NAPG Surface Projects and Studies Orientation

1. NAPG Risk Assessment Tools and Indoctrination

1.1 Intro

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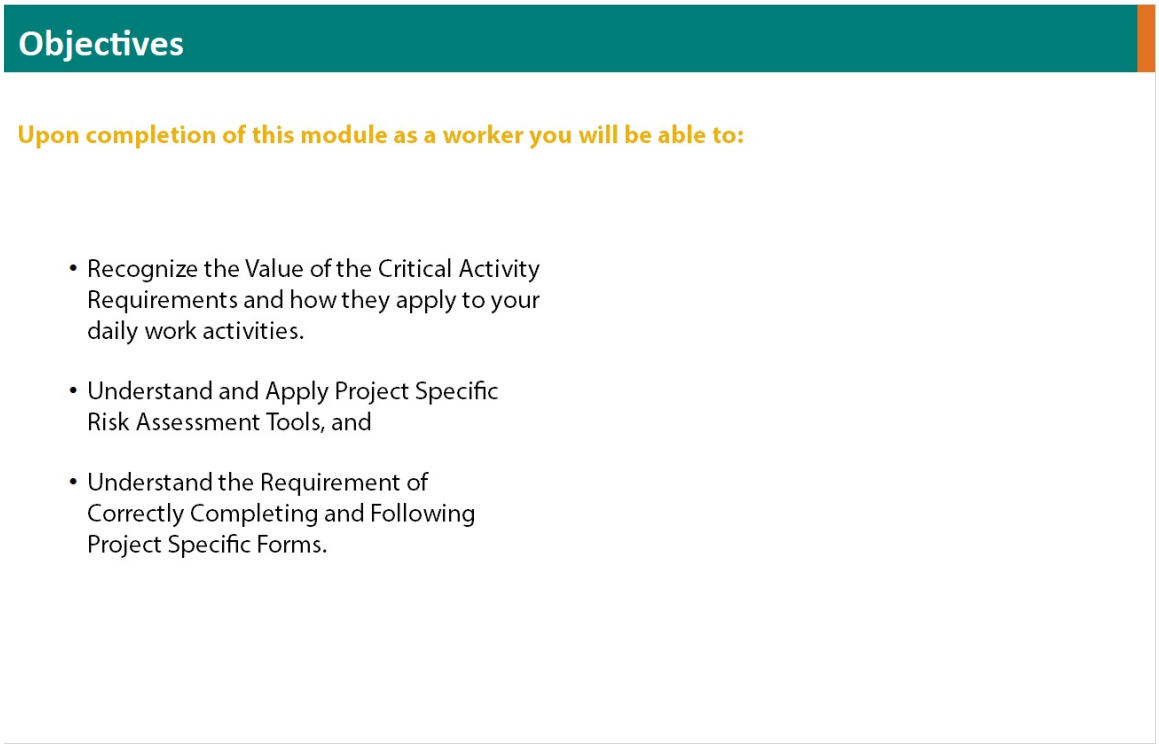
1.2 Course Objectives



1.3 Entry and Training Requirements

Entry and Training Requirements

Prerequisites and Certifications Required for NAPG Project Sites

In order for a Contractor to work on NAPG Project sites, the following Prerequisites and Certifications are required.

- Vale General Orientation Tier 1.
- Vale Tier 2 Training - Surface (previous component of Vale Smelter Orientation).
- Vale Tier 2 Training - Mines (where applicable).
- Vale Tier 3 Area/site specific orientations. (ex. Tier 3 Bulk smelting, and any other Tier 3 orientation that would be required for the area in which you are working).
- ZES Full Program (with appropriate modules, and updates).
- Current Quantitative Fit Test for respirator - Ontario Smelter only.
- WHMIS (2015 Standard).
- Worker Awareness in 4 Steps (Ministry of Labour Training and Skills Development - MLTSD).
- License to operate any equipment and training certificates for the task at hand. Touch base with your NAPG site contact person for further information.

1.4 Entry and Training Requirement

Entry and Training Requirements

Prerequisites and Certifications Required for NAPG Project Sites

As a Supervisor, the following Prerequisites and Certifications are required.

- Supervisory Training within the last 5 years. Certificates of training must be from approved providers. *(such as, ISHA/MLTSD)*
- Supervisor Awareness in 5 Steps *(MLTSD)*
- ZES Supervisory Training Modules.
- If Work at Height is required; Working at Heights (WAH). ***Certificate must be issued by an approved training provider.*
- Equipment Specific Training as required.

1.5 Personal Protective Equipment Requirements

Entry and Training Requirements

Personal Protective Equipment Requirements

The minimum level of Personal Protective Equipment required to be worn in order to perform work on NAPG project sites include the following;

- Long Sleeved Cotton (or approved Natural fibre blend) shirts;
- Long Cotton (or approved Natural fibre blend) trousers or full overalls;
- CSA approved protective foot wear with integral metatarsal guard (min 8 inch height).
- CSA approved "Close Fitting" protective eye wear commonly referred to as "smoggles". (Ex: Pyramex V2G or UVEX S0600X).
- High Visibility clothing min Class 3 type II (coverall, vest, jacket or shirt). Suspenders or bands are not acceptable.

1.6 Personal Protective Equipment Requirements

Entry and Training Requirements

Personal Protective Equipment Requirements

The minimum level of Personal Protective Equipment required to be worn in order to perform work on NAPG project sites include the following;

- New CSA approved, Minimum Class G, Hard Hat with standardized Vale reflective tape markings, company and individual's name.
- No hoodies are to be worn under coveralls, jackets or hardhats while on site.





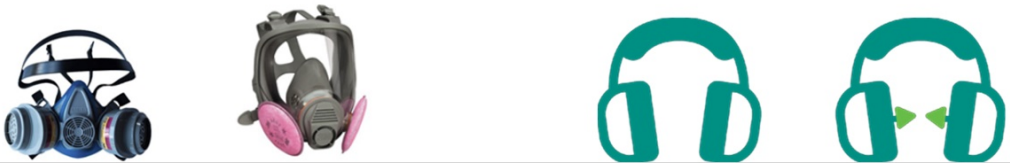
1.7 Personal Protective Equipment Requirements

Entry and Training Requirements

Personal Protective Equipment Requirements

The minimum level of Personal Protective Equipment required to be worn in order to perform work on NAPG project sites include the following;

- Quantitative Fit Tested respirator (on person and ready for use), with appropriate P100 acid gas (AG) and organic vapour (OV) cartridges, alternate cartridges may be required depending on the hazard. Wearer shall be clean shaven daily.
- Full Face Respirator will be required for high likelihood debris in eye tasks, such as, scaffold tear down, washing and spraying, cable pulling…etc.)
- Minimum single layer hearing protection is to be worn in all construction zones, and designated areas. Double hearing protection as required. Double hearing protection must be carried and available at all times.



1.8 Personal Protective Equipment Requirements

Entry and Training Requirements

Personal Protective Equipment Requirements

The minimum level of Personal Protective Equipment required to be worn in order to perform work on NAPG project sites include the following;

- Appropriate gloves for the task, are to be worn at all times in the field. For example, minimum cut resistant for handling sharp objects, such as, sheet metal or cable striping, leather for material handling and rigging.

PLEASE NOTE: That while performing some tasks, or working around site hazards, the use of additional, specific PPE, may be required.

1.9 Feedback

2. Managing Risk

2.1 Managing Risk

2.2 Getting there Together

Managing Risk

Getting there Together

Contractors are expected to have a Safety System in place. If they don't have one, they can use the HomeSafe or SafeProduction suite of tools to manage risk.

Guidance on using the program that applies in the jurisdiction in which you are working will be provided in the local Site Orientation.

Contact your local project contact for further information, instruction and training.

NAPG - Ontario Operations

SAFE PRODUCTION ZERO HARM

NAPG - All Other Operations

2.3 Expected Performance - Zero Harm

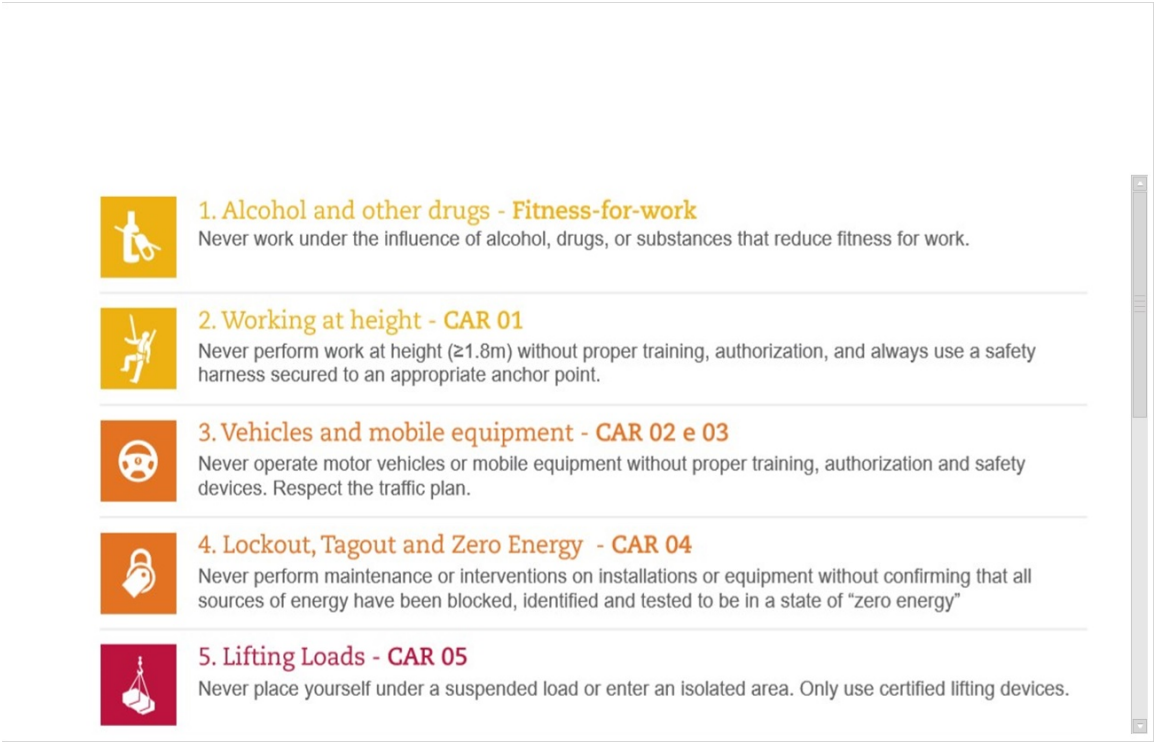
Managing Risk

Expected Performance - Zero Harm

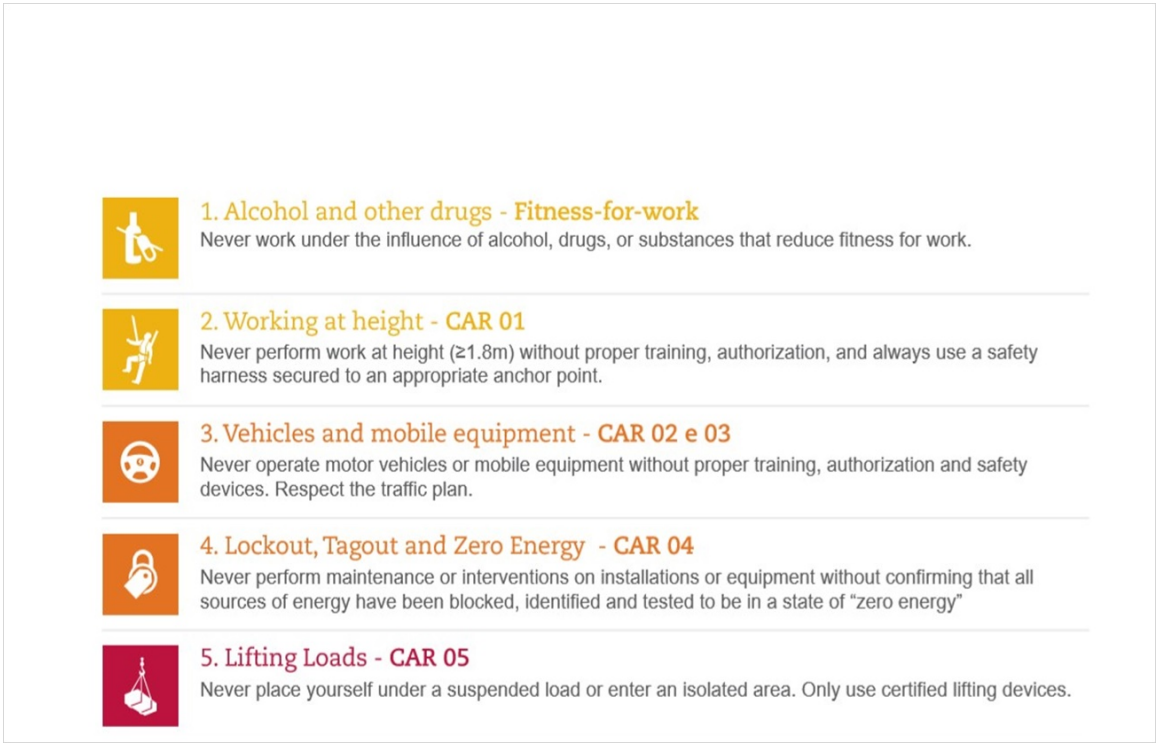
Together, we will attain:

- Zero injuries
- Zero occupational illnesses caused by the working environment
- Zero environmental non-compliances
- Zero community complaints

2.4 Golden Rules



Cover (Slide Layer)



2.5 Understanding and Managing Risk

Managing Risk

Understanding and Managing Risk

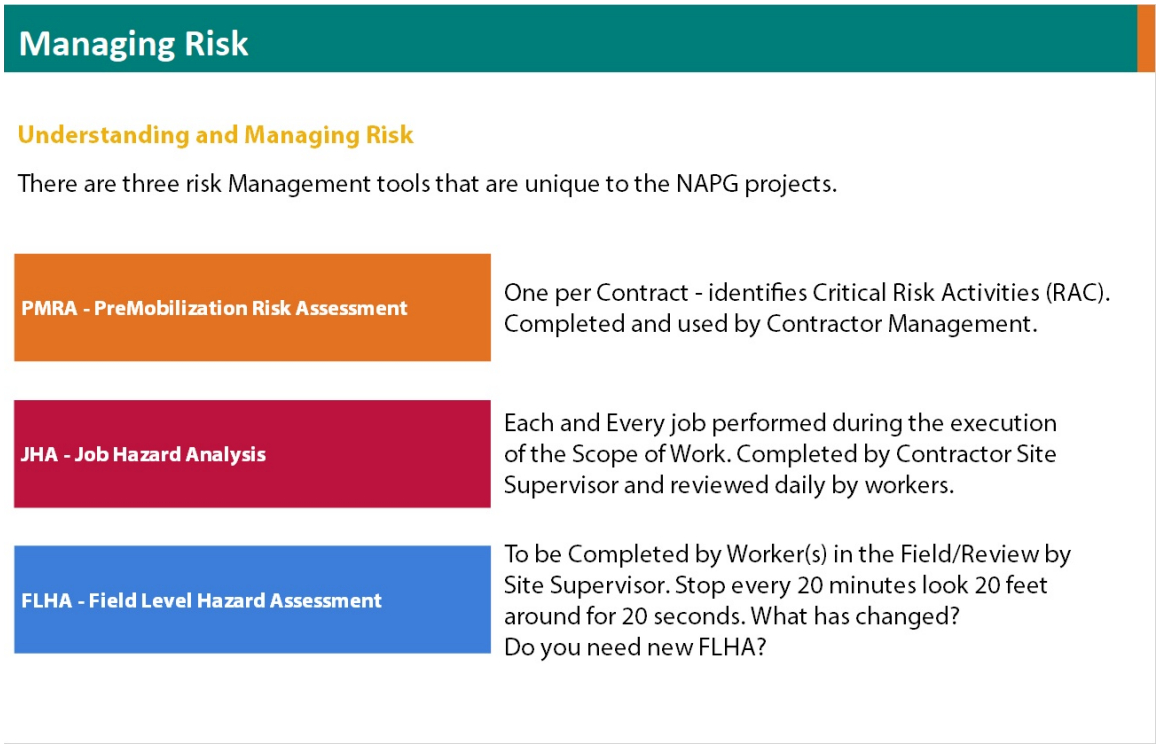
Value:
The value of applying the **Critical Activity Requirements (RAC)** is to sustain a work environment where people's lives are not put at risk.

Our Commitment:
Vale is committed to preserving life and expects that each project apply a set of Golden Rules/ Critical Activity Requirements (RAC) as a basis for risk control.

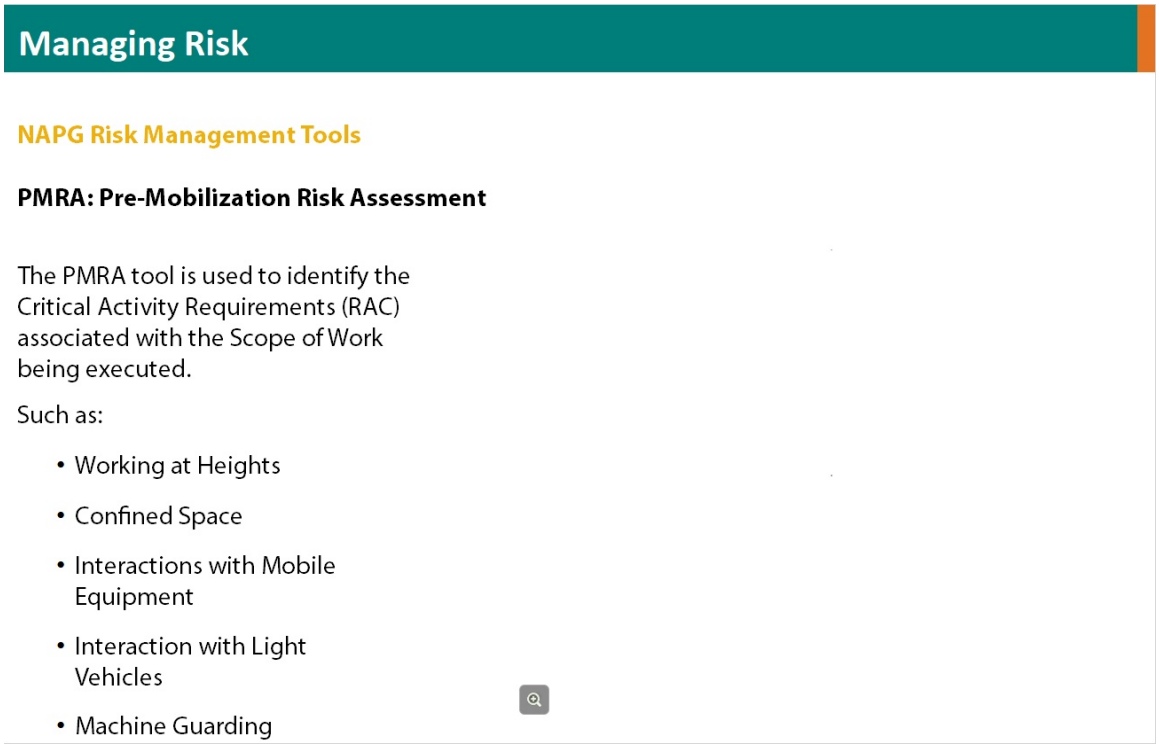
Consequently, every person is expected to know and understand the business unit RAC's and, prior to executing any critical task, they are to apply them so that they eliminate the risk of a fatal event occurring.

Our Experience:

2.6 NAPG Risk Management Tools



2.7 PMRA


Managing Risk
NAPG Risk Management Tools
PMRA: Pre-Mobilization Risk Assessment
The PMRA tool is used to identify the Critical Activity Requirements (RAC) associated with the Scope of Work being executed.
Such as:
• Working at Heights
• Confined Space
• Interactions with Mobile Equipment
• Interaction with Light Vehicles
• Machine Guarding

2.8 JHA

Managing Risk

NAPG Risk Management Tools

JHA: Job Hazard Analysis

The JHA is a risk management tool that manages risk associated with specific tasks and hazards identified during the PMRA process.

The JHA is used to identify and analyze the steps involved in a task to ensure that hazards, actual or potential are identified. The risks are ranked and the controls are documented.

The JHA demonstrates to workers that each task has been planned and the control measures to eliminate the hazard or manage the risk have been identified.

2.9 JHA

Managing Risk

NAPG Risk Management Tools

JHA: Job Hazard Analysis

The JHA risk management tool is to be used as guidance for conducting line-up meetings for the work of the day. *(complete applicable sections only).*

View JHA Form

The JHA must;

- Be *reviewed and signed* daily by the employees performing the work.
- Be *signed pre-shift* as a declaration of fitness for work. *(by the worker).*
- Be *signed post-shift* as a declaration of injury reporting. *(by the worker).*
- Identify any *applicable permits*. ex. hot work permit *(for supervisor).*
- Fulfill *regulatory requirements*. *(for the supervisor).*

JHA's are *Live Documents* - red line additions are made as the work method changes, as result of an incident or near miss, input from the crew etc.

JHA example (Slide Layer)

Managing Risk

NAPG Risk Management Tools

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- Identify any *applicable permits*. ex. hot work permit *(for supervisor).*
- Fulfill *regulatory requirements. (for the supervisor).*

Hide JHA Form

2.10 FLHA

Managing Risk

NAPG Risk Management Tools

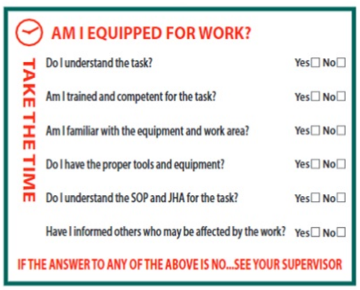
FLHA: Field Level Hazard Assessment

Every worker should complete at least one FLHA during the course of every shift and update the FLHA when environment changes in the workplace.

FLHA is every employee's opportunity to stop and review the work for potential risk and update the FLHA, depending on changes in the workplace.- work activities.

Before proceeding to your work place, ask yourself the following questions.

On the following slides you will learn how to properly complete a FLHA.


AM I EQUIPPED FOR WORK?

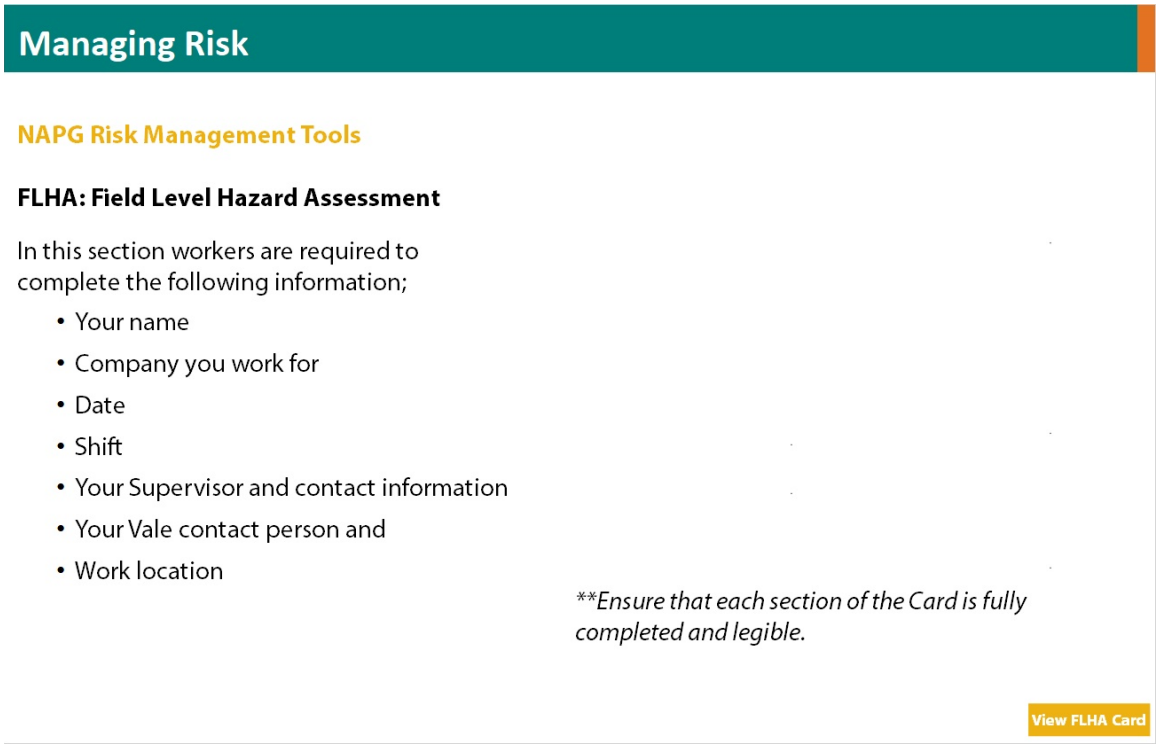
TAKE THE TIME

Do I understand the task?	Yes☐ No☐
Am I trained and competent for the task?	Yes☐ No☐
Am I familiar with the equipment and work area?	Yes☐ No☐
Do I have the proper tools and equipment?	Yes☐ No☐
Do I understand the SOP and JHA for the task?	Yes☐ No☐
Have I informed others who may be affected by the work?	Yes☐ No☐

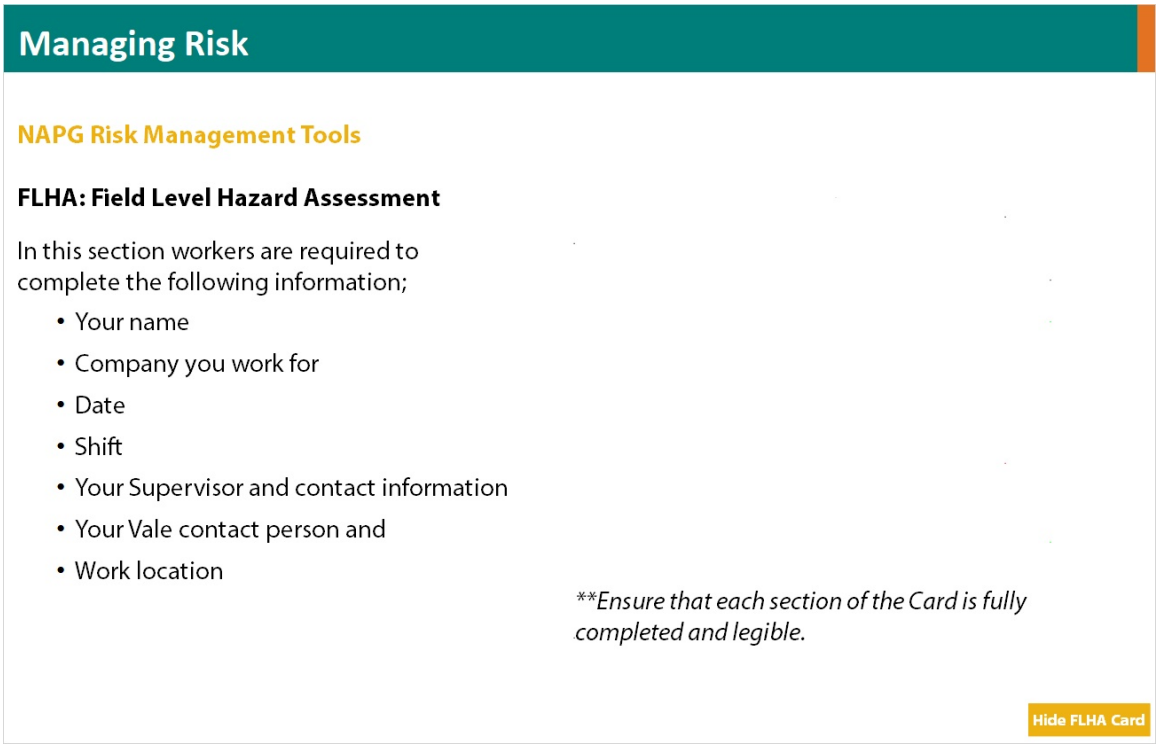
IF THE ANSWER TO ANY OF THE ABOVE IS NO...SEE YOUR SUPERVISOR

***If you are assigned a new workplace, a new FLHA is required.*

2.11 FLHA


Managing Risk
NAPG Risk Management Tools
FLHA: Field Level Hazard Assessment
In this section workers are required to complete the following information;
• Your name
• Company you work for
• Date
• Shift
• Your Supervisor and contact information
• Your Vale contact person and
• Work location
**Ensure that each section of the Card is fully completed and legible.
View FLHA Card

FLHA Card (Slide Layer)



2.12 FLHA

Managing Risk

NAPG Risk Management Tools

FLHA: Field Level Hazard Assessment

In this section, all of the tasks identified in the JHA are listed here.

During your shift line-up, each task and all the associated controls to reduce risk must be clearly identified and understood.

LINE UP TASKS / CONTROLS (from JHA)

Task: _____
Controls: _____
Controls: _____
Controls: _____

Task: _____
Controls: _____
Controls: _____
Controls: _____

Task: _____
Controls: _____
Controls: _____
Controls: _____

Task: _____
Controls: _____
Controls: _____
Controls: _____

View FLHA Card

FLHA Card (Slide Layer)

Managing Risk

NAPG Risk Management Tools

FLHA: Field Level Hazard Assessment

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Hide FLHA Card

2.13 FLHA

Managing Risk

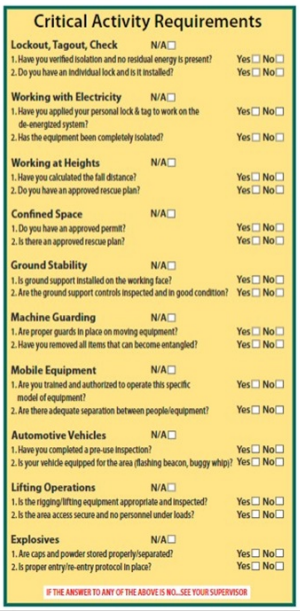
NAPG Risk Management Tools

FLHA: Field Level Hazard Assessment

Following internal policies and procedures such as; the RACs and the Golden Rules, guide us in doing our work and reducing risk.

In this section, you are required to identify and control any hazards associated with the Critical Activity Requirements.

If you answer no to any of these questions, contact your supervisor for direction.



View FLHA Card

FLHA Card (Slide Layer)

Managing Risk

NAPG Risk Management Tools

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If you answer no to any of these questions, contact your supervisor for direction.

Hide FLHA Card

2.14 FLHA

Managing Risk

NAPG Risk Management Tools

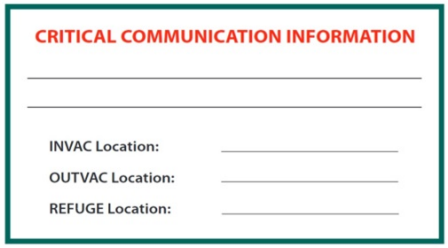
FLHA: Field Level Hazard Assessment

It is every workers responsibility to *know and identify* Critical Communication Information on the FLHA card:

Which includes;

- The Invac location,
- The Outvac location and
- The Refuge location.

In the event of a fire evacuation or upon hearing an intermittent alarm, all workers, except specific, qualified personnel, will proceed immediately to the fire evacuation area or Safe Assembly Area and await further instructions.



2.15 FLHA

Managing Risk

NAPG Risk Management Tools

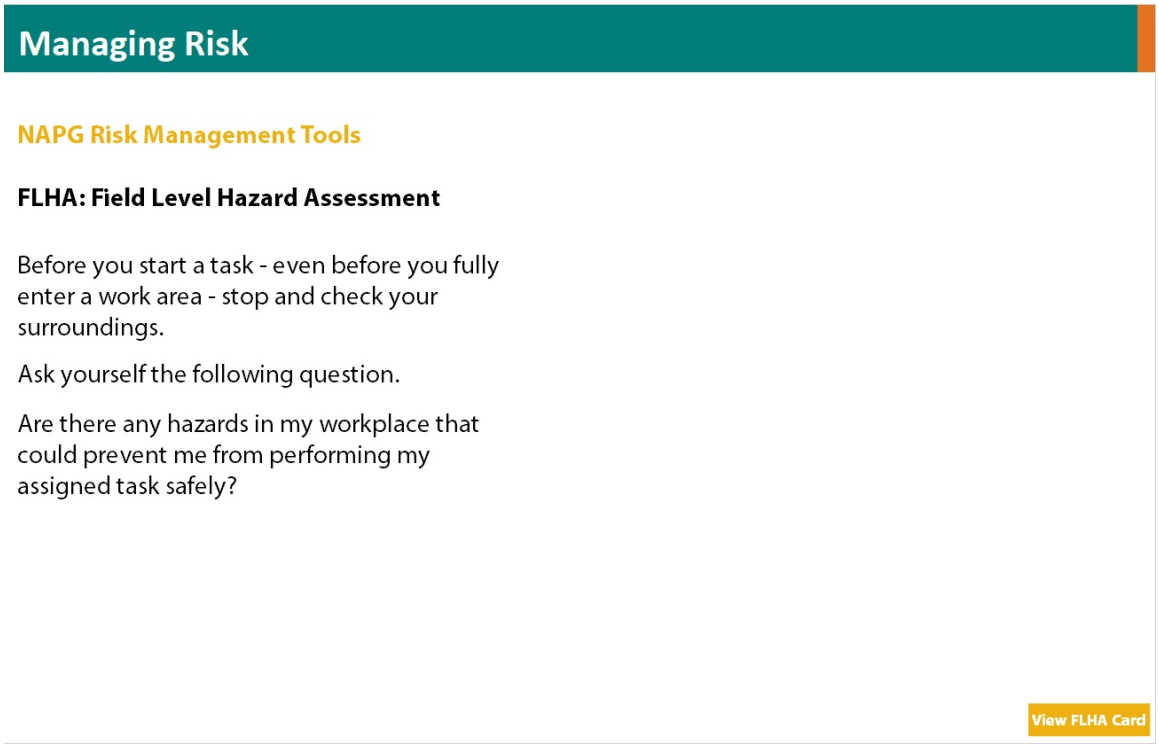
FLHA: Field Level Hazard Assessment

The intent of this section of the FLHA is to help us identify, understand and determine how to manage risk in our tasks.

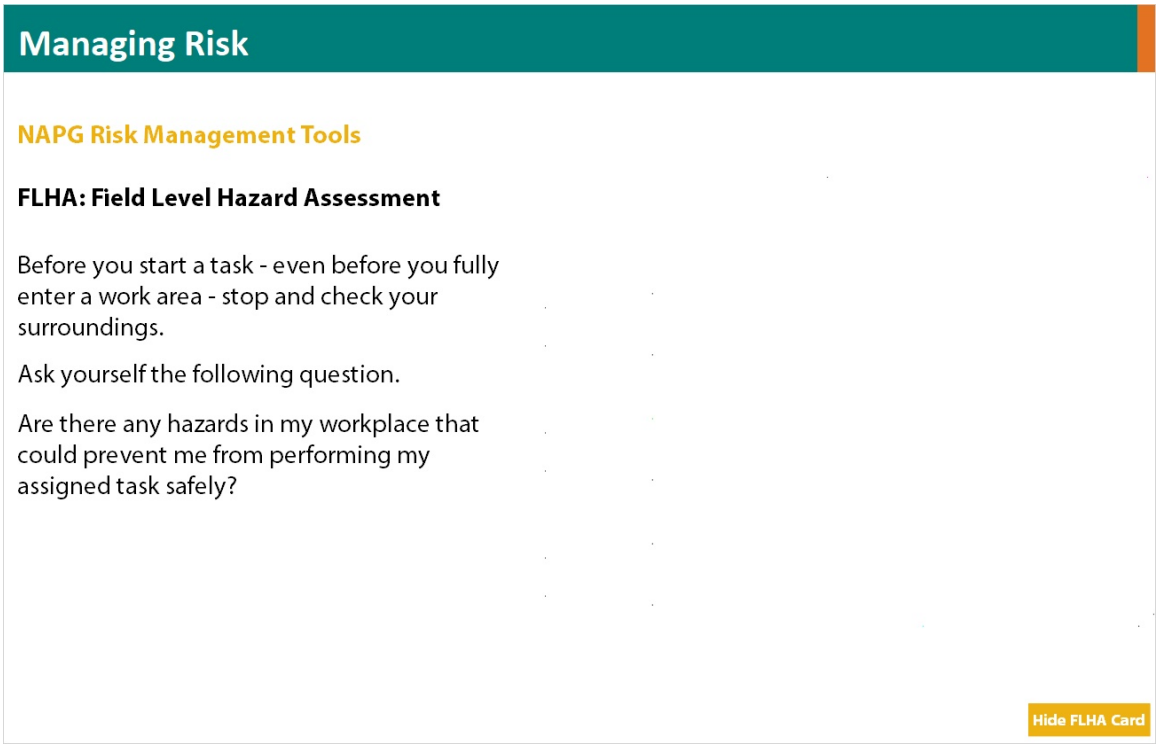
Performing a thorough FLHA gives us important information we use to determine if we can complete our work with Zero Harm or if we need to find other risk management tools to ensure we maintain Zero Harm in the workplace.

***If you are assigned a new workplace, a new FLHA is required.*

2.16 FLHA


Managing Risk
NAPG Risk Management Tools
FLHA: Field Level Hazard Assessment
Before you start a task - even before you fully enter a work area - stop and check your surroundings.
Ask yourself the following question.
Are there any hazards in my workplace that could prevent me from performing my assigned task safely?
View FLHA Card

Back (Slide Layer)



2.17 FLHA

Managing Risk

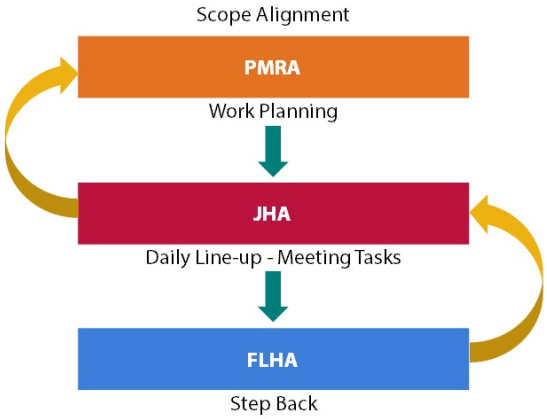
NAPG Risk Management Tools

Feedback Loop

While you are performing a task - you must always be aware of your surroundings.

Ask yourself the following questions.

- Is there a major change in the scope, work method, and/or new interface?
- Has there been any incidents or near misses that may affect your ability to complete the task safely?
- Are there any discoveries, work plan reassessments, reported incidents from the crew or stop and correct actions?



3. Critical Risk Activity and Permits

3.1 Critical Risk Activity and Permits

3.2 Introduction

Critical Risk Activity and Permits

Recall that in Vales T1 General Orientation you learned the value of applying the requirements of the Golden Rules is to sustain a work environment where people's lives are not put at risk.

To re-enforce the value **"Life Matters Most"**, NAPG enforces additional requirements so that we Manage Risk in our workplace to a level that ensures we go home in the same condition we arrived at the end of every shift.

The following section identifies hazards that may be encountered in the work you're doing. Knowing if these hazards apply to your work can be found through, your NAPG Contact Person, your Supervisor or by completing a JHA/FLHA.

3.3 Permit to Work

Critical Risk Activity and Permits

Permit to Work

Permits to work are used to communicate, control, and coordinate multiple work groups/activities. A permit must be completed, identifying all associated hazards and controls and must be authorized prior to the work commencement.

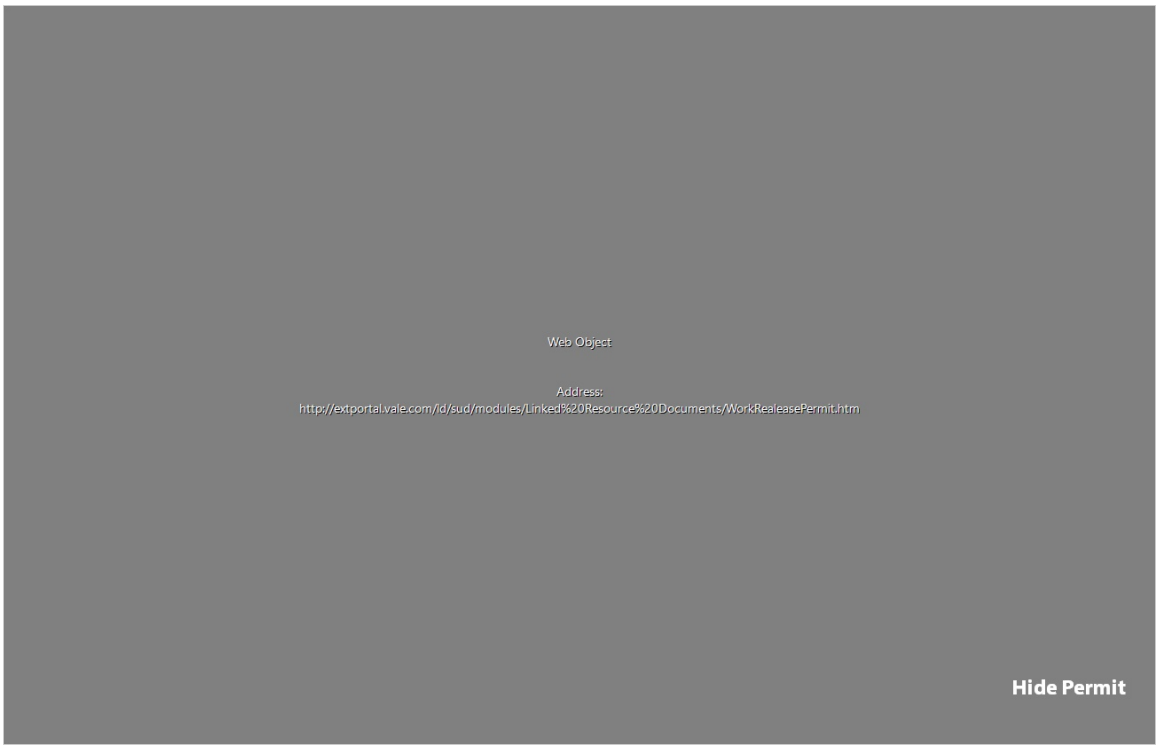
Permits to Work include the following:

- Work Area Authorization and Release
- Hot Work
- Confined Space Entry
- ZES Isolation and High Voltage work
- Critical Lifts Checklist
- Use of Fire Water or Alarm Systems
- Excavations
- Working at Heights
- Openings and Floor Grating Removal
- Power Outage Permit

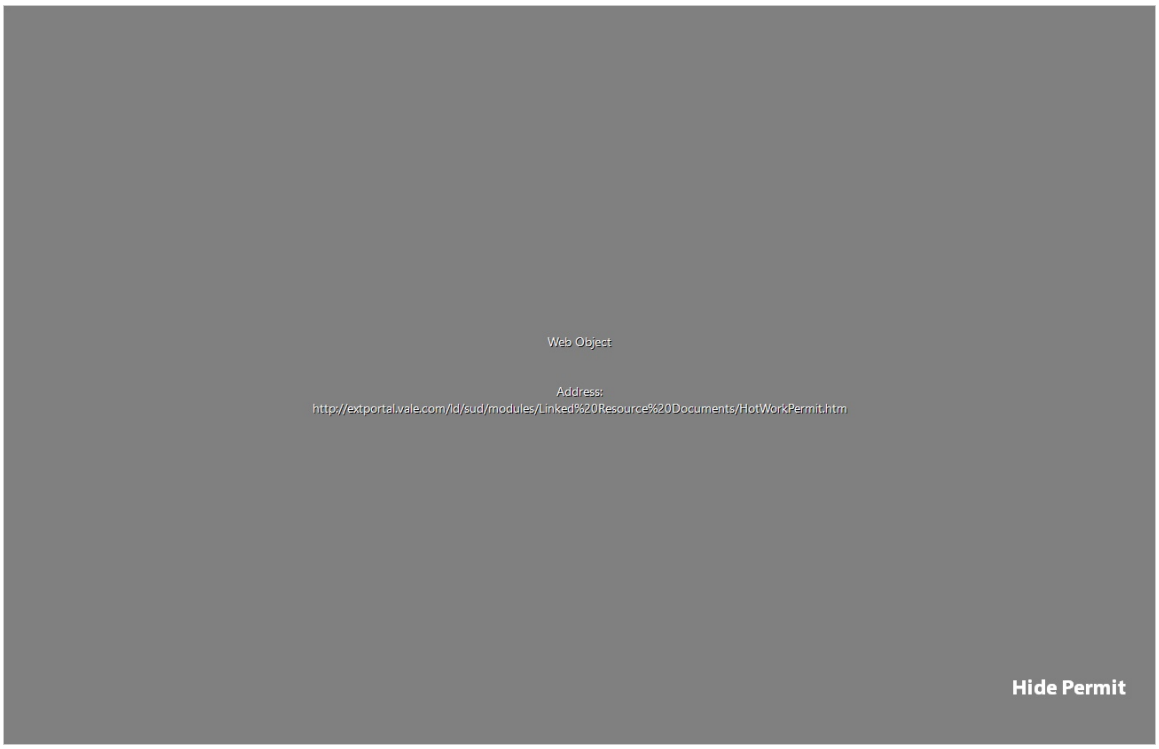
Permit to Work
All contractors must obtain and complete the appropriate permit prior to commencing any work activities.

Click to View Permit Example

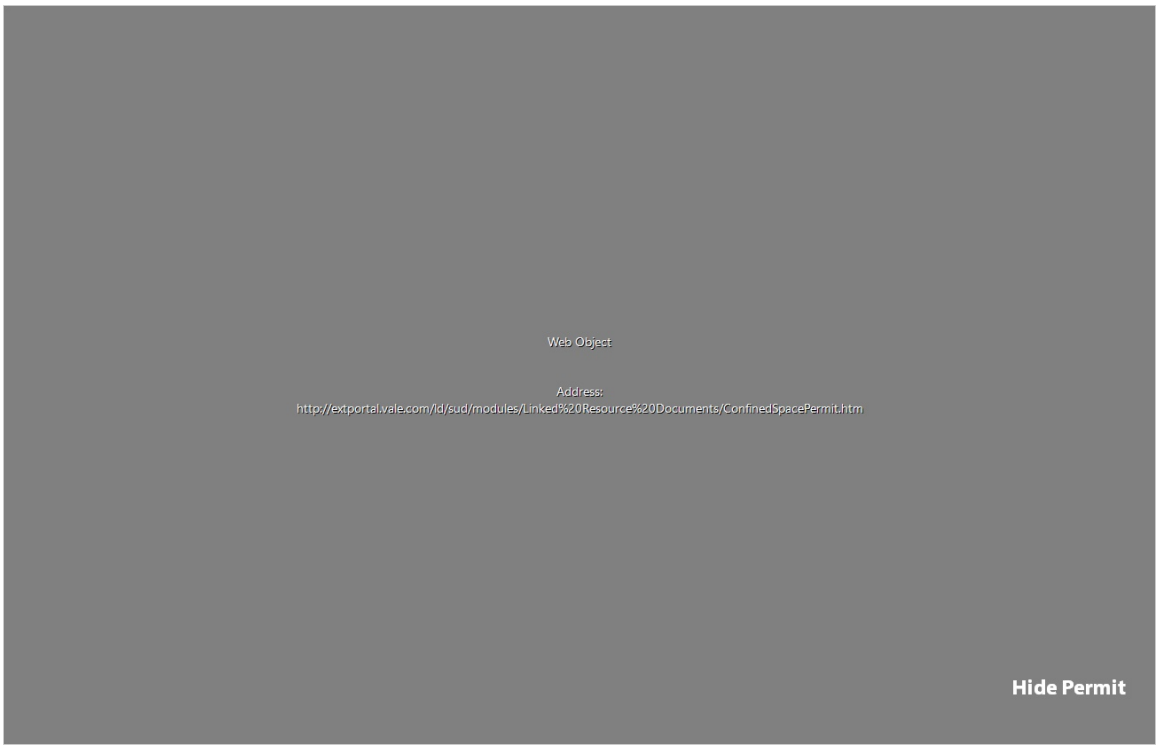
Work Area Authorization and Release (Slide Layer)



HotWork (Slide Layer)



Confined Space Entry (Slide Layer)



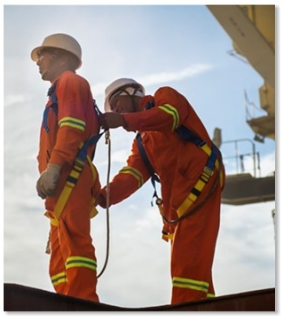
3.4 Working at Heights Permit (RAC#1)

Critical Risk Activity and Permits

Working at Heights Permit (RAC#1)

When working at heights, you must:

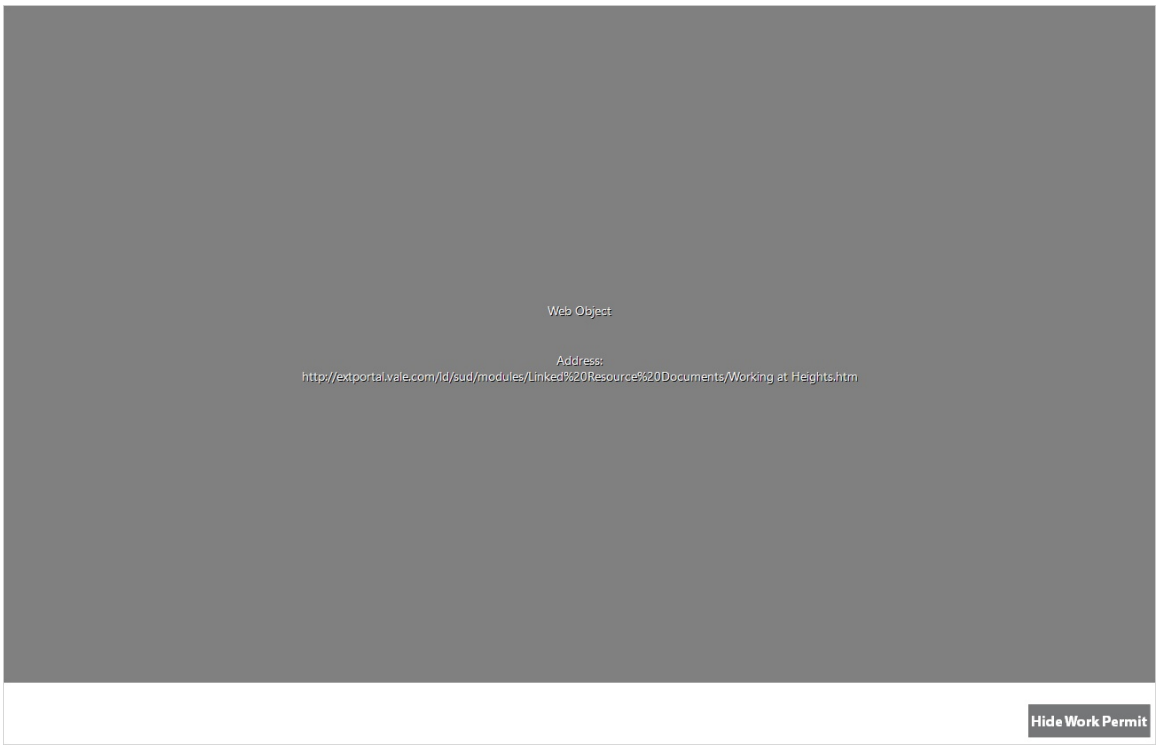
- Obtain a permit prior to starting any work at heights.
- Always attempt to eliminate the hazard through the use of hand/guard rails and appropriate secured identified coverings.
- Be trained and qualified in the working at heights equipment you are to use.
- Ensure 100% fall protection is implemented at 1.8 metres (6 feet) * including working within a guardrail.
- Have an approved written rescue plan.
- Have all required rescue equipment in place.
- Approved Working at Heights training is required.



Note:
Certain situations would require fall protection less than 1.8 metres (6 feet).

View Work Permit

Permit (Slide Layer)



3.5 Working at Heights Permit (RAC#1)

Critical Risk Activity and Permits

Working at Heights Permit (RAC#1)

When wearing a full body harness, remember:

- To include a shock-absorbing lanyard or Self Retracting Lifeline (SRL).
- You must limit free fall distance to a maximum of 3 feet. Use the right equipment. Tie off properly by completing the total fall distance calculations prior to tying off.
- Use travel restraint whenever possible.
- The use of body belts for fall arrest is prohibited.

View Work Permit

Permit (Slide Layer)

Critical Risk Activity and Permits

Working at Heights Permit (RAC#1)

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Hide Work Permit

3.6 Working at Heights Permit (RAC#1)

Critical Risk Activity and Permits

Working at Heights Permit (RAC#1)

When wearing a full body harness, remember:

- If you are required to detach and re-attach at height, utilize a double leg or "Y" lanyard/ SRL system to ensure that at least one connection point is maintained at all times.
- When you use a personal fall arrest equipment, never work alone. Ensure other personnel are in the vicinity and can raise the alarm immediately if a person falls.

View Work Permit

Permit (Slide Layer)

Critical Risk Activity and Permits

Working at Heights Permit (RAC#1)

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Hide Work Permit

3.7 Working at Heights Permit (RAC#1)

Critical Risk Activity and Permits

Working at Heights Permit (RAC#1)

Listed below are the requirements when performing work on mobile elevated work platforms:

- You must be trained and certified for the specific equipment you will be using.
- You shall wear a correctly fitted and adjusted harness, attached by a lanyard to an approved anchor point in the basket.
- Lanyard must be short as possible to ensure worker is not ejected from the basket at any time while the unit is moving in any direction (forward, backward, up or down).
- You shall have a competent ground person in place at all times.
- A daily pre-use inspection must be thoroughly performed prior to use.
- Standing on the guardrails is not permitted.

The Ground Person is required to know how to safely override the MEWP in the event of an emergency, or if a rescue is necessary.)

View Work Permit

Permit (Slide Layer)

Critical Risk Activity and Permits

Working at Heights Permit (RAC#1)

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Hide Work Permit

3.8 Working at Heights Permit (RAC#1)

Critical Risk Activity and Permits

Working at Heights Permit (RAC#1)

When using scaffolds:

- Look for the tag posted at access points.
- Follow the tag and limitations.
- Follow the Maximum Load Capacity sticker instructions, be aware that the maximum load includes, tools, equipment and personnel.
- Zero tolerance for any unauthorized person modifying any scaffold.

View Work Permit

Permit (Slide Layer)

Critical Risk Activity and Permits

Working at Heights Permit (RAC#1)

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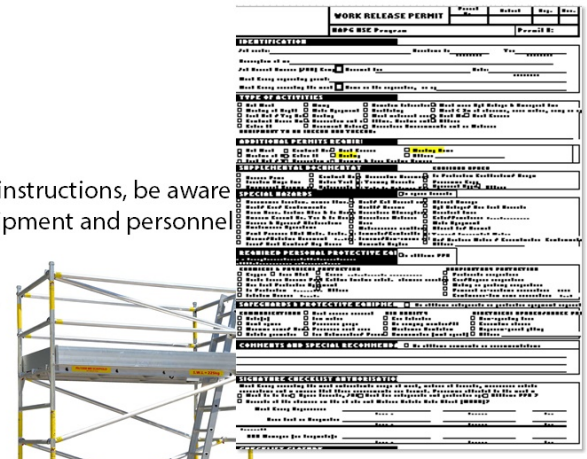


Hide Work Permit

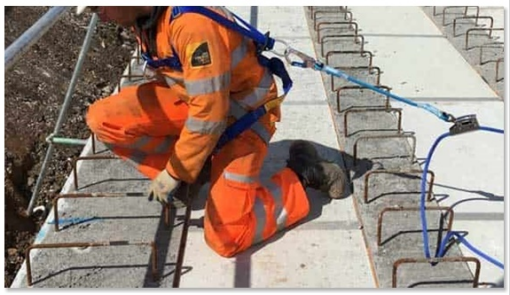
3.9 Working at Heights Permit (RAC#1)

Critical Risk Activity and Permits

Working at Heights Permit (RAC#1)

Travel Restraints:

- A travel-restraint system lets a worker travel just far enough to reach an unprotected edge but not far enough to fall over.
- Adequate anchorage must be capable of supporting 900 lbs.



View Work Permit

Permit (Slide Layer)

Critical Risk Activity and Permits

Working at Heights Permit (RAC#1)

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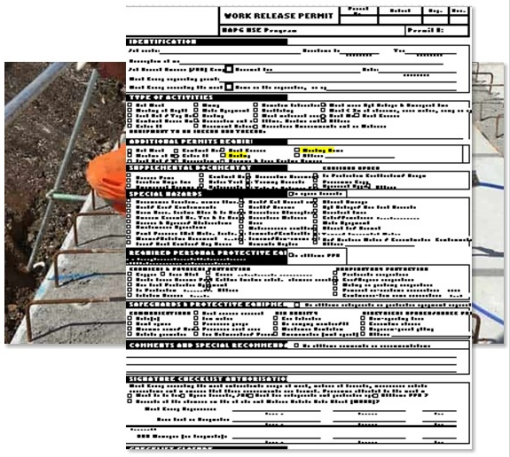


Hide Work Permit

3.10 Working at Heights Permit (RAC#1)

Critical Risk Activity and Permits

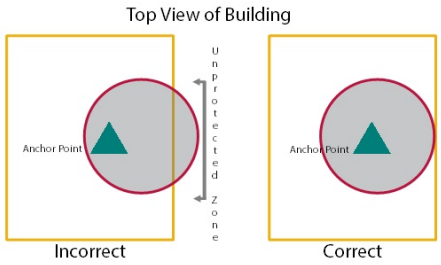
Working at Heights Permit (RAC#1)

Travel Restraints:

Plan thoroughly with careful consideration given to:

- Selection of appropriate components.
- Location of adequate anchor points.
- Identification of every fall hazard in the proposed work area.

Select an anchor point that is as close as possible to being perpendicular to the unprotected edge, and at the centre of the work area.



View Work Permit

Permit (Slide Layer)

Critical Risk Activity and Permits

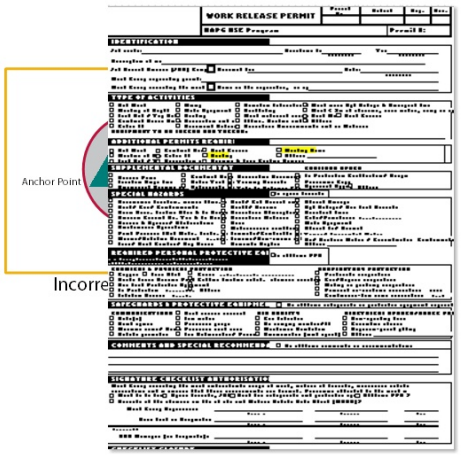
Working at Heights Permit (RAC#1)

Travel Restraints:

Plan thoroughly with careful consideration given to:

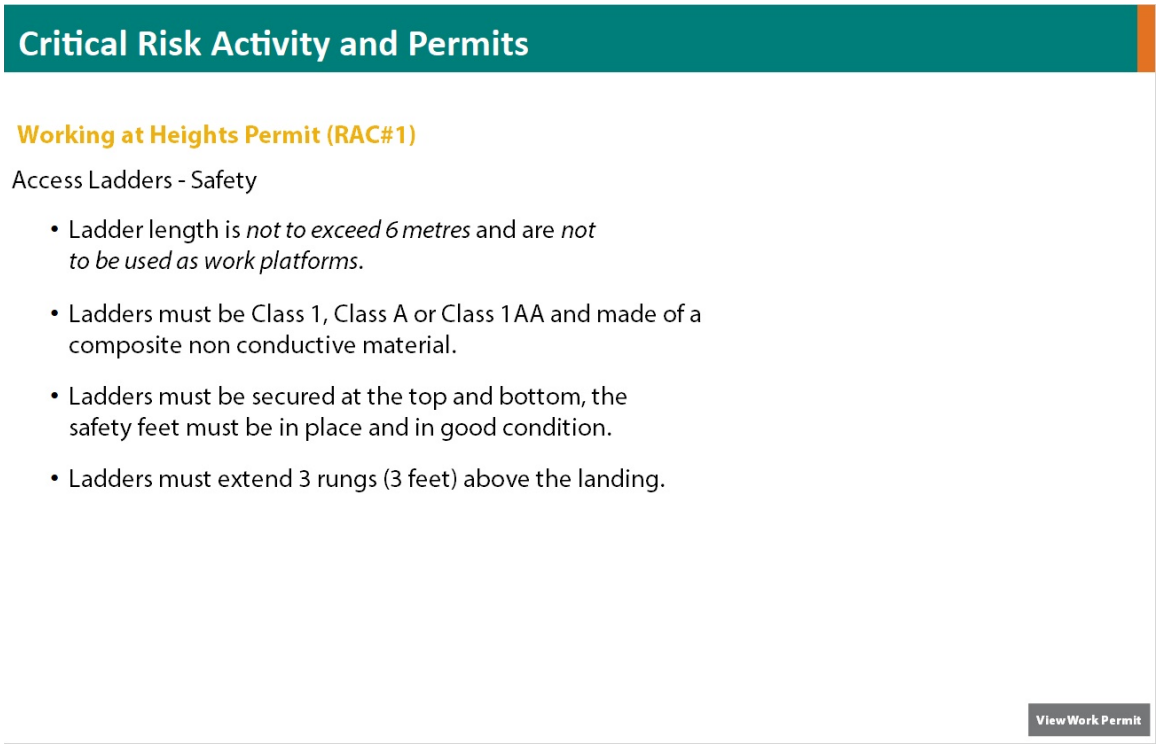
- Selection of appropriate components.
- Location of adequate anchor points.
- Identification of every fall hazard in the proposed work area.

Select an anchor point that is as close as possible to being perpendicular to the unprotected edge, and at the centre of the work area.



Hide Work Permit

3.11 Working at Heights Permit (RAC#1)



Permit (Slide Layer)

Critical Risk Activity and Permits

Working at Heights Permit (RAC#1)

Access Ladders - Safety

- Ladder length is *not to exceed 6 metres* and are *not to be used as work platforms*.
- Ladders must be Class 1, Class A or Class 1AA and made of a composite non conductive material.
- Ladders must be secured at the top and bottom, the safety feet must be in place and in good condition.
- Ladders must extend 3 rungs (3 feet) above the landing.

Hide Work Permit

3.12 Working at Heights Permit (RAC#1)

Critical Risk Activity and Permits

Working at Heights Permit (RAC#1)

Access Ladders - Safety

- Platform ladders are the only stepladders authorized for use on site and must be the appropriate length to work from the platform.
- Work authorized off the platform only - DO NOT work off rungs.
- Where working within 6 feet of guardrail, workers must be tied off.
- When ascending or descending the ladder you must maintain 3 point contact at all times.
- Ensure that the ladder is placed on stable and level ground.

Permit (Slide Layer)

Critical Risk Activity and Permits

Working at Heights Permit (RAC#1)

Access Ladders - Safety

- Platform ladders are the only stepladders authorized for use on site and must be the appropriate length to work from the platform.
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- When ascending or descending the ladder you must maintain 3 point contact at all times.
- Ensure that the ladder is placed on stable and level ground.

Hide Work Permit

3.13 Working at Heights Permit (RAC#1)

Critical Risk Activity and Permits

Working at Heights Permit (RAC#1)

Dropped Objects

Objects or tools dropped from higher levels are a serious hazard on the jobsite, the following actions must be taken to reduce the risk of dropped objects.

- Tools must be tethered at all times. *(Based on PMRA)*
- Install mesh or plywood on guardrails.
- Cover grating with blankets or plywood.
- Use a bucket, tool bags, etc to store tools when they're not in use.

View Work Permit

Permit (Slide Layer)

Critical Risk Activity and Permits

Working at Heights Permit (RAC#1)

Dropped Objects

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- Install mesh or plywood on guardrails.
- Cover grating with blankets or plywood.
- Use a bucket, tool bags, etc to store tools when they're not in use.

Hide Work Permit

3.14 Excavation Permit (RAC#8)

Critical Risk Activity and Permits

Excavation Permit (RAC#8)

Excavation presents a number of risks to workers, including rollovers and contact with buried facilities and overhead power lines, before beginning any excavation work, ask yourself the following questions.

- Did I go through the proper channels?
- Do I have documented locates?
- Do I have an excavation permit?
- Is a spotter in place when required?
- Did I complete a daily inspection form?

*** If buried services are discovered stop work and call your NAPG contact person.*

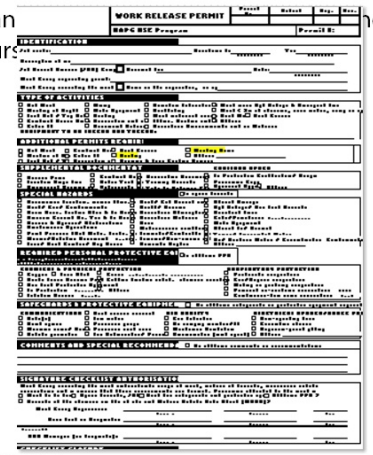
View Work Permit

Permit (Slide Layer)

Critical Risk Activity and Permits

Excavation Permit (RAC#8)

Excavation presents a number of risks to workers, including rollovers an[illegible]nd overhead power lines, before beginning any excavation work, ask yours[illegible] following questions.



- Did I go through the proper channels?
- Do I have documented locates?
- Do I have an excavation permit?
- Is a spotter in place when required?
- Did I complete a daily inspection form?

** *If buried services are discovered stop work and call your NAPG contact person.*

Hide Work Permit

3.15 Hot Work

Critical Risk Activity and Permits

Hot Work Permit

Hot work includes any cutting, grinding, welding or any activities involving a risk of fire and/or explosion.

Remember:

- A Hot Work Permit must be obtained before beginning any hot work.
- Fire watch is a mandatory requirement.
- Always use all required PPE.
- *All combustible materials* must be removed or protected within a radius of 15 metres (50 feet) of the work area.
- Portable 20lb ABC fire extinguishers must be immediately available.
- Flashback arrestors shall be used at the torch and the bottle.

*** Special consideration for operators of equipment (ex. Overhead Crane).*

View Work Permit

Permit (Slide Layer)

Critical Risk Activity and Permits

Hot Work Permit

Hot work includes any cutting, grinding, welding or any activities involv[illegible].

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- Flashback arrestors shall be used at the torch and the bottle.

** *Special consideration for operators of equipment (ex. Overhead Crane).*

Hide Work Permit

3.16 Hot Work

Critical Risk Activity and Permits

Hot Work Permit

Hot work includes any cutting, grinding, welding or any activities involving a risk of fire and/or explosion.

Remember:

- Gas bottles must be properly secured (in a bottle buggy, cage or rack) at all times. Do not use rope.
- If the bottles are being used and are not immediately accessible, a bottle watch must be present.
- Bottles left unattended must be turned off. (i.e. lunch or breaks).
- Bottles left after your shift, must be disconnected and have a protective cap in place.

View Work Permit

Permit (Slide Layer)

Critical Risk Activity and Permits

Hot Work Permit

Hot work includes any cutting, grinding, welding or any activities involv).

Remember:

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- Bottles left after your shift, must be disconnected and have a protective cap in place.

Hide Work Permit

3.17 Vehicles and Mobile Equipment

Critical Risk Activity and Permits

Vehicles and Mobile Equipment (RAC #2 and #3)

Prior to acceptance and use of a vehicle on site,a visual safety inspection must be carried out by a NAPG area lead, once complete a vehicle/equipment decal will be provided/issued.

All road going vehicles must be equipped with the following minimum safety features:

- Seatbelts for all occupants.
- Back up alarm.
- Operators manual.

3.18 Vehicles and Mobile Equipment

Critical Risk Activity and Permits

Vehicles and Mobile Equipment (RAC #2 and #3)

Performing a pre-operational inspection on any vehicle is important to satisfy the operator that the machine they are about to operate is mechanically safe and will perform within the machines operating parameters.

Prior to operating any piece of mobile equipment you must;

- Perform a through vehicle inspection, accurately complete the vehicle/ equipment checklist and keep the list on the vehicle for the duration of the shift.
- Ensure all safety devices in working order as per the manufacturers instructions and manual.

During operation any piece of mobile equipment you must;

- Immediately tag and remove your vehicle from service and notify your supervisor if it has been found to have any defects that pose a hazard to safe operation.

3.19 Vehicles and Mobile Equipment

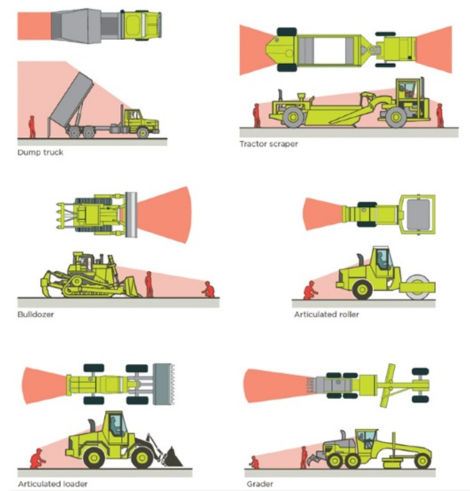
Critical Risk Activity and Permits

Vehicles and Mobile Equipment (RAC #2 and #3)

Many of the high potential incidents that occur within Vale each year are attributed to the operation of Mobile Equipment.

To mitigate the hazards associated to working with or around mobile equipment, the following controls have been put in place;

- All light vehicles must back in/drive through. / Be aware of blind spots
- Never assume. Make eye contact with the driver, wait for direction before movement or approach. / Lower the blade/forks/bucket/attachment prior to exiting.
- Keep a safe distance.
- Plan your work so that vehicles are not operated in reverse unless no other practical alternative is available.
- Maintain a minimum stand off distance from powerlines.



3.20 Vehicles and Mobile Equipment

Critical Risk Activity and Permits

Vehicles and Mobile Equipment (RAC #2 and #3)

Many of the high potential incidents that occur within Vale each year are attributed to the operation of Mobile Equipment.

To mitigate the hazards associated to working with or around mobile equipment, the following controls have been put in place;

- Use spotters and signallers as required.
- Establish procedures with the operator by which the signaller assists the operator and follows them.
- Stand where the operator can see you at all times and where you have full view of the intended path of travel.
- Stay out of the path of the vehicle you are signalling.
- Be aware of other moving machinery operating in the area.

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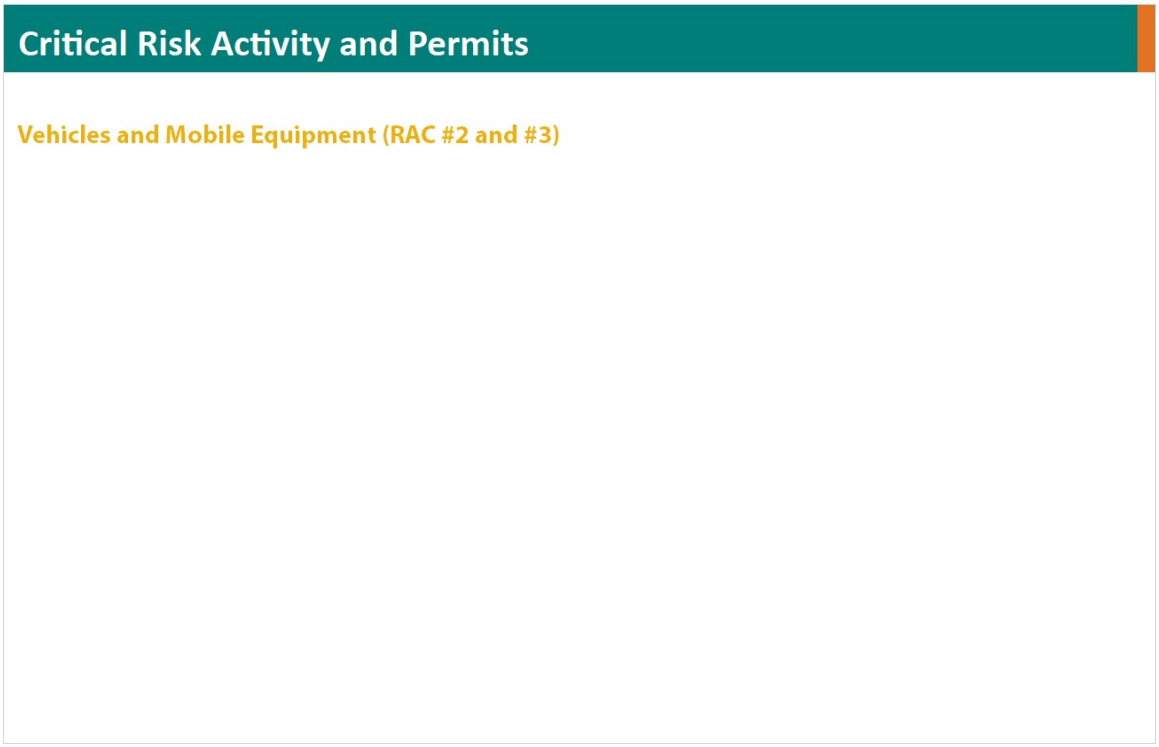

3.21 Floor Gratings, Openings and Trap Doors

Critical Risk Activity and Permits

Floor Gratings, Openings and Trap Doors

Removing floor gratings should be treated as an "anomaly" at Vale and it should happen only as a last option, when there is no other viable alternative, i.e., to remove floor gratings it is necessary to evaluate, in advance, if there are other ways to conduct the activity so it does not generate openings in the floor and in the structures of the facilities.

So, how do I recognize Floor Gratings, Openings and Trap Doors?

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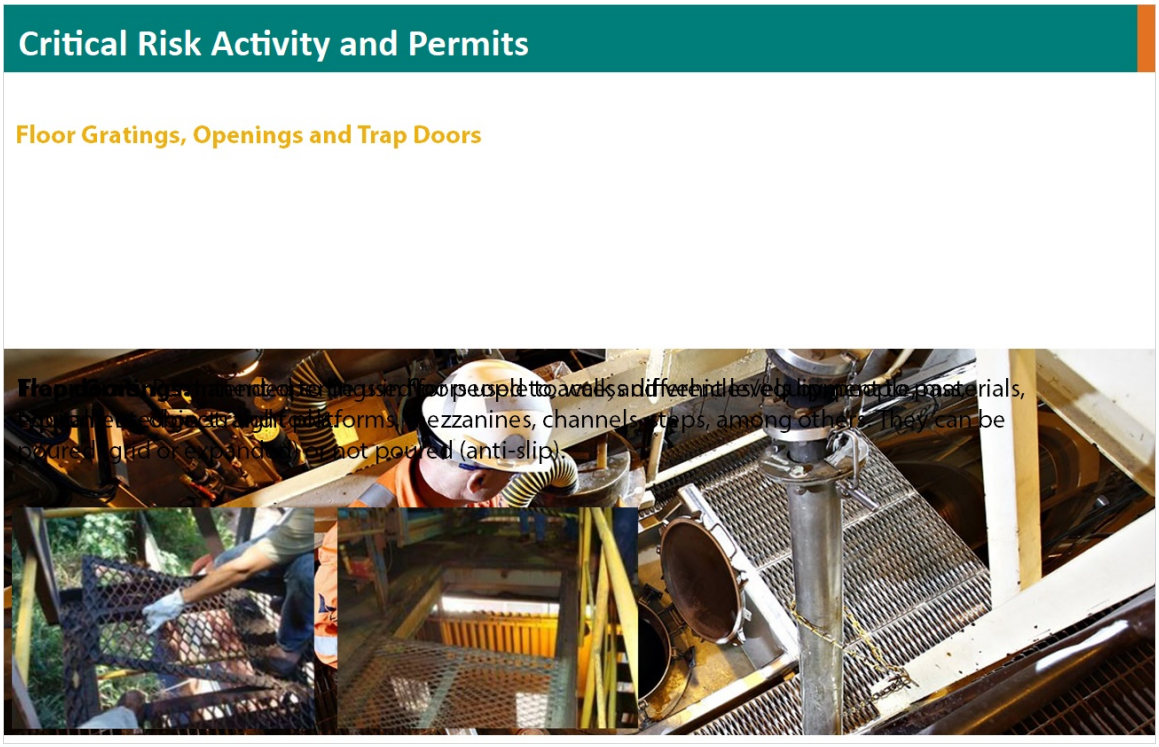

3.22 Floor Gratings, Openings and Trap Doors

Critical Risk Activity and Permits

Floor Gratings, Openings and Trap Doors

Floor grating removal can only be carried out with the simultaneous presence of the Construction Coordinator responsible for the area and the Construction Coordinator responsible for the activity and/or designate.

Prior to commencing any work a Floor Openings and Grating Removal Work Permit, must be thoroughly completed, *(example shown on right)* respecting the safety conditions and considering all the risks identified in the Job Hazard Analysis.

Any work activities that involve access of people in floor openings, the employees should follow the guidelines from RAC 01.

The Construction Coordinator responsible for the activity must monitor its execution of the work as long as there is an opening in the floor.

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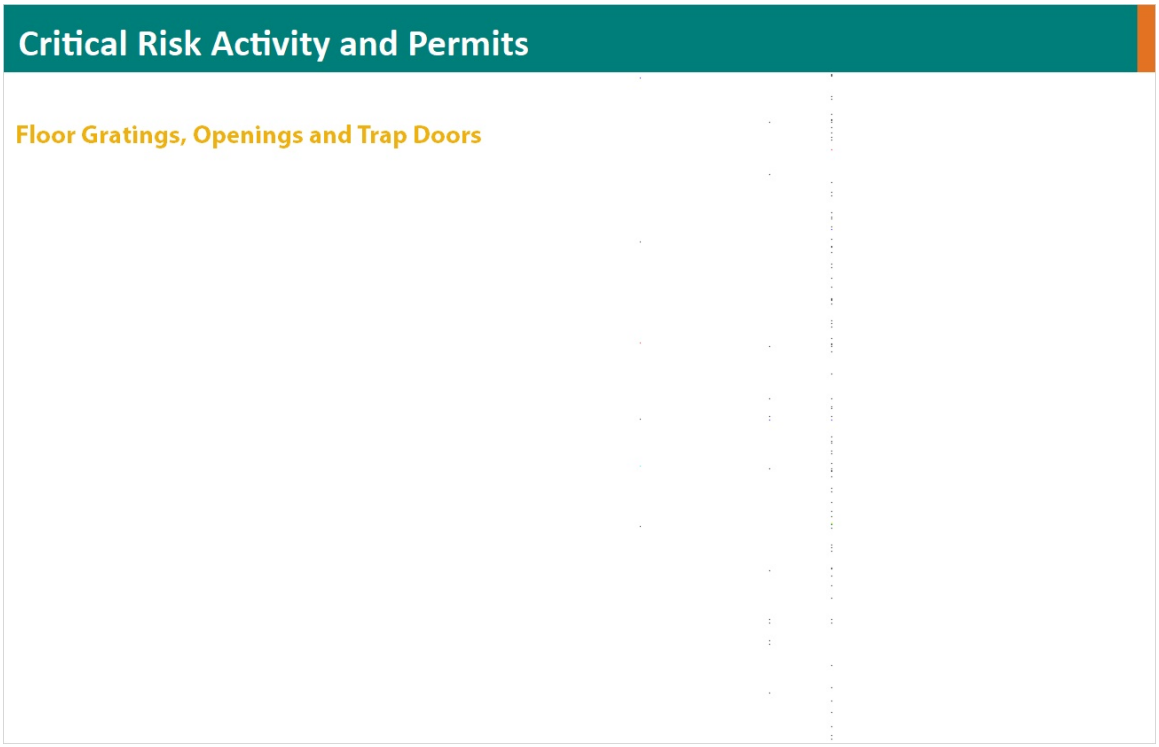


3.23 Hazardous Materials - Utility Lines

Critical Risk Activity and Permits

Hazardous Materials - Utility Lines

Be aware that the utility lines located at the project site may be carrying potentially hazardous material.

Some lines may not comply with standards, always confirm the contents, before beginning any work on or around utility lines. (i.e. contact person, supervision, drawings, labels etc..SDS's).

Oxygen
Sky Blue

LIGHT INDUSTRIAL OIL or NATURAL GAS
Yellow

PROCESS WATER
Dark Green

STEAM
Marked or Silver

SO_2 GAS
Cream & Orange Bands or Solid Orange

INSTRUMENT AIR
Light Green

FIRE WATER
Fire Engine Red

Blast Air
Black

4. General Safety Requirements

4.1 Divider

4.2 Hand Tools

General Safety Requirements

Hand Tools

There are many injuries while using hand tools on the job. Many of these injuries occur from improper use, but there are also injuries that involve a tool that was broken or in need of repair.

Before using any hand tool you must ensure that:

- A pre-use inspection is performed.
- All safety devices, guards and handles are in place.
- All necessary PPE, is worn. Face shields are required for cutting and grinding operations.
- Select the right tool for the job. Substitutes increase the chances of having an accident.
- Use all tools as per manufacturers instruction and recommendations. Do not modify or bypass any safety device.

4.3 Hand Tools

General Safety Requirements

Hand Tools

There are many injuries while using hand tools on the job. Many of these injuries occur from improper use, but there are also injuries that involve a tool that was broken or in need of repair.

Before using any hand tool you must ensure that:

- All electrical tools must have a ground plug, or be double insulated; removal of such grounding is unauthorized.
- Electrical cords are be free of defects, and an electrical cord with a GFI circuit interrupter is required for all hand tools and equipment at the source.
- All repairs of cords, ends or replacement of any parts must be performed by qualified electricians.
- Do not overload circuits.

4.4 Hand Tools

General Safety Requirements

Hand Tools

There are many injuries while using hand tools on the job. Many of these injuries occur from improper use, but there are also injuries that involve a tool that was broken or in need of repair.

Before using any hand tool you must ensure that:

- Grinders are equipped with discs rated to the proper rpm's.
- Do not tamper with guards or use trigger locks.
- Use discs suitable for the task.
  Discs must be stored correctly, protected from damage.
- Before adjusting any power tool always unplug or disconnect the batteries.

4.5 Tools Inspection Requirements

General Safety Requirements

Tool Inspection Requirements

The Colour Coding for the Inspection of Electrical Equipment and Rigging Gear will be:		
January to March	Blue	
April to June	Green	
July to September	Yellow	
October to December	White	

4.6 Safe Refueling - Handling Diesel and Gasoline

General Safety Requirements

Handling Diesel and Gasoline

To mitigate the hazards associated to re-fueling mobile equipment, the following controls have been put in place.

- Follow fueling procedures never take short-cuts!
- Make sure the vehicle engine is shut off before refueling and ensure there are no other sources of ignition in the area (i.e. don't smoke, leave the cell phone in the vehicle).
- Remain in attendance during refueling.

Never rig the nozzle to stay in the open position.

4.7 Safe Refueling - Handling Diesel and Gasoline

General Safety Requirements

Handling Diesel and Gasoline

Ensure that dispensing equipment is in good working order, and also:

- That the nozzles and hoses are free of damage, weathering or cracking and there are no visibleleaks present.
- Check to see if fire-fighting equipment is readily available and in good working condition. At least two - 20lb BC type extinguishers required at every facility.
- Ensure that there is spill response material available. Spill Kits should be replenished and in a state ready for deployment.

4.8 Safe Refueling - Handling Diesel and Gasoline

General Safety Requirements

Handling Diesel and Gasoline

Safe Refueling - Fueling Procedure

Step 1: Turn the Vehicle engine off.

Step 2: Know the location of the fire fighting equipment and check that it is good working condition.

Step 3: Check the condition of the hose and nozzle and do a visual check for leaks.

Step 4: Place the nozzle in the tank intake on vehicle.

Step 5: Turn the pump on.

Step 6: Commence refueling. The operator must remain in attendance at all times.

Step 7: Nozzle will automatically shut off when tank is filled - do not overfill.

Step 8: When fueling is complete turn the pump off and return the nozzle to the nozzle holder.

*** All spills, Leaks and deficiencies must be reported immediately to Your supervisor and the environment department.*

4.9 Manual Material Handling

General Safety Requirements

Manual Material Handling

Lifting, handling, or carrying objects at work can result in musculoskeletal injuries, including sprains and strains and other injuries. The risk of injury increases when bending, twisting, repetition, heavy loads, or awkward postures are involved.

Effective controls can help reduce risk and prevent injuries, which include;

- 20kg is the manual handling maximum, use mechanical devices for all material over 20kg (44lbs).
- Size up the load ahead of time and verify weights of material prior to lifting. Consider awkward sizing or dimensions.
- Always assess the environment and ensure good footing prior to lifting.

4.10 Manual Material Handling

General Safety Requirements

Manual Material Handling

Proper Lifting Practices - DO's and DONT's

DON'T try to handle bulky loads alone.

DON'T lift with your back, curving your body to grab and lift loads from the ground.

DON'T haul heavy hazardous loads that require an intense amount of strength.

DO utilize more than one worker to lift and move bulky loads.

DO lift with your leg muscles, keeping your back straight while bending your knees.

DO use equipment such as, dollys, hand trucks and forklifts to safely lift heavy loads.

4.11 Barricading Requirements

General Safety Requirements

Barricading Requirements

Recall that in Vales T1 General Orientation you learned that areas present hazards must be restricted by being roped-off to prevent inadvertent entry from outside a roped off area.

The North Atlantic Project Group Barricading Requirements include the following;

- Hard barricade or fence is the preferred method of barricading. The minimum standard for barricading is roped off area tags used with 3/8" polypropylene rope.
- Minimize areas as much as possible and include the correct information. (ex. on the yellow tag - Date, Name, Contact Info, Company, and the hazards associated with the barricaded area).

4.12 Barricading Requirements

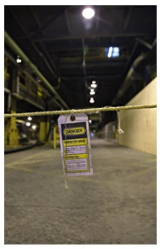
General Safety Requirements

Barricading Policy

Recall that in Vales T1 General Orientation you learned areas that present hazards must be restricted by being roped-off to prevent inadvertent entry from outside a roped off area.

As per the regulations signs shall:

- Be posted in prominent locations and in sufficient numbers to warn workers of a hazard on a project.
- A sign shall contain the word "DANGER" written in legible letters that are at least 150 millimeters in height and shall state that entry by any unauthorized person to the area where the hazard exists is forbidden.



4.13 Barricading Requirements

General Safety Requirements

Barricading Policy

NAPG Barricading Requirements

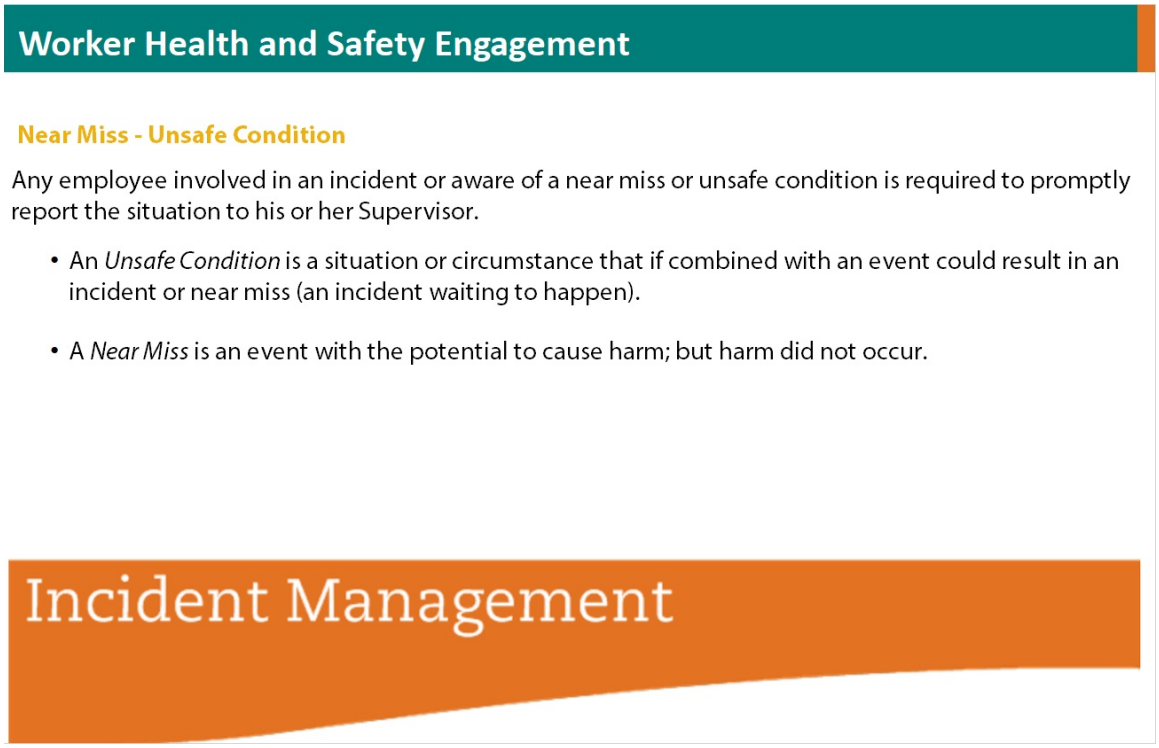
The following situations illustrate where barricading and roping off an area is necessary:

- Any work that creates a hazard and or an unsafe condition must be identified.
- Unsafe, deteriorating walkways or slippery walkways.
- Unsecure structures *(hard barricade required).*
- Danger of falling process material or other items.
- Temporary removal of existing protection such as guardrails (hard barricade required).
- Any opening in a floor, sump, vessel, bin, or other surface that creates a falling hazard. *(hard barricade required).*
- To protect the immediate area where a critical injury has occurred.

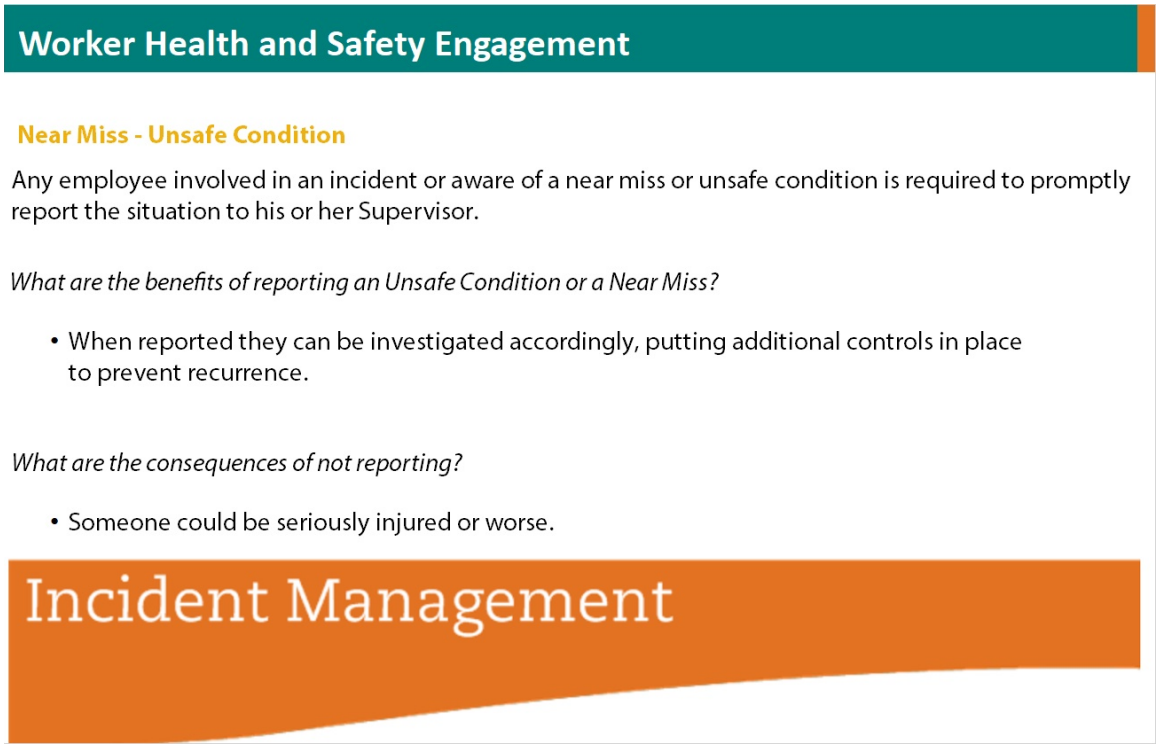
5. Worker Health and Safety Engagement

5.1 Worker Health and Safety Engagement

5.2 Near Miss - Unsafe Condition



5.3 Barricading Requirements



5.4 Safety Interactions

Worker Health and Safety Engagement

Safety Interactions

What is a safety interaction?

Safety interactions generally involve a targeted discussion between employees to better understand the risks involved in an activity.

The purpose of safety instructions is to reinforce safe behaviours and improve commitment.

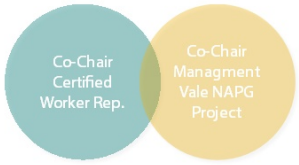
- Be a Safety Champion and look out for one another.
- Apply Brothers Keepers principals. Ask yourself, would this task be safe enough for your loved ones to do?
- Never Pass a Fault.

5.5 Joint Health and Safety / Workers Trade Committees

Worker Health and Safety Engagement

Joint Health and Safety / Workers Trade Committees

As per local legislation, when the project site reaches the minimum requirement *(49 regularly employed workers)* the JHSC shall establish a Workers Trades Committee (WTC).



The members of a WTC represent each of the trades at the workplace as well as the non-union employees.

A Joint Health and Safety Committee (JHSC) is a committee of at least two persons, who represent the workers and the employer at a workplace.

Their primary role is to identify workplace health and safety problems and bring them to the attention of the employer.

The JHSC Committee includes representatives from:

5.6 Communications

Worker Health and Safety Engagement

Communications

The primary goal of the communication process is to ensure hazards and risks raised by all project personnel are addressed and resolved.

Open communication is key to the success of projects, listed below are the communication tools currently in use at NAPG.	
Project JHSC	Review/Planning Meeting with Vale
Worker Trades Committee	FLHA Cards
Daily Toolbox Meetings	Pre Mobilization Risk
Weekly Safety Meetings	JHA
Weekly Safety Coordinators Meeting	Permits to
Safety bulletins and Alerts	
Weekly progress Meetings