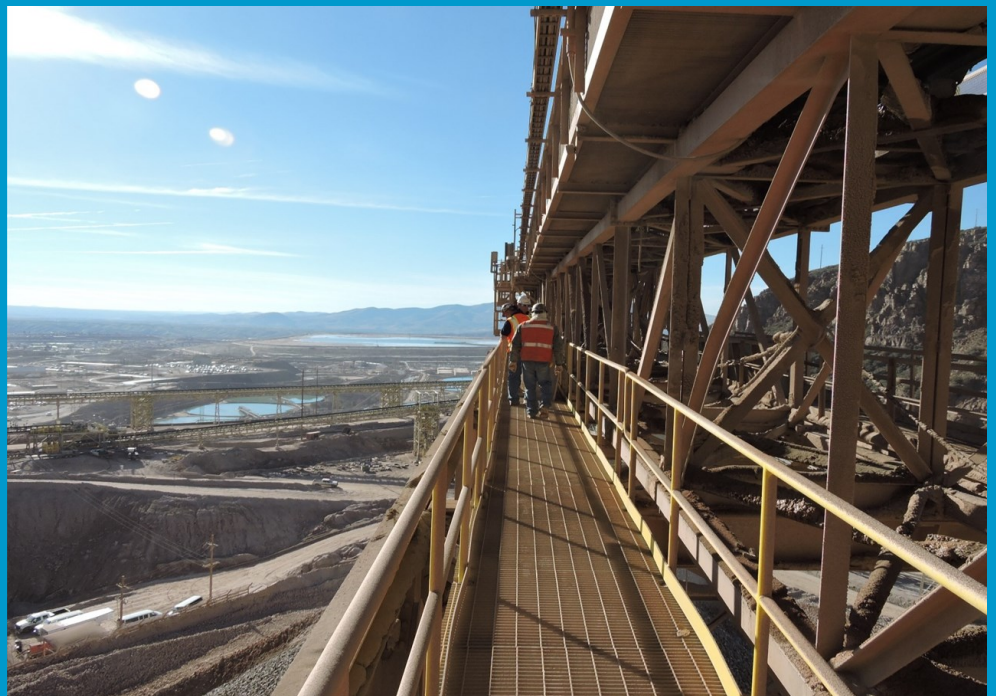




**FREEPORT-
McMoRAN**

FACILITATOR GUIDE



SFT FCX1012C WORKING AT HEIGHTS

AUGUST / 2018
VERSION 1.1

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COURSE OVERVIEW

The following is basic information about this course.

COURSE DESCRIPTION

Through this course, employees will be trained, qualified, and able to follow the appropriate requirements of the Freeport-McMoRan Working at Heights Policy (FCX-HS02). Each employee must have an understanding of the overall hazards, equipment necessary and required procedures that are directly related to his/her work duties performed at heights.

COURSE OBJECTIVES

Upon completion of this course, students will be able to

- Module 1: Fall Hazard Recognition
 - Demonstrate the ability to recognize fall hazards.
 - Describe fall hazards in routine and non-routine jobs.
- Module 2: Hierarchy of Controls
 - Explain the differences in the hierarchy of controls.
 - Analyze a situation and recommend the most effective control.
- Module 3: Component Identification
 - Identify the components of a fall protection system.
- Module 4: Inspection and Storage
 - Define the different types of inspections.
 - Demonstrate a pre-use inspection for a piece of fall protection equipment.
- Module 5: Fall Dynamics
 - Calculate the fall clearances for a given scenario.
 - Explain the differences between a Fall Restraint, Fall Positioning, and Fall Arrest System.
 - Evaluate a situation and select the appropriate system to use.
- Module 6: Fit, Donning, and Adjustment
 - Demonstrate proper fit, donning, and adjustment of full body harnesses and lanyards.
- Module 7: Other Working at Height Systems
 - Discuss the other types of equipment used to work at heights.
- Module 8: Rescue
 - Describe the components of a rescue plan.
 - Demonstrate how to conduct a self-rescue.

COURSE PRE-REQUISITES

There are no pre-requisites for this course.

COURSE LENGTH

This course takes approximately 6 hours to complete.

CLASS SIZE

This course is designed to have a 14:1 student: facilitator ratio. In addition, for every facilitator, there should be one Davit arm available. Class size may be less depending on each site's needs, as well as the student's skill and experience level.

TARGET AUDIENCE

This training is intended to satisfy the minimum training requirements for an Authorized Individual.

FACILITATOR QUALIFICATIONS

Facilitators is well versed in the Freeport-McMoRan Working at Heights Policy (FCX-HS02).

REGULATIONS/POLICIES/PROCEDURES

This course teaches to Freeport-McMoRan Working at Heights Policy (FCX-HS02). Working at Heights has been identified as a Global Significant Risk within our Fatality Prevention Initiative and FCX-HS02 is addresses the minimum requirements and procedures for performing jobs where fall hazards exist.

FATAL RISKS AND CRITICAL CONTROLS

Fatal Risk Management is a continuation of the Fatality Prevention Program. Focus is placed on identifying Fatal Risks and Critical Controls in an attempt to safeguard all employees within the Company. The Fatal Risk Management Program standardizes Fatal Risk communication by implementing icons, definitions, and Critical Controls for twenty-three Fatal Risks.

Fatal Risks are based on safety issues that have resulted in catastrophic events such as severe injury or death. While all risks have a degree of danger, Fatal Risks are those risks that, when left uncontrolled, will kill you. After identifying a Fatal Risk, Critical Control(s) are implemented to prevent death or mitigate the consequences of the Fatal Risk. The absence or failure of a Critical Control significantly increases the risk of severe injury or death despite the existence of other controls. In short, Critical Controls help keep you from being killed. The Fatal Risk(s) and Critical Controls relevant to this course are provided below.

FALL FROM HEIGHTS



The Fall from Heights Fatal Risk is defined as working at height where the danger of falling exists.

Critical Controls

- Fall Protection System
- Fixed Work Platform
- Leading Edge/Open Hole Protection
- Mobile Work Platform
- Scaffold

FACILITATOR PREPARATION

The following information will help the facilitator prepare for the course.

ABOUT THIS GUIDE

This guide is intended to give the facilitator a general outline of the flow of the course. It is designed to assist the facilitator in presenting content, conducting classroom activities, and managing time in order to meet the learning objectives. This Facilitator Guide (FG) is intended to be used in conjunction with the Student Guide (SG) and the PowerPoint (PPT). The guide belongs to the facilitator so make notes and write in it as much as needed.

SAFETY

Safety must be a fundamental component of this course. Students must adhere to safety information in the SG and from the facilitator, and safety procedures must be focused on throughout the training. Equipment may not be operated without facilitator authorization.

ACTIVITIES

Students will participate in many hands-on activities designed to give students time to practice the knowledge learned throughout the course. They also provide the facilitator with opportunities to give immediate feedback on what each student does/does not do well. Facilitators must review each activity's directions in the FG before guiding students through the learning activities.

GENERAL MATERIALS

The following is a list of materials consistently needed for courses. Gather and/or order the necessary materials prior to the start of class and verify that everything functions properly.

- Attendance sign-in sheets
- Name cards – 1 per student
- Pens and/or pencils
- Push pins and/or tape such as painter's tape
- Sticky Notes
- Easel and Flipchart
- Markers of various colors
- Student Guide (SG) – 1 per student (order well in advance)
- Projector and sound system for PPT and/or videos
- Laptop with access to the internet
- Assessments
- Course evaluations
- Appropriate Personal Protective Equipment (PPE)






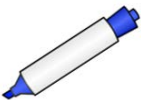


ACTIVITY MATERIALS

The following is a table of the materials needed for the activity in each module:

Module	Activity Materials
Introduction	<ul style="list-style-type: none"> • Activity 1: Icebreaker <ul style="list-style-type: none"> ○ Choose an icebreaker and gather the appropriate materials
Module 1: Fall Hazard	<ul style="list-style-type: none"> • Activity 2: Naming Fall Hazards <ul style="list-style-type: none"> ○ Markers ○ Flip chart or whiteboard • Activity 3: Fall Hazard Detective <ul style="list-style-type: none"> ○ Worksheet located in the SG
Module 2: Hierarchy of Controls	<ul style="list-style-type: none"> • Activity 4: Applying Hierarchy <ul style="list-style-type: none"> ○ Worksheet located in the SG
Module 3: Component Identification	<ul style="list-style-type: none"> • Activity 5: Name Those Components <ul style="list-style-type: none"> ○ Worksheet located in the SG ○ One of each component mentioned to pass around during this module
Module 4: Inspection and Storage	<ul style="list-style-type: none"> • Activity 6: Is There an Issue? <ul style="list-style-type: none"> ○ Worksheet located in the SG • Activity 7: Passing Inspection <ul style="list-style-type: none"> ○ Assortment of components in good, poor, or questionable condition
Module 5: Fall Dynamics	<ul style="list-style-type: none"> • Activity 8: Calculate the Fall <ul style="list-style-type: none"> ○ Worksheet located in the SG
Module 6: Fit, Donning, and Adjustment	<ul style="list-style-type: none"> • Activity 9: Proper Fit <ul style="list-style-type: none"> ○ Worksheet located in the SG • Activity 10: Test Your Fitting <ul style="list-style-type: none"> ○ Harnesses and lanyards (one per student) ○ Davit arm
Module 7: Other Working at Heights Systems	<ul style="list-style-type: none"> • Activity 11: Understand Your System <ul style="list-style-type: none"> ○ Worksheet located in the SG
Module 8: Rescue	<ul style="list-style-type: none"> • Activity 12: Rescue Me <ul style="list-style-type: none"> ○ Harnesses and lanyards (one per student) ○ Stirrups or the site specific self-rescue device used
Conclusion	None

FACILITATOR GUIDE CUES

Throughout the FG, cues are used to help the facilitator quickly identify slides that have unusual but important features. The purpose of these symbols is explained below.

Symbol	Description	Purpose
Audio Link		The speaker icon indicates when audio files are linked on a PPT slide.
Video Link		The director's clapboard indicates when video files are linked on a PPT slide.
Animated Slide		The star indicates when a PPT slide has an animation and requires more than one click to view all of the content.
Note		The paper and pencil indicate that an important note is included on the PPT slide or in the FG for the slide.
Incidents		The first aid symbol indicates when a PFE, testimonial, or other safety related incident is addressed on a PPT slide or in the FG.
Flipchart		The marker indicates when the facilitator needs to write down answers given to them by the students. This is generally done on a flipchart or a whiteboard.
Discussions		The question mark indicates when students are expected to participate in a discussion.
Example		The hand indicates when the instructor will hold up an item or pass an example around the class.

USING THE POWERPOINT PRESENTATION


When preparing to facilitate the course, there are several ways to integrate the PowerPoint (PPT) with the FG.

1. The facilitator can project the PPT and use the paper copy of the FG to walk around the room.
2. The facilitator can begin the PPT in presentation mode on their computer. This displays only the slide to the class on the projection screen, but shows the facilitator a different view on their computer. The facilitator's screen shows a notes screen that has the same information for that slide that is included in the FG. This view also shows the next slide and lets you use the marker tools to write on slides and emphasize teaching points.
3. The facilitator can also choose to do both. This is the preferred method for facilitating this course. Moving around the room helps the facilitator engage more participants and keeps the students' brains stimulated, thus promoting learning.

NOTE: The FG follows the PPT presentation slide by slide. Each page is designed with the information the instructor needs and the image of the slide. The FG should be used as a roadmap to guide the facilitator through the course.

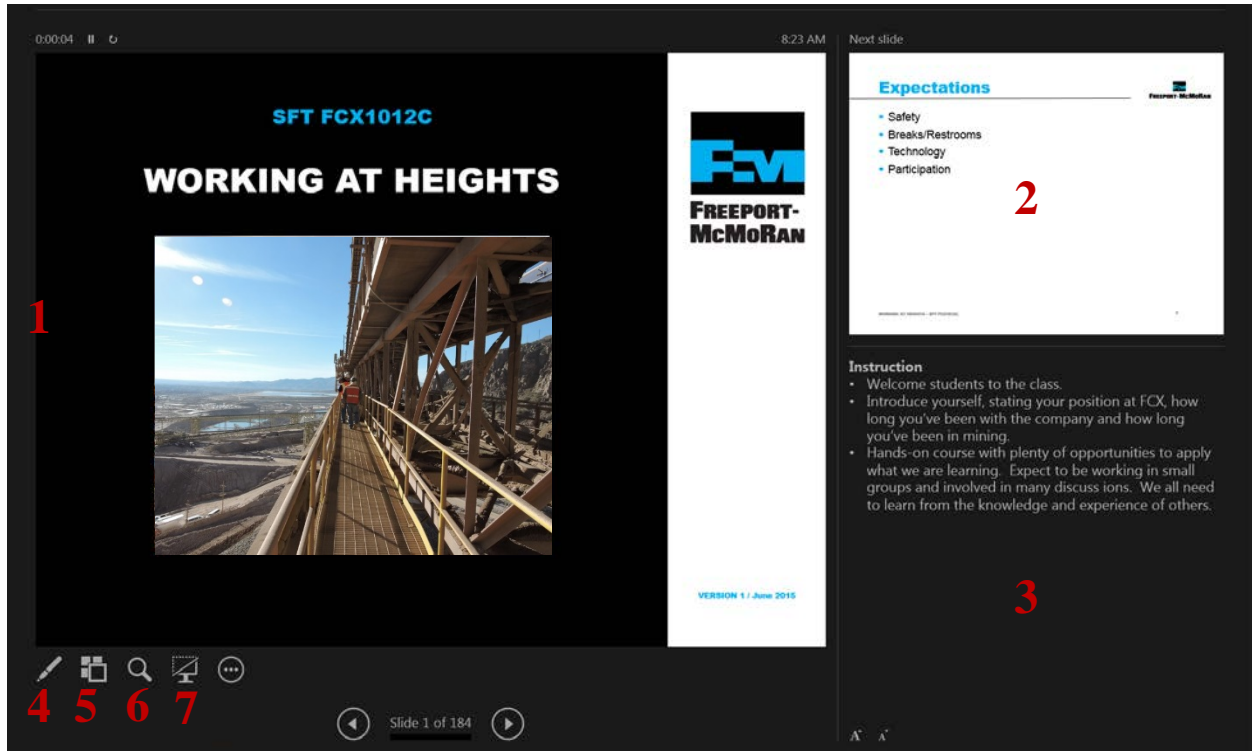
SETTING THE PRESENTATION MODE

To initiate the presentation mode, do the following:

Step	Action
1	Open the PPT presentation.
2	At the bottom of the screen is a colored bar (The look or color may vary depending on the version of PPT used).
3	Select the icon that is noted in the image below. 

PRESENTATION MODE FEATURES

Once you are in presentation mode, the students will only see the slide displayed, but the facilitator will see the layout below. Some of the commonly used features available from this view are numbered in red and identified in the image.



- 1. Current slide** – This is the same slide that students see on the projection screen.
- 2. Next slide** – A visual preview for the next slide is shown.
- 3. Notes** – These notes match the talking points available in the FG. The notes match the current slide projected to the students.
- 4. Pens** – This icon gives the user access to a laser pointer, pen, highlighter, and arrow options. Whichever tool is used on the facilitator's screen will show on the projection screen for the students and allows for specific points on the PPT to be emphasized. This helps the facilitator customize the PPT presentation to better suit the needs of the site and students.
- 5. Zoom** – This icon lets the facilitator zoom in on specific aspects of the PPT.
- 6. Black screen** – If the facilitator would like to explain content further, but feels the PPT slide shown on the screen may distract from learning, the screen can be blacked out to help focus the students.
- 7. All slides** – This will show small images of all of the slides on the facilitator's screen.

COURSE INTRODUCTION

This module contains introductory information about Freeport-McMoRan's Fatality Prevention Initiative and the Global Significant Risk "Working at Heights."

ACTIVITIES

- Activity 1: Icebreaker

Refer to "Activity Materials" in "Facilitator Preparation" for further details.

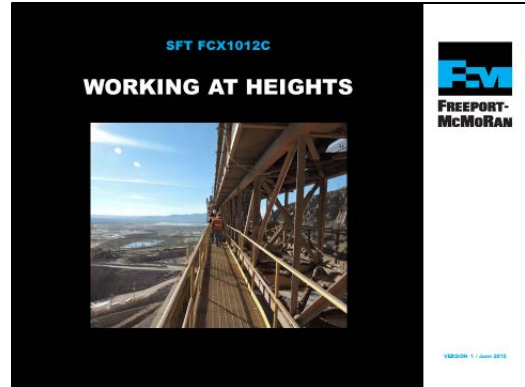
TOTAL TEACHING TIME

The introduction will take approximately 25 minutes to complete.

PPT slide 1

Instruction

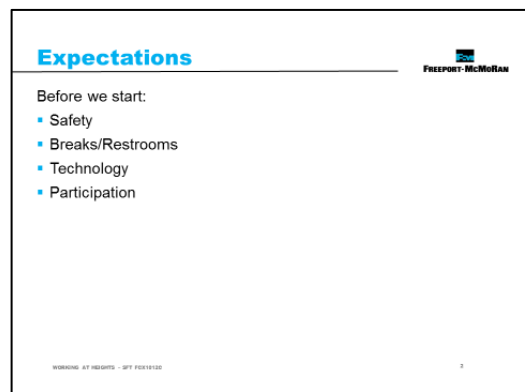
- Welcome students to the class
- Facilitator introduces self by stating your position at FMI, how long you've been with the company, and how long you've been in mining
- This is a hands-on course with opportunities for students to apply what is learned. Students will work in small groups and be involved in discussions to learn from the knowledge and experience of others.
- Remind students to sign the attendance sheet



PPT slide 2

Instruction

- Administrative/Classroom policies
 - Safety
 - Identify the appropriate evacuation procedures, gathering areas, and emergency exits and fire extinguisher locations, etc.
 - Breaks and Restrooms
 - Establish a break schedule and announce it to the class. Suggested break times are included throughout the FG and occur approximately every hour and often occur at the end of each module. Breaks should last 5-10 minutes to give students time to rest and relax before beginning the next learning session.
 - Identify the location of restrooms and smoking areas.
 - Technology policy
 - Review your expectations on cell phone and laptop use during the training.
 - Participation
 - This course requires significant participation. Students should be prepared for discussions and small group activities.
 - Set the class ground rules by verbalizing your expectations. Some suggestions are provided below.
 - Participate.
 - Be on time.
 - Stay on task.
 - Listen when others talk.
 - Respect the opinions and attitudes of others.



ACTIVITY 1: ICEBREAKER

PPT slide 3



Time

Approximately 10 minutes

Materials

- Chose icebreaker. Gather appropriate materials.

Purpose

- Successful icebreakers encourage students to contribute their ideas and experiences thus increasing motivation and engagement in the class.
- Below is an assortment of icebreakers that the facilitator can incorporate at the beginning of the course as well as after breaks.

Icebreaker

Directions

1. Participate in an activity to get to know each other

Activity 1

WORKING AT HEIGHTS - SPY F0019100

Icebreaker	Instructions
<p>What would you do if you had a million dollars? (5-10 minutes)</p>	<ol style="list-style-type: none"> 1. The facilitator will begin by answering this question themselves, such as “I will buy a tiny island in the Bahamas and live there the rest of my life selling coconuts and bananas”, “I will sell my house and live in an RV touring the U.S and Canada”, or “I plan on paying off all my debt and giving \$xxx to ABC charity.” 2. The facilitator will then ask each student to respond to the question. There may be some similarities or common themes.
<p>Two Truths and a Lie (15 minutes)</p>	<ol style="list-style-type: none"> 1. The facilitator will begin this icebreaker by explaining the activity. Each student will think of two true statements about themselves and one false statement. Allow a few minutes for students to come up with their examples. The facilitator will then proceed telling the class two truths and a lie about him or herself. 2. The class will come to a common vote on what they believe is the lie. The facilitator will reveal the correct answer. After the lie has been detected, the facilitator can elaborate on one or two of the statements that they made. 3. Continue the exercise with the students as you have each one present their statements.

Icebreaker	Instructions
<p>A Little Known Fact (10-15 minutes) http://www.thiagi.com/game-littleknown.html</p>	<ol style="list-style-type: none"> 1. The facilitator will begin by stating their name, title, organization (if different than students), length of time in position and one little known fact about themselves. 2. Continue this exercise by asking each student to share the same information about themselves.
<p>One Question One Answer (5-10 minutes) http://humanresources.about.com/od/icebreakers/a/Ice-Breakers-For-Meetings.htm</p>	<ol style="list-style-type: none"> 1. Divide class into groups of about four people by either having them work with the people near them or numbering them and having them move to be with others of the same number. This gives individuals the chance to meet new people. 2. Assign a question to each group from the list below. Have individuals share with their groups. <ul style="list-style-type: none"> • What are you most worried about at work this month? • What characteristic do you value the most in your coworkers? • What is the most important personal attribute that you bring to your job? • What are you most excited about in relation to your job this year? • What coworker characteristic do you find most irritating? • What's the one word that you'd like to hear from your boss? • What's the single most important factor that you would change about your job?


Icebreaker	Instructions
<p>Ten Things in Common (15 minutes) Materials: Blank paper and pen for each group http://humanresources.about.com/od/icebreakers/a/icebreaker_com.htm</p>	<ol style="list-style-type: none"> 1. Divide class into groups of about four people by either having them work with the people near them or numbering them and having them move to be with others of the same number. This gives individuals the chance to meet new people. Give each group a paper and pen. 2. Tell class their assignment is to find ten things they <u>all</u> have in common that have nothing to do with work, body parts, or clothes. 3. One person should list the things that everyone has in common on paper. 4. After about seven minutes of brainstorming stop the groups so there will be time to share. Tell the groups that if they didn't get ten things, it is okay. 5. Have one person from each group share their list with the class.
<p>Would You Rather (10-15 minutes)</p>	<ol style="list-style-type: none"> 1. Divide class into groups of about four people by either having them work with the people near them or numbering them and having them move to be with others of the same number (this gives individuals the chance to meet new people). 2. Ask each statement below one at a time and give the groups about two minutes to discuss and explain their answers. Each individual should be given a chance to share. Would you rather be a farmer or a politician? . . . ride a roller coaster or a mechanical bull? . . . have the power to fly or disappear? . . . live in the city or the country? . . . drive a Ford or a Chevy? . . . be known for your looks or your personality? . . . go for a month without the internet or your car? . . . lose your wallet or your keys? . . . spend every minute of the rest of your life indoors or outdoors? . . . live in a home without electricity or running water?

PPT slide 4



Instruction

- Introduce the SG as a resource.
- Read or have a student read the quote by Richard Adkerson. Read it aloud.
- As a class, discuss what the quote means.

Quote 

"We start with looking after our workers' welfare."
-Richard C. Adkerson

- What does this mean to you?


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PPT slides 5-8, SG page v



Instruction

- **Before beginning these next four slides:**
 - Ask the students what they would like to get out of this course?
 - **List responses on the flip chart**
 - **Place it on a wall and go over at the end of the course to make sure all items on the list have been addressed**
- Explain the objectives for each module.
- Point out that the module objectives are also listed on the first page of each module.


Learning Modules & Objectives 

Module 1: Fall Hazard Recognition

- Demonstrate the ability to recognize fall hazards.
- Describe fall hazards in routine and non-routine jobs.

Module 2: Hierarchy of Controls

- Explain the differences in the hierarchy of controls.
- Analyze a situation and recommend the most effective control.


Learning Objectives 

Module 3: Component Identification and Systems

- Identify the components of a fall protection system.

Module 4: Inspection and Storage

- Define the different types of inspections.
- Demonstrate a pre-use inspection and storage for a piece of fall protection equipment.


Learning Objectives 

Module 5: Fall Dynamics

- Calculate the fall clearances for a given scenario.
- Evaluate a situation and select the appropriate system to use.

Module 6: Fit, Donning, and Adjustment

- Demonstrate proper fit, donning, and adjustment of full body harnesses and lanyards.

Learning Objectives 

Module 7: Other Working at Height Systems

- Discuss the other types of equipment used to work at heights.

Module 8: Rescue

- Describe the components of a rescue plan.
- Demonstrate how to conduct a self-rescue.

Working at Heights - OPI F0210100 9


PPT slide 9, SG page vi

- **Instruction** Fatal Risk Management is a continuation of the Fatality Prevention Program.
- Focus is placed on identifying Fatal Risks and Critical Controls in an attempt to safeguard all employees within the Company
- Fatal Risks are based on safety issues that have resulted in catastrophic events such as severe injury or death
- While all risks have a degree of danger, Fatal Risks are those risks that, when left uncontrolled, will kill you
- After identifying a Fatal Risk, Critical Control(s) are implemented to prevent death or mitigate the consequences of the Fatal Risk
- In short, Critical Controls help keep you from being killed
- Fall from Heights is the Fatal Risk relevant to this course
 - Review fall from Heights Fatal Risk definition on slide
 - Review the Critical Controls listed on the slide

Fatal Risks and Critical Controls

Fall from Heights

- Working at height where the danger of falling exists
- Critical Controls
 - Fall Protection System
 - Fixed Work Platform
 - Leading edge/Open Hole Protection
 - Mobile Work Platform
 - Scaffold



WORKING AT HEIGHTS - 07/15/2010

PPT slide 10, SG page 6

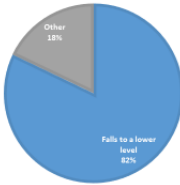


Instruction

- Review the statistics from the U.S. Department of Labor Bureau of Labor Statistics.
- Falls continue to be a top contributor of workplace fatalities in general industry and a leading cause of fatalities in mining.
- It is critical to focus on jobs that are performed at heights.

Introduction

In 2013, 699 people were killed as a result of workplace falls, slips, or trips in the United States. Of those events, 574 (82%) were falls to a lower level.¹



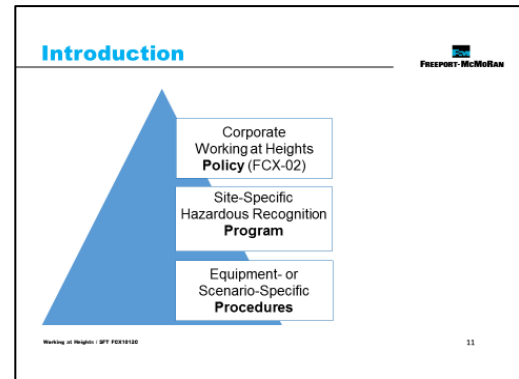
Category	Percentage
Falls to a lower level	82%
Other	18%

WORKING AT HEIGHTS - 07/15/2010

PPT slide 11, SG page vii

Instruction

- In alignment with Freeport-McMoRan's Fatality Prevention Initiative, the Department of Health and Safety has identified Working at Heights as a **"Fatal Risk"** and the Working at Heights Policy (FCX-HS02) addresses the minimum requirements and procedures when performing jobs where fall hazards exist.
- A Fatal Risk is considered anything that can kill you.
- Many of the tragedies that occurred were the result of taking unnecessary short cuts and here at Freeport-McMoRan, the time to do the job safely is built into every job.
- This course was designed to meet the minimum requirements for an authorized user.
- If at any time you have a question, in this class or while you are working in the field, it is your responsibility to stop and seek clarification.



MODULE 1: FALL HAZARD RECOGNITION

According to Freeport-McMoRan's Working at Heights Policy (FCX-HS02), fall protection must be provided and used 100% of the time whenever persons are exposed to a fall hazard that could reasonably result in an injury to an employee working at height. This course will help employees identify these hazards, assess the risk, and know how to appropriately control for the situation.

LEARNING OBJECTIVES

Upon completion of Module One, the students will be able to:

- Demonstrate the ability to recognize fall hazards.
- Describe fall hazards in routine and non-routine jobs.

ACTIVITIES

- Activity 2: Naming Fall Hazards
- Activity 3: Fall Hazard Detective

Refer to "Activity Materials" in "Facilitator Preparation" for further details.

TOTAL TEACHING TIME

This module takes approximately 45 minutes to complete.

PPT slide 12, SG page 3

Instruction

- Upon completion of Module One, the students will be able to:
 - Demonstrate the ability to recognize fall hazards.
 - Describe fall hazards in routine and non-routine jobs.



PPT slide 13, SG page 5



Instruction

- What is a fall hazard?
 - Any walking or working surface that is 4 ft. or more above the lower level must be provided with some sort of fall protection.
 - Walking or working surfaces that are less than 4 ft., but are above sharp objects, corrosive substances, entrapment hazards, moving machinery, or other significant hazards, must also be provided some sort of fall protection.
- Working at Heights Policy (FCX-HS02) states that fall protection must be provided and used 100% of the time whenever persons are exposed to a fall hazard that could reasonably result in an injury to an employee working at height.
- It is important that you are aware of any hazard above, below or around you, prior to beginning a job. Maintain that awareness throughout your shift.

Fall Hazard Recognition

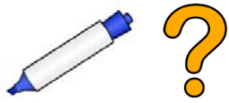
FREEPORT-McMORAN

- When you hear the words "Fall Hazard," what comes to mind?
- Are you confident that you can spot any fall hazard in your surroundings?

WORKING AT HEIGHTS - 07/16/2020

ACTIVITY 2: NAMING FALL HAZARDS

PPT slide 14



Time

Approximately 5 minutes

Materials

- Flip chart
- Markers

Purpose

- This activity draws out the students' existing knowledge on fall hazards.

Instruction

1. Ask for a volunteer to record responses on the flip chart.
2. As a class, brainstorm a list of fall hazards that can be encountered on sites.
3. Discuss the responses as a class.

Proposed Responses

- Leading edges
- Grated walkways
- Ladders
- Open holes
- Aerial work platform

Naming Fall Hazards	
<p>Directions</p> <ol style="list-style-type: none">1. As a class, brainstorm a list of fall hazards present on our properties2. The facilitator will ask for a volunteer to capture those responses on a flip chart	Activity 2
<small>WORKING AT HEIGHTS - OPI FC191120</small>	

PPT slides 15-19



Instruction

- As you proceed through the next five slides, give a brief explanation about the fall hazard in the photograph. Do not talk in great length as the students are being introduced to fall hazards. You should be referring back to the list that was brainstormed a few moments ago to see if this hazard was captured.

Possible Responses

Slide 15

- There are a variety of hazards in the photo; it depends on the job being performed.
 - Are lights being repaired (ladder use)?
 - Are hand rails being repaired?
 - Are personnel entering chutes?
 - Is the structure being repaired (man lift)?



Slide 16

- Maintenance work on the crane may require the employee to work outside of the hand rail.



Slide 17

- Repairs to the structure can pose a hazard
- Also working near the open hole in the center of the structure requires fall protection, so an anchor and SRL have been installed.



Slide 18

- Employees working in man lifts can be launched out of basket due to rough surfaces or improper use.



Slide 19

- It is possible to fall to the outside or inside of the crusher bowl while making entry.

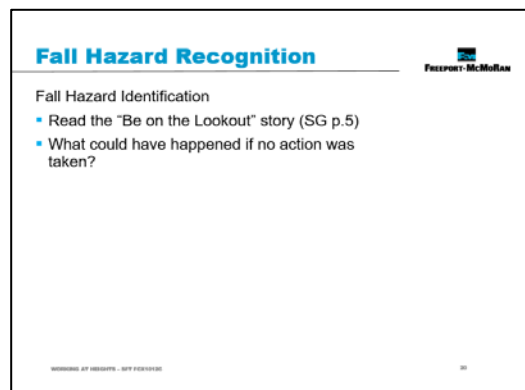


PPT slide 20, SG page 5



Instruction

- Direct the students to read the “Be on the Lookout” story
 - What could have happened if no action was taken that day?

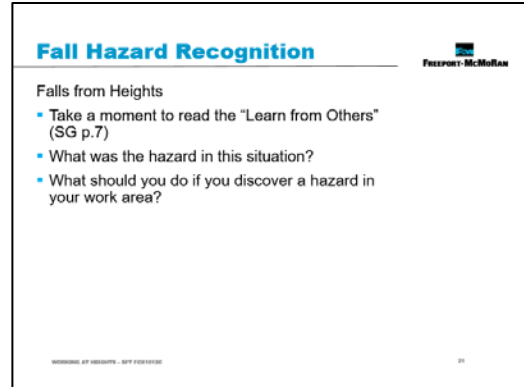


PPT slide 21, SG page 6-7



Instruction

- Discuss key facts about falls from heights
 - Unguarded falls from an elevation, which typically result in a serious injury or death.
 - Existing hazards must be identified prior to starting a job.
 - Make the right decisions and use the appropriate tools that are available to you.
- Direct the students to the “Learn from Others”.
 - Answer the discussion question in the SG – “What was the hazard in this situation?”
- What should you do if you discover a fall hazard in your work area?
 - Remove yourself from the hazard and contact your supervisor immediately.

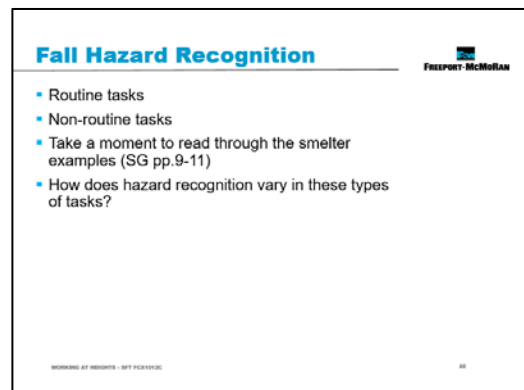


PPT slide 22, SG pages 8-11



Instruction

- Routine tasks – Work that is:
 - Regularly or frequently performed.
 - Repetitive and familiar.
 - Not different from day to day functions.
 - Documented through procedures (SOP)
 - Low level risk.
- Non-routine tasks – Work that is:
 - Performed for the first time or on an irregular schedule.
 - Changed because of conditions.
 - Different from normal job duties.
 - Without a document process or differs from the documented process.
 - High level risk.
 - Conducted during an emergency situation.
- Direct the students to the two smelter examples explaining a routine job turning into a non-routine job.
- How does hazard recognition vary in routine and non-routine tasks?



ACTIVITY 3: FALL HAZARD DETECTIVE

PPT slides 23-29, SG pages 12-14



Time: Approximately 10 minutes

Materials

- Fall Hazard Detective Worksheet (SG pp. 12-14)

Purpose

- This activity reinforces this module's lesson on fall hazards.

Instruction

1. Direct students to the Fall Hazard Detective Worksheet.
2. Allow 5 minutes for students to identify if there are any existing fall hazards present in each photo.
3. Discuss the responses as a class.
4. The next 6 slides are the photos from the activity.

Answer Key

1. One building has a guardrail on the roof. The other building does not.
2. Guardrail doesn't go around entire tank.

Fall Hazard Detective

Directions


1. Refer to the activity in the Student Guide
2. Take five minutes to identify if there are any existing fall hazards present in each photo
3. Be prepared to share your findings
4. Review the answers as a class

WORKING AT HEIGHTS - OPI F0019120

Activity 3

Fall Hazard Detective

FREEPORT-McMORAN


1. 

WORKING AT HEIGHTS - OPI F0019120

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Fall Hazard Detective

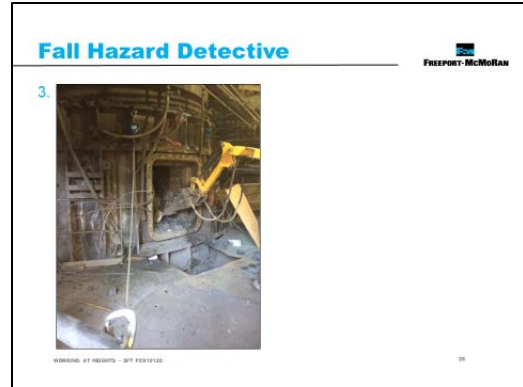
FREEPORT-McMORAN

2. 

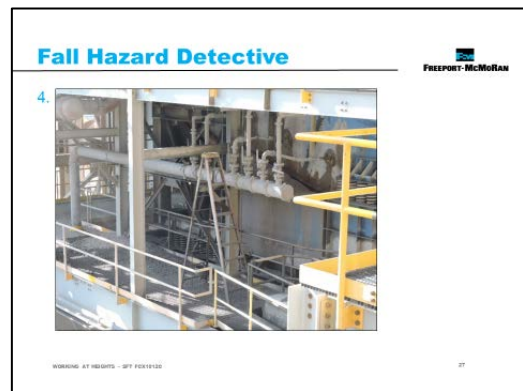
WORKING AT HEIGHTS - OPI F0019120

25

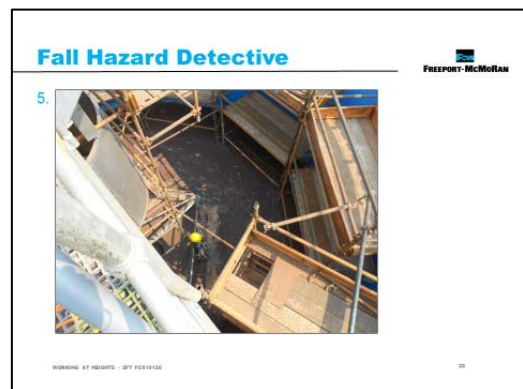
3. Open hole in the ground. The tie-off is incorrect.



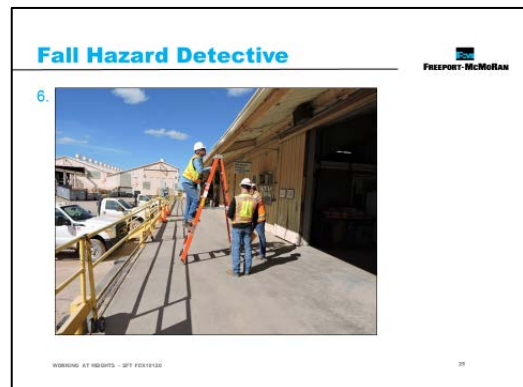
4. Ladder above handrail. Could fall to platform or over the handrail.



5. There is an open hole in the scaffolding and it is not covered.



6. Employee can fall to platform or potentially into the handrail.



PPT slide 30



Instruction

- Review the questions on the slide.

Debrief

Freeport-McMoRan

- How will you apply the skills learned in this module to your daily work activities?
- Were there any fall hazards that surprised you?

WORKING AT HEIGHTS - 8PT F0018102

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MODULE 1 QUIZ

PPT slides 31-33, SG page 15



Instruction

1. Students will complete the answers to the quiz questions in the SG.
2. Review the answers as a class.

Quiz Answers

1. a, b, c, d, SG p. 5
2. c, SG p. 7
3. Select a couple of students to share their routine working at heights task and the factor(s) that can impact that task.

Module 1 Quiz

Directions

1. Refer to the Quiz in the Student Guide (p.14)
2. Take five minutes to complete
3. Review the answers as a class

WORKING AT HEIGHTS - SFY F0219122

Quiz

Module 1 Quiz

FREEPORT-McMORAN

1. Which of the following is a fall hazard? Circle all that apply.
 a. Open hole
 b. Scaffolding
 c. Retaining walls
 d. Aerial work platform
2. What should you do if you encounter a fall hazard?
a. Tell your co-worker and continue with your work.
b. Leave it alone. Someone must be working on it.
 c. Remove yourself from the hazard, secure the area, and contact your supervisor.
d. Set up proper flagging and continue with your work.

WORKING AT HEIGHTS - SFY F0219122

33

Module 1 Quiz

FREEPORT-McMORAN

3. Select a couple of students to share their routine working at heights task and the factor(s) that can impact that task.

WORKING AT HEIGHTS - SFY F0219122

33

Break

- We recommend taking a 5 to 10 minute break after this module. Allow students to stand up, stretch, use the facilities, etc. Make sure you clearly communicate what time you expect them to return and start the next module.

MODULE 2: HIERARCHY OF CONTROLS

Before beginning to work at heights, we need to assess the risk and put appropriate controls in place. Here at Freeport-McMoRan, we use the Hierarchy of Controls to help us remove or reduce our exposure to hazards. The most effective control is at the top of the pyramid – Elimination. These are highly reliable controls where worker behavior plays only a small role. Controls at the bottom of the pyramid (such as Personal Protective Equipment, or PPE) are less reliable because worker behavior plays a much larger role.

LEARNING OBJECTIVES

Upon completion of Module Two, the student will be able to:

- Explain the differences in the hierarchy of controls.
- Analyze a situation and recommend the most effective control.

ACTIVITIES

- Activity 4: Applying the Hierarchy

Refer to “Activity Materials” in “Facilitator Preparation” for further details.

TOTAL TEACHING TIME

This module takes approximately 30 minutes to complete.

PPT slide 34, SG page 19

Instruction

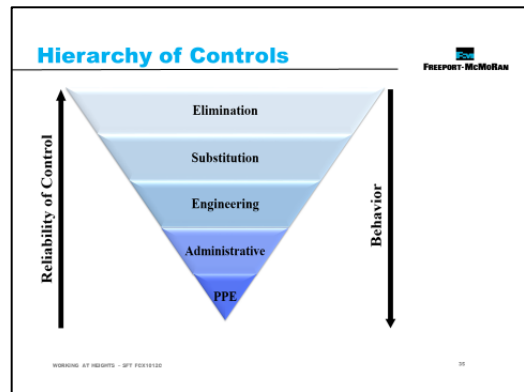
- Upon completion of Module Two, the student will be able to:
 - Explain the differences in the hierarchy of controls.
 - Analyze a situation and recommend the most effective control.



PPT slide 35, SG page 21

Instruction

- Review the Hierarchy of Controls, explaining each level.
- As you move down the hierarchy (beginning with Elimination), behavior plays a larger role in the effectiveness of the control.
- As you move up the hierarchy (beginning with PPE), the reliability of each control increases.



PPT slide 36, SG page 22



Instruction

- Most effective control as it gets rid of the hazard entirely.
- Review the elimination example.
- Why was this task a hazard?



PPT slide 37, SG page 22


Instruction

- When elimination is not possible, substitution is the next recommended control.
- Uses a less hazardous chemical, substance, or practice in place of a more hazardous one.
- Review the substitution example.

Hierarchy of Controls

Substitution

- Using a less hazardous chemical, substance, or practice in place of a highly hazardous one



WORKING AT HEIGHTS - SPY F0319130 37

PPT slide 38, SG page 23


Instruction

- Devices can be permanent, semi-permanent or temporary
 - Such as guardrails, handrails, work platforms, or covers.
- Review the engineering example.

Hierarchy of Controls

Engineering

- Creation of a device or barrier to prevent employees from coming in contact with the hazard



WORKING AT HEIGHTS - SPY F0319130 38

PPT slide 39, SG page 24


Instruction

- Less effective than elimination, substitution, and engineering.
- Not a physical barrier, so it is critical that employees pay attention to the information communicated.
- Review the administrative example.

Hierarchy of Controls

Administrative

- Form of communicating the hazard typically through policies, regulations, signage, JSAs, Risk Assessments, and SOPs



WORKING AT HEIGHTS - SPY F0319130 39

PPT slide 40, SG page 25


Instruction

- Least effective control within the hierarchy.
- Review the PPE example.

Hierarchy of Controls

PPE

- Relies on the behavior of the employee to properly use it
- Worn on the person's body



WORKING AT HEIGHTS - SPY PEX10120

PPT slide 41, SG page 25-26



Instruction

- Emphasize how behavior, while not a control in the hierarchy, can impact the effectiveness of the established controls.
- Review the behavior example.
- Allow two minutes for the class to read the “Learn from Others” PFE.
- Discuss the PFE.
 - What happened?
 - What is the point of the PFE?

Hierarchy of Controls

Behavior

- Plays a key role in the effectiveness of the established controls
- Take two minutes to read the “Learn from Others” story (SG p. 26)

WORKING AT HEIGHTS - SPY PEX10120

PPT slide 42



Instruction

- Play the three minute video.
 - This video is from Morenci, where an employee fell off the roof. Their PPE saved their life.
- After the video, discuss what happened.
 - What is the message behind this video?

Hierarchy of Controls Video

Click [here](#) to play video



WORKING AT HEIGHTS - SPY PEX10120

ACTIVITY 4: APPLYING THE HIERARCHY

PPT slide 43, SG page 27

Time

Approximately 5-7 minutes

Materials

- Applying the Hierarchy Worksheet (SG p. 27)

Purpose

- This activity reinforces this module's lesson on the hierarchy of controls.

Instruction

- Direct students to the Hierarchy of Controls Activity Worksheet.
- Allow 5 minutes for students to complete the scenarios by creating a solution for each control.
- Discuss the responses as a class. Proposed responses are available, if the students struggle to provide their own.

Answer Key

Scenario 1 – You are a warehouse employee and are given the task of replacing a light bulb in the shop. The light fixture is eight feet off of the ground. Complete the chart below by supplying a solution for each control. Then, circle the most effective option based on the Hierarchy of Controls.

Control	Solution
Elimination	None
Substitution	LED lightbulb, assign task to taller employee
Engineering	Extension pole created to change light bulbs
Administrative	SOP
PPE	Site minimum required PPE

Scenario 2 – You are told that a pump has malfunctioned on top of a 20 foot lime tank. There is a fixed ladder attached to the tank. Complete the chart below by supplying a solution for each control. Then, circle the most effective option based on the Hierarchy of Controls.

Control	Solution
Elimination	
Substitution	Staircase instead of fixed ladder
Engineering	Relocating the pump to the ground
Administrative	SOP
PPE	Fall protection

Applying the Hierarchy

Directions

1. Refer to the activity in the Student Guide
2. Take five minutes to complete the scenarios by creating a solution for each control
3. Be prepared to share your results
4. Review the answers as a class

WORKING AT HEIGHTS - SP7 F0016120

Activity 4

PPT slide 44



Instruction

- Review the questions on the slide.

Debrief

FREEPORT-McMORAN

- How will you apply the hierarchy of controls in your work area?
- Any safety successes as a result of a control that you are willing to share?

WORKING AT HEIGHTS - 07/1 FEB/15/10 44

MODULE 2 QUIZ

PPT slides 45-48, SG page 29



Instruction

1. Students will complete the answers to the quiz questions in the SG.
2. Review the answers as a class.

Quiz Answers

1. Elimination, Substitution, Engineering, Administrative, PPE, SG p. 21
2. c, SG p. 23
3. b, SG pp. 22-23
4. c, SG p. 23
5. d, SG p. 24

<p>Module 2 Quiz</p> <p>Directions</p> <ol style="list-style-type: none">1. Refer to the Quiz in the Student Guide (p.26)2. Take five minutes to complete3. Review the answers as a class	<p>Quiz</p>	
<p>Module 2 Quiz</p> <p>1. Hierarchy of controls in order of effectiveness Elimination, Substitution, Engineering, Administrative, PPE</p> <p>2. You notice a grate missing in the catwalk that is 10 feet off the ground, but you are able to find assistance with putting a temporary guardrail around the hole. What control is this an example of?</p> <ol style="list-style-type: none">a. Substitutionb. Elimination<input checked="" type="radio"/> c. Engineeringd. Administrative		
<p>Module 2 Quiz</p> <p>3. Your co-worker is using the top rung of a ladder to perform maintenance on a haul truck. You remember hearing at your tailgate meeting about ladder safety and suggest using a scissor lift (a form of mobile scaffolding that elevates employees in a vertical motion) to your co-worker. What control is this an example of?</p> <ol style="list-style-type: none">a. PPE<input checked="" type="radio"/> b. Substitutionc. Eliminationd. Administrative		
<p>Module 2 Quiz</p> <p>4. At the safety meeting, they announce that handrails are being installed in the tankhouse to prevent employees from falling off the platform. What control is this an example of?</p> <ol style="list-style-type: none">a. PPEb. Substitution<input checked="" type="radio"/> c. Engineeringd. Administrative <p>5. You notice a sign stating "D-ring Tie-off Point." What control is this an example of?</p> <ol style="list-style-type: none">a. PPEb. Eliminationc. Engineering<input checked="" type="radio"/> d. Administrative		

Break

- We recommend taking a 5 to 10 minute break after this module. Allow students to stand up, stretch, use the facilities, etc. Make sure you clearly communicate what time you expect them to return and start the next module.
-

MODULE 3: COMPONENT IDENTIFICATION AND SYSTEMS

Deciding which system to use requires knowledge of the specific pieces of equipment available. Each system is comprised of different components. It is critical that every employee that works at heights can correctly identify these components. This skill can aid the employee in selecting the appropriate system, properly inspecting it, and donning or connecting it in the safest manner possible.

LEARNING OBJECTIVES

Upon completion of Module Three, the student will be able to:

- Identify the components of a fall protection system.

ACTIVITIES

- Activity 5: Name Those Components

Refer to “Activity Materials” in “Facilitator Preparation” for further details.

TOTAL TEACHING TIME

This module takes approximately 35 minutes to complete.

PPT slide 49, SG page 33

Instruction

- Upon completion of Module Three, the student will be able to:
 - Identify the components of a fall protection system.

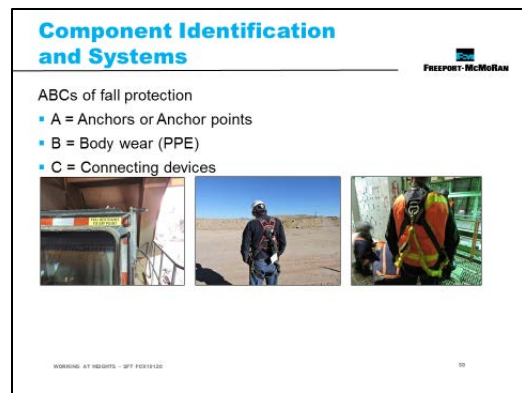


PPT slide 50, SG pages 36-37

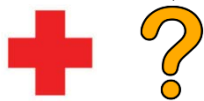


Instruction

- Review the ABCs of fall protection.

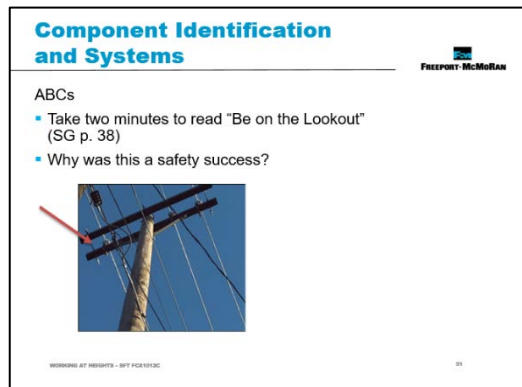


PPT slide 51, SG page 38



Instruction

- Allow two minutes to read the “Using the Right Tools Correctly” story.
- Answer the Discussion Question (SG p. 38) as a class. “Why was this a safety success?”
 - Employee is made aware of the proper equipment for the task, and does not expose himself to greater risk by using equipment not rated for the job.



PPT slide 52, SG page 39



Instruction

- Anchors are the foundation of your fall protection system.
- Handrails and scaffolding are never suitable anchor points, unless engineered by a qualified person to withstand 5000 lbs. of force.
- Pass around site-specific example of equipment to the class.

Component Identification and Systems

Anchor

- Foundation of a fall protection system



WORKING AT HEIGHTS - OIT F0219132

PPT slide 53, SG page 39




Instruction

- A type of temporary anchorage connector that is used as anchor points when working with structural supports, such as I-Beams.
- The beam strap has a ring at each end, with one being slightly larger than the other. The strap is wrapped around the support beam, and the small ring is passed through the large ring. The small ring then becomes the anchor point for the lanyard.
- Pass around site-specific example of equipment to the class.

Component Identification and Systems

Beam Strap

- Type of temporary anchorage connector



WORKING AT HEIGHTS - OIT F0219132

PPT slide 54, SG page 40




Instruction

- I-beam clamps can either be fixed in one place (when used with a vertical beam), or mobile (when used with a horizontal beam).
- Pass around site-specific example of equipment to the class.

Component Identification and Systems

I-Beam Clamp

- Another anchorage connector
- Also known as a Fixed Beam Anchor



WORKING AT HEIGHTS - OIT F0219132

PPT slide 55, SG page 40




Instruction

- Allows the worker to freely move in the direction of the beam, while still maintaining a secure anchor point.
- Pass around site-specific example of equipment to the class.

Component Identification and Systems

I-Beam Roller

- Intended for use with a horizontal beam support
- Also known as Beam Trolleys



WORKING AT HEIGHTS - SP7 F0319122

FREEPORT-McMORAN

PPT slide 56, SG page 41



Instruction

- An improperly used, damaged, or ill-fitting harness can severely injure a worker during a fall.

Component Identification and Systems

Body Wear (PPE)

- Connects the worker to the rest of the fall protection system

WORKING AT HEIGHTS - SP7 F0319122

FREEPORT-McMORAN

PPT slide 57, SG page 41



Instruction

- Designed to distribute the shock from a fall evenly throughout the body.
 - Helps minimize the internal trauma that can result from a fall.
- Pass around site-specific example of equipment to the class.

Component Identification and Systems

Full Body Harness

- Protects the employee by supporting them in an upright position after a fall



WORKING AT HEIGHTS - SP7 F0319122

FREEPORT-McMORAN

PPT slide 58, SG page 41



Instruction

- May be used in conjunction with a fall positioning system, but never in a fall arrest system.
- Not designed to distribute the force from a fall throughout the entire body.
- Pass around site-specific example of equipment to the class.

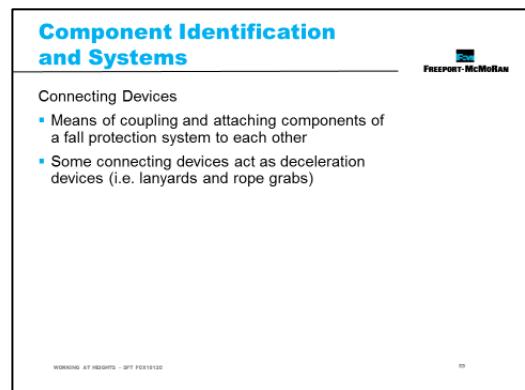


PPT slide 59, SG page 42



Instruction

- A large variety of connecting devices exist in order to accommodate a wide array of working conditions.
- Check with your site Health & Safety Specialist or Supervisor for available devices.

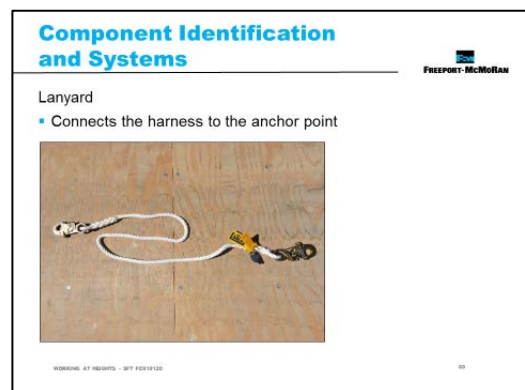


PPT slide 60, SG page 42



Instruction

- They come in a variety of materials and lengths to accommodate the task being performed.
- They may include an energy-absorber and connecting device.
- Pass around site-specific example of equipment to the class.

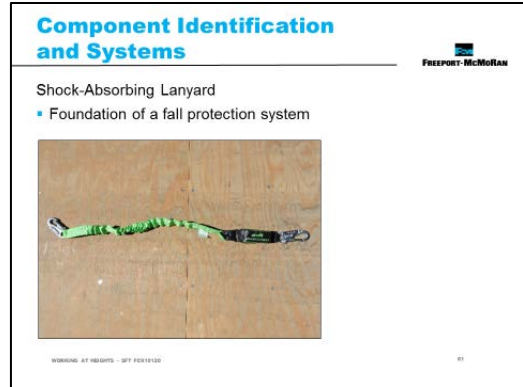


PPT slide 61, SG page 42



Instruction

- This is a fixed length lanyard with a built-in shock absorber.
- The shock-absorber protects the employee by minimizing the force transferred to the body in the event of a fall.
- Best practice is to use the shortest length available to you. Vary between two and four feet
- Pass around site-specific example of equipment to the class.

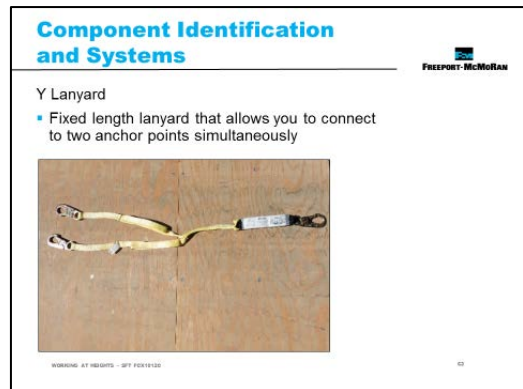


PPT slide 62, SG page 43



Instruction

- Has the ability to allow greater employee movement while still remaining anchored 100% of the time.
- Both anchors do not need to be attached for the lanyard to arrest a fall.
- Pass around site-specific example of equipment to the class.

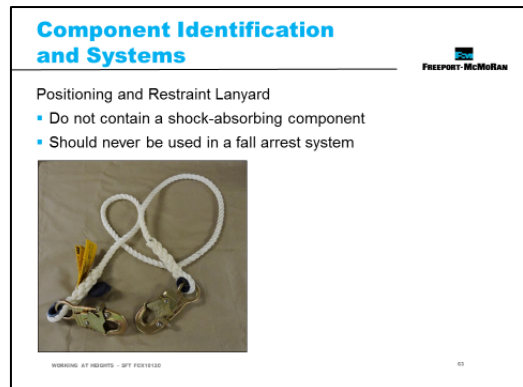


PPT slide 63, SG page 43



Instruction

- This can be a rope, webbing, or cable lanyard.
- Pass around site-specific example of equipment to the class.



PPT slide 64, SG page 43




Instruction

- The rapid deployment of the webbing will cause a braking mechanism in the housing to engage, which will arrest the fall.
- Pass around site-specific example of equipment to the class.

Component Identification and Systems

Self-Retracting Lanyard/Lifeline (SRL)

- Variable length lanyard that employs a locking mechanism
- SRL has a retracting line attaching to the D-Ring



WORKING AT HEIGHTS - OET F0210102

PPT slide 65, SG page 44




Instruction

- Both anchors with a double PFL do not need to be engaged for the system to arrest a fall
- Some refer to these as SRLs
- Preferred devices worn when working with an aerial work platform
- Retracting line attaches to anchor point
- Similar to Y Lanyards, double PFLs allow for 100% anchoring and otherwise function the same as a single PFL

Component Identification and Systems

Personal Fall Limiter (PFL)

- Allows for 100% anchoring
- PFL has a retracting line that attaches to the anchor point



WORKING AT HEIGHTS - OET F0210102

PPT slide 66, SG page 44




Instruction

- Both of these devices are required to be able to withstand 5000 lbs. of force and 3600 lbs. of forced at the gate.
- Pass around site-specific example of equipment to the class.

Component Identification and Systems

Carabiner and Snap Hook

- Connectors used to secure lanyards both to anchor points and harness D-rings



WORKING AT HEIGHTS - OET F0210102

PPT slide 67, SG page 44



Instruction

- Certain harnesses may have D-rings located at the chest or hips, but the proper location for a fall arrest system is on the back.
- Pass around site-specific example of equipment to the class.

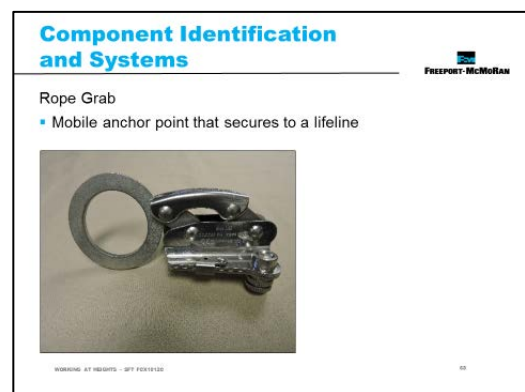


PPT slide 68, SG page 45



Instruction

- This allows the worker to move either up or down the lifeline while still maintaining fall protection.
- Pass around site-specific example of equipment to the class.

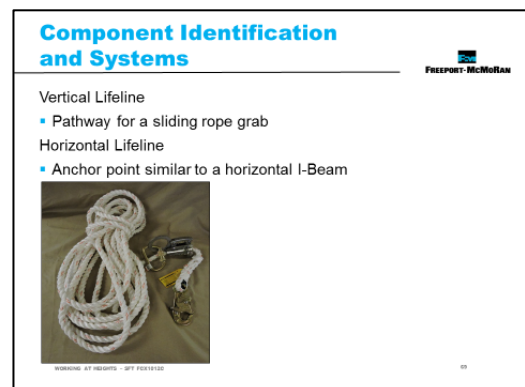


PPT slide 69, SG page 45



Instruction

- Lifelines come in a variety of materials and widths.
- The lifeline is fixed between two anchor points and allows for movement by a worker.
- Pass around site-specific example of equipment to the class.
- Only lifelines made from wire can be used in a horizontal direction with a breaking strength of 2268 kg (5000 lbs).



PPT slide 70, SG pages 46-48




Instruction

- Review the three systems and their limitations
- **Fall restraint** – keeps the person at a specific distance from the hazard.
 - Limitations – mobility
- **Fall positioning** – works in conjunction with fall arrest system and allows hands-free work.
 - Limitations – mobility, weak anchor points
- **Fall arrest** – designed to stop a free fall in a controlled manner.
 - Limitations - Weak anchor points, free falling too far, insufficient fall clearance, not aware of swing falls, falling out of a harness, either not properly sized or donned

Component Identification and Systems

Discuss each system and its limitations

- Fall restraint system
- Fall positioning system
- Fall arrest system



WORKING AT HEIGHTS - SPT F0019100

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ACTIVITY 5: NAME THOSE COMPONENTS

PPT slide 71, SG page 50



Time

Approximately 15 minutes

Materials

- Components Identification Activity Worksheet (SG p. 45)

Name Those Components

Directions

1. Each group will receive a topic (anchors, body wear, or connecting devices)
2. Take five minutes to complete the worksheet (SG p. 50)
3. Identify the components on each item within that topic
4. Are there any limitations, or pros and cons for using these items?
5. Prepare to teach back to the class on your topic

WORKING AT HEIGHTS - 07/17/2010

Activity 5

Purpose

- This activity reinforces this module's lesson on identifying the components of a fall protection system.

Instruction

1. Direct students to the Components Identification Activity Worksheet.
2. Assign each table group one of the following topics:
 - Anchors
 - Body Wear
 - Connecting Devices
3. If there are more than three groups, give more than one group the same topic.
4. Allow 10 minutes for groups to complete the worksheet by identifying the components within their assigned topic, as well as any limitations, pros, or cons.
5. After the 10 minutes, have each group teach back their responses to the class. As a facilitator, ensure that the correct information is being taught to the class.

PPT slide 72



Instruction

- Review the questions on the slide.

Debrief

FREEPORT-McMORAN

- Why is it important to know the components of the system you are using?
- How can you apply this knowledge to your daily work activities?

WORKING AT HEIGHTS - 07/17/2010

MODULE 3 QUIZ

PPT slides 73-75, SG page 51



Instruction

1. Students will complete the answers to the quiz questions in the SG.
2. Review the answers as a class.

Quiz Answers

1. I - Lanyard, SG p. 42
2. C – Body belt, SG p. 41
3. A – Beam strap, SG p. 39
4. L – D-ring, SG p. 44
5. J – Rope grab, SG p. 45
6. F - Carabiner, SG p. 44
7. H – Full body harness, SG p. 41

Module 3 Quiz

Directions

1. Refer to the Quiz (SG p. 51)
2. Take five minutes to complete
3. Review the answers as a class

WORKING AT HEIGHTS - OPI P031102

Quiz

Module 3 Quiz

FREEPORT-McMORAN

1. Sometimes is equipped with an energy absorber **I: Lanyard**
2. Only secure around the waist and cannot be used in a fall protection system **C: Body belt**
3. Temporary anchorage connector used as an anchor point when working on structural supports **A: Beam strap**
4. Connection point between your lanyard and your harness **L: D-ring**
5. A mobile anchor point that secures to a lifeline **J: Rope grab**
6. Self-closing or self-locking connectors that are able to withstand 5000 lbs. of force **F: Carabiner**
7. Designed to distribute the shock evenly throughout the body and keep employee in an upright position once a fall has occurred **H: Full body harness**

WORKING AT HEIGHTS - OPI P031102

Module 3 Quiz

FREEPORT-McMORAN

8. What are the ABCs?
 a. Anchor points, body wear, connecting devices
 b. Anchor points, body armor, communication plan
 c. Anchorage points, body harnesses, company policy
 d. Aerial platforms, body harnesses, connecting devices

WORKING AT HEIGHTS - OPI P031102

Break

- We recommend taking a 5 to 10 minute break after this module. Allow students to stand up, stretch, use the facilities, etc. Make sure you clearly communicate what time you expect them to return and start the next module.

MODULE 4: INSPECTION AND STORAGE

All equipment, tools, PPE, and barriers (handrails, toe boards, etc.) eventually wear out. Inspections are regularly performed on equipment as a means of lengthening the life and proactively catching any issues before they occur.

Inspections are not the only factor in extending the life of the PPE; storage plays a key role as well. Proper storage guidelines are established for both prolonging the durability, and maintaining the safety of our employees. Adhering to the storage guidelines after each use is as important as cleaning the equipment of dirt, corrosives, and contaminants.

LEARNING OBJECTIVES

Upon completion of Module Four, the student will be able to:

- Define the different types of inspections.
- Demonstrate a pre-use inspection for a piece of fall protection equipment.

ACTIVITIES

- Activity 6: Is There an Issue?
- Activity 7: Passing Inspection

Refer to “Activity Materials” in “Facilitator Preparation” for further details.

TOTAL TEACHING TIME

This module takes approximately 30 minutes to complete.

PPT slide 76, SG page 55

Instruction

- Upon completion of Module Four, the student will be able to:
 - Define the different types of inspections.
 - Demonstrate a pre-use inspection and storage for a piece of fall protection equipment.



PPT slide 77, SG page 57



Instruction

- Inspections are a means of lengthening the life of equipment and proactively catching any issues before they occur.
- The next several slides will go through what to look for and the step-by-step inspection process on harnesses, lanyards, and SRLs.

Inspection and Storage

FREEPORT-McMORAN

Inspections

- Purpose: Inspections are a means of lengthening the life of equipment and proactively catching any issues before they occur.

Harness: What to look for

- Review the table with components of a harness and what to inspect (SG p. 57)

WORKING AT HEIGHTS - 017 FALL PROTECT

Component	Inspect for
Harness hardware (buckles, D-rings, back pad, loop keepers)	Damage, broken, distorted, and free from sharp edges, burrs, cracks, worn parts, or corrosion
Webbing	Frayed, cut or broken fibers. Look for tears, abrasions, mold, burns or discoloration. Check stitching for pulled or cut stitches.
Labels	Location and fully legible
Stitching	Loose or frayed stitching

PPT slides 78-80, SG page 58



Instruction

- Show how to inspect a harness.
- Facilitator should demonstrate this process either during these slides or at the end of the slides.

Inspection and Storage

Harness Inspection

1. Hold harness by the D-ring



WORKING AT HEIGHTS - OPI FC019122

79

Inspection and Storage

2. Inspect for deterioration of webbing or hardware

3. Is the manufacturer label legible?



WORKING AT HEIGHTS - OPI FC019122

79

Inspection and Storage

4. Inspect straps for twists or knots

5. Document your inspection



WORKING AT HEIGHTS - OPI FC019122

80

PPT slide 81, SG pages 59-60



Instruction

- Review the Full Body Inspection Checklist / Log example. This is checklist/log may not be what is used on your site. Check with your Health & Safety Specialist or Supervisor to determine what is available to you.
- Review the signs of damage to webbing and rope lanyards.

Freeport-McMoRan

Inspection and Storage

Harness Inspection

- Take a moment to review the Full Body Harness Inspection Checklist / Log example (SG p. 59)

Lanyard: What to look for

- Review the signs of damage to webbing, cable or wire, and rope lanyards (SG p. 60)
- What can affect the life expectancy of lanyards?

WORKING AT HEIGHTS - SAFETY VIDEO


Signs of Damage to Webbing, Cable or Wire, and Rope Lanyards	
Heat Note: Never use above 180 degrees Fahrenheit	<ul style="list-style-type: none"> • Nylon becomes brittle to the touch • Appearance can turn brownish or have a shriveled look • Fibers easily break when flexed • Wire rope can melt and fuse
Chemical	<ul style="list-style-type: none"> • Appearance can be either a brown smudge or smear • When belt is bent, cracks may appear <ul style="list-style-type: none"> ○ Results in loss of elasticity
Ultraviolet Rays Note: Do not store in direct sunlight	<ul style="list-style-type: none"> • Webbing will appear faded
Molten Metal or Flame Note: Nylon will support combustion; webbing will not	<ul style="list-style-type: none"> • Appearance may have hard, shiny spots • Can have a hard, brittle texture
Paint and Solvents	<ul style="list-style-type: none"> • Paint – Can absorb through material and dry <ul style="list-style-type: none"> ○ Results in limited fiber movement • Solvents – Similar to chemical damage • Wire rope can rust and corrode

PPT slides 82-83, SG page 61





Instruction

- Show how to inspect a lanyard.
- Facilitator should demonstrate this process either during these slides or at the end of the slides.


Inspection and Storage 

Lanyard Inspection



1. Inspect the connectors (visually and functionally)
2. Inspect the shock absorber and labeling



WORKING AT HEIGHTS - OPI F0319132 82

Inspection and Storage 

3. Inspect the entire length of the webbing
4. Inspect the connectors on opposite end from the single connector



WORKING AT HEIGHTS - OPI F0319132 83

PPT slide 84, SG pages 62-63



Instruction

- Review the Lanyard Inspection Checklist / Log. This is checklist/log may not be what is used on your site. Check with your Health & Safety Specialist or Supervisor to determine what is available to you.
- Review the table with components of an SRL and what to inspect.

Inspection and Storage

Lanyard Inspection

- Take a moment to review the Lanyard Inspection Checklist / Log example (SG p. 62)

SRL: What to look for

- Review the table with components of an SRL and what to inspect (SG p. 63)

WORKING AT HEIGHTS – GET READY! 99

Components	Inspect for
Exterior	Loose screws and bent or damaged parts
Housing	Distortion, cracks or other damage
Lifeline	Full extension and retraction without hesitation or creating a slack line, free of knots <ul style="list-style-type: none"> • Cable or wire ropes – cuts, kinks, broken wires, corrosion, welding splatter, chemical burns, or frayed • Web or synthetic rope – wear, frayed strands, broken yarn, burns, cuts, or abrasions
Device	Locking up without slipping when lifeline is jerked suddenly
Labels	Location and fully legible
Entire unit	Signs of corrosion, rust or kinks
Connecting hooks or carabiners	Damage, corrosion, or working condition
Reserve lifeline payout	The reserve lifeline has been used by pulling it out of the SRL <ul style="list-style-type: none"> • Wire rope – a red line will be visible • Web or synthetic rope – a label is visible
Impact Indicator	Engagement or activation

Always refer to the manufacturer for further inspection recommendations.

PPT slides 85-87, SG page 64




Instruction

- Show how to inspect an SRL.
- Facilitator should demonstrate this process either during these slides or at the end of the slides.

Inspection and Storage

SRL Inspection

1. Inspect the connector and SRL housing



WORKING AT HEIGHTS - 07F F0219132

FREEPORT-McMORAN

Inspection and Storage

2. Engage mechanism four times
3. Ensure that shock indicator has not been deployed



WORKING AT HEIGHTS - 07F F0219132

FREEPORT-McMORAN

Inspection and Storage

4. Inspect entire length of webbing
5. Inspect the connector



WORKING AT HEIGHTS - 07F F0219132

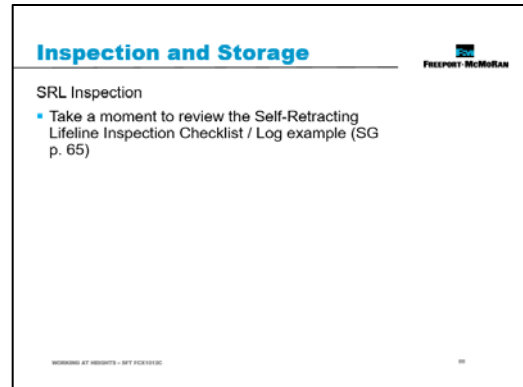
FREEPORT-McMORAN

PPT slide 88, SG page 65



Instruction

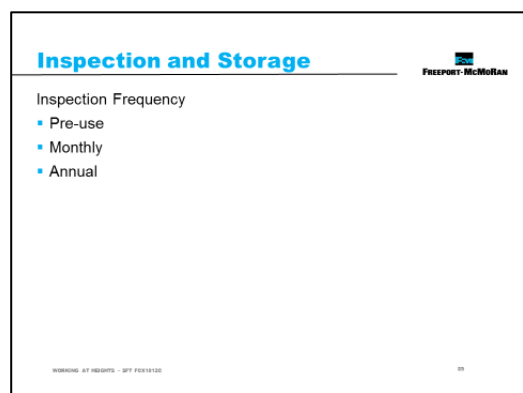
- Review the SRL Inspection Checklist / Log. This is checklist/log may not be what is used on your site. Check with your Health & Safety Specialist or Supervisor to determine what is available to you.



PPT slide 89, SG page 66

Instruction

- Inspections must be done by each employee prior to using any fall protection device or system.
- Best Practice
 - Pre-use
 - Completed before each use, and according to manufacturer's specifications
 - Monthly
 - Equally as important as a pre-use inspection
 - An opportunity for the qualified person to coach or retrain the employee on the appropriate ways to inspect, maintain, use, or store their equipment
 - Annually
 - Test all equipment, as well as permanently installed systems, to ensure they are in good working order.
- It is up to each site to determine and communicate the expectation for their inspection criteria.



PPT slide 90, SG pages 67-69




Instruction

- Review the tables below regarding cleaning.
- Discuss the following storage expectations:
 - Clean, dry, free from flammable materials or direct sunlight.
 - Lock up equipment.

Inspection and Storage Freeport-McMoRan

Storage and Care

- Cleaning components (SG p.61)
- Storage guidelines
- Why are these important?



WORKING AT HEIGHTS - 017 FEB 2010 50

Web Materials

Method	Procedure
Hand wash	<ul style="list-style-type: none"> • Can be soaked in warm water/cleaning solution prior to wash • Using a bleach-free, gentle solution, lightly scrub material • Fully rinse in clean water • Hang dry out of direct sunlight
Machine wash	<ul style="list-style-type: none"> • Place in a mesh bag to prevent tangling • It should go through a full wash and rinse • Hang dry out of direct sunlight

Carabiner and Hooks

Component	Procedure
Carabiners and Hooks	<ul style="list-style-type: none"> • Clean with a mild detergent • Locking mechanisms may need lubrication after cleaning (Refer to manufacturer’s recommendations for specific procedure for lubrication)

SRLs

Description	Procedure
Exterior	<ul style="list-style-type: none"> • Clean with water and mild soap, allowing excess water to drain • Clean labels, as needed
Lifeline	<ul style="list-style-type: none"> • Clean with water and mild soap • Rinse and thoroughly air dry

ACTIVITY 6: IS THERE AN ISSUE?

PPT slides 91-99, SG pages 70-72



Time: Approximately 5-7 minutes

Materials

- Is There an Issue? Worksheet (SG pp. 70-72)

Purpose

- This activity reinforces this module's lesson on the proper inspection and storage procedures.

Instruction

1. Direct students to the Is There an Issue? Worksheet.
2. Allow 5 minutes for students to complete the worksheet by determining if the photos show proper storage or pass inspection.
3. The next 8 slides are from this activity.
4. Discuss the answers for each photo.

Answer Key

1. Yes. There are tools on top of the equipment.

2. No

Is There an Issue?

Directions


1. Refer to the activity (SG pp. 70-72)
2. Take 5 minutes to determine if the photos show proper storage, or pass inspection
3. Be prepared to share your results
4. Review the answers as a class

WORKING AT HEIGHTS - OBT 16210102

Activity 6

Is There an Issue?

FREEPORT-McMORAN

1. 

WORKING AT HEIGHTS - OBT 16210102

71

Is There an Issue?

FREEPORT-McMORAN

2. 

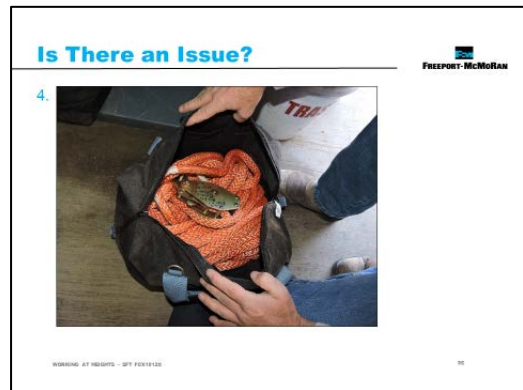
WORKING AT HEIGHTS - OBT 16210102

71

- 3. Yes (unless the employee is on a break). The equipment is piled on top of itself.



- 4. No



- 5. No



- 6. Yes. The seal is broken (appears over the letters TOP).



7. Yes. There is visible damage on the belt.



8. No



ACTIVITY 7: PASSING INSPECTION

PPT slide 100



Time

Approximately 5 minutes

Materials

- Components should be in either good, poor, or questionable condition
 - You will need all conditions represented in the variety of components
 - Students need the opportunity to handle and inspect these items

Passing Inspection

Directions

1. Proceed to the table(s) with the equipment
2. Take 5 minutes and individually determine if each item passes inspection
3. Be prepared to share your results
4. As a class, discuss the inspection of each item

WORKING AT HEIGHTS - SPT F0319132

Activity 7

Purpose

- This activity reinforces this module's lesson on the proper inspection procedures.

Instruction

1. Direct students to the table(s) with the equipment.
2. Allow 5 minutes for students to individually inspect each item.
3. As a class, discuss the inspection of each item.

PPT slide 101



Instruction

- Review the questions on the slide.

Debrief

WORKING AT HEIGHTS - SPT F0319132

- How can inspection or storage affect your PPE?
- Were there any procedures or processes that surprised you?

FREEPORT-McMORAN

135

MODULE 4 QUIZ

PPT slides 102-104, SG page 73



Instruction

1. Students will complete the answers to the quiz questions in the SG.
2. Review the answers as a class.

Quiz Answers

1. Pre-use, Monthly, Annual, SG p. 66
2. Yes, No, No, Yes
3. b, SG p. 68
4. a, SG p. 69

Module 4 Quiz

Directions

1. Refer to the Quiz (SG p. 73)
2. Take five minutes to complete
3. Review the answers as a class

WARNING AT HEIGHTS - SPY F0210100

Quiz

Module 4 Quiz

FREEPORT-McMORAN

1. Name the three types (frequencies) of inspections.
Pre-use, Monthly, Annual
2. After reading each sentence, decide if you would consider this defective by marking a yes or no in the boxes provided.
The SRL does not fully extend. **Yes**
The body harness has not been used in 3 months. **No**
The lanyard was left on the shop floor all night. **No**
The shock indicator is visible. **Yes**

WARNING AT HEIGHTS - SPY F0210100

103

Module 4 Quiz

FREEPORT-McMORAN

3. Carabiners do not need to be cleaned.
a. True
 b. False
4. You should store equipment in a clean and dry location.
 a. True
b. False

WARNING AT HEIGHTS - SPY F0210100

104

Break

- We recommend taking a 5 to 10 minute break after this module. Allow students to stand up, stretch, use the facilities, etc. Make sure you clearly communicate what time you expect them to return and start the next module.
-

MODULE 5: FALL DYNAMICS

No two jobs performed are ever the same. There are factors that influence the performance, such as weather, the location, the employee's height or weight, if equipment is in the area, etc. Looking at these factors takes a critical eye and employees should pay special attention to anything that could impact their safety or their co-workers'. Never assume that conditions are the same from day to day, shift to shift, or employee to employee.

In addition to determining the distance, another important factor to consider is the type of system to use. There are three basic methods of fall protection.

1. **Fall restraint** - designed to prevent workers from reaching a fall hazard
2. **Fall positioning** - holds the employee in place while keeping his/her hands free to work; however, the positioning system is not specifically designed for fall arrest purposes.
3. **Fall arrest** - designed to protect the employee by stopping them before hitting a lower level and minimizing injury

LEARNING OBJECTIVES

Upon completion of Module Five, the student will be able to:

- Calculate the fall clearance for a given scenario.
- Evaluate a situation and select the appropriate system to use.

ACTIVITIES

- Activity 8: Calculate the Fall

Refer to “Activity Materials” in “Facilitator Preparation” for further details.

TOTAL TEACHING TIME

This module takes approximately 40 minutes to complete.

PPT slide 105, SG page 77

Instruction

- Upon completion of Module Five, the student will be able to:
 - Calculate the fall clearance for a given scenario.
 - Evaluate a situation and select the appropriate system to use.



PPT slide 106, SG page 79

Instruction

- Fall dynamics is a combination of many things. It includes the fall clearance calculation, the fall protection system in use, selecting the proper harness, and the fit of the harness, to name a few. Fall dynamics is *the sum of events that occur during a fall*.

Fall Dynamics FREEPORT-McMORAN

Fall dynamics

- The sum of events that occur during a fall
 - Free fall distance
 - Fall clearance distance
 - Swing Fall, or pendulum effect

WORKING AT HEIGHTS - 07/16/2020 101

PPT slide 107, SG page 79 & 84

Instruction

- Free fall distance is the distance a person falls before either reaching the next level (or ground) or before his/her fall arrest equipment engages.
- FCX-HS02 states that the maximum allowable free fall distance is six feet.
- Fall clearance distance is the maximum vertical distance a person travels during a fall

Fall Dynamics FREEPORT-McMORAN

Free fall distance

- The distance a person falls before either reaching the next level (or ground) or before his/her fall arrest equipment engages
- FCX-HS02 states the maximum allowable free fall distance is six feet

Fall clearance distance


- The maximum vertical distance a person travels during a fall

WORKING AT HEIGHTS - 07/16/2020 102

PPT slide 108, SG page 80

Instruction

- Explain the three formulas used for free fall distances.

Fall Dynamics 

Free Fall Formulas

	Formulas	Use when anchor is
EQ 1	Free Fall Distance = $LL - (HA - HD)$	Above D-ring
EQ 2	Free Fall Distance = $LL + (HD - HA)$	Below D-ring
EQ 3	Free Fall Distance = LL	Level with D-ring

*LL = Length of Lanyard
HA = Height of anchor
HD = Height of D-ring*


WORKING AT HEIGHTS - SP7 F0210102 108

PPT slide 109, SG page 81



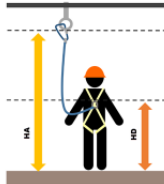
Instruction

- Show how this equation is solved from start to finish allowing the students to see the complete flow of the equation.
- Point out that the math inside of the parenthesis must be completed first to get the correct answer.

Fall Dynamics 

Anchor point is ABOVE the D-ring

EQ1 Free Fall Distance = $LL - (HA - HD)$



Free Fall Distance = $6 \text{ ft.} - (9 \text{ ft.} - 5 \text{ ft.})$
 Free Fall Distance = $6 \text{ ft.} - (4 \text{ ft.})$
 Free Fall Distance = 2 ft.


WORKING AT HEIGHTS - SP7 F0210102 109

PPT slide 110, SG page 81



Instruction

- Have the students provide each answer as they work with you to solve the equation.

Fall Dynamics 

- As a class, read the practice scenario (SG p. 81)
- Fill in the known information

LL = 6 ft.
 HA = 8 ft.
 HD = 4 ft.

- Use EQ 1 since the anchor point is above the D-ring
- Fill in the equation and solve

Free Fall Distance = $\underline{6} \text{ ft.} - (\underline{8} \text{ ft.} - \underline{4} \text{ ft.})$
 Free Fall Distance = $\underline{6} \text{ ft.} - (\underline{4} \text{ ft.}) = \underline{2} \text{ ft.}$

WORKING AT HEIGHTS - SP7 F0210102 110

PPT slide 111, SG page 82



Instruction

- Show how this equation is solved from start to finish allowing the students to see the complete flow of the equation.
- Point out that the math inside of the parenthesis must be completed first to get the correct answer.

Fall Dynamics FREEPORT-McMORAN

Anchor point is BELOW the D-ring

EQ 2 Free Fall Distance = $LL + (HD - HA)$

Free Fall Distance = 6 ft. + (5 ft. - 3 ft.)
 Free Fall Distance = 6 ft. + (2 ft.)
 Free Fall Distance = 8 ft.

WORKING AT HEIGHTS - OPI FC011102 111

PPT slide 112, SG page 82



Instruction

- Have the students provide each answer as they work with you to solve the equation.

Fall Dynamics FREEPORT-McMORAN

- As a class, read the practice scenario (SG p. 82)
- Fill in the known information
 $LL = 6 \text{ ft.}$
 $HA = 2 \text{ ft.}$
 $HD = 4 \text{ ft.}$
- Use EQ 2 since the anchor point is below the D-ring
- Fill in the equation and solve
 $Free \text{ Fall Distance} = 6 \text{ ft.} + (4 \text{ ft.} - 2 \text{ ft.})$
 $Free \text{ Fall Distance} = 6 \text{ ft.} + (2 \text{ ft.}) = 8 \text{ ft.}$

WORKING AT HEIGHTS - OPI FC011102 112

PPT slide 113, SG page 83



Instruction

- Show how this equation is solved from start to finish allowing the students to see the complete flow of the equation.

Fall Dynamics FREEPORT-McMORAN

Anchor point is LEVEL with the D-ring

EQ 3 Free Fall Distance = LL

Free Fall Distance = 6 ft.

WORKING AT HEIGHTS - OPI FC011102 113

PPT slide 114, SG page 84

Instruction

- Explain the formula used for fall clearance.
- Explain the four variables.
 - HW – For the purposes of calculating fall clearance distances, using the workers height accounts for D-ring slide.
 - SF – A minimum safety factor of 2 ft. is required for fall all fall clearance calculations.

Fall Dynamics

Freeport-McMolan

Fall Clearance Formula

EQ 4	Formulas
	$Fall\ Clearance\ Distance = LL + DD + HW + SF$

- Four Variables
 - Lanyard Length (LL)
 - Deceleration Distance (DD)
 - Height of the suspended worker (HW)
 - Safety factor (SF)

WORKING AT HEIGHTS - SFT FC010100 114

PPT slide 115, SG page 85-86

Instruction

- Formula for fall clearance distance on a lanyard.

Fall Dynamics

Freeport-McMolan

$Fall\ Clearance\ Distance = LL + DD + HW + SF$

Fall clearance distance must be less than the height of the anchor to the lower level.

WORKING AT HEIGHTS - SFT FC010100 115

PPT slide 116, SG page 86



Instruction

- Show how this equation is solved from start to finish allowing the students to see the complete flow of the equation.

Fall Dynamics

Freeport-McMolan

- Fall Clearance on a Lanyard

$Fall\ Clearance\ Distance = LL + DD + HW + SF.$

$Fall\ Clearance\ Distance = 6\ ft. + 3.5\ ft. + 6\ ft. + 2\ ft.$

$Fall\ Clearance\ Distance = 17.5\ ft.$

Since 17.5 ft. is greater than 15 ft., this is not a safe working condition.

WORKING AT HEIGHTS - SFT FC010100 116

PPT slide 117, SG page 86



Instruction

- Have the students provide each answer as they work with you to solve the equation.

Fall Dynamics FREEPORT-McMORAN

- As a class, read the practice scenario (SG p. 86)
- Fill in the equation and solve

Fall Clearance Distance = LL + DD + HW + SF
 Fall Clearance Distance = 6 ft. + 3.5 ft. + 5 ft. + 2 ft.
 Fall Clearance Distance = 16.5 ft.

Since 16.5 ft. is less than 20 ft., this is a safe working condition.

WORKING AT HEIGHTS - OPI FC210102 117

PPT slide 118, SG page 86

Instruction

- Swing fall, or pendulum effect, is the horizontal movement that occurs during a fall.
- The more you increase your lateral distance away from the anchor point, the greater the swing fall effect becomes.
- Always monitor your anchor location and work below your anchor point.

Fall Dynamics FREEPORT-McMORAN

- What is swing fall?
- How can it be avoided?
- Is there a difference – on a lanyard vs. an SRL?

WORKING AT HEIGHTS - OPI FC210102 118

PPT slide 119, SG page 87



Instruction

- Work the example of an SRL
- Have student use the formula

Fall Dynamics FREEPORT-McMORAN

SRL Equation:
Deceleration distance + SF = Fall Clearance Distance < distance to next level

You will be working on an elevated platform that is 15 ft. above the lower level. You have selected an SRL as the appropriate lanyard for the task. The deceleration distance of your SRL is 3.5 ft., and you are using a 2 ft. safety factor.

3.5 ft. + Deceleration Distance of SRL
2 ft. + Safety Factor
15 ft. Working Height above Fall Surface

WORKING AT HEIGHTS - OPI FC210102 119

PPT slide 120, SG page 87



Instruction

- Have the students provide each answer as they work with you to solve the equation.
- By the addition of the metal conduit 5 ft. below the floor, the lanyard is not adequate.
- **Consider making up a situation were the worker is kneeling as they work (Remember: to add 3.5 ft. for the body length)**

Fall Dynamics FREEPORT-McMORAN

SRL – Example 5: Pg. 87 in SG

3.5 ft. + Deceleration Distance

2 ft. + Safety Factor

5 ft. Working Height above Fall Surface

WORKING AT HEIGHTS - SAFETY 101 120

ACTIVITY 8: CALCULATE THE FALL

PPT slide 121-124, SG page 89



Time

Approximately 5-7 minutes

Materials

- Fall Dynamics Activity Worksheet (SG p. 85)

Purpose

- This activity reinforces this module's lesson on fall dynamics.

Instruction

- Refer to the activity in the SG.
- Allow 5 minutes for students to complete the calculations for the scenario.
- Review the answers as a class.

Answers

Fall Clearance Distance

- 6 ft., 3.5 ft., 6 ft., 2 ft., and 17.5 ft.

Free Fall Distance

- Height of Anchor Point – 7 ft.
- Height of D-ring – 5 ft.
- Free Fall Distance – 4 ft.
- Not performing in a safe manner. Explain why.
- Free fall distance is less than the maximum allowable distance
- Four aspects that can be changed
 - Raise the anchor point
 - Use a shorter lanyard
 - Use an AWP
 - Switch to an SRL

Calculate the Fall

Directions

- Refer to the activity in the Student Guide
- Take 5 minutes to complete the calculations for the scenario, and answer the questions
- Be prepared to share your results
- Review the answers as a class

WORKING AT HEIGHTS - 817 F0218120

Activity 8

Calculate the Fall

FREEPORT-McMORAN

6 ft. + Lanyard Length
3.5 ft. + Deceleration Distance
6 ft. + Height of Suspended Worker
2 ft. + Safety Factor
17.5 ft. = Fall Clearance Distance
17 ft. Height of Anchor Point above Fall Surface

WORKING AT HEIGHTS - 817 F0218120

122

Calculate the Fall

FREEPORT-McMORAN

7 ft. : Height of Anchor Point above Working Surface
5 ft. : Height of D-ring
4 ft. : Free Fall Distance

WORKING AT HEIGHTS - 817 F0218120

121

Calculate the Fall

FREEPORT-McMORAN

- Are you performing the work in a safe manner? No
- Is your free fall distance less than the maximum allowable distance? Yes
- What are at least two aspects of this job that you could change in order to better protect yourself?
 - Raise the anchor point
 - Use a shorter lanyard
 - Use an aerial work platform (AWP)
 - Switch to an SRL

WORKING AT HEIGHTS - 817 F0218120

123


PPT slide 125



Instruction

- Review the questions on the slide.

Debrief



- Why is it important to understand fall dynamics prior to working on a job?
- How can the location of the anchor affect a fall?
- How is a fall altered if you are connected to a lanyard versus an SRL?

WORKING AT HEIGHTS - 8PT F0413122

147

MODULE 5 QUIZ

PPT slides 126-128, SG page 90



Instruction

1. Students will complete the answers to the quiz questions in the SG.
2. Review the answers as a class.

Quiz Answers

1. d, SG p. 86
2. b, SG p. 84
3. c, SG p. 79

Module 5 Quiz

Directions

1. Refer to the Quiz in the Student Guide
2. Take five minutes to complete
3. Review the answers as a class

WORKING AT HEIGHTS - SFT F0019120

Quiz

Module 5 Quiz

FREEPORT-McMORAN

1. What can cause a swing fall?
 - a. There is too much slack in the lanyard
 - b. The body harnesses are not worn properly
 - c. The anchor points are lower than the employee
 - d. The anchor point is no longer above the employee

WORKING AT HEIGHTS - SFT F0019120

126

Module 5 Quiz

FREEPORT-McMORAN

2. On a lanyard, how is fall clearance calculated?
 - a. From the anchor point to the D-ring
 - b. From the anchor point to the lower level
 - c. From the anchor point to the higher level
 - d. From the D-ring to the lower level
3. What is the maximum allowable free fall distance?
 - a. 3 feet
 - b. 5 feet
 - c. 6 feet
 - d. 8 feet

WORKING AT HEIGHTS - SFT F0019120

127

Break

- We recommend taking a 5 to 10 minute break after this module. Allow students to stand up, stretch, use the facilities, etc. Make sure you clearly communicate what time you expect them to return and start the next module.

MODULE 6: FIT, DONNING, AND ADJUSTMENT

Any job that requires you to wear fall protection is a job that carries a certain degree of risk of injury. It is critical that you not only know **what** you need to wear, but also **how** to wear it. Specific training is provided for the equipment you will use. Improper harness fit, an incorrectly positioned D-ring, or a lanyard that is not the correct length, can have major negative consequences in the event of a fall. It is your body and health. This is why it is important to take the proper steps and use the tools that Freeport-McMoRan has provided to you.

LEARNING OBJECTIVES

Upon completion of Module Six, the student will be able to:

- Demonstrate proper fit, donning and adjustment of full body harnesses and lanyards.

ACTIVITIES

- Activity 9: Proper Fit
- Activity 10: Test Your Fitting

Refer to Activity Materials in *Facilitator Preparation* for further details.

TOTAL TEACHING TIME

This module takes approximately 20 minutes to complete.

PPT slide 129, SG page 93

Instruction


- Upon completion of Module Six, the student will be able to:
 - Demonstrate proper fit, donning and adjustment of full body harnesses and lanyards.



PPT slide 130, SG page 95

Instruction

- Improper harness fit can result in injury and falling out of it.
- Empty the pockets, inspect the equipment, undo the buckles, and ensure proper sizing.

Fit, Donning, and Adjustment 

- Why is the harness fit important?
- What should be done prior to donning the equipment?


WORKING AT HEIGHTS - OPI FC019120 130

PPT slides 131-132, SG page 96




Instruction


- Facilitator can demonstrate this process either during these slides or at the end of the slides if a competent person is available to check.
- Otherwise, a video is provided during Activity 10 demonstrating the process.

Fit, Donning, and Adjustment 


- Don the harness beginning with the leg strap
- Connect the chest strap



WORKING AT HEIGHTS - OPI F0019122 140

Fit, Donning, and Adjustment 

- Make sure that the straps are snug
- Position the D-ring on your back. Have a co-worker inspect your harness




WORKING AT HEIGHTS - OPI F0019122 141

PPT slide 133, SG page 97



Instruction

- Facilitator should demonstrate adjusting the harness if a competent person is available to check.
- Otherwise, a video is provided during Activity 10 demonstrating the process.
- A table is provided in the SG detailing how to adjust each area.

Fit, Donning, and Adjustment 

- Adjusting
 - Shoulders
 - Chest strap
 - D-ring (on back)

WORKING AT HEIGHTS - OPI F0019122 142

ACTIVITY 9: PROPER FIT

PPT slides 134-142, SG page 98-99



Time

Approximately 5-7 minutes

Materials

- Proper Fit Worksheet (SG pp. 96-97)

Purpose

- This activity reinforces this module's lesson on proper fitting.

Instruction

- Refer to the activity in the SG.
- Allow 5 minutes for students to determine if the equipment in the photos fit properly.
- Review the answers as a class.

1. No. Harness is loose and the D-ring is too low.

2. Yes. D-ring is located in between her shoulder blades and harness appears to be properly fitted.

Proper Fit

Directions


1. Refer to the activity in the Student Guide
2. Take 5 minutes to determine if the fall protection equipment in the photos fit properly
3. Be prepared to share your findings
4. Review the answers as a class

WORKING AT HEIGHTS - OPI FC019122

Activity 9

Proper Fit

FREEPORT-McMORAN

1. 

WORKING AT HEIGHTS - OPI FC019122

133

Proper Fit

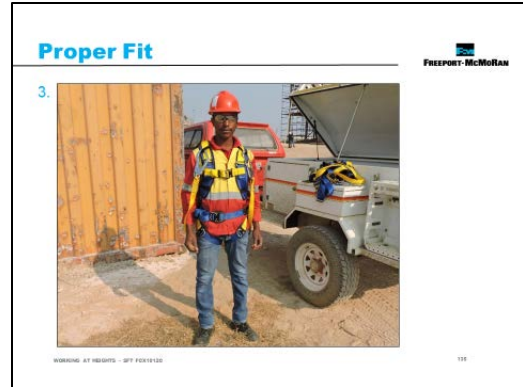
FREEPORT-McMORAN

2. 

WORKING AT HEIGHTS - OPI FC019122

134

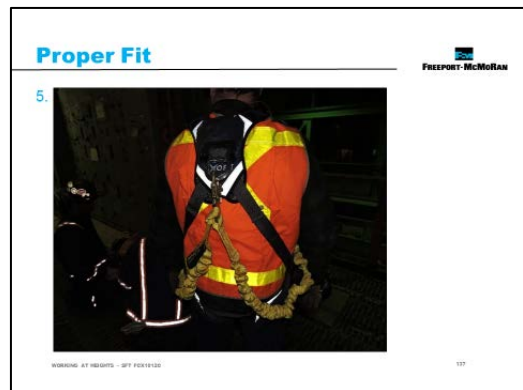
3. Yes.



4. No. Improper placement of back D-ring.



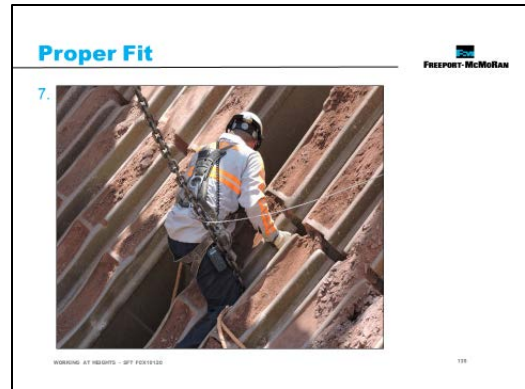
5. Yes.



6. Yes.



7. No. Harness is loose and D-ring placement is low.



8. Yes



ACTIVITY 10: TEST THE FITTING

PPT slide 143-144



Time

Approximately 5 minutes

Materials

- Harnesses and lanyards (one per student)
- Davit arm

Purpose

- This activity reinforces this module's lesson on proper fitting.

Instruction

1. Watch the video.
2. Facilitator will have a table set up with harnesses and lanyards.
3. Direct students to the table with the harnesses and lanyards. Ask them to pair up.
4. Each student should fit and don their harness. Then have their partner inspect the fit of their harness.
5. Facilitator will suspend each student momentarily with the Davit arm to determine if it was done correctly.

Note: The activity was filmed so that the facilitator does not need to rely on novice students to suspend him or her.

Test The Fitting

Directions


1. Proceed to the table with the harnesses and lanyards
2. Practice fitting, donning, and adjusting the harness
3. Pair up and have another student inspect your harness
4. The facilitator will suspend each student to check for effectiveness of the fitting, donning and adjustment

WORKING AT HEIGHTS - SP7 PEX19120


Activity 10

Test The Fitting Video

Click [here](#) to play video



WORKING AT HEIGHTS - SP7 PEX19120


FREEPORT-McMoRAN

PPT slide 145




Instruction

- Review the questions on the slide.

Debrief

- How does fit or adjustment affect your fall protection system?
- How will you apply the skills learned in this module to any job you perform at heights?

WORKING AT HEIGHTS - SP7 PEX19120


FREEPORT-McMoRAN

MODULE 6 QUIZ

PPT slides 146-148, SG page 100



Instruction

1. Students will complete the answers to the quiz questions in the SG.
2. Review the answers as a class.

Quiz Answers

1. b, SG p. 95
2. a, SG p. 95
3. c, SG p. 95

Module 6 Quiz

Directions

1. Refer to the Quiz in the Student Guide
2. Take five minutes to complete
3. Review the answers as a class

WARNING AT HEIGHTS - SFY F0216100

Quiz

Module 6 Quiz

WARNING AT HEIGHTS - SFY F0216100 FREEPORT-McMORAN

1. Harnesses are one size fit all.
 - a. True
 - b. False
2. The straps around the legs should be a snug fit; not too loose or too tight.
 - a. True
 - b. False

WARNING AT HEIGHTS - SFY F0216100 146

Module 6 Quiz

WARNING AT HEIGHTS - SFY F0216100 FREEPORT-McMORAN

3. When not in use, lanyard connections can be attached to which of the following?
 - a. Jean pockets
 - b. Unused D-rings
 - c. Break-away connections
 - d. Around the harness straps

WARNING AT HEIGHTS - SFY F0216100 147

Break

- We recommend taking a 5 to 10 minute break after this module. Allow students to stand up, stretch, use the facilities, etc. Make sure you clearly communicate what time you expect them to return and start the next module.
-

MODULE 7: OTHER WORKING AT HEIGHT SYSTEMS

In addition to the fall protection systems already discussed, there are other pieces of equipment commonly used for tasks performed at heights. Some examples of this include ladders, scissor lifts, scaffolds, and bucket trucks. Elevated work platforms or work surfaces have unique fall hazards and fall protection requirements. It is important to maintain a hazard awareness for any form of fall protection used on the job.

Maintain a safety awareness for any form of fall protection used on the job.

LEARNING OBJECTIVES

Upon completion of Module Seven, the student will be able to:

- Discuss the other types of equipment used to work at heights

ACTIVITIES

- Activity 11: Understand Your System

Refer to “Activity Materials” in “Facilitator Preparation” for further details.

TOTAL TEACHING TIME

This module takes approximately 25 minutes to complete.

PPT slide 149, SG page 103

Introduction

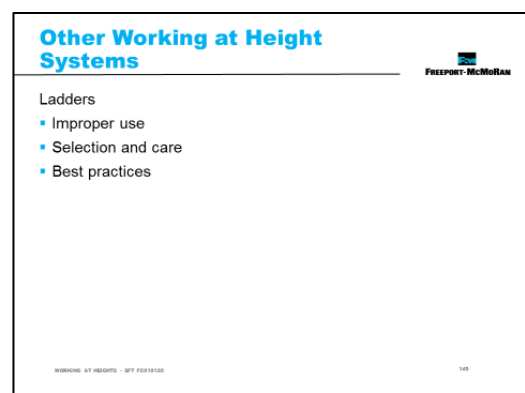
- Upon completion of Module Seven, the student will be able to:
 - Discuss the other types of equipment used to work at heights.



PPT slide 150, SG pages 105-106

Instruction

- Improper Use:
 - Using ladders in a manner for which they were not intended.
 - Leaning away from a ladder while working.
 - Failing to maintain three points of contact.
 - Placing ladders on an uneven surface causing it to become unstable and tip over.
 - Failing to barricade or secure the area where the ladder is in use.
- Selection and care:
 - Based on the task and environmental conditions present at the time of use.
 - Cleaned after each use and stored properly.
- Best practices:
 - Refer to the “Always/Never” list of best practices in the SG.



PPT slide 151, SG pages 107




Instruction

- Discussion questions
 - Based on the Hierarchy of Controls and the critical controls that you have learned about, why would this be considered a major success? What control was implemented? How does this relate to the Hierarchy of Controls? Using your knowledge of working at heights, what additional concerns do you have regarding the original method of accessing the grease fill port?

Other Working at Height Systems

General ladder safety and best practices

- Take 2 minutes to read "Eliminating the Risk" (SG p. 107)
- As a class, answer the Discussion Questions



WORKING AT HEIGHTS - SAFETY PRACTICES

101

PPT slide 152, SG page 108



Instruction

- When to use ladders with fall protection.
 - Are your feet more than 4 feet from the lower level?
 - Is the ladder wet and dirty?
 - Is the ladder on an uneven surface?
 - Does the work require leaning or reaching away from the ladder?
 - Does the work include leaning over corrosive substances or sharp objects?
- **Note: If "yes" to any of the above questions, you will need fall protection.**
- Direct the students to read the PFE "Learn from others".

Other Working at Height Systems

Using ladders with fall protection

- Review the questions for using fall protection with ladders(SG p.108)
- Take a moment to read the "Learn from Others" story (SG p.108)

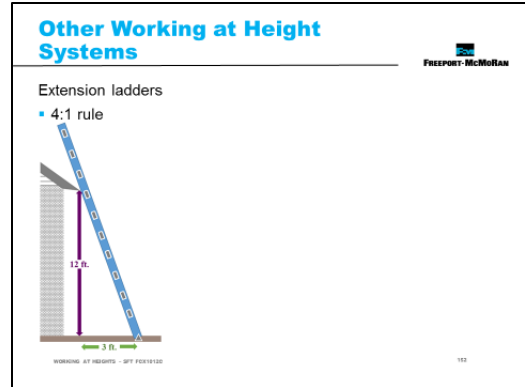
WORKING AT HEIGHTS - SAFETY PRACTICES

102

PPT slide 153, SG page 109

Instruction

- The horizontal distance should be $\frac{1}{4}$ the height of the point of contact.
 - For example, if your ladder is extended 20 feet high, the base should be approximately 5 feet from the wall.



PPT slide 154, SG page 110



Instruction

- It is important to identify appropriate anchorage points on the platform. In most cases, guardrails are not engineered to withstand the forces required to restrain or arrest a fall.

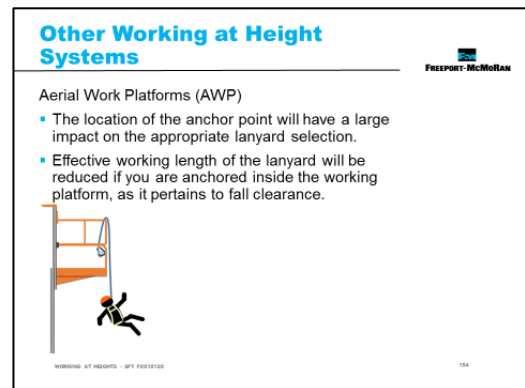


Note: Reinforce the statement on the slide. It is important that students understand what is required when operating or riding in an AWP.

PPT slide 155, SG page 111

Instruction

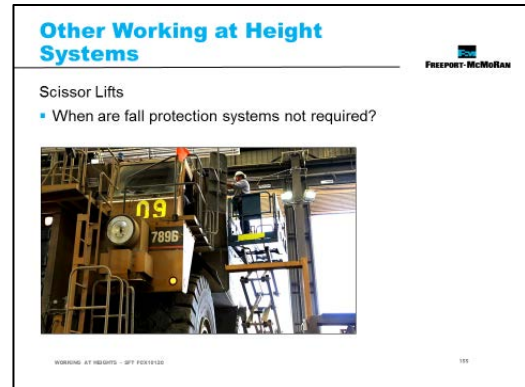
- Discuss AWP's.
- If you are using a 6 ft. fixed length lanyard and the anchor point is 2 ft. below the top railing of the AWP, then the effective length of your lanyard is 4 ft. when calculating fall clearance distance.



PPT slide 156, SG page 111

Instruction

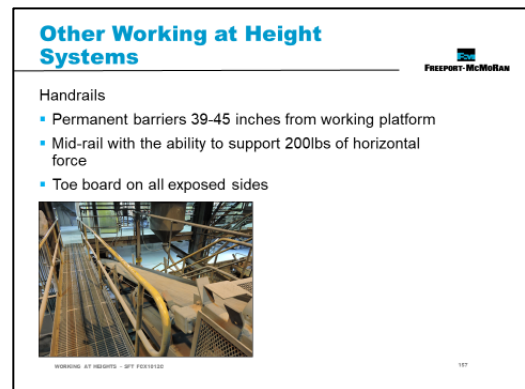
- Employees are not required to use fall prevention/protection systems in a scissor lift when the following conditions are met:
 - A complete handrail, mid-rail and toe board is present.
 - The lift is used according to manufacturer's instructions.
 - Workers' feet never leave the platform.
- Some sites require the use of fall protection while working from scissor lifts. Check with your supervisor or safety representative for your site's specific policies.



PPT slide 157, SG page 112

Instruction

- Discuss handrails.
- Include a standard toe board on all exposed sides with the ability to withstand 75lb (34kg) of force outward, and no more than 1/4in (0.64 cm) gap between surface and lower edge to the top of the rail
- Stair rail systems must be 42in (107cm) from the leading edge of the stair to the top of the rail



ACTIVITY 11: UNDERSTAND YOUR SYSTEM

PPT slide 158, SG page 113



Time

Approximately 15 minutes

Materials

- Understand Your System Worksheet (SG p. 113)

Understand Your System

Directions

1. Break into groups
2. Take 10 minutes and complete the Activity Sheet located in the Student Guide based on your assigned system
 - List the pros, cons, and limitations for your system
3. Be prepared to share your responses

WORKING AT HEIGHTS - SFY F0216100

Activity 11

Purpose

- This activity reinforces this module's lesson on other working at heights systems.

Instruction

1. Break the class into small groups.
2. Facilitator will assign each group one of the following systems:
 - Ladders
 - Aerial work platforms
 - Scissor lifts
3. If there are more than three groups, give more than one group the same topic.
4. Refer to the activity in the SG.
5. Allow 10 minutes for students to complete the worksheet by listing the pros, cons and limitations for their assigned system.
6. Review the answers as a class.

PPT slide 159



Instruction

- Review the questions on the slide.

Debrief

FREEPORT-McMORAN

- How will this knowledge affect how you plan a job at heights?
- What jobs performed at heights do not require fall protection?

WORKING AT HEIGHTS - SFY F0216100

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MODULE 7 QUIZ

PPT slides 160-162, SG page 114



Instruction

1. Students will complete the answers to the quiz questions in the SG.
2. Review the answers as a class.

Quiz Answers

1. 3, ascending, descending, SG p. 106
2. Highest rung, SG p. 106
3. Man lifts, bucket trucks, SG p. 110
4. b, SG p. 111
5. b, SG p. 109

Module 7 Quiz

Directions

1. Refer to the Quiz in the Student Guide
2. Take five minutes to complete
3. Review the answers as a class

WORKING AT HEIGHTS - SP7 F0219122

Quiz

Module 7 Quiz

FREEPORT-McMORAN

1. When working with ladders, always maintain 3 points of contact when ascending or descending.
2. When working with ladders, never step above the highest rung indicated by the manufacturer.
3. What are some examples of aerial work platforms?
Man lifts, Bucket trucks

WORKING AT HEIGHTS - SP7 F0219122

Module 7 Quiz

FREEPORT-McMORAN

4. Employees working in scissor lifts always need to use fall protection.
a. True
 b. False
5. The 4:1 rule applies to aerial work platforms.
a. True
 b. False

WORKING AT HEIGHTS - SP7 F0219122

Break

- We recommend taking a 5 to 10 minute break after this module. Allow students to stand up, stretch, use the facilities, etc. Make sure you clearly communicate what time you expect them to return and start the next module.
-

MODULE 8: RESCUE

Fall protection is an effective control for falls from heights. In the event your fall protection becomes engaged, new hazards can arise. While the fall protection may have prevented you from falling to the ground below, you can still be injured. The forces exerted on the body by the engagement of the fall protection can be substantial. In addition, there is a possibility for internal injuries that may not be obvious at the time of the incident.

Chances are that the fastest rescue will be conducted by members of your work group. Due to the size of some Freeport-McMoRan properties, mine rescue teams and fire department personnel may have a longer response time.

How do you prepare for these circumstances? What should you do if you are suspended from your lanyard? In this module, we will discuss the importance of a well formed rescue plan, and why communication is so important to potentially saving your life or the life of a co-worker.

LEARNING OBJECTIVES

Upon completion of Module Eight, the student will be able to:

- Describe the components of a rescue plan.
- Demonstrate how to conduct a self-rescue.

ACTIVITIES

- Activity 12: Rescue Me

Refer to “Activity Materials” in “Facilitator Preparation” for further details.

TOTAL TEACHING TIME

This module takes approximately 25 minutes to complete.

PPT slide 163, SG page 117

Instruction

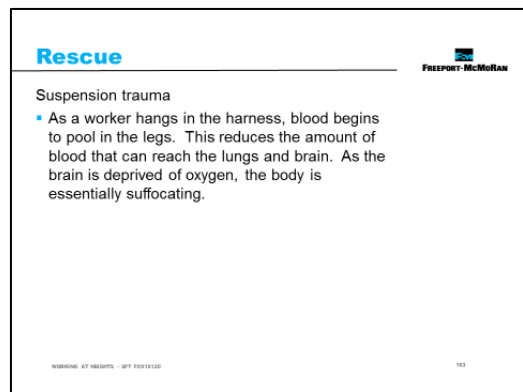
- Upon completion of Module Eight, the student will be able to:
 - Describe the components of a rescue plan.
 - Demonstrate how to conduct a self-rescue.



PPT slide 164, SG page 119

Instruction

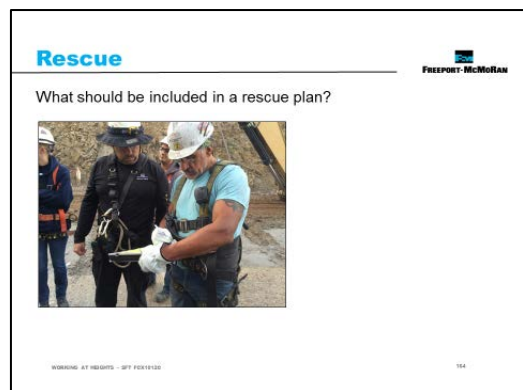
- As a worker hangs in the harness, blood begins to pool in the legs. This reduces the amount of blood that can reach the lungs and brain. As the brain is deprived of oxygen, the body is essentially suffocating. Additionally, the kidneys are very susceptible to blood oxygen levels. So even if the worker has not lost consciousness, renal failure may still be a concern. This scenario is known as suspension trauma.



PPT slide 165, SG page 120

Instruction

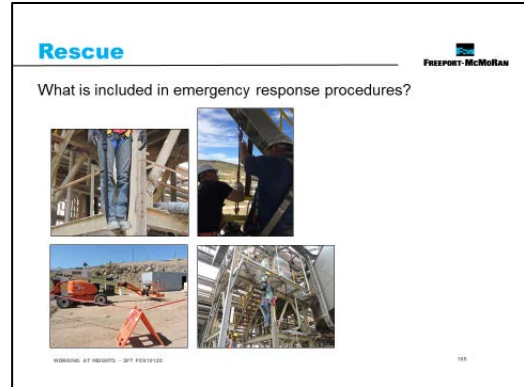
- An integral part of a well-developed fall protection program is conducting a successful rescue.
- Be sure that any rescue plan includes the following:
 - Emergency response procedures. These are the steps to be followed during a rescue event.
 - General guidelines for methods used during rescue operations.
 - Training requirements/competency measurements for rescue team members.



PPT slide 166, SG page 120

Instruction

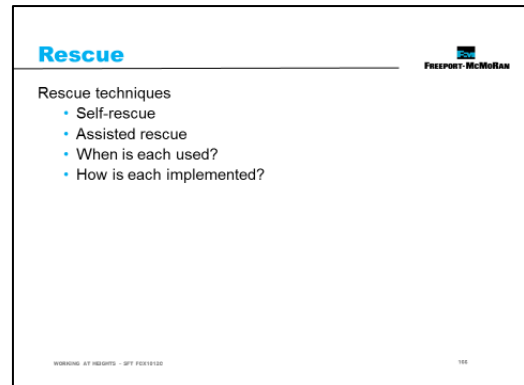
- Sounding a Mayday, reporting the location and type of emergency.
- Perform a quick hazard assessment to ensure that rescue personnel are not exposed to unnecessary dangers.
- Rescue the suspended worker; this will be accomplished with a full knowledge of:
 - Location and strength of the rescue anchor.
 - Identification of the nearest safe working level.
 - Equipment required to transport the suspended worker to a safe working level.
 - Personnel required to operate the rescue equipment.
- Provide first aid or medical care only to your level of training.



PPT slide 167, SG page 121-122

Instruction

- There are two types of rescue techniques that can be performed to help the suspended worker. These techniques are referred to as Self-Rescue or Assisted Rescue, and may be used independently or in conjunction with each other depending on the situation.
- Assisted rescues are performed when the suspended worker cannot correct the situation after a fall. They involve trained rescuers and appropriate equipment.
- Self-rescue should always be performed if an employee is capable of doing so.
- Ask yourself:
 - Can you use a forklift with man basket, or an elevating platform to perform an assisted rescue? If not, do you need technical rescue equipment (such as pulley systems and winch systems)?
 - Will the equipment be available and ready to use when you need it?
 - Can rescuers always reach a suspended worker with the equipment?
 - Have rescue personnel been trained on the specific equipment available?
- **Note: If you answered “no” to any of these questions, then a new rescue plan should be developed prior to beginning the job.**



ACTIVITY 12: RESCUE ME

PPT slide 168-169



Time

Approximately 30 minutes

Materials

- Harnesses and lanyards – one per student
- Stirrups (or the site specific self-rescue device used)

Purpose

- This activity reinforces this module's lesson on self-rescue techniques.

Instruction

1. Each student will correctly fit, don, and adjust their harness.
2. The facilitator will suspend each student.
3. While suspended, they will need to conduct a self-rescue by relieving the pressure on his/her legs. This should be accomplished within two minutes.

Note: The activity was filmed so that the facilitator does not need to rely on novice students to suspend him or her.

Rescue Me

Directions


1. Correctly fit, don and adjust your harness
2. The facilitator will suspend each student
3. Conduct a self-rescue by relieving the pressure from your legs
 - This should be accomplished within two minutes
4. Record any observations in the Student Guide (SG p. 122)

WORKING AT HEIGHTS - SFT FCE10100

Activity 12

Rescue Me Video

Click [here](#) to play video



WORKING AT HEIGHTS - SFT FCE10100

FREEPORT-McMORAN

PPT slide 170



Instruction

- Review the questions on the slide.

Debrief

- How will you apply the rescue skills learned in this module to your daily work activities?
- What was most surprising or interesting to you?

WORKING AT HEIGHTS - SFT FCE10100

FREEPORT-McMORAN

MODULE 8 QUIZ

PPT slides 171-173, SG page 123



Instruction

- Students will complete the answers to the quiz questions in the SG.
- Review the answers as a class.

Quiz Answers

1. d, SG p. 120
2. d, SG p. 121
3. When the employee cannot perform a self-rescue, SG p. 122

Module 8 Quiz

Directions

1. Refer to the Quiz in the Student Guide
2. Take five minutes to complete
3. Review the answers as a class

WORKING AT HEIGHTS - SFY F0219122

Quiz

Module 8 Quiz

FREEPORT-McMORAN

1. What should be included in the written rescue plan?
 - a. Response procedures
 - b. General guidelines for methods used during rescue operations
 - c. Training requirements/competency measurements for team members
 - d. All of the above

WORKING AT HEIGHTS - SFY F0219122

172

Module 8 Quiz

FREEPORT-McMORAN

2. What causes a suspended person to lose consciousness?
 - a. Fear of heights
 - b. Nerves are pinched
 - c. Air flow is restricted
 - d. Blood flow is restricted
3. When are assisted rescues necessary?

When the employee cannot perform a self-rescue

WORKING AT HEIGHTS - SFY F0219122

173

Break

- We recommend taking a 5 to 10 minute break after this module. Allow students to stand up, stretch, use the facilities, etc. Make sure you clearly communicate what time you expect them to return and start the next module.
-

CONCLUSION

This module contains a brief overview about Working at Heights.

PURPOSE

During the conclusion, the students will be able to:

- Demonstrate their knowledge through a performance and knowledge based assessment

ACTIVITIES

- Knowledge Assessment (one copy per student)
- Performance Assessment (make appropriate number of copies)
- Student End of Course Questionnaire (located in SG)

TOTAL TEACHING TIME

This conclusion takes approximately 60 minutes to complete.

PPT slide 174

Instruction

- Complete a final review session.



PPT slide 175



Instruction

- As the objectives for each module are reviewed, ask if there are any lingering questions, comments, or concerns (Be sure to go over the list on the flip chart from the beginning of class).
- Module 1
 - Ability to recognize fall hazards.
 - Describe fall hazards in routine and non-routine jobs.
- Module 2
 - Explain the differences in the hierarchy of controls.
 - Analyze a situation and recommend the most effective control.
- Module 3
 - Identify the components of a fall protection system.
- Module 4
 - Define the different types of inspections.
 - Demonstrate a pre-use inspection for a piece of fall protection equipment.
- Module 5
 - Calculate the fall clearances for a given scenario.
 - Evaluate a situation and select the appropriate system to use.
- Module 6
 - Demonstrate proper fit, donning, and adjustments of full body harnesses and lanyards.
- Module 7
 - Discuss the other types of equipment used to work at heights.
- Module 8
 - Describe the components of a rescue plan.
 - Demonstrate how to conduct a self-rescue.

Debrief

FREEPORT-McMORAN

- What are some of the key concepts in each module?
 - Module One: Fall Hazard Recognition
 - Module Two: Hierarchy of Controls
 - Module Three: Component Identification
 - Module Four: Inspection and Storage
 - Module Five: Fall Dynamics
 - Module Six: Fit, Donning, and Adjustment
 - Module Seven: Other Working at Height Systems
 - Module Eight: Rescue
- Are there any additional questions, comments, or concerns?

WORKING AT HEIGHTS - SIF F0015100 104

PPT slide 176

Instruction

- Have students complete the knowledge assessment.

Knowledge Assessment

Directions

1. Complete the assessment
2. Return the completed assessment to the facilitator
3. Facilitator scores it

WORKING AT HEIGHTS - SP7 F0319120

Assessment

PPT slide 177



Instruction

- Have students complete the performance assessment in small groups (see the assessment for further details).

Performance Assessment

Directions

1. Read through the student directions
2. Complete the assessment while the facilitator observes

WORKING AT HEIGHTS - SP7 F0319120

Assessment

Note: For a portion of the performance assessment, you will need to have a table set-up with various site-specific equipment options. Be sure to include SRLs, double SRLs, double Y lanyards, I-beam clamps, lanyards, and fall restraint devices as options. It is recommended that additional equipment be provided, so that the answer is not obvious.

PPT slide 178

Instruction

- Have students complete the Student End of Course Questionnaire (located in the SG).

End of Course Questionnaire

Directions

1. Complete the questionnaire
 - Your feedback is valuable to us
2. Return the completed form to the facilitator

WORKING AT HEIGHTS - SP7 F0319120

Questionnaire

FACILITATOR FEEDBACK SURVEY

Course Name

Facilitator Name

1. What worked well in the course? Please explain.

2. Were the topics effectively sequenced? If not, please provide suggestions for change.

3. Was the content up-to-date with current processes, equipment, etc.? If not, please provide specific examples.

4. Was the content at the appropriate level of difficulty? If not, please provide examples.

5. What in the course needs improvement? Please provide specific examples.

6. Were the teaching materials (PPT, FG, etc.) of high quality? If not, please provide examples.

7. Were there any inaccuracies or missing content? If so, please provide examples.

8. Do any of the issues you've identified need to be addressed immediately? If so, please list which ones.

Thank you for taking the time to complete the survey.

Please mail to: Mine Training Institute, Attention: Suzanne Anderson, 18550 S. La Canada Drive, Sahuarita, AZ 85629
Or scan and email to: sanderso2@fmi.com

