory must be conducted regularly to ensure all equipment is available and to maintain familiarity with the equipment
- » During everyday operations, equipment must be ready for use, which will require regular (weekly) inspections

Anchorage

Rescuers need to pay attention to establishing their anchor points once they have reached their rescue locations at height. The first Rescuer sets up the anchorages for the other Rescuers, the casualty and themselves.



Figure 3.1a: Anchor Points



Figure 3.1b: Anchor Points

Set-Up and Use

Anchor/Anchorage

- » The rescue anchor used should be as directly above the casualty as possible and high enough to allow room for the rescue system to raise them up. If the anchor is too close to the casualty, there might not be enough room for the lift and the pulleys will simply come together and jam up before the casualty can be reached.



Figure 3.2: Rescuer straddling casualty to ensure stabilization

Pre-Engineered Rescue System with Rope or Tugger Line

Background

Any location on a rig is a hazard. If a worker does fall, they can be injured or have their fall arrested in a location where they are unable to reach any structure to perform a self-rescue. When assistance is required, remember, rescue by the simplest and safest means possible is the first line of approach.

Systems

The two rescue systems you will be training with are:

- » The Tugger Line – because it is a permanent part of the rig, it is often the most accessible equipment to assist in a rescue operation
- » A pre-rigged rope rescue system – used in cases where the Tugger Line is not accessible to the fallen worker

Taglines are also important pieces of equipment in any rescue; they are considered utility ropes and used as casualty control lines.

Components

Descent Control Device

A self-braking descender with an anti-panic function for rescue.

- » Designed for work on a compatible rope.
- » Multi-functional handle allows the user to:
 - Unblock the rope and control the descent with the hand on the braking side of the rope
 - Move more easily on horizontal or low-angle terrain by using the button on the handle
- » Anti-panic function is engaged if the user pulls too hard on the handle; the pivoting cam is released and automatically brakes
- » Anti-error safety cam reduces the risk of an accident due to incorrect installation of the device on the rope
- » Pivoting cam makes it easier to take up the slack in the rope



Figure 3.3: Descent Control Device

Rope Grab

A cam-loaded rope clamp.

- » Removable axle can be used to install or remove the clamp at any point on the rope
- » Locking pin reduces the risk of undoing the system accidentally



Figure 3.4: Rope Grab



Figure 3.6: Mechanical Advantage attached to rail

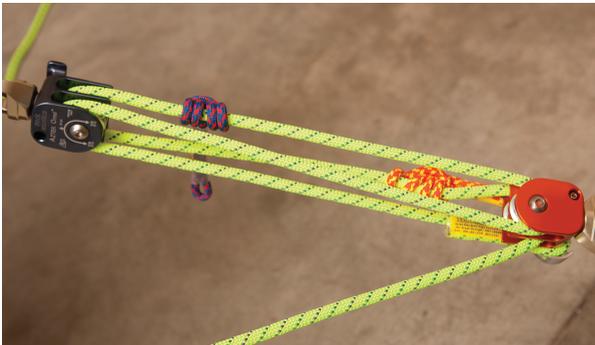


Figure 3.5: Mechanical Advantage Pulley System

Mechanical Advantage Pulley System

A pre-rigged rope and pulley system which can be connected to a suitable anchor point and be ready for use. It can be used for lifting and lowering short distances, fall protection and deflecting the Tugger Line.

- » It consists of compact bag that includes two pulleys, main rope, two prusiks, and a travel restrict or fall arrest prusik
- » The purpose of Mechanical Advantage systems is to reduce the work power used to move the weight of a load
- » Incorporates built-in safety features to minimize risk during use

Pick Pole

An aluminum extension with a rope clip that is used to attach a carabiner to an anchor, rope or harness ring.

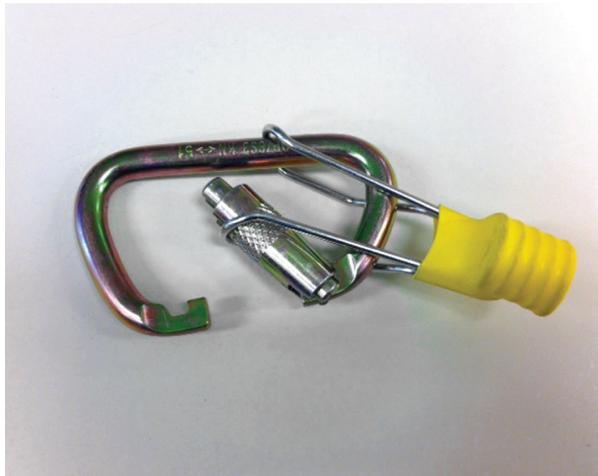


Figure 3.7: Pick pole

Rope

11-13mm static kernmantle rope with pre-finished eyes. To be only used for rescue purposes.



Figure 3.8: Rescue Rope

Tugger Line

- » The Tugger Line is also known as the mechanical winch
- » In most rescues at height, the Tugger Line would be used only if its position provides good access to the casualty and a competent operator, who is authorised by the Team Leader, is available
- » The Tugger Line is only used to lower the casualty. If necessary, use a pre-rigged system to raise the casualty to unlock the SRL
- » The safe use of a standard Tugger Line should adhere to provincial guidelines and requirements
- » The Tugger Line must be operated at the lowest speed possible, an additional Spotter must be used and all rotating equipment must be shut down



Figure 3.9: Tugger line in use for rescue on the derrick

Critical Points

Capacity

Any mechanical device or system used for rescue must be load rated. See manufacturers' specifications for ratings/maximum capacity for your equipment.

Backup Fall Arrest

Rescuers should always be backed up with an independent fall arrest system. This could include a self-retracting lifeline or vertical rope lifeline and rope grab connected to the user's harness. The rescue system would be connected to the front D-rings of the harness. For the casualty, their needs for backup fall arrest are determined in the rescue plan.

Communications

Clear and constant communication between the Rescuer(s) and the Winch Operator is critical to ensure a safe rescue. The use of pre-established hand signals or radios is always recommended.

Location

The three main locations for rescue of an injured worker at height include the:

- » Ladder
- » Monkey board
- » Rig floor

The pre-rigged rope system could be used for rescue at any of these locations, provided a suitable anchor point is accessible.

The winch line would most likely be used for rescues in areas associated with the monkey board or rig floor.



Figure 3.10: Winch line in use on the monkey board

Rescuer Positioning

- » The Rescuer has to get in a position so that the rescue carabiner is slightly higher than the back D-ring on the suspended worker's harness. The carabiner should be connected to the rescue system and not to the Rescuer. The Rescuer can straddle the suspended worker to get them closer to allow for the connection.
- » If the fallen worker is suspended by a self-retracting lifeline that will reach the ground, it should not be removed, but simply used as backup fall arrest for the fallen worker during the descent once they are raised and the unit is unlocked
- » Several rigs now have dedicated man-rated winch systems. These systems should be used for lowering personnel and have built-in safety features, such as clutching, backup protection and speed control.
- » In some instances, there will be no clear path down to the ground from the rescue anchor (i.e., during a lowering from the crown). As a result, edge protection or re-directional pulleys might have to be used to ensure a safe and friction-free descent.
- » Use pre-rigged systems and CSA-approved fall arrest equipment
- » Remember the Rescue Principle: use the simplest approach



Figure 3.11: Mechanical advantage DEflecting winch line

Stabilizing an Injured Worker

Stabilization refers to the way an injured worker will be lowered safely to the ground so that further injury will not be caused by the descent. The severity of a worker's injury determines the type of stabilization:

- » Mild injuries
- » More severe injuries
- » Possible neck or spine injuries – immobilize as necessary

It will take much longer to evacuate a worker if they have to be stabilized in a stretcher before the descent because of space limitations for maneuvering and of the stabilizing protocol at height.



Figure 3.12: Stretcher being lowered

Stabilizing a casualty in a stretcher/spine board minimizes the chances of aggravating any injuries they might have and allows for lowering and transportation to a medical facility.

It's important that only qualified first aid responders and medical personnel direct the stabilization and lowering of a seriously injured worker.

Stabilizing a Casualty at Height for Mild and More Severe Injury

Depending upon the mechanism of injury, immobilization may be required.

- » It's not always recommended that a conscious worker be stabilized in a stretcher before lowering, assuming there is no suspected neck or back injury, because:
 - The evacuation or lowering of a stretcher is more complicated, which can lead to making mistakes
 - Injured workers are susceptible to going into shock, and being confined tightly in a stretcher when being lowered from a location of height can lead to a claustrophobic-like feeling that can induce shock
- » Lowering a casualty in a harness requires a Rescuer to be lowered as well to ensure their airway is kept open. Airways can become obstructed in an upright position if the head slumps forward. In this case, the accompanying Rescuer can maintain airway.



Figure 3.13: Rescuer maintaining airway

Systems

There is a variety of equipment used for this option, including:

- » A Stretcher
- » Fall arrest equipment (CSA-approved)
- » A pre-rigged system
- » Anchors

Activity

1. What areas of your rig have you found to be the most hazardous for falls?

2. Which rescue option(s) are used at your rigs for:

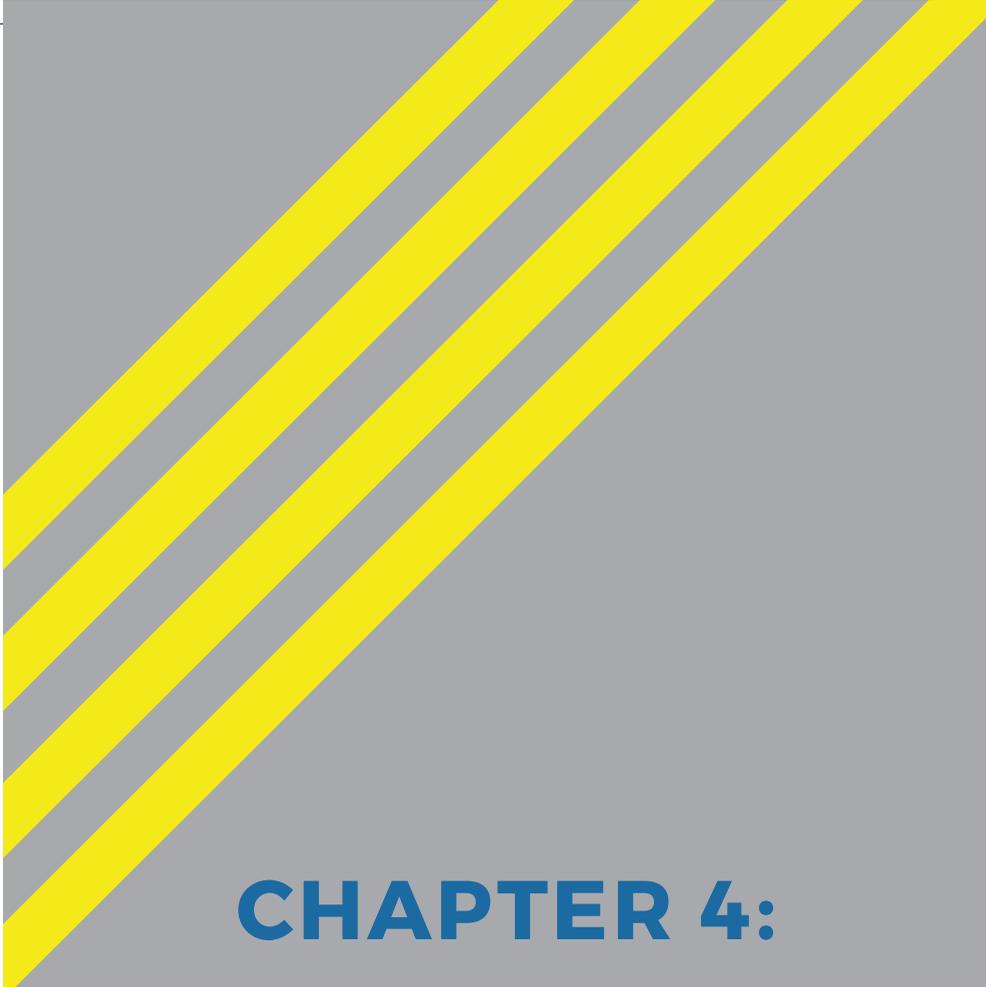
- The crown?
- The monkey board?
- The vertical ladder?

3. Describe the Fall Rescue equipment that you use on your rigs and discuss any differences this makes to Fall Rescue operations and options.

4. Where is the rescue equipment located on your rig?

5. How often is the rescue equipment inspected? Who does the inspection?

6. How often is Fall Rescue practised on your rig?



CHAPTER 4:

Post-Incident Activities



OUTCOME

Explain post-incident activities that meet regulatory requirements.



OBJECTIVES

1. Explain each step of the post-incident process.
2. Apply the post-incident process to a Fall Rescue scenario.

Several post-incident activities are required to meet regulatory requirements, learn from the incident, improve safety systems and return the worksite to normal operations. These can be detailed and complex and your level of involvement in them will depend on your role in the incident.

The close-out and follow-up to a rescue incident focuses on:

- » Worksite management
- » Regulations
- » The rescue plan
- » The rescue team and personnel
- » Equipment
- » Follow-up casualty care

The post-incident process provides an opportunity for everyone to re-group, re-assess and learn from the incident that has just occurred.

WORKSITE MANAGEMENT

After an incident, a number of activities must occur to return the worksite to a state where it's safe for employees to continue their work. Even if there is no formal investigation, those involved want to ensure that lessons are learned and any gaps in the safety system are addressed.

- » The return to work must be in compliance with company policies and procedures
- » A full report of the incident must be provided to management
- » Required forms and documents must be completed

Regulations

If the incident is serious, regulations require a formal investigation to determine root causes and contributing factors, address safety gaps and prevent or better mitigate future incidents.

- » A full report of the incident must be provided to regulators, depending on the seriousness or nature of the incident
- » Appropriate records and information must be provided to regulators, as required
- » The company must participate in a review or inquiry about the incident
- » If post-incident activities indicate an investigation is required, the company managers and any workers, including the rescue team, must participate by providing the appropriate regulatory agencies with all the documentation and full disclosure of circumstances around the incident

Rescue Plan

The Fall Rescue Plan must be reviewed in detail post-incident to address any gaps that were revealed as a result of that situation. Any changes must be communicated to those involved and may require new procedures and additional training.

- » The effectiveness of the Fall Rescue Plan must be assessed, and must be amended accordingly
- » The emergency response plan must be evaluated and adjusted, if required
- » Any procedures indicated in the plan with regard to 'stand down' and incident close out must be followed

- » The incident must be reported and all forms and documents must be completed, as required in the Fall Rescue Plan

Rescue Team and Personnel

The rescue team is most closely involved in any incident and their insights and learning must be accounted for in any comprehensive review of safety requirements.

- » The Team Leader and rescue team members, must document and record the specifics about the incident
- » Conducting a debrief session on how the rescue was performed should be done with a view to looking for improvements in performance

Rescuers and others involved may require counselling and other support.

Equipment

An assessment of all fall protection and Fall Rescue equipment is an essential follow-up activity for any incident. This is part of the company's safe work procedures. Rescuers must be confident they can rely on this equipment during any future incident.

- » The equipment involved in both the incident and the rescue must be inspected
- » Equipment must undergo a formal inspection and be properly tagged and labelled
- » Equipment must undergo maintenance, as required

Follow-Up Casualty Care

In the case of serious injury, the end of rescue activities transitions into support activities for those involved. Any casualties as a result of an incident must be followed up on by the company and associated organizations such as insurance companies. Injured employees will require medical treatment and a return to work program.

Worksite Management

- » Describe the activities that should be included (to return the worksite to pre-incident operation level or status)
- » Describe your role in these activities and what they mean to your safety in the workplace.

Regulations

- » What does it take to trigger a formal accident investigation?
- » What is the point of such an investigation?
- » Describe the accident investigation process.
- » What kinds of information do investigators collect and analyze?

Rescue Plan

- » What questions would you ask when reviewing a Fall Rescue Plan post-incident?

Rescue Team and Personnel

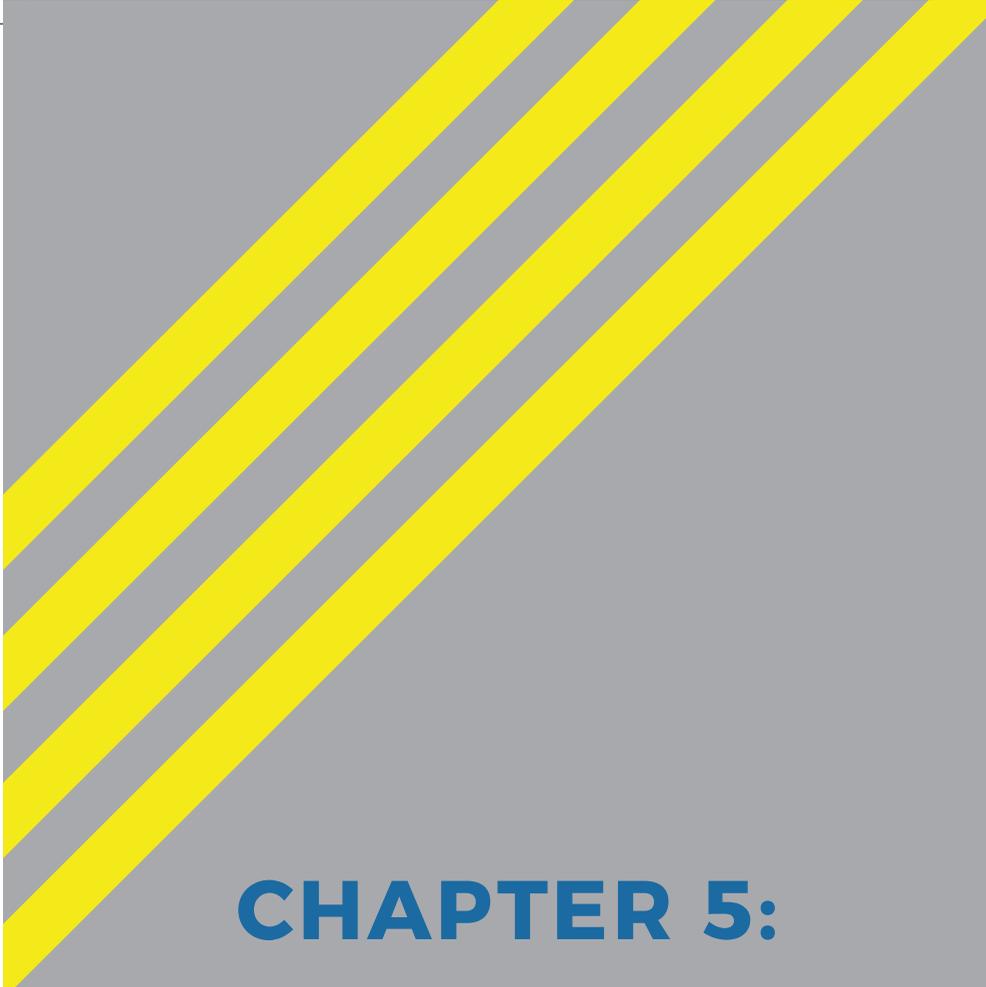
- » What are some things you would review with your rescue team post-incident?

Equipment

- » Describe Fall Protection and Fall Rescue equipment that might be involved in post-incident activities.
- » Who is or should be inspecting your company's rescue equipment post-incident?

Follow-Up Casualty Care

- » What are the possible implications of an injury for:
 - The worker
 - Family
 - Co-workers
 - Rescuers
 - The company
- » How are injured workers protected and supported after an incident?



CHAPTER 5:

Fall Rescue Scenarios



OUTCOME

Conduct simulated Fall Rescue operations according to the principles, standards, and procedures learned in this course.



OBJECTIVES

1. Demonstrate Fall Rescue operations in tugger line, rope, ladder and litter rescues.

In this part of the course, you will apply what you have learned about Fall Rescue to simulated rescue scenarios. Recall what you have learned about Fall Rescue options and equipment from chapter three.

PRE-ENGINEERED RESCUE SYSTEM WITH ROPE OR TUGGER LINE

- » Pre-Rigged Rescue System
- » Tugger Line

Before You Begin the Practice

The instructor will ask questions about the site assessment and casualty assessment for each scenario.

There will be multiple rounds of practice for each scenario. Participants will rotate in the roles of Rescuers on the rig while the others remain as active observers below. The observers should pay attention to what is happening on the rig, and ask questions of the instructor if clarification is needed.

Participants will refer to the scenario instructions and the instructor will provide coaching. This guidance takes the form of questioning and prompting that helps participants discover the answers for themselves and is gradually lessened until they can perform independently.

The final round will be a non-stop run from the beginning of the rescue to the end. During this round, the participants will perform independently from instructor guidance and should not depend on the scenario instructions. The instructor will take on the role of evaluator and will not provide support unless it is required for safety or to move the scenario along. Feedback will be provided at the end of this evaluation round.

The following Fall Rescue scenarios will be practiced during this session.

Tugger Line Rescue

- » Suspended below monkey board
- » Rescue option: Tugger Line and Mechanical Advantage
- » Unconscious/injured worker

Rope Rescue

- » Suspended below monkey board
- » Rescue option: Rope and Mechanical Advantage
- » Conscious/injured worker

Ladder Rescue

- » Suspended from vertical ladder
- » Rescue option: Pre-Rigged Rescue System (Mechanical Advantage)
- » Unconscious/injured worker

Monkey Board Basket Rescue

- » Worker on monkey board
- » Rescue option: Stretcher and belay line
- » Conscious/injured worker

Tugger Line Rescue

Rescue Location: Suspended worker below the monkey board

Rescue Option: Tugger line and pre-rigged rescue system

Equipment: Tugger Line, two Mechanical Advantages, two taglines, four anchor connectors, metal pulley, two scaffold carabiners, two double leg tieback lanyards, two fall arrest systems: vertical rope lifeline systems or SRLs, harnessed mannequin

Situation: The fallen worker is suspended below the monkey board. He or she is conscious/injured. A Mechanical Advantage is used to deflect the Tugger Line and another Mechanical Advantage will be used to connect and lower the suspended worker to the rig floor



1. Ascend derrick using ladder SRL with double leg tieback lanyards pre-attached to rescuers, Mechanical Advantage and a tagline
 - Rescuer One and Rescuer Two

-
2. Transfer to monkey board with double leg tieback lanyards

- Rescuer One and Rescuer Two

3. Lower tagline from monkey board

- Rescuer Two

4. Rig onto tagline: Mechanical Advantage, four anchor connectors, metal pulley

- Rescuer Three



5. Raise tagline and install anchorage connectors and Mechanical Advantage

- Rescuer One and Rescuer Two



6. Locate eye of tugger at rig floor

- Winch Operator

7. Connect two large scaffold carabiners through the eye of the Tugger Line. For transport purposes, clip tagline, two vertical rope lifelines, pre-rigged with grabs and lanyards or SRLs to tugger.

- Rescuer Three

8. Call “up” to winch operator to raise Tugger Line

- Rescuer Two

9. Raise Tugger Line

- Winch Operator

10. Call “Stop” to winch operator when Tugger Line reaches chest height at the monkey board

- Rescuer Two



11. Stop Tugger Line
 - Winch Operator

12. Detach rope lifelines and secure to anchor connectors
 - Rescuer Two



13. Attach lifeline weights to bottom of lifeline(s)
 - Rescuer Three



14. Connect Mechanical Advantage system between anchorage connector and steel pulley installed on winch line
 - Rescuer One

15. Connect eye of Tugger Line to the front of Rescuer One's harness with one of the attached scaffold biners, as per manufacturer's specifications
 - Rescuer Two

16. Connect a pre-rigged vertical rope lifeline or SRL to Rescuer One's dorsal D-ring
 - Rescuer Two

17. Load system by sitting down on harness
 - Rescuer One

18. Take second rope grab to be connected to the suspended worker
 - Rescuer One

19. Call "Down" – descend to suspended worker
 - Rescuer One

20. Lower Tugger Line
 - Winch Operator

21. Call “Stop” on Tugger Line when eye of tugger is parallel to suspended workers dorsal D-ring

- Rescuer One

22. Stop Tugger Line

- Winch Operator



23. Collapse Mechanical Advantage to position Rescuer One above and to the side of the suspended worker

- Rescuer Two



24. Connect second vertical rope lifeline or SRL to suspended worker’s dorsal D-ring attachment

- Rescuer One

25. Connect extended second Mechanical Advantage to anchor connector and lower other end to Rescuer One

- Rescuer Two

25.1 Connect lowered end to suspended worker’s harness

- Rescuer One

25.2 Unlock casualty’s SRL by collapsing Mechanical Advantage

- Rescuer Two
-



26. If SRL suspending worker reaches down to the next safe level (floor or ground), determine usefulness
- Rescuer Two

NOTE: all personnel prior to work commencing should know monkey board SRL's length

27. Leave SRL on suspended worker to serve as fall protection while lowering (if applicable, disconnect SRL from casualty)
- Rescuer One



- 27.1 Connect suspended worker to Tugger Line eye using second attached scaffold carabiner
- Rescuer One

28. Call "Down" on Tugger Line to lower suspended worker and Rescuer One to next safe level
- Rescuer One

29. Lower Tugger Line
- Winch Operator



30. Manage tagline with gloved hands to control direction of descent
 • Rescuer Three

31. Manage rope grabs as required during descent
 • Rescuer One

32. Call “Stop” on Tugger Line when suspended worker and Rescuer One reach ground floor
 • Rescuer One

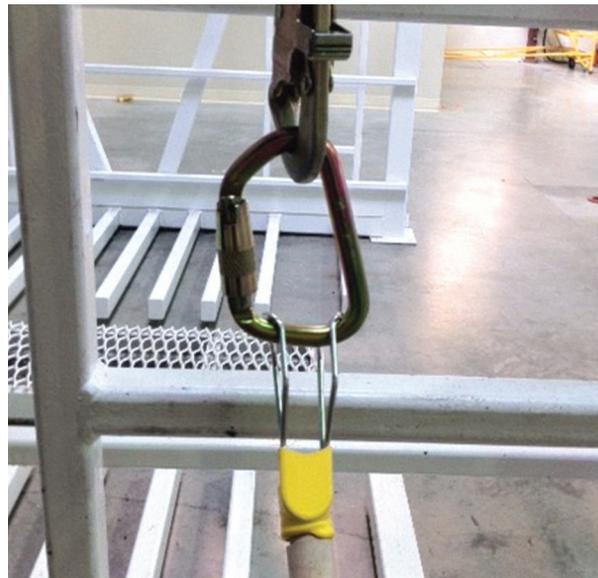
33. Stop Tugger Line
 • Winch Operator

34. Release unsuspected worker and Rescuer One on rig floor
 • Rescuer Two and Rescuer Three

Rope Rescue System – Monkey Board Pick

- » **Equipment:** one Quick Pick Pole, six Quick Pick Carabiners, two taglines, four Anchorage Connectors, one Descent Control Device, one Rope Grab, two Pulleys and one mechanical advantage
- » **One Rescue Rope System** consists of: one Pulley, one Rescue Rope with pre-finished end and one locking carabiner
- » **One Vertical Rope Lifeline System** consists of: one vertical rope lifeline, one rope grab with lanyard and weight

1. Use ladder Self Retracting Lifeline (SRL) to ascend ladder to monkey board with tagline, two Anchorage Connectors (AC) and pre-attached double leg tieback lanyard
 • Rescuer One



2. Attach ground tagline to Quick Pick Carabiner (QPC) and attach assembled QPC and ground tagline to Quick Pick Pole (QPP)
 • Rescuer Two at ground level

3. Extend QPP and attach assembled QPC and ground tagline to suspended worker’s rear D-ring
 • Rescuer One on monkey board

-
- Attach two AC directly above suspended worker as possible
 - Rescuer One
-

- Assemble Rescue Rope System (RRS) and attach to another QPC
 - Rescuer Three at ground level
-

- Assemble Vertical Rope Lifeline System (VRLS) and attach to another QPC
 - Rescuer Three at ground level
-

- Lower monkey board tagline to ground
 - Rescuer One
-

- Attach QPP, RRS, and VRLS to monkey board tagline to raise
 - Rescuer Two at ground level
-



- Raise monkey board tagline to monkey board
 - Rescuer One
-

- Attach anchor end of VRLS to AC
 - Rescuer One
-

- Attach anchor end of RRS to separate AC
 - Rescuer One
-

- Tension VRLS with weight
 - Rescuer Two at ground level
-



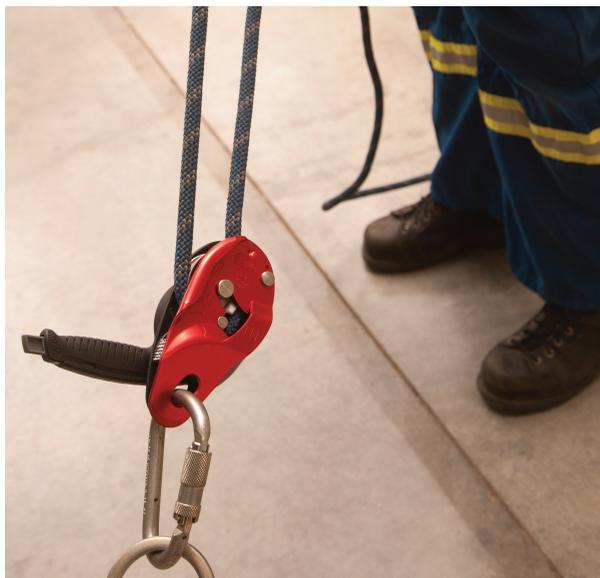
- Using QPP, attach RRS QPC to suspended worker's harness
 - Rescuer One
-

- Using QPP, attach VRLS QPC to suspended worker's rear D-ring on harness
 - Rescuer One
-

- Attach AC to ground level anchor
 - Rescuer Two at ground level
-



16. Load Descent Control Device (DCD) with rescue rope and attach to ground level AC
- Rescuer Two at ground level



17. Tension rescue rope by pulling slack through DCD. Place DCD in locked position if leaving unattended.
- Rescuer Two at ground level



18. Attach Rope Grab (RG) to tensioned rescue rope
- Rescuer Three at ground level

19. Weave pulley with non-tensioned rescue rope and attach to RG to create a Mechanical Advantage (MA)
- Rescuer Three at ground level

20. Pull on non-tensioned rope end to collapse MA and raise suspended worker until their suspension is relieved. Reset MA and repeat collapse of if necessary.
- Rescuer Three at ground level

21. Remove MA and take up ground tagline
- Rescuer Three at ground level



22. Prepare DCD for down and lower when directed
 - Rescuer Two at ground level

 23. Manipulate tagline to clear suspended worker from entanglement in structure
 - Rescuer Three at ground level
-

Ladder Rescue

- » **Rescue location:** Suspended from the vertical ladder
- » **Rescue option:** Pre-Rigged Rescue System (Mechanical Advantage)
- » **Equipment:** Mechanical Advantage, Descent Control Device, Rope Grab, anchor connectors, pulley, rescue rope, tagline and two carabiners, work positioning lanyard
- » **Situation:** The worker is suspended unconsciously after falling off the vertical ladder

NOTE on casualty positioning:

- The participant playing the role of the casualty attaches fall protection and ascends the ladder. An anchor connector is attached to an overhead crossbeam and the unsecured end of the work positioning lanyard attaches to the anchor connector. Once the connections have been made, the participant eases himself into suspension on the positioning system. The intent here is to minimize the suspension time of the participant/casualty.



1. Ascend ladder past unconscious casualty using double leg lanyard with scaffold hooks, work positioning lanyard, anchor connector and tagline
 - Rescuer One: ladder above the casualty



2. Place work positioning lanyard to work above casualty
 - Rescuer One



- 2.1 Install anchor connector
 - Rescuer One



3. Rig pulley, rescue rope, tagline and two carabiners
 - Rescuer Two: rig floor

4. Collect rescue equipment from rig floor
 - Rescuer One

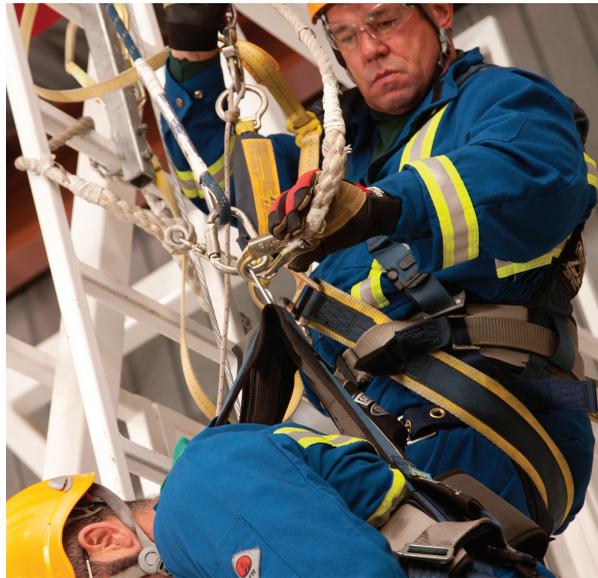
- 4.1 Lower tagline
 - Rescuer One

5. Connect pre-rigged pulley with rescue rope carabiner to anchor connector
 - Rescuer One
-

6. Disconnect work positioning lanyard
 - Rescuer One



- 6.1 Descend to casualty
 - Rescuer One



- 6.2 Install work positioning lanyard when able to reach casualty's front and dorsal D-ring attachments
 - Rescuer One

7. Attach both rescue rope termination carabiner and tagline to casualty's dorsal D-ring
 - Rescuer One
-



8. Set up Descent Control Device for lowering casualty

- Rescuer Three: cat walk

8.1 Attach anchor connector to rack or cat-walk

- Rescuer Three

8.2 Pull slack out through Descent Control Device

- Rescuer Three

8.3 Call “Up” to vector rescue rope

- Rescuer One



8.4 Using gloved hands, vector rescue rope until casualty is raised sufficiently to release SRL (positioning lanyard becomes slack and can be disconnected. SRL should not be loaded)

- Rescuer Three

8.4.1 Option: Using Rope Grab and Mechanical Advantage, collapse Mechanical Advantage to vector rescue rope until casualty is raised sufficiently to release SRL

- Rescuer Three

8.5 Call “Stop” when casualty is raised enough to release SRL from locked and suspended mode

- Rescuer One

9. Determine the usefulness of the casualty’s SRL for descent to next safe level (rig floor or ground)

- Rescuer One

9.1 Leave SRL on casualty to serve as fall protection while lowering to next safe level (if applicable disconnect SRL from casualty)

- Rescuer One



10. Use attached tagline to pull casualty away from the ladder

- Rescuer Two

11. Call “Down” to release the vector on rescue rope

- Rescuer One

11.1 Release the vector

- Rescuer Three



12. Lower casualty with Descent Control Device
 • Rescuer Three

12.1 Use attached tagline to control direction of casualty's descent
 • Rescuer Two

13. Release casualty with assistance of first aid worker to avoid further injury

14. Package Descent Control Device, Mechanical Advantage, Rope Grab and equipment

Monkey board basket rescue

Incident Description

The derrickman on a drilling rig was pulling back a collar when he became trapped between 2 collars. He managed to extricate himself from the collars but now has pain in the middle of the left side of his chest. He tries to connect to the derrick ladder SRL to climb down but has severe pain when reaching for the connection. The motorman harnesses up and climbs to the monkey board to assist him. The derrickman also complains of pain in the chest wall when breathing.

The motorman suspects he may have fractured some ribs.

Task

Using the winch line, raise the stretcher to the monkey board, package the derrickman in the stretcher and lower him to the rig floor where the medical attendant is waiting. The derrickman is able to assist the rescuers in positioning himself in the stretcher but experiences pain when movement affects the chest area.

Teaching Points

- » Correct rigging of a stretcher in a horizontal application
- » Use of a belay line or other secondary protection system while lowering the stretcher
- » Use of tag lines to guide the stretcher
- » The exercise is conducted as a group activity. Groups should be no larger than 6 students.

Skills

- » Retrieval of a casualty by other persons utilizing the tugger or winch and basket stretcher.
- » Placement of casualty onto traverse stretcher.
- » Control of the load with a tagline.

Equipment

- » Harnesses
- » Traverse stretcher
- » Large scaffold carabiner
- » Medium carabiner
- » Adjustable or fixed length lanyard
- » Anchor slings
- » Two (2) – taglines
- » 72 kg (160 lbs) mannequin c/w coveralls and full-body harness

Procedures

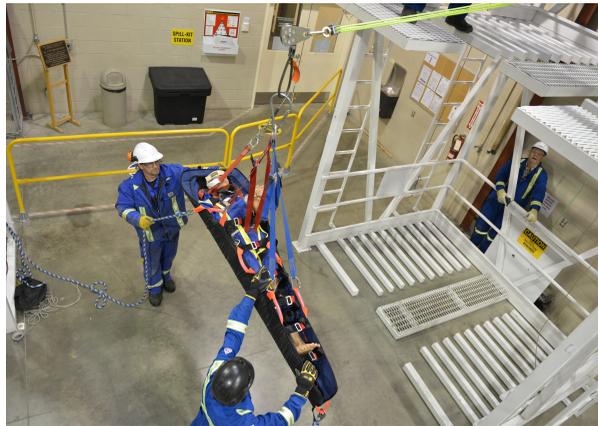


1. Position casualty on the monkey board level using proper fall protection.
2. Casualty waits for rescue.
3. Rescuers climb to monkey board using proper fall arrest.
4. Rescuers check ABCD's
5. Secure the casualty into the stretcher by means of restraining straps. In absence of restraining straps, an 8-10 m (25 – 30 ft) rope should be used to lash the casualty into the stretcher. This lashing technique should be rehearsed periodically before it is ever needed. Casualty's hands may be bound together to keep limbs from flopping.

6. Rescuers check all rigging and attach fall arrest to casualty dorsal D-ring



7. While maintaining hand-hold on the stretcher, rescuers signal winch operator to raise the stretcher just slightly off the platform. Stretcher is then lowered with rescuers holding contact until it is clear of the monkey board



8. Casualty is lowered to floor using taglines to prevent spin and to miss obstacles
9. Casualty fall arrest on dorsal D-ring is maintained until ground level is reached

SUMMARY: QUESTIONS TO CONSIDER

Here are some questions you might want to ask your employer. Feel free to add your own.

1. What is our company's Fall Rescue Plan and Emergency Response Plan?

2. What roles am I required to play for Fall Rescue?

3. Where is our rescue equipment located on our rig?

4. How often is the rescue equipment inspected? Who does the inspection?

5. How often do we practice Fall Rescue? (hold mock drills)

6. Who is or who should be inspecting our company's equipment post-incident?



APPENDICES

GLOSSARY OF FALL RESCUE TERMS

Achorage

A structure, or part of a structure, that is capable of safely withstanding any potential forces applied by a fall protection system.

Anchor

An engineered component for coupling a fall protection or travel restraint system to an anchorage.

Anchor Connector

The means by which a fall arrest or travel restraint system is secured to the anchorage. This can include steel cable sling, anchor strap, load-rated eye bolts, tripod davit arm, or any other devices designed to suspend human loads and capable of withstanding forces generated by a fall.

Anchor System

The term used to describe the combination of the anchorage, anchor or anchorage connector(s). The combination, and components of the combination, may be engineered or improvised. All equipment should be for the exclusive purpose of fall protection.

Approved

Deemed acceptable by a person or body having authority to establish regulations or standards.

Arresting Distance

The total vertical distance required to arrest a fall. Includes activation and deceleration distance. Does not include free fall distance.

Body Harness

Means of configuration of connected straps that are secured about the employee in a manner that will distribute the fall arresting forces over at least the upper thighs, waist, shoulders chest and pelvis with means for attaching a lanyard to other components or the personal fall arrest system.

Cable Grab

A fall arrest device that locks by either a cam lock (locking arm) or inertia when a free fall is sensed. It is attached to a worker directly or by a lanyard that slides up or down a fixed or vertical cable or rope life line.

Carabiner

A connector component generally consisting of an oval and trapezoid shaped body with a closed gate or similar arrangement. The carabiner opens to permit the body to receive an object and, when released, automatically closes to retain the object. The steel auto-locking carabiner is most applicable for industrial purposes. (Only CAS approved self locking carabiners are acceptable for use in the oil and gas industry).

Competent Person

One who is capable of identifying existing and predictable hazards in the surroundings or work conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Connector

A device that is used to couple (connect) parts of the personal fall arrest system together. It may be an independent component of the system such as a carabiner or it may be an integral component or part of the system such as a buckle or D-ring sewn into a body harness, or a snap hook spliced or sewn to lanyard or self-retracting lanyard.

CSA

Canadian Standards Association

D-ring

A connector used in a harness or a positioning belt as an attachment element or fall arrest attachment. It is also used in lanyards, energy absorbers, lifelines and anchorage connectors as an integral connector. D-rings can be used for work position and fall restraint.

Egress

To exit from, or the route to exit from a work area.
Opposite of access.

Engineered

Designed and/or approved by a Registered Professional Engineer.

Engineered Anchor

An anchor designed and approved by a qualified person.

Employer

A person who is self employed in an occupation, a person who employs one or more workers, a person designated by an employer as the employer's representative, or a director or officer of a corporation who oversees the occupational health and safety of the workers employed by the corporation.

Fall Arrest System

A combination of equipment and components connected together that are designed to stop a person from striking a lower level or an obstruction during a fall.

Fall Prevention

The elimination and minimization of potential fall hazard, lessening the chance of employee's exposure to a fall hazard for example guardrails, walls, floors and area isolation.

Fall Protection

Action and procedures to effectively protect the worker from fall hazards.

Fall Protection System

The system utilized to minimize the chance for injury during a fall. A fall protection system consists of an anchor point, connecting means and a body holding device (harness). A well-rounded fall protection program considers rescue and methods to extricate a fallen worker.

Fall Restraint System

A system designed to restrain a worker from reaching an exposed fall hazard. System include personal fall protection equipment, acceptable anchorage systems, trained worker and administrative procedures.

Free Fall

The act of falling before a personal fall arrest system begins to apply force to arrest a fall.

Free Fall Distance

The distance a worker may fall before a fall arrest system engages and begins to slow the fall. The vertical distance from the onset of a fall to a point where a fall arrest system is activated or engaged (this is the vertical displacement of the fall arrest attachment point on the employee's body harness between onset of the fall and just before the system begins to apply force to arrest the fall. The distance does NOT include deceleration distance and lifeline/ lanyard elongation but does include any deceleration device slide distance or self -retracting lifeline/lanyard extension before they operate and fall arrest forces occur)

Full Body Harness

A device made primarily out of straps for containment of the torso and pelvic area (and optionally the waist area) designed to support the user during and after the arrest of an accidental fall and/or during a rescue operation and/or during activities, depending on the group classification of the harness.

Gravity

A force of attraction between the earth and all bodies of mass near it's surface that causes those bodies to move toward the earth at an acceleration of 9.8 metres per second per second;

- » Imparts a force on a one kilogram mass of 9.8 Newtons.
- » Imparts a force on a 100 kilogram mass of 980 Newtons.

Horizontal Lifeline

A fall arrest system that uses a line made from rope, wire rope or metal railing that spans horizontally between two end anchorages. The assembly includes the necessary connectors, turnbuckles, inline energy absorbers, shackles Etc. and may include intermediate anchorage. This is a component of a fall protection system, which consists of a trained worker wearing appropriate fall protection equipment that enables them to safely traverse/work in the horizontal plane. The horizontal lifeline shall be designed, installed and used under the supervision of a qualified person.

Integral

Not removable from the component, system or subsystem without mutilating any element or without use of special tools.

Kilo Newton (kN)

The force which imparts to a mass of 102 kilograms an acceleration of 9.8 metres per second per second.

Kinetic Energy

The energy of a body in motion. The kinetic energy of a body that is accelerating will increase as it accelerates its motion. The body in motion will tend to stay in motion unless acted upon by an outside force to the degree that an equal amount of energy is required to be applied in the opposite direction to stop the motion. If the body in motion is to be stopped immediately, the energy that is applied (opposite to the direction of motion) to decelerate (to a stop) the moving body must be very high for a very short time. If the energy is applied gradually to decelerate the motion, the energy level is much lower and will require a greater distance and time to decelerate and stop the motion.

Ladder Climbing Device

A device or climbing sleeve connected to the front D-ring on the climber's full body harness that slides up or down a rigid rail or cable. Should a fall occur while connected to the device, it is designed to lock by inertia or cam action and arrest the fall.

Lanyard

A flexible line of rope, wire rope, or strap that generally has a connector at each end for connecting the body harness to a deceleration device, lifeline or anchorage.

Lifeline

A component consisting of a flexible line for connection to an anchorage at one end, to hang vertically (Vertical lifeline), or for connection to anchorage at both ends to stretch horizontally (horizontal lifeline) and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.

Maximum Arresting Force

The peak force exerted on a body or test weight when a fall protection system stops a fall.

Monkey Board/ Tubing Board/ Racking Platform

Platform on which the derrickman works during the time a trip is being made

Newton

A metric unit of force which imparts to a mass of one kilogram an acceleration of 1 metre per second per second. (Forces must be applied to any mass to cause it to move as bodies at rest will remain at rest - no motion until a force is applied to cause them to move). In the case of a falling body, gravity supplies the force to cause the body to move toward the earth.)

Personal Fall Arrest System

A system used to arrest an employee in a fall from a working level. It consists of an anchorage system, connecting means and body support and may include a lanyard, deceleration device such as a shock absorber, lifeline or suitable combination of these.

Qualified Person

One who, by profession or a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.

Rope Grab

A deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest the fall of a worker. A rope grab usually employs the principle of inertial locking, cam/level locking or both.

Self Retracting Lifeline (SRL)

A deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which, after onset of fall, automatically locks the drum and gradually arrests the fall.

Shock/Energy Absorber

A component of a fall protection system that dissipates energy by deformation or extending the deceleration distance.

Snap Hooks

A connector comprised of a hook shaped body with a normally closed gate or similar arrangement, which may be opened to permit the hook to receive an object and when it is released, automatically closes to retain the object.

Supplier

A person who rents, leases, erects, installs or provides any tools, appliances or equipment or who sells or otherwise provides any designated substance or hazardous materials to be used by a worker in respect of any occupation, project or work site.

Swing Fall

A pendulum like motion that can result from moving horizontally away from, or toward, a fixed anchorage and falling. Swing fall generates the same amount of force when falling the same distance vertically. Swing fall has the hazards in both horizontal (swinging into an obstruction) and vertically (falling onto an obstruction or the ground) directions.

Total Fall Distance

The vertical distance between the anchorage location and connecting point on the body (harness D-ring) after the fall is arrested which includes the free fall and the deceleration distance.

Worker

A person engaged in an occupation (not including management who are designated by an employer as the employers representative).

Worksite

A location where a worker is, or is likely to be, engaged in any occupation and includes any vehicle or mobile equipment used by a worker in an occupation.

Work Positioning System

This is a system of components attached to a vertical safety line and includes a full body harness, descent controllers and positioning lanyards used to support or suspend a worker in tension at a work position.

LIFE SAVING RULES



CONFINED SPACE

Obtain authorization before entering a confined space

- I confirm energy sources are isolated
- I confirm the atmosphere has been tested and is monitored
- I check and use my breathing apparatus when required
- I confirm there is an attendant standing by
- I confirm a rescue plan is in place
- I obtain authorization to enter



WORKING AT HEIGHT

Protect yourself against a fall when working at height

- I inspect my fall protection equipment before use
- I secure tools and work materials to prevent dropped objects
- I tie off 100% to approved anchor points while outside a protected area



WORK AUTHORIZATION

Work with a valid permit when required

- I have confirmed if a permit is required
- I am authorized to perform the work
- I understand the permit
- I have confirmed that hazards are controlled and it is safe to start
- I stop and reassess if conditions change



ENERGY ISOLATION

Verify isolation and zero energy before work begins

- I have identified all energy sources
- I confirm that hazardous energy sources have been isolated, locked, and tagged
- I have checked there is zero energy and tested for residual or stored energy



LINE OF FIRE

Keep yourself and others out of the line of fire

- I position myself to avoid:
 - Moving objects
 - Vehicles
 - Pressure releases
 - Dropped objects
- I establish and obey barriers and exclusion zones
- I take action to secure loose objects and report potential dropped objects



BYPASSING SAFETY CONTROLS

Obtain authorization before overriding or disabling safety controls

- I understand and use safety-critical equipment and procedures which apply to my task
- I obtain authorization before:
 - Disabling or overriding safety equipment
 - Deviating from procedures
 - Crossing a barrier



DRIVING

Follow safe driving rules

- I always wear a seatbelt
- I do not exceed the speed limit, and reduce my speed for road conditions
- I do not use phones or operate devices while driving
- I am fit, rested and fully alert while driving
- I follow journey management requirements



HOT WORK

Control flammables and ignition sources

- I identify and control ignition sources
- Before starting any hot work:
 - I confirm flammable material has been removed or isolated
 - I obtain authorization
- Before starting hot work in a hazardous area I confirm:
 - A gas test has been completed
 - Gas will be monitored continually



SAFE MECHANICAL LIFTING

Plan lifting operations and control the area

- I confirm that the equipment and load have been inspected and are fit for purpose
- I only operate equipment that I am qualified to use
- I establish and obey barriers and exclusion zones
- I never walk under a suspended load



FIT FOR DUTY

Be in a state to perform work safely

- I will be physically and mentally in a state to perform my assigned duties
- I commit to not being under the influence of alcohol or drugs
- I will inform a supervisor immediately if I or a co-worker may be unfit for work

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