CB9902 Contractor Underground Orientation - Thompson

1. CB9902 Contractor Underground Orientation

1.1 Preparation

1.2 Abstract

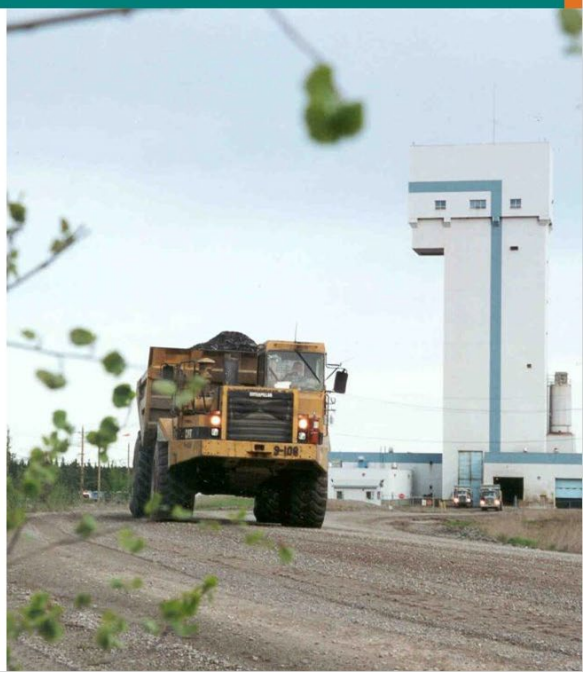
Preparation

Abstract

The preparation section outlines the specific training this module covers and states the objectives and the means of taking this training.

The purpose of this orientation is to make you familiar with the aspects of underground operations that affect you in your work at any Vale mine in the Thompson Operations.

It also will make you aware of any hazards that may exist and the proper procedures to follow while working in an underground environment.



1.3 Learner Objectives

Preparation

Learner Objectives

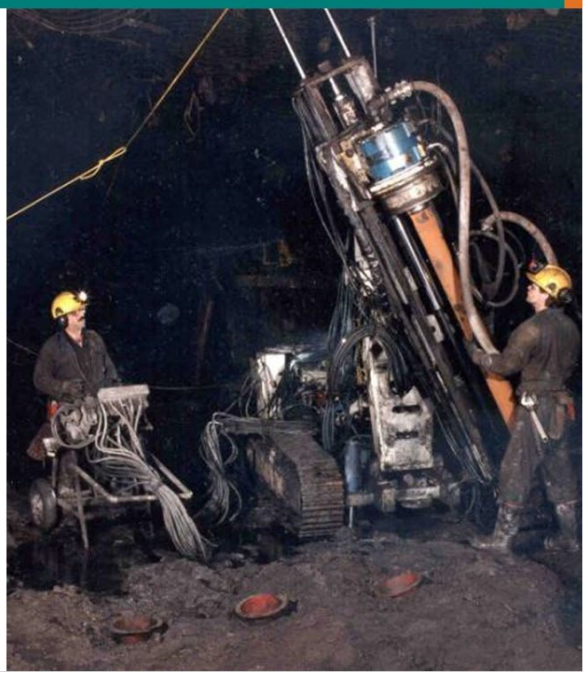
- Upon completion of this training, the learners will be able to:
- Know the location of the mine and surface plant offices and facilities.
- Recognize known hazardous conditions against which they and their fellow workers require protection, and know what protective measures are required against the hazards.
- Know what to do in case of a fire and plant wide emergency response alarms.
- Know and apply the rules, standards and regulations that pertain to their job.
- Note: If the objectives are met, the learners will be able to perform their job safely and efficiently.

1.4 What to Expect

Preparation

What to Expect

- You must be 18 years of age to work on Vale property. (Unless you are delivery personnel.)
- You will be expected to ask questions on any part of this training that you do not understand.



1.5 List of Figures

Preparation

List of Figures

Here is a list of figures that will be used in this module.

Click and See

Figure 10 (Slide Layer)

Preparation

List of Figures

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Click and See

Figure 1, Thompson Operations

Figure 2, Map of T-3 Mine

Figure 3, Map of Birchtree Mine

Figure 4, T-1 Headframe

Figure 5, T-3 Headframe

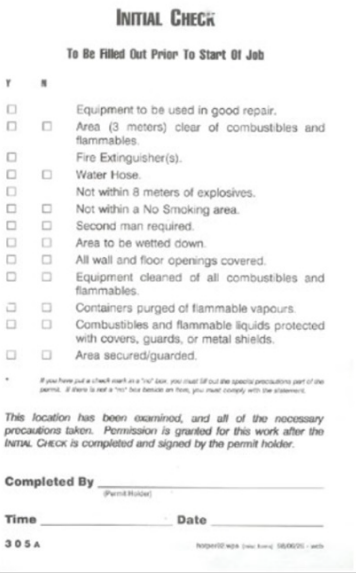
Figure 6, Birchtree Headframe

Figure 7, Reflective Clothing Policy

Figure 8, Fire Retreat

Figure 9, Hot Work Permit (front)

Figure 10, Hot Work Permit (Back)



INITIAL CHECK

To Be Filled Out Prior To Start Of Job

Y	N	
☐		Equipment to be used in good repair.
☐	☐	Area (3 meters) clear of combustibles and flammables.
☐		Fire Extinguisher(s).
☐	☐	Water Hose.
☐		Not within 8 meters of explosives.
☐	☐	Not within a No Smoking area.
☐	☐	Second man required.
☐	☐	Area to be wetted down.
☐	☐	All wall and floor openings covered.
☐	☐	Equipment cleaned of all combustibles and flammables.
☐	☐	Containers purged of flammable vapours.
☐	☐	Combustibles and flammable liquids protected with covers, guards, or metal shields.
☐	☐	Area secured/guarded.

* If you have put a check mark in a "no" box, you must fill out the special precautions part of the permit. If there is not a "no" box beside an item, you must comply with the statement.

This location has been examined, and all of the necessary precautions taken. Permission is granted for this work after the INITIAL CHECK is completed and signed by the permit holder.

Completed By _____
(Permit Holder)

Time _____ **Date** _____

305A

Figure 1 (Slide Layer)

Preparation

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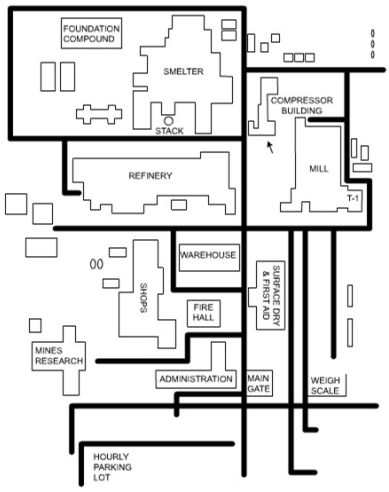

FIG.1, MAP OF THOMPSON PLANT

Figure 2 (Slide Layer)

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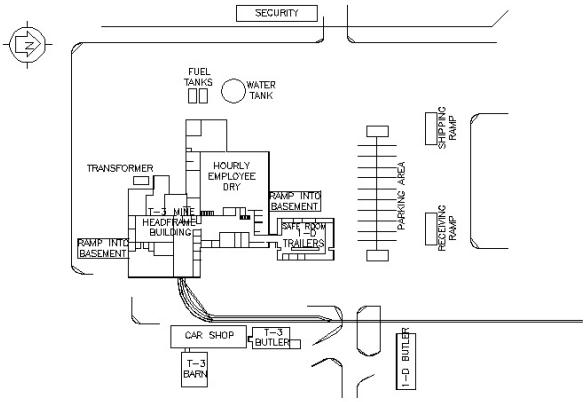

FIGURE 2
MAP OF T-3

Figure 3 (Slide Layer)

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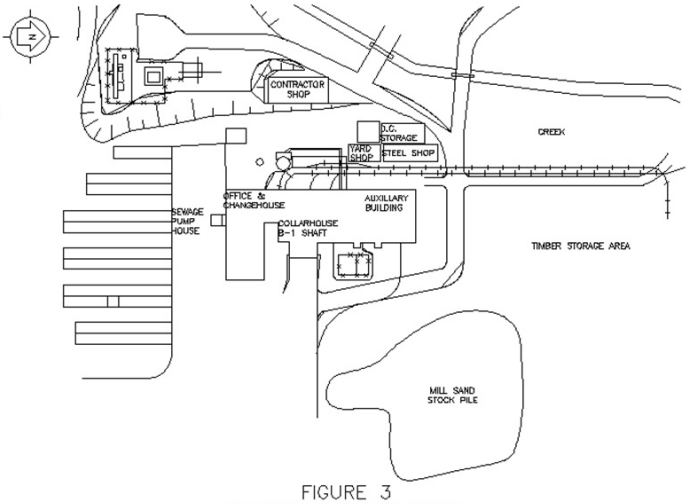

FIGURE 3
BIRCHTREE MINE LAYOUT

Figure 4 (Slide Layer)

Preparation

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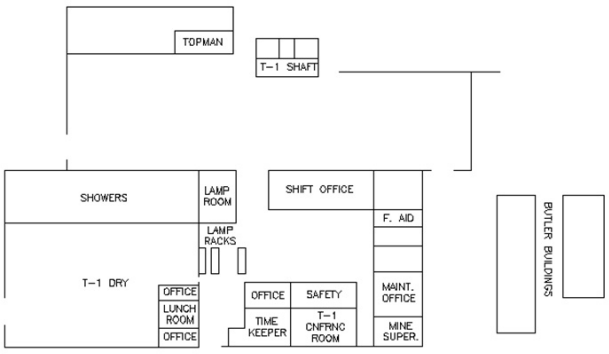

FIGURE 4
LAYOUT OF T-1 HEADFRAME

Figure 9 (Slide Layer)

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HOT WORK PERMIT

Date _____ Time _____

Area _____ Dept _____

Location of Work _____

Work to be done _____

Special Precautions _____

_____

_____

Is Fire Watch Required (2nd Person) _____

Time Started _____ Completed _____

Fire checks must be done and signed AFTER HOT WORK IS COMPLETED.

30 Minute By _____
(Permit Holder)

1-2 Hour By _____
(Permit Holder/Designate)

* When completed, return this form to Supervisor and then to Safety Office.

Signed _____
(By Supervisor)

305 R-3

Figure 6 (Slide Layer)

Preparation

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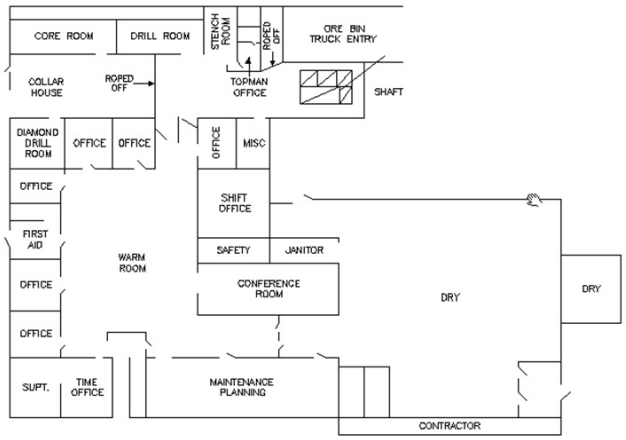

FIGURE 6
LAYOUT OF BIRCHTREE HEADFRAME

Figure 7 (Slide Layer)

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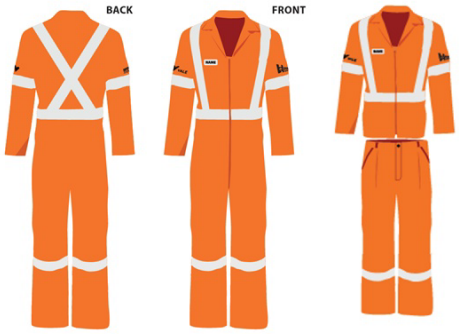

Figure 8 (Slide Layer)

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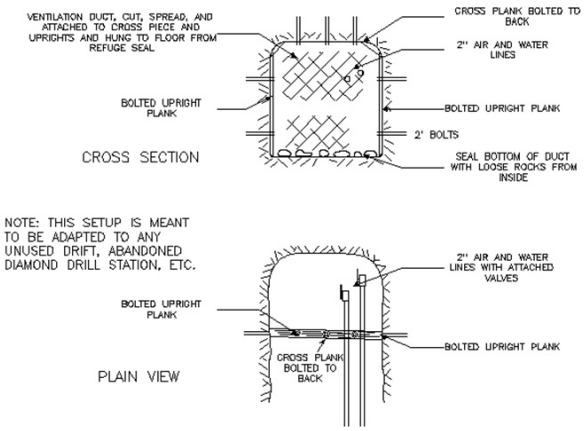

FIGURE 8
TEMPORARY FIRE RETREAT STATION

Figure 5 (Slide Layer)

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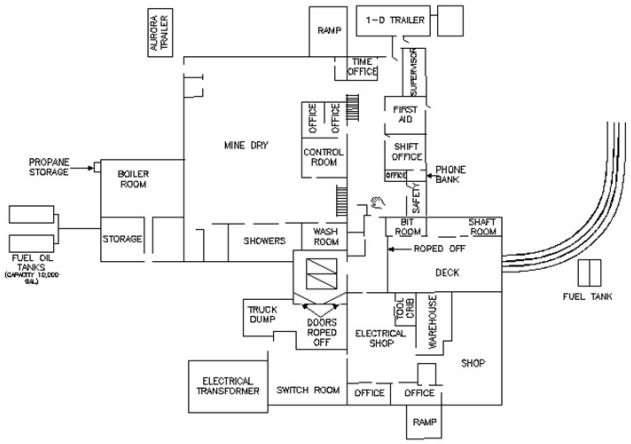


FIGURE 5
LAYOUT OF T-3 HEADFRAME

2. Safety Awareness

2.1 Introduction

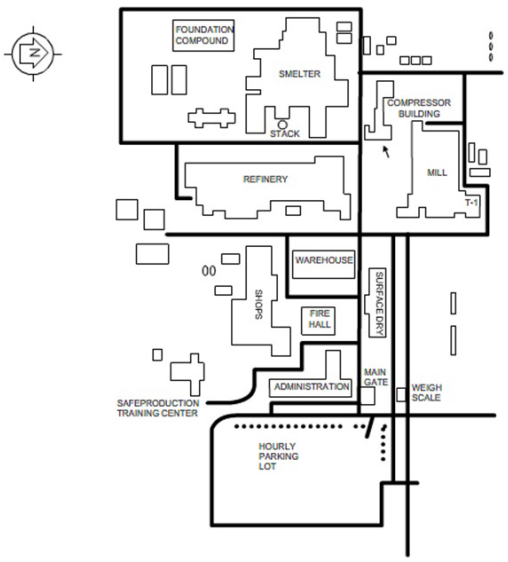
2.2 Introduction

Safety Awareness

Introduction

It will be the responsibility of the mine at which you will be working to familiarize you with the required surface locations and departments such as First Aid, Safety, tag in boards, etc.

Refer to Figure 1, Thompson Operations Surface Plant.



MAP OF MANITOBA DIVISION SURFACE PLANT

2.3 Passes

Safety Awareness

Terminology

The following are a number of the more common mining terms used in an underground mining operation.

- Ground Support
- Loose
- Scaling
- Crusher
- Ramp
- Powder & Fuse Magazine
- Nipping
- Tram
- Escapeway
- Muck
- Back
- Bench

Note: Briefly review the meaning of any unfamiliar terms.

2.4 Passes

Safety Awareness

Passes

A pass will be issued to you upon the completion of this training.

It is important that all employees have their pass with them at all times.

Passes must be shown upon all entries onto company property.

This pass must be returned upon terminating employment.

2.5 Vehicle Registration

Safety Awareness

Vehicle Registration

All vehicles must be registered at the Security Office, including changes and cancellations.

This is for the benefit of employees, in cases of emergency, (theft, fire, etc.).

All traffic violations and traffic accidents involving Vale property must be reported to this office.

In the winter months, plug-ins and a battery booster are available.

Special Pass (Slide Layer)

Safety Awareness

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All vehicles must be registered at the Security Office, including changes and cancellations.

This is for the benefit of employees, in cases of emergency, (theft, fire, etc.).

All traffic violations and traffic accidents involving Vale property must be reported to this office.

In the winter months, plug-ins and a battery booster are available.

TO SAFETY and PROTECTION

SPECIAL PASS AND RELEASE

Please Grant Entry Onto Company (INCO) Property To:

Name: _____ #_____

Employed By: _____

☐ With A Vehicle ☐ Without A Vehicle

VEHICLE DESCRIPTION:

Make/Model _____ Year _____

Colour _____ Licence # _____

PURPOSE:

☐ Visitor ☐ Business ☐ Selective Duty ☐ Other _____

DURATION:

From _____ To _____

AREA: (Plant/Mine) _____

Authorized By: _____

RELEASE (NON INCO PERSONNEL ONLY)

I, the undersigned, in consideration of your permitting me to visit your plant(s), HEREBY voluntarily assume all risks, detriment, damage or injury whether to my person or property of whatever nature and whether occasioned by negligence of Inco Limited, your agents or your employees, or occasioned by defects in the premises or otherwise. I EXPRESSLY agree not to hold Inco Limited, your agents or your employees liable, and HEREBY RELEASE Inco Limited, your agents or your employees from all claims of any kind whatsoever in respect thereof.

Address _____

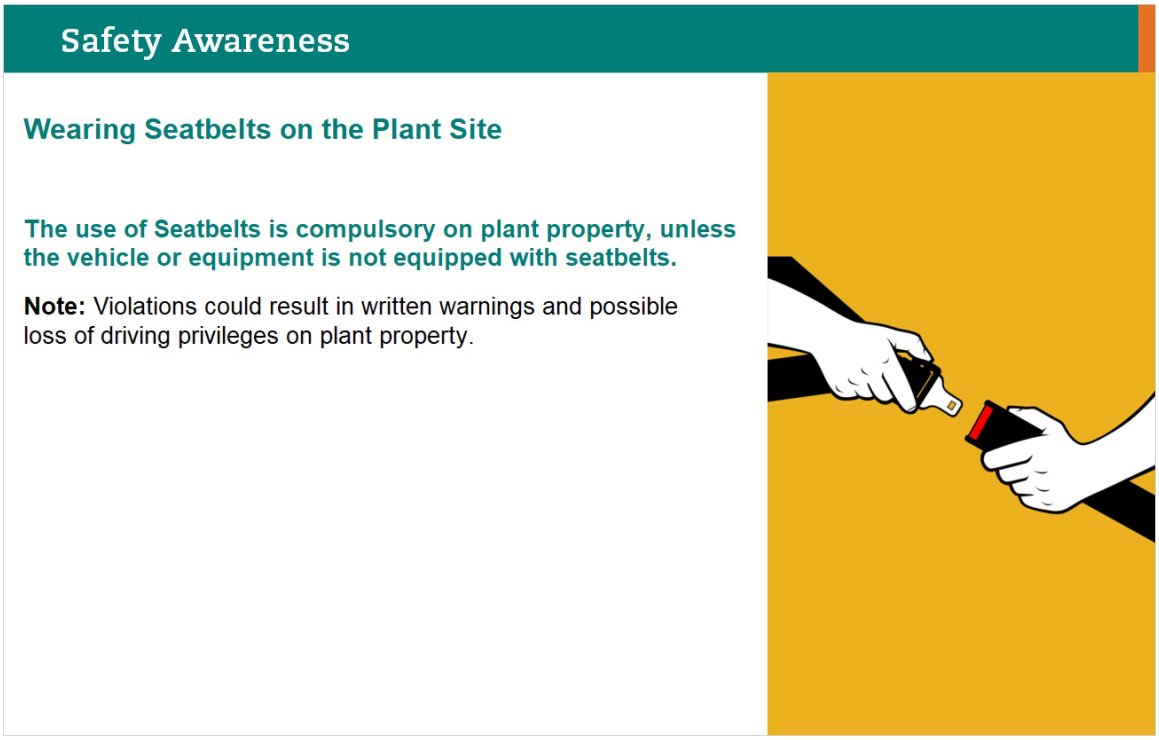
Signature _____ (Please Print) _____

MUST BE ON DISPLAY WHENEVER ON INCO PROPERTY

2016 Rev. 1 WHITE: Holder YELLOW: Security PINK: Originator

Hide

2.6 Wearing Seatbelts on the Plant Site



2.7 Articles Removed From Vale Property

Safety Awareness

Articles Removed From Vale Property

All articles being removed, with the exception of personal work clothes and lunch pails, must be accompanied by a Pass Out Slip.

Vale

Manitoba Division, Thompson, Manitoba R8N 1P3
24 Hour Emergency, Phone 778-2278

PASS OUT & RECEIPT No.

Conveyance _____ Date _____

Licence No. _____ Destination _____

Driver _____ Received By _____

Quantity	Unit of Measurement	D.G.	Description	Weight or Volume

Pass Out Authorized By: _____ Signature

Originated At: _____ Plant Location

Security Check:
CST. _____
Time _____

WHITE - To be turned over to Security by driver.
YELLOW - To be delivered by driver along with goods to destination. Receiver to INITIAL and return by mail to originator.
PINK - To be retained by receiver for 2 years for Dangerous Goods.

526 Rev. 1

2.8 Buckets In the Dry

Safety Awareness

Buckets In the Dry

Buckets are obtained from First Aid, they must be kept up and should be locked to avoid theft.

Do not bring expensive articles of clothing, jewelery or great amounts of money onto the property, leave them at home.

Report all lost and stolen articles to First Aid and Security.

Please keep in mind that buckets have a maximum load capacity of 50 pounds.

Note: Refer to Figure 2, Surface Dry Map.

Surface DRy MAP (Slide Layer)

Safety Awareness

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Note: Refer to Figure 2, Surface Dry Map.

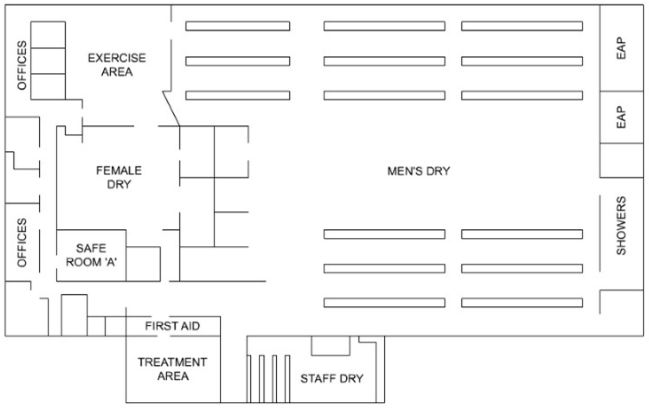

FIGURE 2
SURFACE DRY MAP

Hide

2.9 Buckets In the Dry

Safety Awareness

Safety Rules for Dry Baskets;

Owners of baskets must ensure that their basket number and name are registered with First Aid.

Loaded baskets must not weigh in excess of fifty (50) pounds.

Glassware of any shape or form is not permitted to be stored in the basket. This includes mirrors.

A seven foot minimum clearance between the floor and basket contents is to be maintained at all times. No double hanging baskets are permitted.

If any damage or problems (with the basket, rope, pulley, etc.) occur, they are to be reported to First Aid.

Surface DRy MAP (Slide Layer)

Safety Awareness

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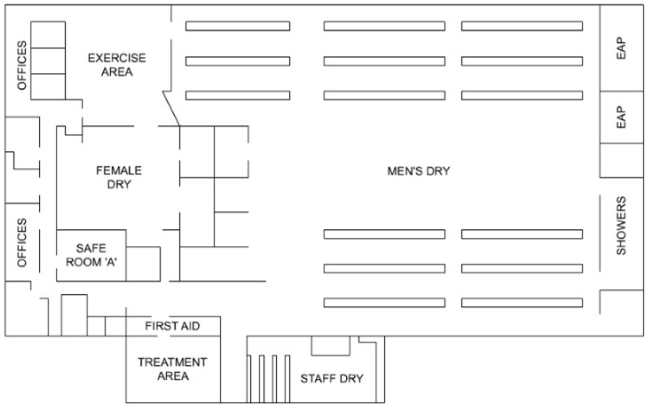


FIGURE 2
SURFACE DRY MAP

Hide

3. Personal Safety

3.1 SafeProduction - An Introduction

3.2 Introduction to SLAM

3.3 Stop

Personal Safety

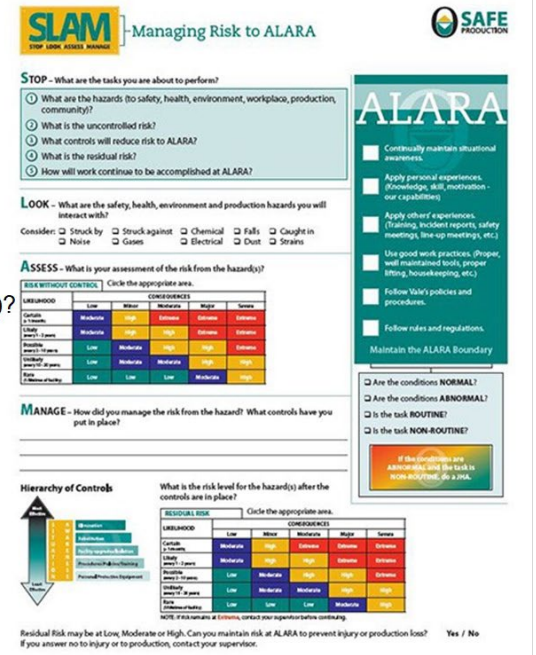
SLAM

STOP - Before you start a task - even before you fully enter a work area - stop and check your surroundings.

The following questions will help you think about your work, your work area and what hazards are present.

1. What are the hazards (to safety, health, environment, workplace, production, community)?
2. What is the uncontrolled risk?
3. What controls will reduce risk to ALARA?
4. What is the residual risk?
5. How will work continue to be accomplished at ALARA?

The point of stopping is to give you a moment to consider the expected outcome of your task and how you can plan to ensure you achieve that outcome with **Zero Harm**.



3.4 Look

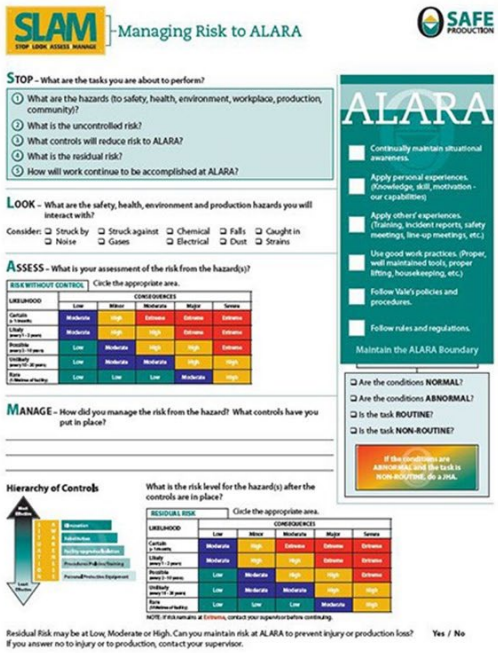
Personal Safety

SLAM

LOOK - After you stop, look around for hazards.

One of the benefits of SLAM, is that it creates those extra moments before you start working to think about hazards that are not always obvious.

In familiar and in new tasks, new hazards may be found in unexpected places - whether physical hazards or otherwise.



3.5 ASSESS

Personal Safety

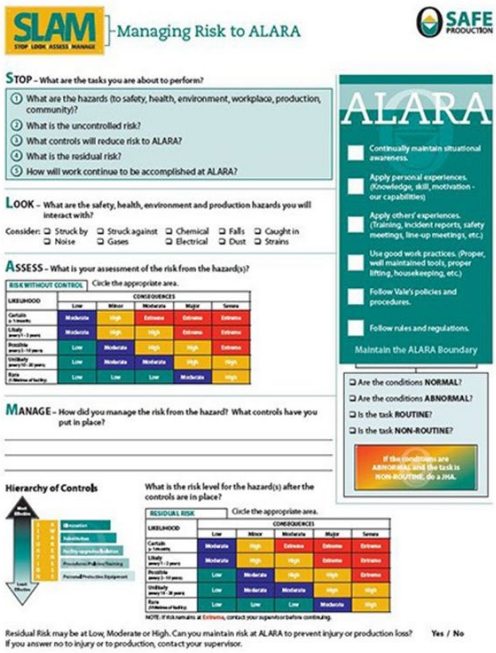
SLAM

Assess - Once you have identified the hazards, you can start to understand - to assess - the risk these hazards create if you interact with them without any controls in place - and then once controls are in place.

Use the Risk Matrix and consider how likely it is that an event will occur and the severity of the expected harm. Once you understand this, you can start identifying appropriate controls to manage risk to **ALARA**.

Use these questions and the risk matrix to help determine the level of risk:

- What is the likelihood that the hazard will cause harm if you don't introduce any control to manage risk to **ALARA**?
- What is the expected severity of the consequence?



3.6 MANAGE

Personal Safety

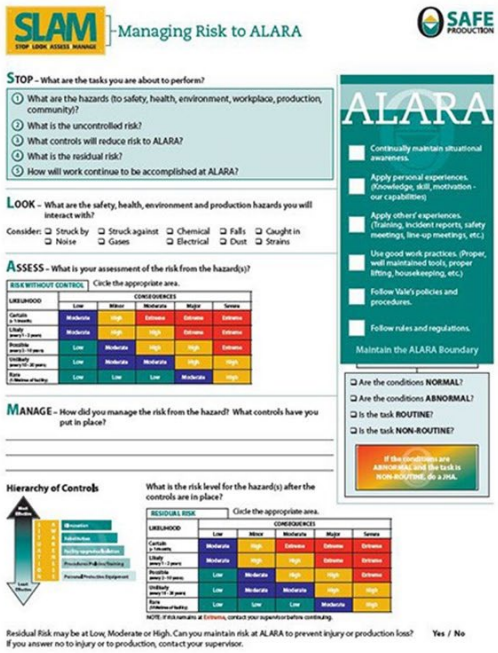
SLAM

Manage - Having stopped, looked and assessed the risk, you are ready to determine how to manage risk to ALARA to achieve ZERO HARM. Your decisions on how to manage the risk will depend on the activity (the task or work), the hazard(s) and your assessment of the likelihood and consequences of risk.

The manage step of SLAM is based on finding controls to reduce the likelihood or consequences - or both – of an interaction with hazards.

The Hierarchy of Controls identifies the categories of controls you can use to manage risk.

All Controls are valid; some are more effective in different circumstances that other controls. It is not unusual to have to use a combination of controls.



3.7 3 Basic Rights

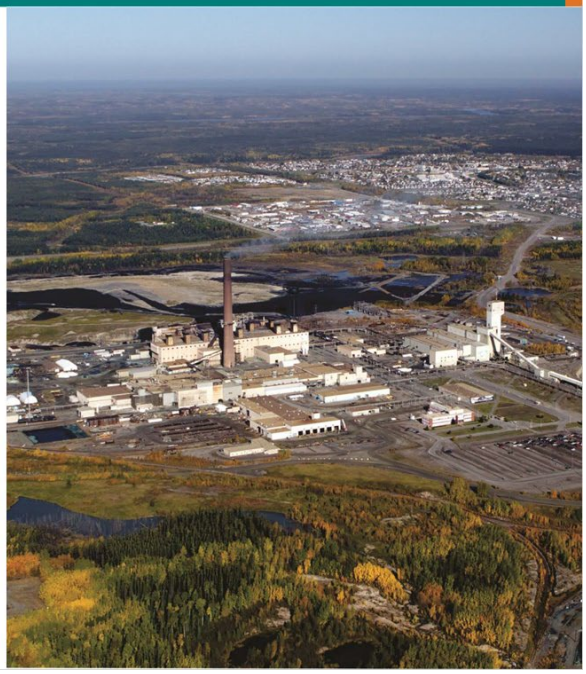
3.8 The Right to Know

Personal Safety

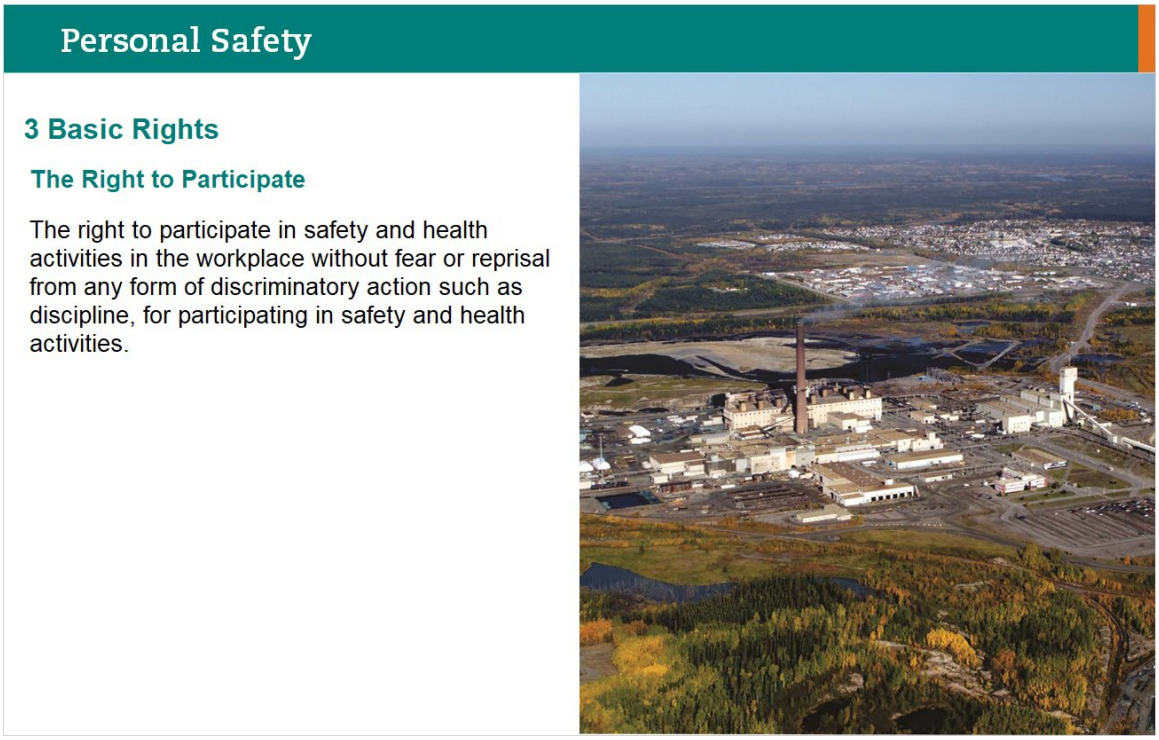
3 Basic Rights

The Right to Know

The right to know about what hazards there are in the workplace and to know what precautions must be taken to prevent injuries from those hazards.



3.9 The Right to Participate



3.10 The Right to Refuse

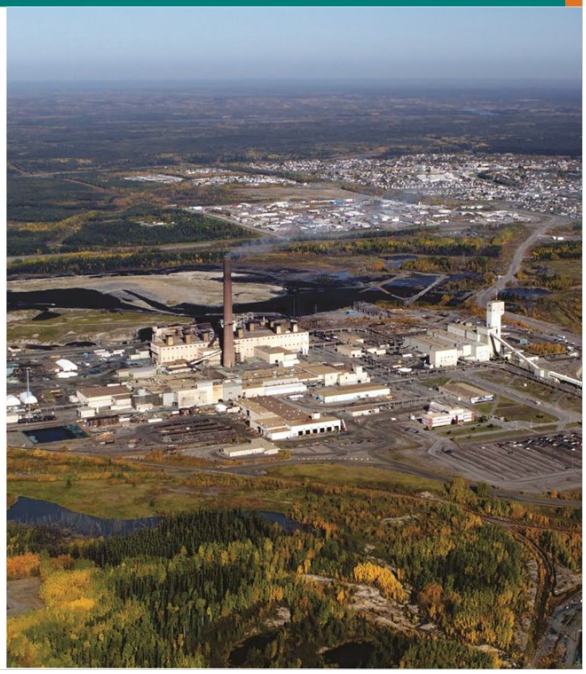
Personal Safety

3 Basic Rights

The Right to Refuse

The right to refuse work that they reasonably believe can be dangerous to themselves or others.

Click here to review the "3 R's Flow Chart".



Flow chart (Slide Layer)

Personal Safety

3 Basic Rights

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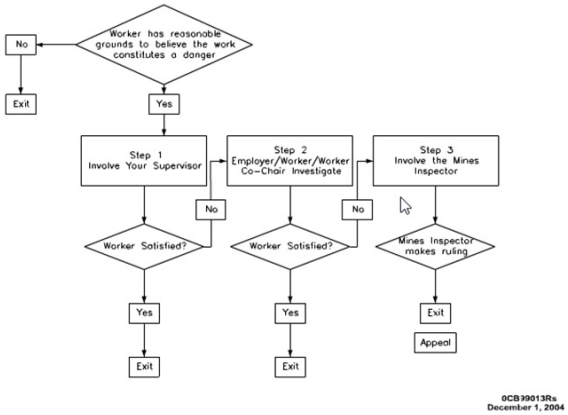

3 Rs Flow chart

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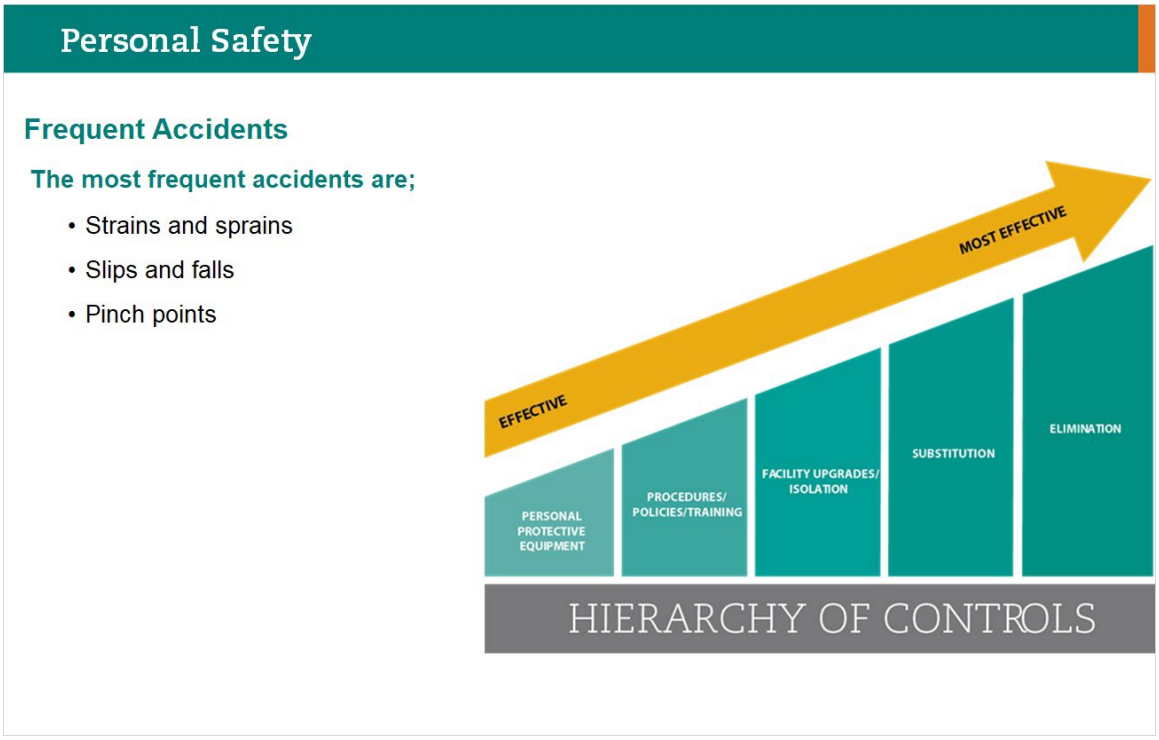
3.11 Frequent Accidents



3.12 Personal Protective Equipment

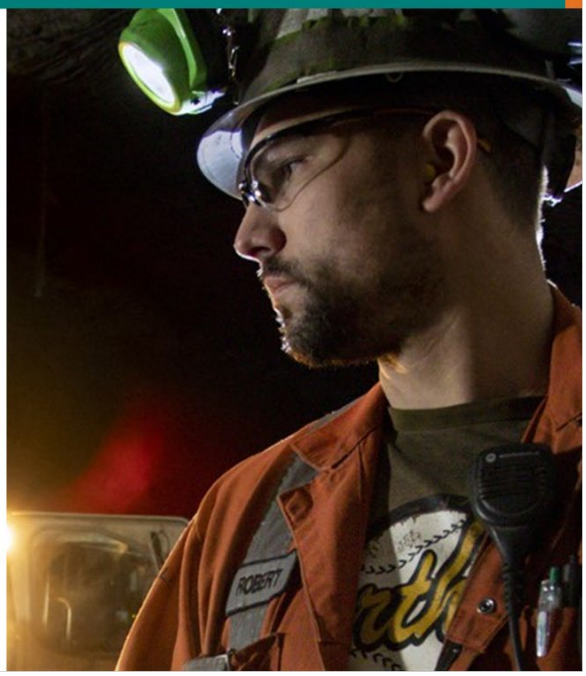
Personal Safety

Personal Protective Equipment

Every person shall wear and maintain approved personal protective equipment as required.

This equipment is as follows:

- Hardhat with reflective strips in standard pattern
- CSA grade one boots with steel-toe and metatarsal guard
- Eye protection
- Hearing protection
- Gloves
- Respiratory protection
- Clothing with reflective strips in standard pattern



3.13 Hardhat

Personal Safety

Personal Protective Equipment

Protective Headwear

- Hardhats must be C.S.A. approved.
- The helmet cannot be painted, in order that inspection for cracks and/or holes can be made.
- The inner suspension must be in good repair and properly adjusted.
- An upside down “V” is to be attached to the back of the hat using 1” wide by 4” long strips of reflective tape. A strip 1” wide by 4” long of reflective tape is to be attached on each side of the hat. These will extend horizontally from near the cap lamp holder towards the centre of the hat.
- Note: Refer to Figure 7, Reflective Clothing Policy.

3.14 Protective Footwear

Personal Safety

Personal Protective Equipment

Protective Footwear

- Puncture resistant grade one construction safety boots with metatarsal guards are the only acceptable footwear for contract personnel.
- They must have the green C.S.A. patch of approval.
- The boots must be in good condition.
- Oxfords are not permitted.
- Vales' employment standards require metatarsal protection be worn by all employees.
- Refer to Footwear SPI No. 34-10.

3.15 Eye Protection

Personal Safety

Personal Protective Equipment

Eye Protection

- Industrial safety glasses must also be C.S.A. approved.
- The glasses are required to have side shields attached to them.
- Contact lenses are not allowed even if worn with ordinary safety glasses.
- Additional eye protection may be required when doing certain jobs such as using a grinder, burning etc.
- Light sensitive (photo-grey) lenses are not permitted unless medically required.
- Refer to Eyewear SPI No. 34-18.

3.16 Hearing Protection

Personal Safety

Personal Protective Equipment

Hearing Protection

- If you are operating drills, noisy grinders, chippers, scooptrams, etc., hearing protection is required.
- Protection can be obtained through the use of muffs and earplugs.
- Earplugs alone are not allowed in designated hearing protection areas. Earplugs must be confined within the earmuff.
- Note: This hardhat must be equipped with reflective tape before it is worn underground. For clarification see section 3.4.2 "Hard Hat With Reflective Strips".

3.17 Gloves

Personal Safety

Personal Protective Equipment

Hand Protection

- Hand protectors can and do reduce hand injuries, in the form of cuts, bruises, burns, punctures and many other forms of injuries.

3.18 Respiratory Protection

Personal Safety

Personal Protective Equipment

Respiratory Protection

- Every person, who works in areas where the use of respiratory protective devices are required, shall be clean-shaven.
- Fit testing of tight-fitting respirators requires a worker to be clean-shaven in all areas of the face that the respirator makes contact. Moustaches are allowed providing that they do not extend past the bottom lip. In case of tight-fitting respirators, the user must maintain their required clean-shaven condition.

Note: Refer to Respiratory Protection Program - Manitoba Division SPI No. 36-4 and All Mines Respirator Policy (AM 9.1).

3.19 Respiratory Protection

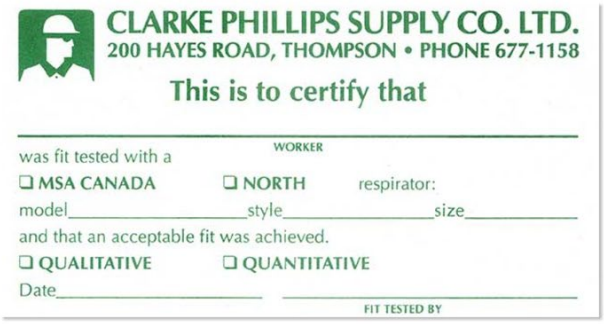
Personal Safety

Personal Protective Equipment

Respiratory Protection

Certain areas of our mines have been identified as containing asbestos and the wearing of respiratory protection is mandatory while working in these areas.

Note: You should have already been fitted for your respirator. If not, you must arrange to do so.



CLARKE PHILLIPS SUPPLY CO. LTD.
200 HAYES ROAD, THOMPSON • PHONE 677-1158

This is to certify that

_____
WORKER

was fit tested with a

❑ MSA CANADA ❑ NORTH respirator:

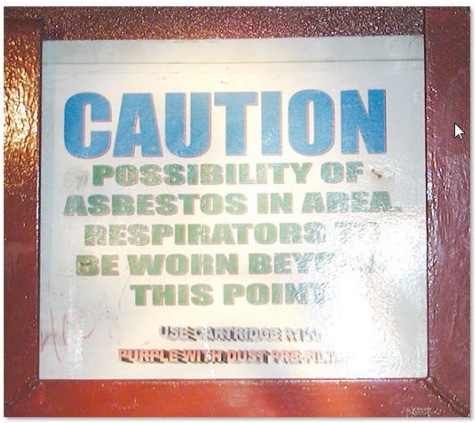
model_____style_____size_____

and that an acceptable fit was achieved.

❑ QUALITATIVE ❑ QUANTITATIVE

Date_____ _____

FIT TESTED BY



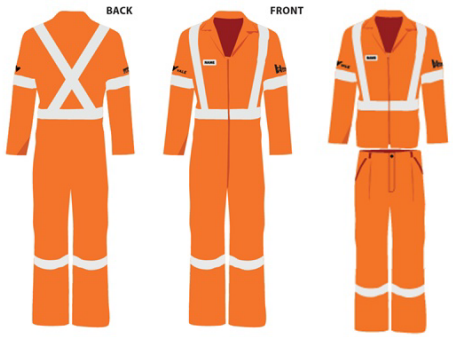
3.20 Proper Reflective Clothing

Personal Safety

Personal Protective Equipment

Proper Reflective Clothing

- Common sense dictates the type of clothing that should be worn.
- You must dress appropriately with respect to the weather. All areas underground require that you wear long sleeve shirts with the sleeves rolled down or a coat or jacket. (No Bare Arms).
- A strip 1 inch wide by 6 inches long of reflective material shall be attached 1" above each chest pocket. (This area must be approximated on clothing containing no upper pockets.)



- A strip 1inch wide of reflective material shall encircle each sleeve 1inch above the elbow.
- A strip 1inch wide of reflective material shall encircle each leg 1inch above the knee.

3.21 Timepiece

Personal Safety

Timepiece

All Underground employees are to have on their body a working time piece as they enter the Mine.

A time piece is necessary to keep track of:

- Blast times
- Guarding duration (i.e. guarding area for 10 minutes)
- Shift duration

Before going underground check that the timepiece is in working condition and set to the correct time.

Refer to All Mines Procedure AM 1.11, "Working Time Piece For All Underground Employees".

3.22 The Leading Causes of Fatalities

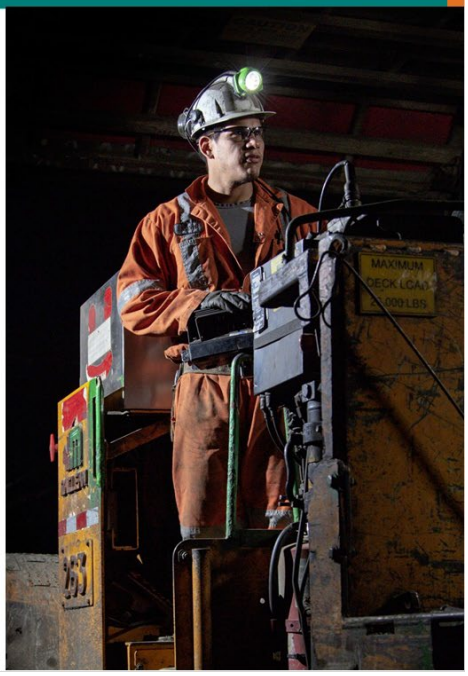
Personal Safety

The Leading Causes of Fatalities

The leading causes of fatalities are:

- Fall of ground
- Tramming
- Falls of persons
- Falling objects
- Runs of muck
- Explosives
- Oxygen deficiency

Check the ground conditions in your work area following the safety system, Check the condition of the bolts and screen and the condition of the supporting timber. If any unsafe conditions are found, correct, secure and report them to your supervisor.



3.23 Falls or Slipping of Ground

Personal Safety

Falls or Slipping of Ground

- Check the ground conditions in your work area following the safety system.
- Check the condition of the bolts and screen.
- Check the condition of the supporting timber.

Note: Correct and secure and report any unsafe conditions.

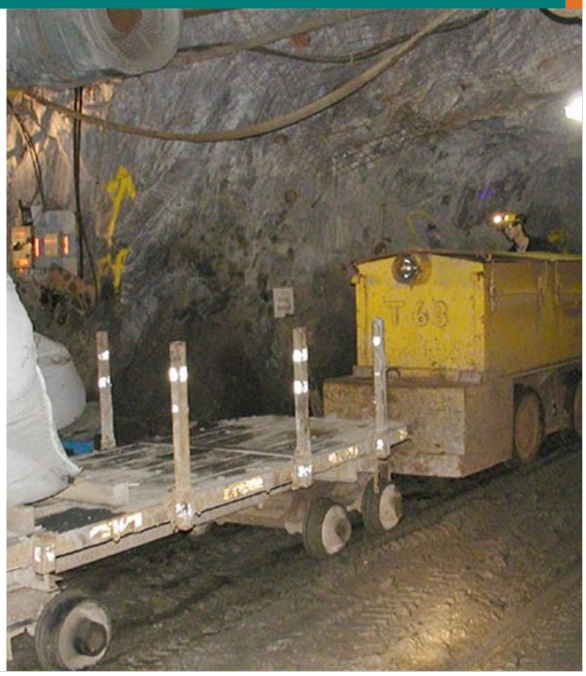
3.24 Tramming

Personal Safety

Tramming

- Only qualified persons may operate a rail haulage vehicle.
- Motor crews must follow standard practices and be alert at all times to avoid injuries or damages.

Note: in the General Procedures section, you will be reviewed on Rockbolting and Screening, Tramming, and Blasting standard practices if that is a part of your job.



3.25 Falls of persons

Personal Safety

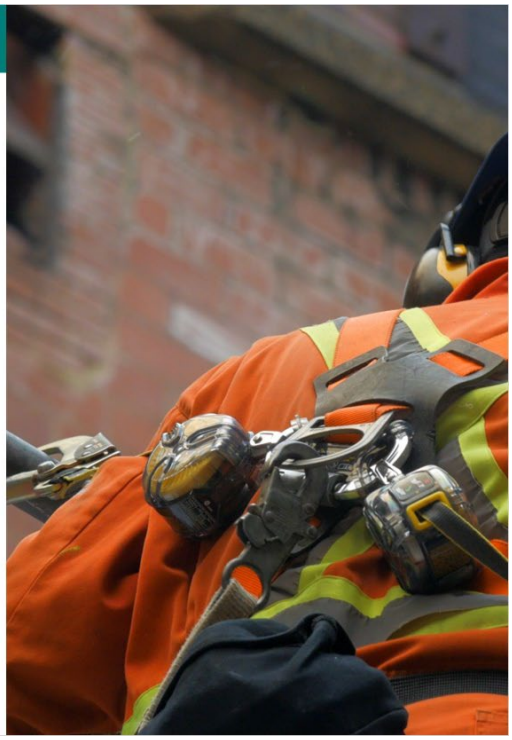
Falls of persons

Please refer to Fall Protection SPI No. 34-21 for information on fall protection.

Always inspect your safety belt prior to donning, look for cuts, excessive dirt, grease or other damage. If it is found to be defective, do not use it and remove it from service.

Note: A lanyard is of no value unless worn.

DON'T TAKE CHANCES.



3.26 Falling objects

Personal Safety

Falling objects

Falling objects are one of the main causes of fatalities in underground mines.

Section 28(1) of the Operation of Mines Regulation in Manitoba states: "No worker shall work, and no employer shall require a worker to work, at a location on surface or underground where other work is being carried out above the worker unless the worker is protected by such measures as are required by the activities in the workplace above."

Precautions To Be Observed:

Whenever persons are working overhead, the area below is to be roped off or otherwise suitably guarded and signs affixed as required.

A hand line and, where practical, a bag or bucket is to be used, when passing material to and from personnel working overhead.

All persons are to stand clear of suspended loads.

3.27 Runs of Muck

Personal Safety

Runs of Muck

A run of muck is the uncontrolled movement of ore or rock from a storage location (bin, chute, ore pass, etc.).

A run of muck underground is caused in some instances by the failure of the mechanism controlling the flow of muck from the storage location.

However, the most frequent cause of a run of muck is an abnormal amount of water entering the muck. This condition is extremely hazardous and requires specific procedures for each occurrence.

Note: Report all wet muck conditions or indications of water entering a muck storage area, to company supervision immediately.

3.28 Explosives

Personal Safety

Explosives

All blasting accidents are serious and all regulations must be followed to the letter.

Note: If you are not sure, DO NOT BLAST.

Adhere to all instructions given by a person blasting or guarding a blast.

Leave your work area as instructed; do not return until told to do so.

3.29 Oxygen Deficiency

Personal Safety

Oxygen Deficiency

The term oxygen deficiency simply means that there is not enough oxygen in the air to support human life. Air containing less than 18% oxygen is a hazardous atmosphere and results in the slowing down of the pulse rate, unconsciousness and death.

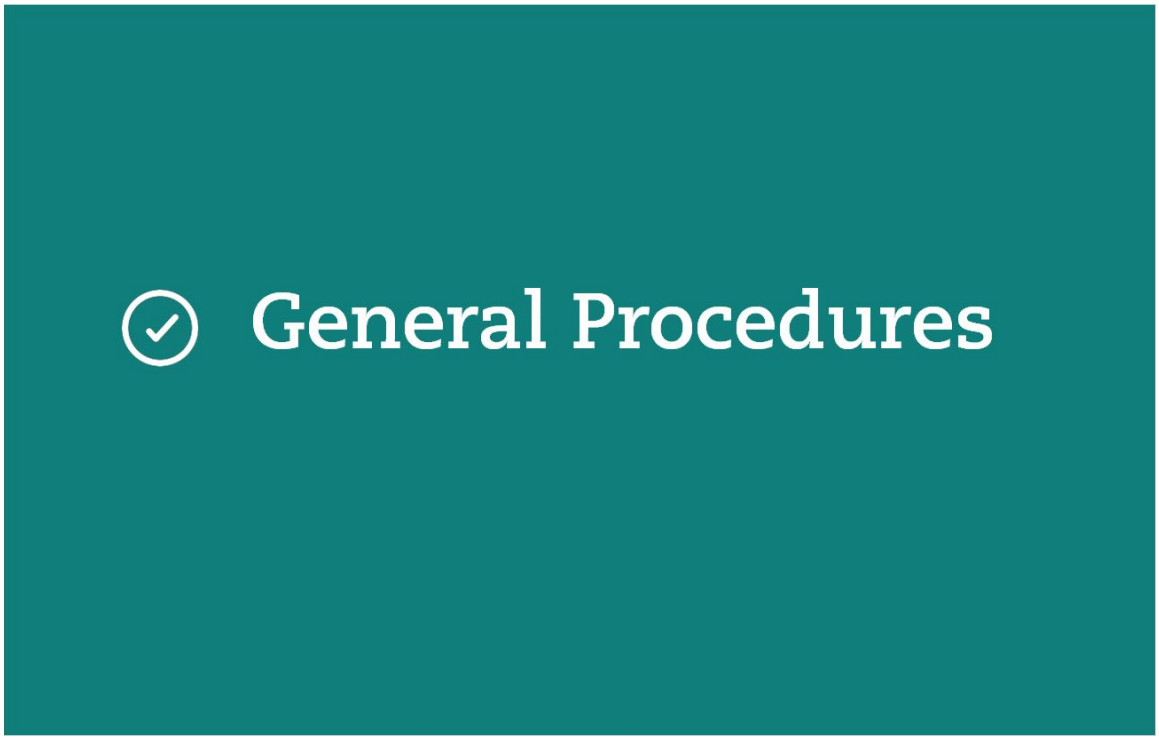
Oxygen Deficiency can be caused by the following:

- Absorption by water, timber or ore
- Rust formation
- Combustion (fires)
- Displacement by other gases (carbon dioxide, carbon monoxide, combustion gases).

Fires rapidly consume available oxygen. An area may be dangerously low in oxygen long after a fire has gone out.

4. General Procedures

4.1 General Procedures



4.2 Check In/Out Procedure

General Procedures

Check In/Out Procedure

It is your responsibility to use and follow the system and procedures at the mine, in which you are located.

Every worker must use the tag in boards on surface.

Each worker is responsible to move their own tags to the proper place, in when on shift and out when off shift.

4.3 Check In/Out Procedure

General Procedures

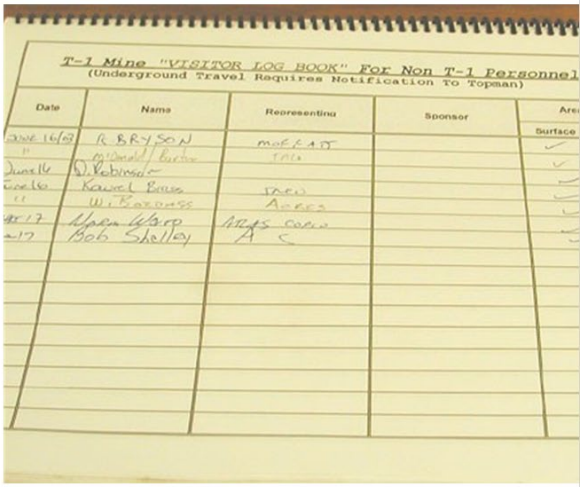
Check In/Out Procedure

A visitor's logbook is kept and maintained in the topman's office.

All visitors will check in by listing:

- The date
- Their name
- Their company
- Where they are visiting
- Time down/Time up

When they list the time up, this will be a check out. The topman will check this book at the end of his shift and determine if the visitor has checked out or is still in the mine.



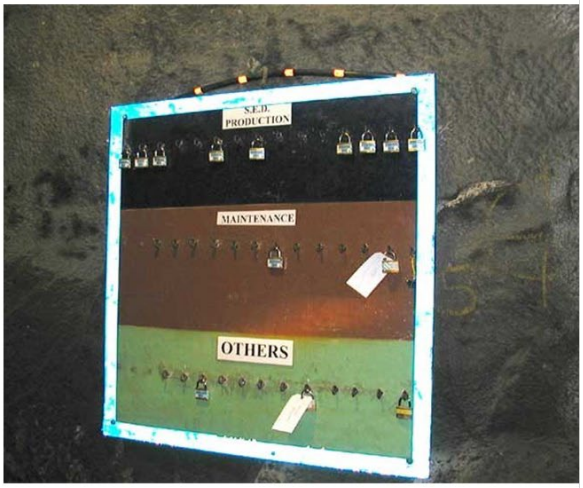
4.4 Central Blasting Areas

General Procedures

Central Blasting Areas

In central blasting areas, all persons in these areas must be under a personal lock/tag or under a sponsor's lock/tag.

This procedure will be explained to you at the mine or area that you will be working/visiting in.



4.5 The Reporting of Accidents

General Procedures

The Reporting of Accidents

It is company policy and also a requirement of the Workers Compensation Board (WCB) that all injuries and illnesses occurring on the job, no matter how slight, be reported as soon as possible.

If immediate treatment is required, you will go to First Aid.

Any injury not requiring immediate first aid treatment must be reported to the first aid room, before you leave the property.

The Benefits of Reporting All Injuries and Illnesses;

- The proper treatment of a minor injury can prevent serious complications such as infection and unnecessary personal discomfort.
- Workers Compensation Benefits are less apt to be delayed or denied, when injuries and illnesses are reported properly and on time.

4.6 Personal Behaviour

4.7 Vale's Alcohol and Drug Instruction

General Procedures

Vale's Alcohol and Drug Instruction

Vale is committed to protect the health and safety of employees & contractors, and the environment of the communities in which they operate.

- Health, safety and environmental performance relies on good judgment and precise action.
- Employees & contract workers are operating in a safety-sensitive work environment.
- The use of illicit drugs, inappropriate use of alcohol and medications can impact health and safety throughout the operations.
- This Instruction complies with our legislative duty to ensure all workers are fit for work and is a key component of the SHE Management System.

4.8 Application

General Procedures

Vale's Alcohol and Drug Instruction - Application

We expect that your company, employees, subcontractors, and agents will comply with these minimum requirements when:

- Engaged in Vale business.
- At all times when on Vale premises and property including when operating vehicles and equipment.
- Violations will result in removal from site access privileges and up to termination of contract.

4.9 Contractor Responsibilities

General Procedures

Vale's Alcohol and Drug Instruction – Contractor Responsibilities

Ensure that their representatives remain free from any adverse performance effects of alcohol or other drugs when:

- Engaged in Vale business.
- At all times when on Vale premises and property including when operating vehicles and equipment.
- Contractors are encouraged to implement an Alcohol and Drug Policy of their own which meets or exceeds Vale requirements.
- However having their own Policy is not mandatory.

4.10 Contract Employee Responsibilities<

General Procedures

Vale's Alcohol and Drug Instruction – Contract Employee Responsibilities

Contract Employee Responsibilities include the following;

- Report fit for duty, and remain fit throughout their work day or shift.
- Adhere to the fitness for duty standards that have been set out by Vale.
- Maintain a valid drivers license if it is a condition of work and report any loss of license immediately (no later than 24 hours after losing the license).
- Conduct themselves in an appropriate manner while on Vale business, premises, and property.
- Co-operate with an investigation into an Instruction violation including any testing requirements.
- If unexpected circumstances arise where a contract worker is requested to perform services while under the influence of alcohol or other drugs that could impact safe operations, it is the responsibility of that individual to inform the Contractor or a Vale representative that he or she cannot accept that assignment.

4.11 Key Requirements - Standards

4.12 Standards: Drugs

General Procedures

Vale's Alcohol and Drug Instruction – Key Requirements

Standards: Drugs

Illicit Drugs:

The following are prohibited while on Vale business, premises, and property:

- The use, possession, cultivation, manufacture, distribution, offering or sale of illicit drugs or illicit drug paraphernalia.
- Reporting to work or being at work while under the influence of illicit drugs.
- A positive drug test as determined through the testing program.

4.13 Standards: Alcohol

General Procedures

Vale's Alcohol and Drug Instruction – Key Requirements

Standards: Alcohol

- The use, possession, distribution, offering or sale of beverage alcohol is prohibited when on Company business, premises, and property consistent with the dry site rules and industry regulations.

In addition, contract workers cannot:

- Report for work or remain at work under the influence of alcohol from any source.
- Consume any product containing alcohol (including beverage alcohol) when on duty including during meals or breaks.
- Return to work or report for work after consuming alcohol at a social event.
- Have a positive test as determined through the testing program.
- Use alcohol after an incident until tested or advised testing is not required.
- Alcohol use or possession is permitted at off-site residential facilities unless specifically prohibited by site management.

4.14 Standards: Medications

General Procedures

Vale's Alcohol and Drug Instruction – Key Requirements

Standards: Medications

Contract workers are expected to responsibly use prescribed and over the counter medications.

They should investigate (through their doctor or pharmacist) whether a medication can affect safe operation, and take appropriate steps to minimize associated risk, which would include notifying their company or a Vale representative of any need for modified work under the circumstances.

The following are prohibited while on Vale business, premises, and property:

- The possession of prescribed medications without a legally obtained prescription, and distribution, offering or sale of prescription medications (trafficking).
- The intentional misuse of medications (e.g. using the medication not as it has been prescribed, using someone else's prescription medication, combining medication and alcohol use against direction).

4.15 RISK MANAGEMENT INVESTIGATIONS

General Procedures

Vale's Alcohol and Drug Instruction – Risk Management Investigations

Unfit for Work Investigations:

Vale reserves the right to require a Contractor to fully investigate a possible Instruction violation if a contract worker is on duty in an unfit condition, including the requirement for a reasonable cause test.

Possession of Banned Substances:

- Supervisors or security will advise senior management of any concern.
- Senior management will determine whether and how to initiate an investigation, including whether to involve law enforcement.
- A contract worker, who refuses to submit to an investigation requested by a Vale representative, will be removed from the premises.

4.16 RISK MANAGEMENT INVESTIGATIONS

General Procedures

Vale's Alcohol and Drug Instruction – Risk Management Investigations

Impaired Driving Situations:

- If required to operate any company vehicle on behalf of Vale, contract workers are expected to report the loss of their driver's license.
- They are required to immediately report receipt of an impaired driving charge to their contract manager or supervisor if it is received while operating a vehicle on behalf of Vale, and to comply with all investigation procedures and consequences.

Incident Investigations:

- Vale reserves the right to require a contract worker to be tested for alcohol and drugs as part of an investigation into a serious or potentially serious incident.
- The decision to refer someone, or a group of individuals, for a test will be made by the Vale representative investigating the incident in conjunction with the Contractor, if available.

4.17 RISK MANAGEMENT INVESTIGATIONS

General Procedures

Vale's Alcohol and Drug Instruction – Risk Management Investigations

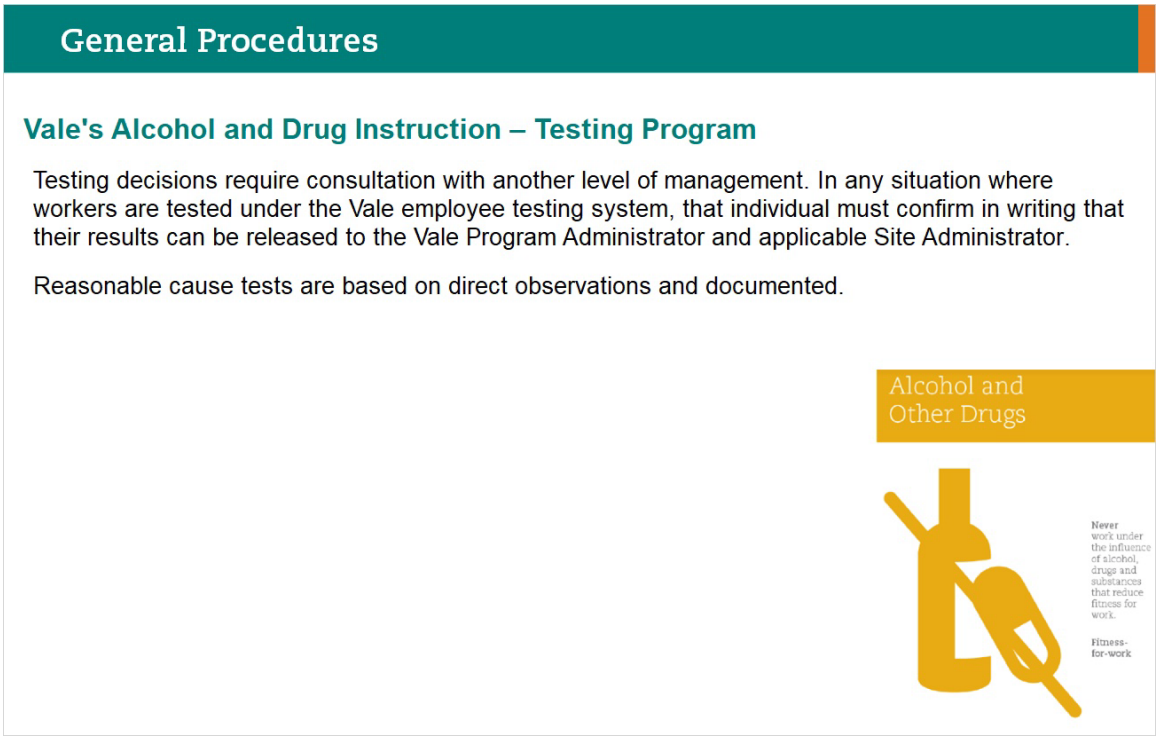
Other Testing Circumstances:

- Vale reserves the right to require contract workers who hold a higher risk position, or who are assigned to work on a high risk operating or project site to be tested prior to assignment.
- Testing may also be required on an unannounced basis when it is deemed necessary to meet the objectives of this Instruction. All Contractors affected will be advised in advance of these requirements.

Access to Testing Services:

- Minimum standards for the testing program are provided in the appendix.
- Only Vale representatives can initiate tests through the Vale System.
- If contract companies have their own testing systems, they must be conducted off Vale Property.
- If your company does not have testing services, you are encouraged to independently obtain testing services (procedures consistent with those set out in this Instruction).

4.18 Testing Program



4.19 Testing Program

General Procedures

Vale's Alcohol and Drug Instruction – Testing Program

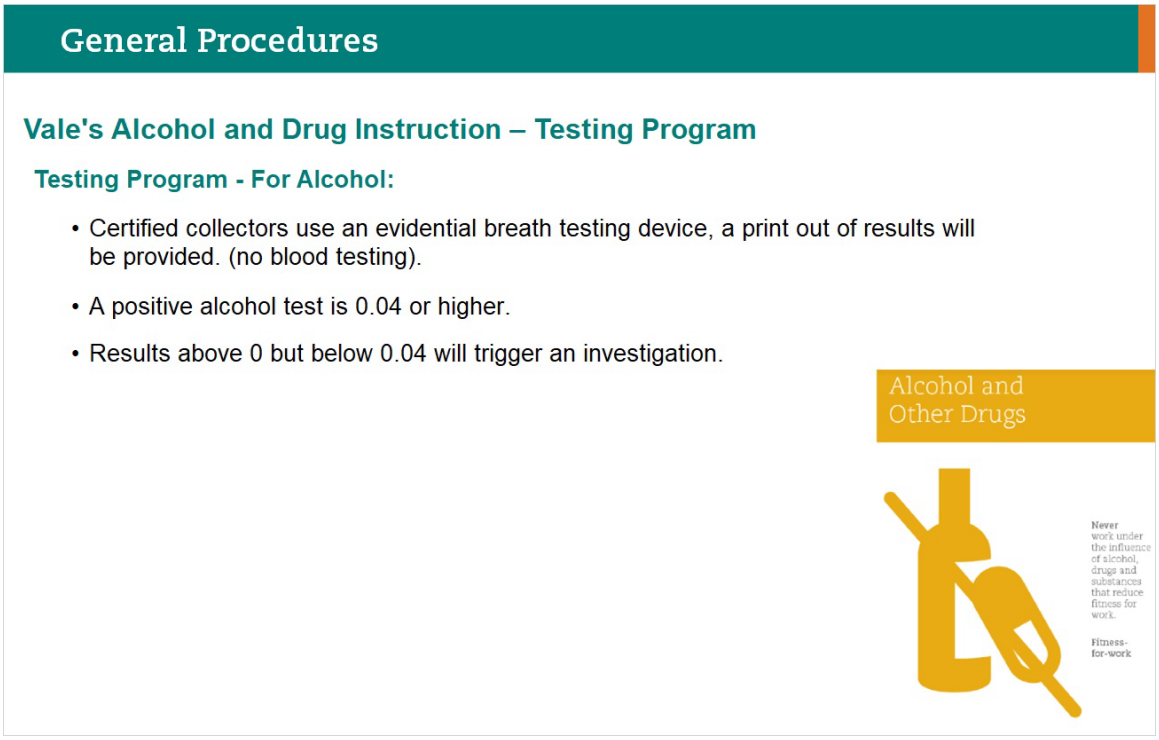
Post incident tests are initiated after an incident resulting in:

- a fatality or serious injury to any individual;
- an environmental incident with adverse effects;
- significant loss or damage to property, equipment or vehicles;
- significant loss of Company or client revenues;
- a near miss with significant potential for serious consequences;
- any other incident or a near miss.

Post Incident Testing will not be triggered if there is an immediately obvious structural, mechanical or environmental cause for the incident.

Post Incident Testing will be conducted on those whose acts, errors or omissions contributed or potentially contributed to the incident.

4.20 Testing Program for Alcohol



4.21 Testing Program for Alcohol

General Procedures

Vale's Alcohol and Drug Instruction – Testing Program

Testing Program - For Drugs:

- Point of Collection Urine Test (POCT) will be conducted at secure site location administered by a certified collector.
- If POCT result is “non-negative” samples sent to certified laboratory.
- An independent Medical Review Officer (MRO) – reviews all +results.
- The employee can discuss the result with the MRO.
- MRO reports results to the Site Administrator.
- Second hand smoke, poppy seeds and legitimate use of a medication CANNOT cause a positive result.
- Tampering will be identified by the collector or lab.

4.22 Testing Program for Alcohol

General Procedures

Vale's Alcohol and Drug Instruction – Testing Program

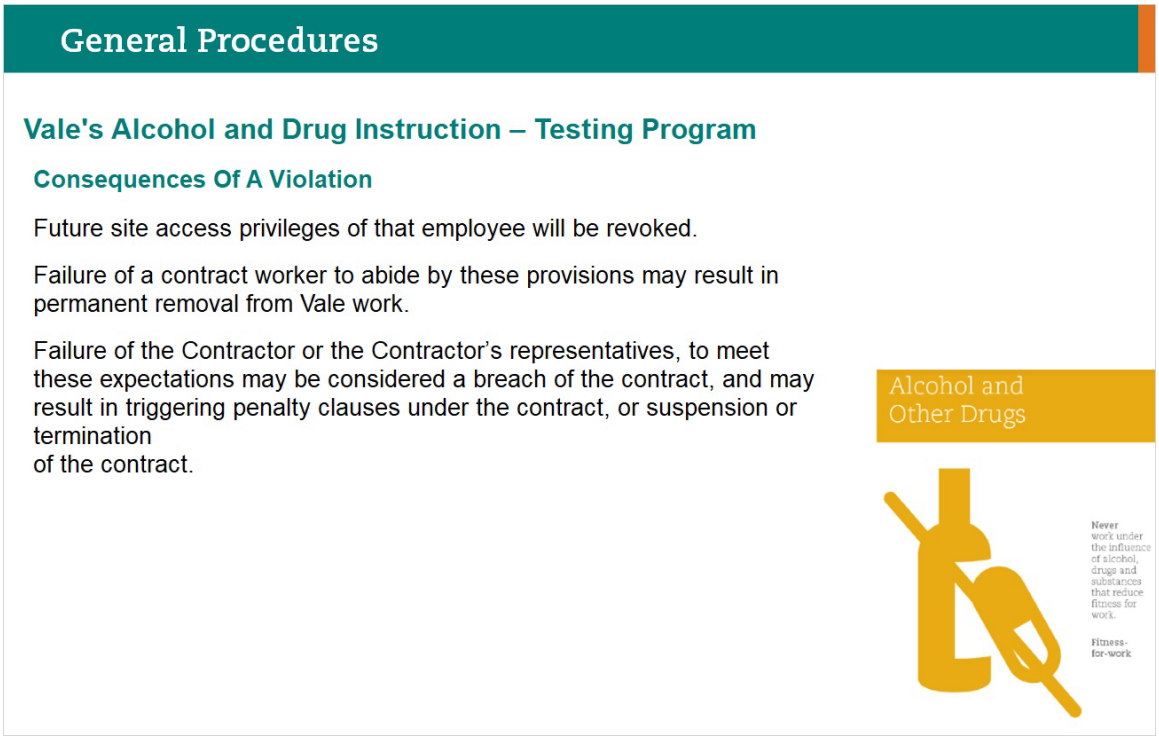
Consequences Of A Violation

The individual will not be allowed to return to work for Vale without written permission, and will be required to adhere to any conditions governing their return.

If the Contractor confirms that a breach of the Instruction has occurred, they are required to take the appropriate steps to prevent further risk to people, property, the environment or the company's business and inform Vale of the actions to be taken.

Failure to report directly for a test, refusal to submit to a test, refusal to agree to disclosure of a test result to the Vale Site Administrator or a confirmed attempt to tamper with a test sample, or failure to report an incident which may require testing, are a violation of this Instruction.

4.23 Testing Program for Alcohol



4.24 Testing Program for Alcohol

General Procedures

Vale's Alcohol and Drug Instruction

Vale places high priority on life, safety and health in the workplace.

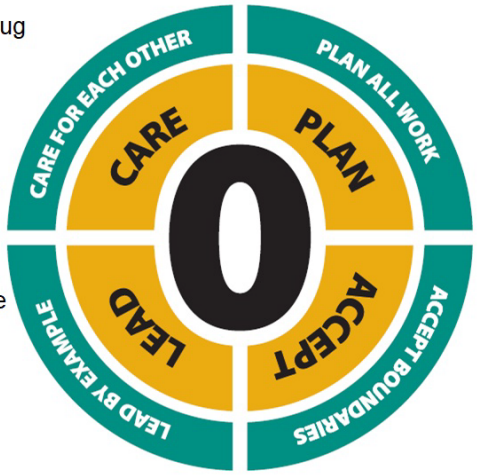
Everyone is expected to comply with the Vale alcohol and drug instruction standards.

PLAN: To come in fit for work every rotation and remain fit.

ACCEPT: The standards of this instruction and comply with them.

LEAD: Get help if you need it before it creates a health and safety problem for you and the worksite. Set a good example of being fit and remaining fit at work.

CARE: Care about your own wellbeing and others.



4.25 SLAM Dunk

General Procedures

SLAM Dunk

The intent of SLAM Dunk is to promote sustainability.

Every Vale employee as well as every contractor and visitor at the Manitoba Operations will be expected to SLAM Dunk.

That means over 1500 people on the waste management team.

SLAM Dunk

Our landfill is not the right place to send most of our waste - in fact, much of what we call waste is a potential resource that can be reused or sold. Co-mingled General Recyclables cost us $40/MT to recycle. Properly segregated Cardboard will pay us $30/MT and Office Paper will pay us $75/MT. A clean scrap metal pile will generate a higher payout.

People will choose to properly dispose of any waste, given the opportunity.

4.26 How it works

General Procedures

SLAM Dunk – How it Works

The intent of SLAM Dunk is to promote sustainability.

A new Vale Waste Management Facility was completed in 2012, complete with one landfill cell constructed to new waste disposal ground regulations. In 2013, Vale Partnered with Tervita as a Waste Management Facility Operator.

SLAM Dunk should NOT hinder our everyday operations. It should provide opportunities to enhance it.

SLAM Dunk uses colour-coded bins in various sizes with symbols to identify the waste stream for that bin.

SLAM Dunk Waste Laydown Areas are located outside of each plant, some plants have more than one.

4.27 How it works

General Procedures

SLAM Dunk – How it Works

SLAM Dunk doesn't take long to do, just a few extra moments. Just as you SLAM any task before you start, you'll SLAM materials to decide what to do with them to prevent harm to others. We all have to work together to make it work and if we do, the handling our waste will be safe and efficient.

SLAM Dunk, is four steps: Stop, Look, Assess, and Manage.

Stop before you simply throw a used item into the nearest container.

Look and see what the item is and whether it can be reused, recycled, or simply is general waste.

Assess and decide into which colour-coded bin the item should go based on its waste stream.

Manage by putting the item into the right bin based on your assessment.

4.28 Waste Streams

General Procedures

SLAM Dunk – Waste Streams

SPI28-7 covers the minimum amount of segregation that must be followed.

The five minimum waste streams are:

- Scrap Metal
- Wood
- General Recyclables
- Hazardous
- General Waste

Each of the minimum 5 streams MUST be kept separate, especially the hazardous wastes.

SLAM Dunk has expanded the waste streams to help turn our waste into a resource. More segregation means it is easier to find someone interested in recycling a particular stream.

The additional waste streams are:

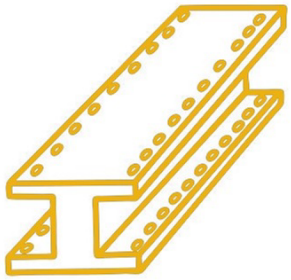
- Cardboard
- Office Paper
- Non-Industrial Plastics
- Organics
- Industrial Plastics
- Rubber
- Difficult Waste
- Contaminated

4.29 Scrap Metal Tips

General Procedures

SLAM Dunk – Scrap Metal Tips

- Use steel tipping bins for smaller items.
- Place large items on pallets.
- Metal contaminated with oil or grease needs to be contained to prevent rain and snow from washing it into the earth.
- Use labeled drums or bins to keep it separate.
- Shavings must be kept separate in drums or tipping bins.
- If a motor is determined to be waste using the new standard for overhaul and rewind sizing, place motors less than 50lbs in the closest MWB or secure motors 50lbs or greater to a pallet.



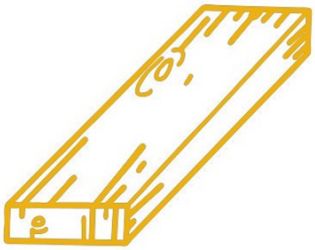
Segregate specialty metals using labeled drums (use a label maker to provide specific labelling or request a label by calling 2003). For example: Zinc, Bronze, Stainless, Steel, Titanium, Aluminum, Cables, Copper.

4.30 Wood Tips

General Procedures

SLAM Dunk – Wood Tips

- All exposed nails are to be removed or bent for the safety of others that may come into contact with the wood.
- Remove spikes from railway ties.
- Wood products are to be dismantled if done easily. If not, stack on pallets.
- Cut large pieces to 8 foot lengths, 4 foot, if possible. If not, stack on pallets.
- Neatly stack pallets.



- Separate pallets as per: blue and orange, clean and reusable, clean and unusable, nickel contaminated.
- Neatly stack cribbing.
- Contaminated wood must be kept separate.
- Empty cable reels are to be brought to the closest WLA.
- Keep rock and concrete out of wood waste.

4.31 General Waste Tips

General Procedures

SLAM Dunk – General Waste Tips

This waste ends up in landfill. All efforts are made to reduce this waste stream by considering the impact to the environment and business.

General waste includes items that cannot be recycled, reused or sold. Some of the more common general waste items include:

- Take out coffee cups (without the sleeve and lid).
- Tissue.
- Polystyrene (Styrofoam).
- Hand towels.
- Jiffy envelopes (bubble wrap envelops).
- Laminated paper.
- Fibreglass insulation and rigid rope.

4.32 General Recyclables Tips

General Procedures

SLAM Dunk – General Recyclables Tips

- Empty all containers.
- Tin cans, Rinse and hand crush when possible.
- Boxboards are the typical tissue or cracker boxes. Boxboards belong in General Recyclables not Cardboard.
- Take out coffee cup sleeves are to be separated from the cup and placed in General Recyclables. The cup itself belongs in General Waste.

Note: All recyclable waste that does not belong in Cardboard, Office Paper and Non-Industrial Plastics, should be placed in this bin.

4.33 Cardboard Tips

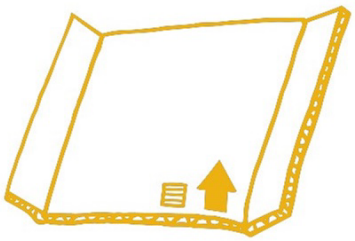
General Procedures

SLAM Dunk – Cardboard Tips

Look for the wavy corrugated layer. Empty, dismantle and flatten all boxes. This waste stream provides the highest rebate due to the volume generated. It is one of the easier streams to segregate.

Some common errors in segregation are:

- Failing to flatten the boxes. - Flattening ensures the box is emptied of non-cardboard waste and provides more airspace in the collection containers.
- Mixing boxboard. Not everyone understands the difference between cardboard and boxboard.



4.34 Office Paper Tips

General Procedures

SLAM Dunk – Office Paper Tips

Although the labels indicate White Office Paper, this stream includes good quality paper in any colour. The symbol was developed before the waste stream contents were fully understood.

A good rule of thumb is if you would put it in your printer, it belongs in this stream.

Keep paper flat, do not crumple. Shred confidential paper. Contain shredded paper in clear plastic bag.

4.35 Organics Tips

General Procedures

SLAM Dunk – Organics Tips

Although the Organics waste stream is part of SLAM Dunk, few plants have implemented the segregation of organic waste.

If Organics bins are in use, the small bins in use indoors must be emptied daily into larger outdoor bins at the WLA.

If Organics bins are not in use, place organic waste in General Waste.

4.36 Non-Industrial Plastics Tips:

General Procedures

SLAM Dunk – Non-Industrial Plastics Tips:

- Empty as much as possible.
- Rinse and hand crush when possible. If rinsing is not an option, wipe clean with a paper towel.
- Recycle the container and dispose of the paper towel in General Waste.
- Plastic lids from take out coffee cups belong in Non-Industrial Plastics.

4.37 Industrial Plastics Tips:

General Procedures

SLAM Dunk – Industrial Plastics Tips:

- Hard plastics.
- Non-contaminated only.

SLAM Dunk – Rubber Tips:

- Non-contaminated only.

4.38 Summary

General Procedures

SLAM Dunk – Summary

Everyone is accountable to properly segregate waste and empty bins. SLAM Dunk and SafeProduction.

If we follow SafeProduction, it makes it really easy.

- Plan to place the waste in the right bin by learning what goes where and having the right bins accessible.
- Accept that proper segregation is the right thing to do.
- Care, for everyone that may come into contact with the waste in each stream, for the environment, and for the business by allowing us to create resources out of some waste streams.
- Lead, by making the right choices and helping others do the same.

4.39 Housekeeping

General Procedures

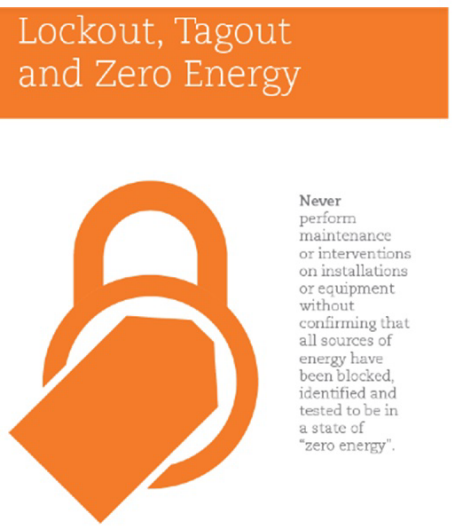
Tagging Procedures

Only authorized individuals may operate switches and valves on equipment and systems, however everyone working on that equipment or system must be protected by their personal lock and tag.

When a personal lock cannot be applied, an alternate means of ensuring equipment remains isolated must be used. Isolating and locking and tagging equipment at a control mechanism is not acceptable. Never operate equipment which is tagged out.

Switch operators may only operate the switches that they have been authorized and trained to operate. Un-authorized removal of a tag may result in injury to self and others.

Refer to the Lock and Tag SPI No. 34-27.



4.40 The Personal Protection Tag

General Procedures

Personal Protection Tag

Every individual must ensure his or her own safety by applying their own lock and personal protection tag.

Equipment Status Tag

The Equipment Status Tag indicates the equipment is not suitable for operation and may create a hazard if operated.

Superintendent's Hold Tag

The Equipment Status Tag indicates the equipment is not suitable for operation and may create a hazard if operated.

4.41 General Rules - Tagging

General Procedures

General Rules - Tagging

All tags must be securely attached to ensure that they will not fall or be blown off.

All information written on tags must be clear and legible.

Always do a thorough initial check on equipment. Correct any defects or unsafe conditions before use and report it to your supervisor.

Do not operate any machine you believe to be unsafe. It is your responsibility to report conditions, hazards or any unusual situations to your supervisor whether or not there has been any damage or personal injury.

4.42 Defective Equipment

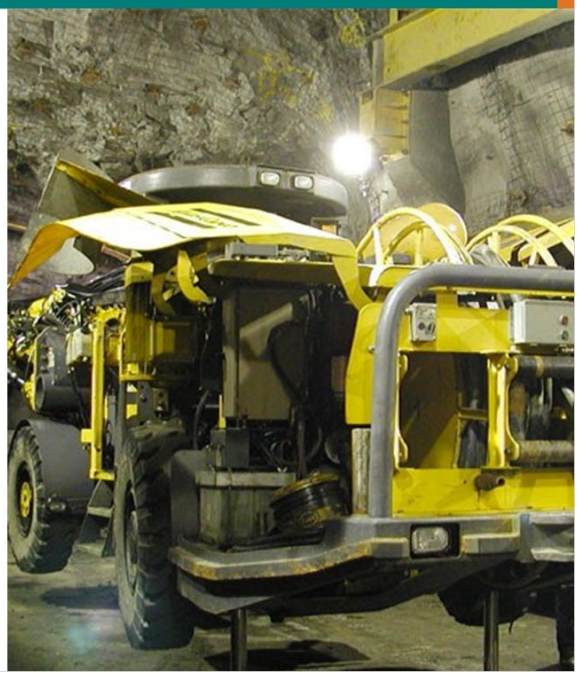
General Procedures

Defective Equipment

Always do a thorough initial check on equipment.

Correct any defects or unsafe conditions before use and report it to your supervisor.

Do not operate any machine you believe to be unsafe.



4.43 Disabled Equipment Towing Procedures

General Procedures

Disabled Equipment Towing Procedures

Only competent and authorized vehicle operators are to tow a piece of equipment.

A competent authorized person is to be in charge of and check the towing arrangements and equipment.

Disabled vehicles are not to be pushed up a ramp.

Standard hitches and towing arrangements are to be used.

4.44 Burning and Welding

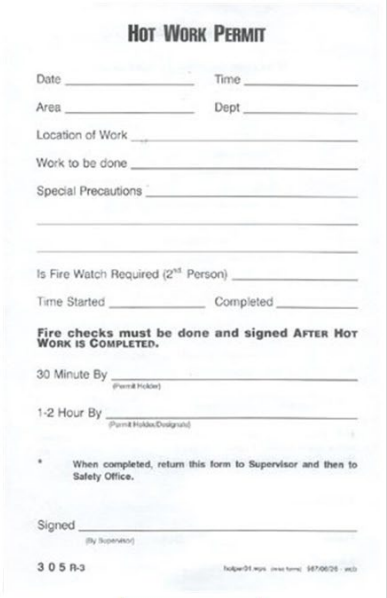
General Procedures

Burning and Welding

Any hot work involving the use of oxygen acetylene, kerosene, gasoline, or any other fuel, and any work using electric arcs requires a written burning permit.

The person doing the welding, cutting, heating, or burning is to have possession of a properly authorized burning permit for the job to be done.

Note: Please review a sample of a hot work permit. Refer to Fig. 3 Hot Work Permit.



HOT WORK PERMIT

Date _____ Time _____

Area _____ Dept _____

Location of Work _____

Work to be done _____

Special Precautions _____

_____

_____

Is Fire Watch Required (2nd Person) _____

Time Started _____ Completed _____

Fire checks must be done and signed AFTER HOT WORK IS COMPLETED.

30 Minute By _____
(Permit Holder)

1-2 Hour By _____
(Permit Holder/Designate)

* When completed, return this form to Supervisor and then to Safety Office.

Signed _____
(By Supervisor)

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Flip Over

Back (Slide Layer)

General Procedures

Burning and Welding

Any hot work involving the use of oxygen acetylene, kerosene, gasoline, or any other fuel, and any work using electric arcs requires a written burning permit.

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Note: Please review a sample of a hot work permit. Refer to Fig. 3 Hot Work Permit.

INITIAL CHECK

To Be Filled Out Prior To Start Of Job

Y	N	
☐		Equipment to be used in good repair.
☐	☐	Area (3 meters) clear of combustibles and flammables.
☐		Fire Extinguisher(s).
☐	☐	Water Hose.
☐		Not within 8 meters of explosives.
☐	☐	Not within a No Smoking area.
☐	☐	Second man required.
☐	☐	Area to be wetted down.
☐	☐	All wall and floor openings covered.
☐	☐	Equipment cleaned of all combustibles and flammables.
☐	☐	Containers purged of flammable vapours.
☐	☐	Combustibles and flammable liquids protected with covers, guards, or metal shields.
☐	☐	Area secured/guarded.

* If you have put a check mark in a "no" box, you must fill out the special precautions part of the permit. If there is not a "no" box beside an item, you must comply with the statement.

This location has been examinod, and all of the necessary precautions taken. Permission is granted for this work after the INITIAL CHECK is completed and signed by the permit holder.

Completed By _____
[Permit Holder]

Time _____ **Date** _____

305A

Flip Back

4.45 Burning and Welding

General Procedures

Burning and Welding

Established repair depots, such as car repair rooms and diesel equipment garages, where fire extinguishers and water under pressure is available, may be exempt from the requirement to have a permit.

A second competent worker shall be employed to attend to the operation of the cylinder control devices and to guard against any outbreak of fire.

- Where cylinders of oxygen acetylene or other compressed gas are operated from within any cage, skip or other shaft conveyance.
- Where a potential fire hazard exist; or at a location not readily accessible to the worker operating the nozzle equipment.

Back (Slide Layer)

General Procedures

Burning and Welding

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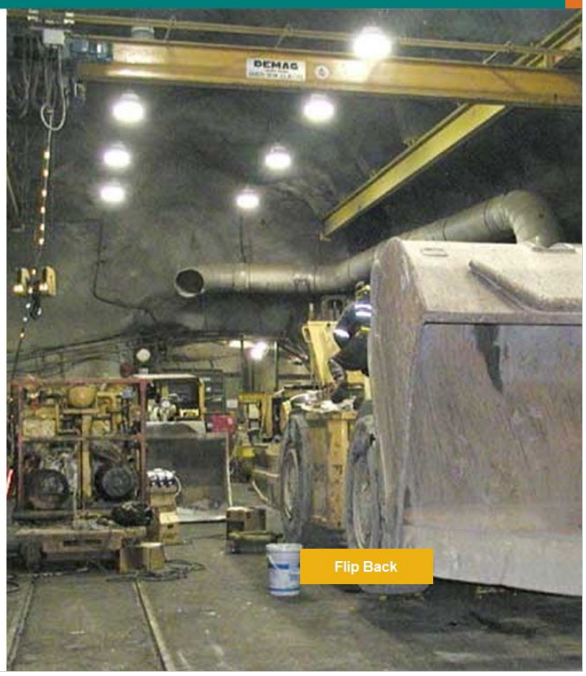

4.46 Burning and Welding

General Procedures

Burning and Welding – Fire Protection

Fire protection shall include wetting down the area, where practical, before burning and after the operation.

In cases where the slag or cuttings can fall down a shaft, raise, etc., they are to be caught in a pail, or a fire resistant blanket or a bulkhead is to be used to contain them.

Back (Slide Layer)

General Procedures

Burning and Welding – Fire Protection

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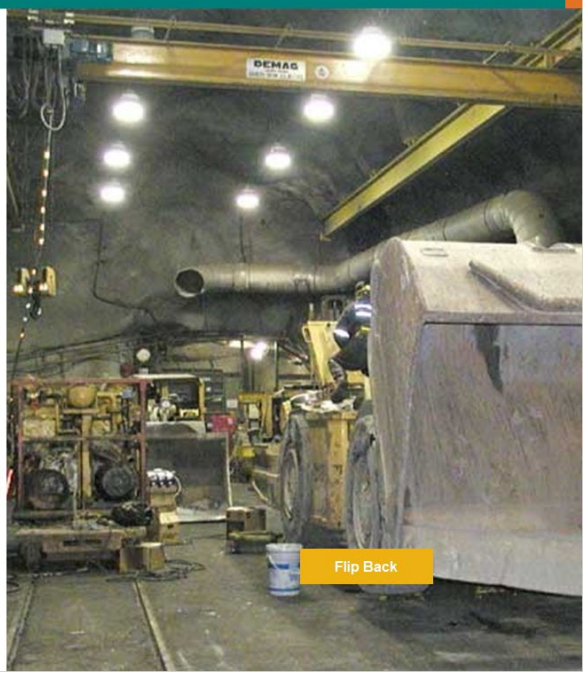
In cases where the slag or cuttings can fall down a shaft, raise, etc., they are to be caught in a pail, or a fire resistant blanket or a bulkhead is to be used to contain them.



4.47 Regulation

General Procedures

Burning and Welding – Regulation

The Operation of Mines Regulation in Manitoba Section 56(b) states, "the area where hot work is done shall be inspected for smouldering fires between one and two hours after hot work is finished".

To comply, the following will apply:

- When there is a replacement crew in the same work area on the following shift, all welding, cutting, heating, or burning operations will cease one hour prior to quitting time, unless crews are relieved on the job.
- When there is no following shift, all welding, cutting, heating, or burning operations will cease two hours prior to quitting time, unless special permission is received from the mine superintendent or designate.

Back (Slide Layer)

General Procedures

Burning and Welding – Regulation

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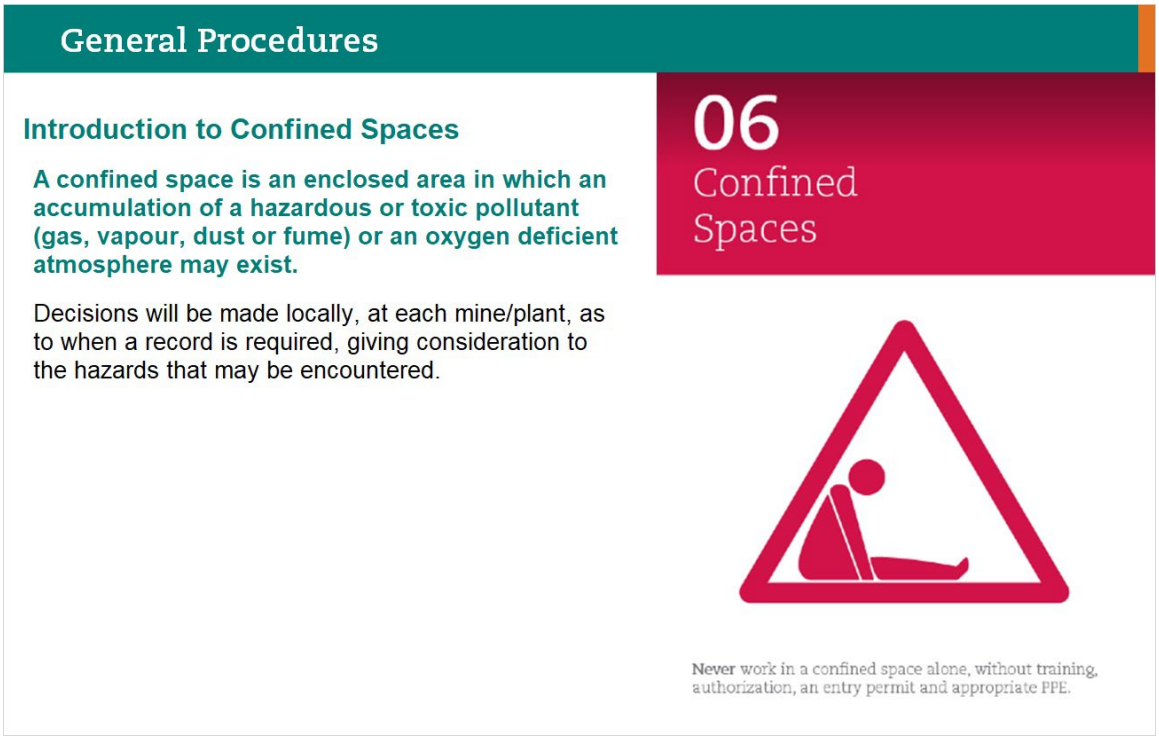
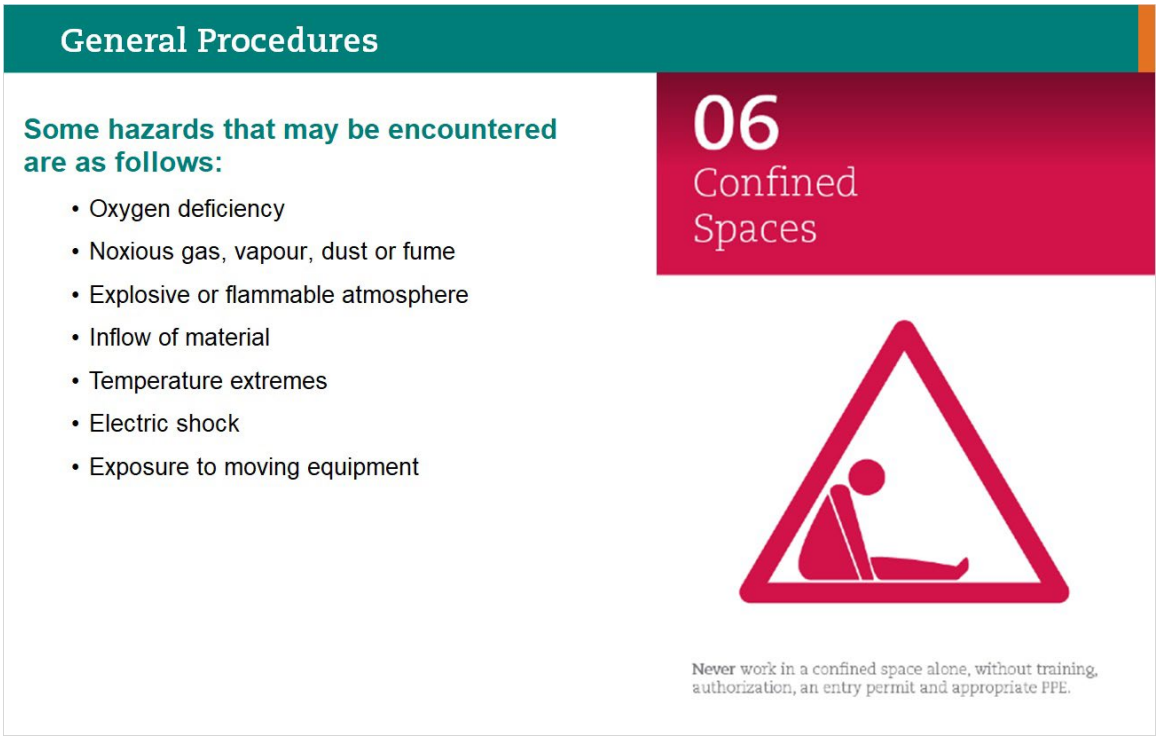
4.48 Introduction to Confined Spaces



4.49 Confined Space Hazards



4.50 Confined Space Controls

General Procedures

The supervisor in charge will decide what precautions and/or tests are required, but may delegate the testing to other competent persons, such as process technology personnel.

Some of the precautions that may be utilized are as follows:

- Machinery tagged and locked out
- System is empty or drained
- Air testing and Ventilation (continuous supply of air)

Further precautions including breathing apparatus are required if there exists, or is likely to exist, an oxygen deficiency or a toxic gas, vapour, dust or fume.

06
Confined
Spaces

Never work in a confined space alone, without training, authorization, an entry permit and appropriate PPE.

4.51 Confined Space Regulations

General Procedures

Regulations

Due to the large number of fatalities throughout industry from persons entering tanks, etc. which contain toxic or explosive atmospheres, the Operation of Mines Regulation now dictates certain precautions and procedures that must be followed prior to and during entry into certain "confined spaces".

Please review information on entering confined spaces.

Entry to confined space

253(1) No worker shall enter and no employer shall cause or permit a worker to enter a tank, pit, sump or other confined space until

(a) mechanical equipment in the confined space, except pumps, is

(i) disconnected form its power source, and

(ii) locked out;

(b) all pipes and other supply lines, except those required for the work therein, are closed and all valves locked out;

(c) the atmosphere in the confined space has been tested and evaluated by an authorized person who

(i) records the test results in a permanent record,

(ii) certifies in writing in the permanent record that the test indicate that the confined space is free from hazard, and

(iii) records the emergency and rescue procedures to be implemented in the event of a mishap in the confined space; and

(d) the confined space is adequately lighted by suitable means.

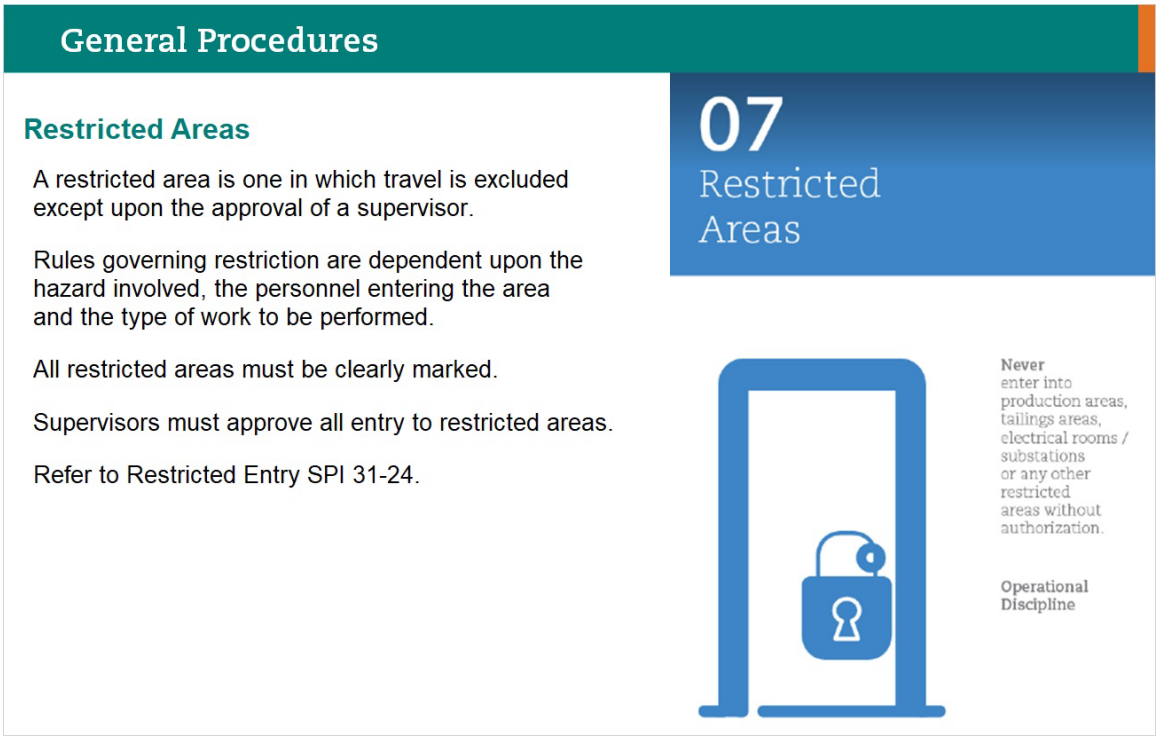
Egress from confined space

253(2) Subject to subsection (3), no worker shall enter, and no employer shall cause or permit a worker to enter, a confined space unless

(a) there is ready egress from all accessible parts of the confined space;

(b) the requirements of the subsection (1) are complied with;

4.52 Restricted Areas



4.53 Spill Reporting

General Procedures

Spill Reporting

A spill can be defined as any release, leakage or spillage of material, which could create a hazard to human life or health or could have a significant adverse impact on the environment.

The operator handling equipment or containers from which material has been spilled must take immediate action to contain and control the material.

Check containers to see if the material is labeled as dangerous goods (TDG or WHMIS). Report all spills of dangerous goods of any size to your immediate supervisor as soon as possible.

- Any chemical cannot be brought on site unless it is approved.
- Please refer to the Workplace Safety and health Act and to the Spill Reporting SPI No.35-3.

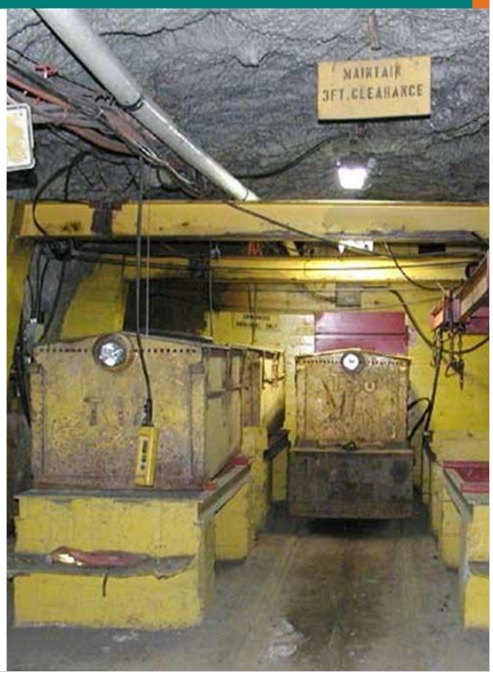
4.54 Mines Policy on Smoking in the Workplace

General Procedures

Mines Policy on Smoking in the Workplace

No smoking areas are:

- Battery charging stations.
- Within 25 feet of powder or fuse storage.
- Within 25 feet of oil or grease storage.
- Timbered areas.
- Shaft cages.
- In lunchrooms and refuge stations.
- Any other area where No Smoking signs are posted.



4.55 Mines Policy on Smoking in the Workplace

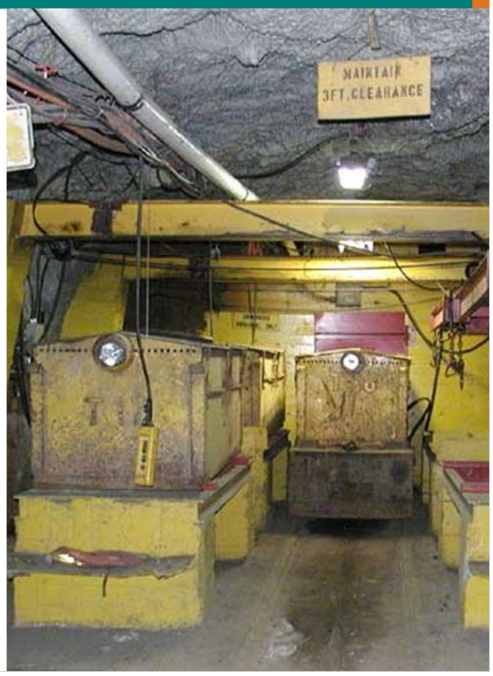
General Procedures

Mines Policy on Smoking in the Workplace

Smoking will be permitted where mechanically assisted ventilation maintains a minimum airflow of 50 cfm per square foot of face area; Examples are a 10' x 10' drift where 5,000 cfm is required and a 14' x 12' drift where 8,400 cfm is required.

Smoking will not be permitted in surface buildings.

Note: Refer to the Smoking in the Workplace SPI No. 26-8.



4.56 Level Conduct and Procedures

General Procedures

Level Conduct and Procedures

Level Conduct

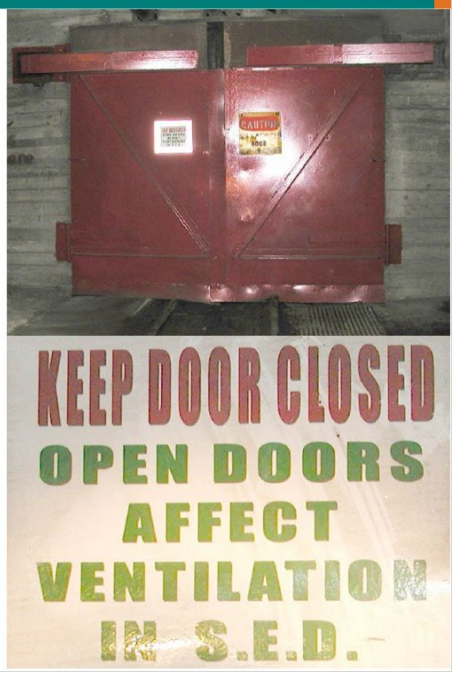
At all times when traveling on the level you must precede in an orderly manner.

Watch for and adhere to any danger, cautionary and directional signs.

Leave ventilation doors in proper position. *(indicate position)*

Observe no smoking areas.

Note: Notify the operator once you have passed through the train.



4.57 Ramp Travel

General Procedures

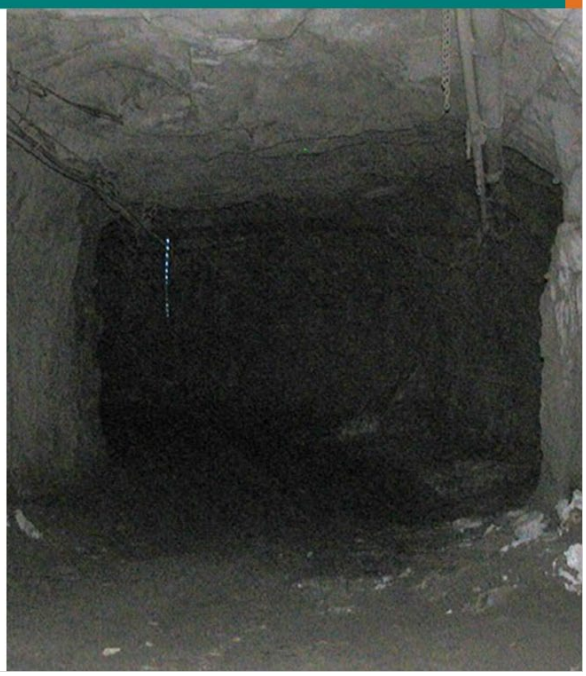
Level Conduct and Procedures

Ramp Travel

The same general precautions apply to walking on levels and ramps.

Watch out for slippery conditions and obey all signs.

Walk on the travelway side and step into safety stations to allow equipment to pass.



4.58 Mobile Equipment (Track And Trackless)

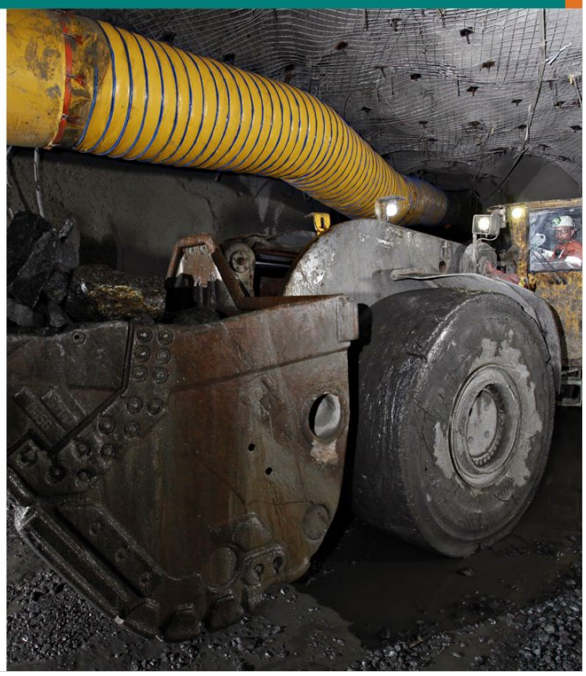
General Procedures

Level Conduct and Procedures

Mobile Equipment (Track And Trackless)

When travelling underground and you hear or see machinery approaching, you must:

- Stand in a safe place, tight against the wall if the location is wide enough, or in a safety station.
- Never walk beside a moving piece of mobile equipment and never hitch a ride on a piece of mobile equipment that is not designed to carry passengers.
- When traveling or working in a trackless (mobile) area, your cap lamp must be positioned in the proper location on your safety hat. This procedure makes you more visible to the operators of mobile equipment.



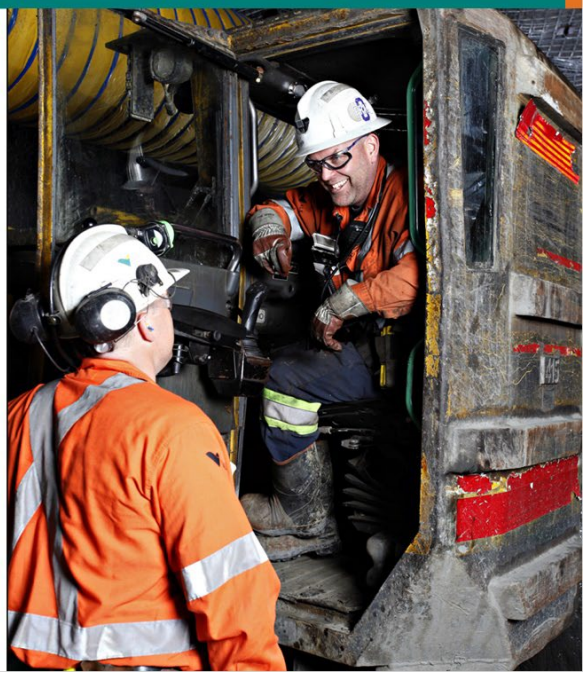
4.59 Oil And Fuel Storage

General Procedures

Level Conduct and Procedures

Oil And Fuel Storage

- Oil and fuel is to be stored ONLY in designated locations.
- Fuel is to be stored and transported in approved containers only.
- Appropriate signs must be in place and maintained at all locations where oil and fuel are stored and dispensed.
- Fire suppression systems must be in place.
- When transferring fuel from one tanker to another. The fuel transfer must be supervised at all times.



4.60 Ventilation

General Procedures

Level Conduct and Procedures

Ventilation

Maintaining the designed ventilation (airflow) in any mine is extremely important.

You can do your part by adhering to the following:

- Do not alter vent doors, controls, or raise top fans without authorization.
- Ensure auxiliary fans are on and the ducting is maintained in good order.
- Do not idle diesel equipment unnecessarily.

4.61 Ventilation

General Procedures

Level Conduct and Procedures

Ventilation

Constantly be aware of the possibility of an oxygen deficiency or a build up of toxic gases.

Pay special attention when entering:

- A manway or a raise.
- A dead-end drift.
- A recently sand filled area.
- Any unused area of the mine.
- Work area after a blast.

4.62 Control of Water Underground

General Procedures

Level Conduct and Procedures

Control of Water Underground

Every effort is to be made to keep water out of the ore and rock handling circuits; this is considered an unsafe condition.

- A communication procedure and system to report abnormal water conditions is to be in place.
- All engineered water controls must be maintained, such as: ditches, drain holes, sumps, pumps, dams, grades for levels and ramps etc.

4.63 Danger, Cautionary and Directional Signs

General Procedures

Level Conduct and Procedures

Danger, Cautionary and Directional Signs

Watch for and adhere to all danger, cautionary and directional signs such as:

- Danger - Keep Out
- Danger - Open Hole
- Escapeway
- Manway Closed/Open
- No Smoking
- Men Working Above

All signs are self-explanatory and are to be obeyed.

4.64 Roping Off

General Procedures

Level Conduct and Procedures

Roping Off

Protection of persons by roping off an area could occur as follows;

- To prevent personnel from entering an area during work activities, which are taking place above.
- To protect personnel from entering an area, where an uncontrolled hazard exists.
- To prevent personnel from entering an area, where construction is taking place.

4.65 Cage Procedure

General Procedures

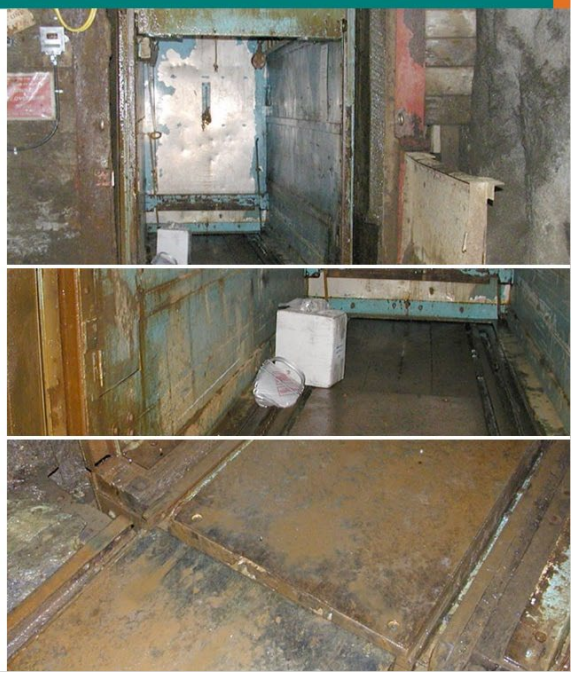
Level Conduct and Procedures

Cage Procedure

You are not to enter or leave the cage without the consent of the cage tender, and once permitted to do so, watch your step.

Basic Safeguards to be Taken While in the Cage;

- Line-up properly
- No smoking
- No drinks allowed
- No horseplay
- Keep tools or equipment on the floor at all times.



4.66 Shaft Station Procedure

General Procedures

Level Conduct and Procedures

Shaft Station Procedure

All persons waiting for the cage should observe the following safe procedures:

- Use the proper buzzer for requesting cage service.
- Do not touch the cage or skip signal system.
- Obey warning lights for explosives (No Smoking).
- Do not throw any objects into the shaft.
- Stay behind the shaft collar "I" beam when waiting for the cage.

4.67 Rockbolting and Screening Procedures

General Procedures

Level Conduct and Procedures

Rockbolting and Screening Procedures

As the face advances in all stopes and development headings, the specified bolts must be installed to within 4 ½' of the face.

The screen must be within 9' of the face.

The screen must be overlapped.

This may be done on previously installed bolts or when necessary on newly installed bolts in the same line.

Screen must be installed a minimum of 3' down the walls below the shoulder; further if warranted by ground conditions.

4.68 Rockbolting and Screening Procedures

General Procedures

Level Conduct and Procedures

Rockbolting and Screening Procedures

All bolts must be installed on a maximum of a 4’ x 4' diamond pattern.

Changing ground conditions may require additional bolts.

The bolting pattern is usually specified on the engineering print for the excavation.

Type, length and size of bolts will be specified by the mines engineering department.

No person is to expose himself to loose ground.

The area to be bolted is to be well scaled prior to drilling and scaled as required during drilling.

4.69 Rockbolting and Screening Procedures

General Procedures

Level Conduct and Procedures

Rockbolting and Screening Procedures

As each hole is drilled for bolting, the supporting bolt is to be installed and tensioned before the next hole is drilled.

A Well Installed Bolt Will Support Ground.

Note: A poorly installed bolt is worse than no bolt at all.

Well Installed Bolt

Poorly Installed Bolt

4.70 Nine Points of Good Scaling

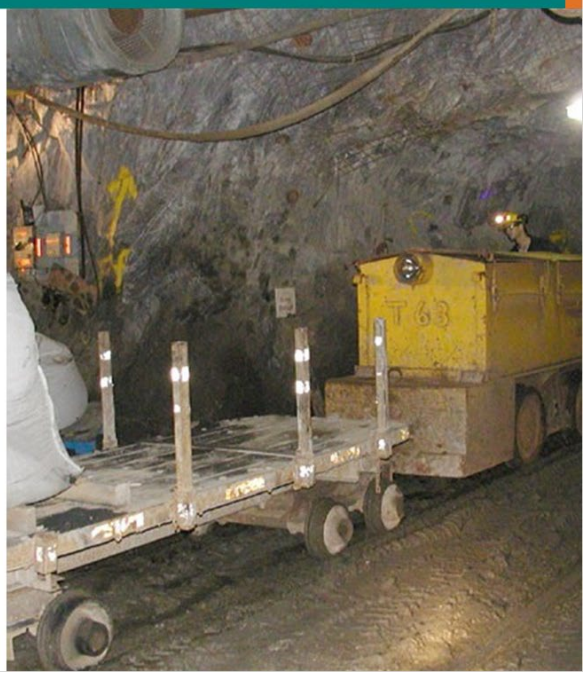
4.71 Tramming Procedure

General Procedures

Level Conduct and Procedures

Tramming Procedure

- Only competent and authorized persons may operate a rail haulage vehicle.
- All train movements are to be in accordance with an approved code of signals exchanged between the trammers.
- All trains are to carry an approved light, on the opposite end from the motor.
- Trammers are to be familiar with the standards that apply, to the transportation of explosives.
- Cars and trucks are to be coupled together when being moved by locomotive power.
- No car or loco is to be uncoupled while the train is in motion.



4.72 Tramming Procedure

General Procedures

Level Conduct and Procedures

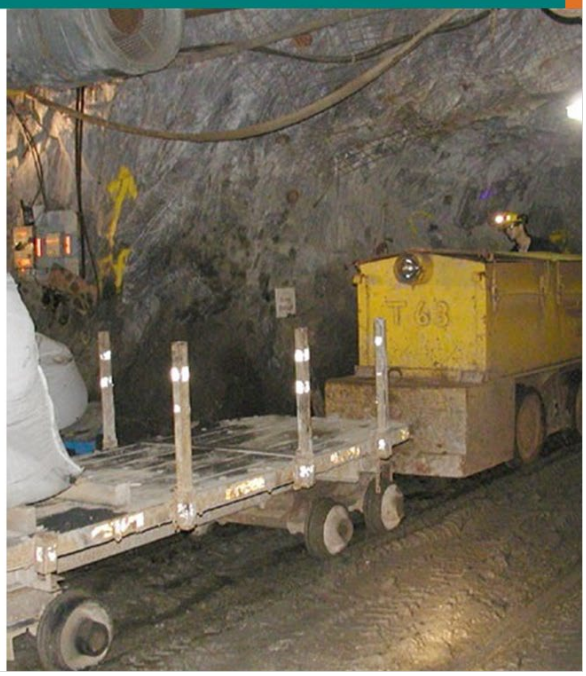
Tramming Procedure

All re-railing is done in accordance with approved procedures and mechanical devices.

The standard method of re-railing cars is the use of re-railers supplied to each locomotive.

However, should a motor crew display through experience and training, the ability to competently and safely re-rail cars using re-railing bars, jacks or chain blocks, they may be so authorized by their supervisor.

Carrying material on the top cover of a loco is forbidden. Carrying material in the cab of a loco is forbidden, unless procedures are in place to ensure the safety of the loco operator.



4.73 Tramming Procedure

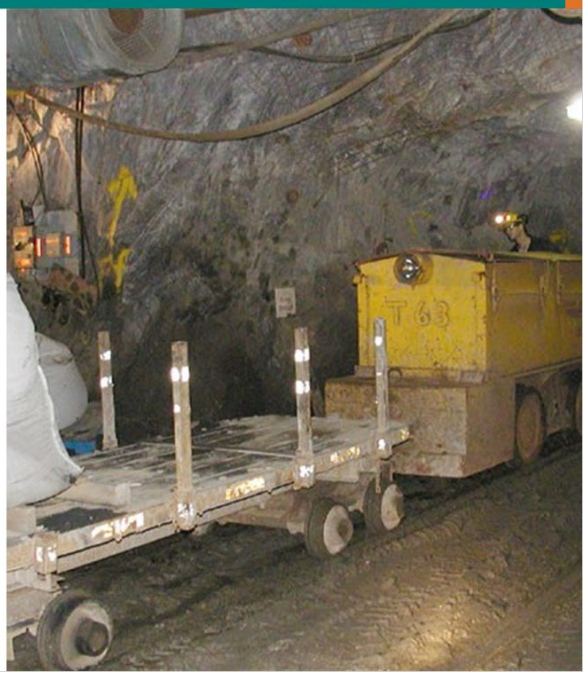
General Procedures

Level Conduct and Procedures

Tramming Procedure

No person is permitted to pass through a train when the locomotive is attached until the following arrangements have been made:

- Obtain the motorman's permission.
- Motorman will set the brakes.
- Place the forward/reverse lever in neutral.
- Disconnect the power on a battery loco and stop the engine on a diesel loco.
- The motorman will get out of the cab and give you permission to pass through.
- Notify the motorman once you are clear.



4.74 Blasting Procedures

General Procedures

Level Conduct and Procedures

Blasting Procedures

Only trained and authorized persons are allowed to conduct blasting operations and have access to or be in possession of explosives.

- All laws concerning the use, storage, handling, and transportation of explosives must be known and followed.
- A person, referred to as "the man in charge of the blast", will assume responsibility for all aspects of each blasting operation.
- Explosives will be stored in an approved manner and separation of blasting agents and detonators will be observed until actual loading commences.
- All loading of holes is to be conducted using approved procedures or methods. Only approved loading tools and equipment may be used.
- The "man in charge of the blast" will satisfy himself that all entrances to the scene of the blast are cleared and guarded before a blast is detonated. Guardrails and signs do not constitute a guard at a point of entry to the scene of a blast.

4.75 Blasting Procedures

General Procedures

Level Conduct and Procedures

Blasting Procedures

- The firing cable leading to the face shall be short circuited, while the leads from the blasting cap are being connected to the firing cable. The short circuit shall not be removed until all persons have retreated from the face. And it shall be so located that a premature explosion would be harmless to the person opening the short circuit.
- All persons who may at any time be in charge of blasting are to be equipped with a reliable watch for the proper timing and guarding of the blast.
- Before any person returns to the scene of any blasting operation, the guarding time shall have elapsed and sufficient air introduced to drive out or dilute, to a safe degree, the gases produced in the blasting operation.
- All day boxes must be emptied at the end of each shift.
- Any unused explosives **must** be returned to their proper magazine immediately.

4.76 Working Near Overhead Power Lines

General Procedures

Working Near Overhead Power Lines

- Keep a safe distance between yourself and power lines. Ten feet is the minimum safe distance.
- Before you begin working, check for overhead power lines in your work area. Don't assume that wires are telephone or cable lines: check with your electric utility for advice.
- Even if a power line appears to be broken or grounded, keep your distance. The line could still be energized.
- When working with ladders, make sure they can't come into contact with power lines in case they fall over.
- Work only in good weather, storms and damp or icy ground can cause you to lose control and come into contact with power lines.
- Power lines may appear to be insulated, these coverings are intended only to protect metal wires from weather conditions and may not protect you from electric shock.

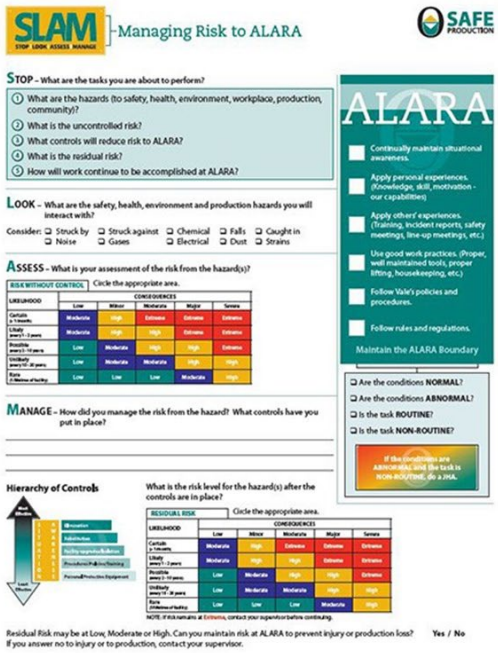
4.77 Housekeeping

General Procedures

Housekeeping

Housekeeping is an important part of any task or procedure.

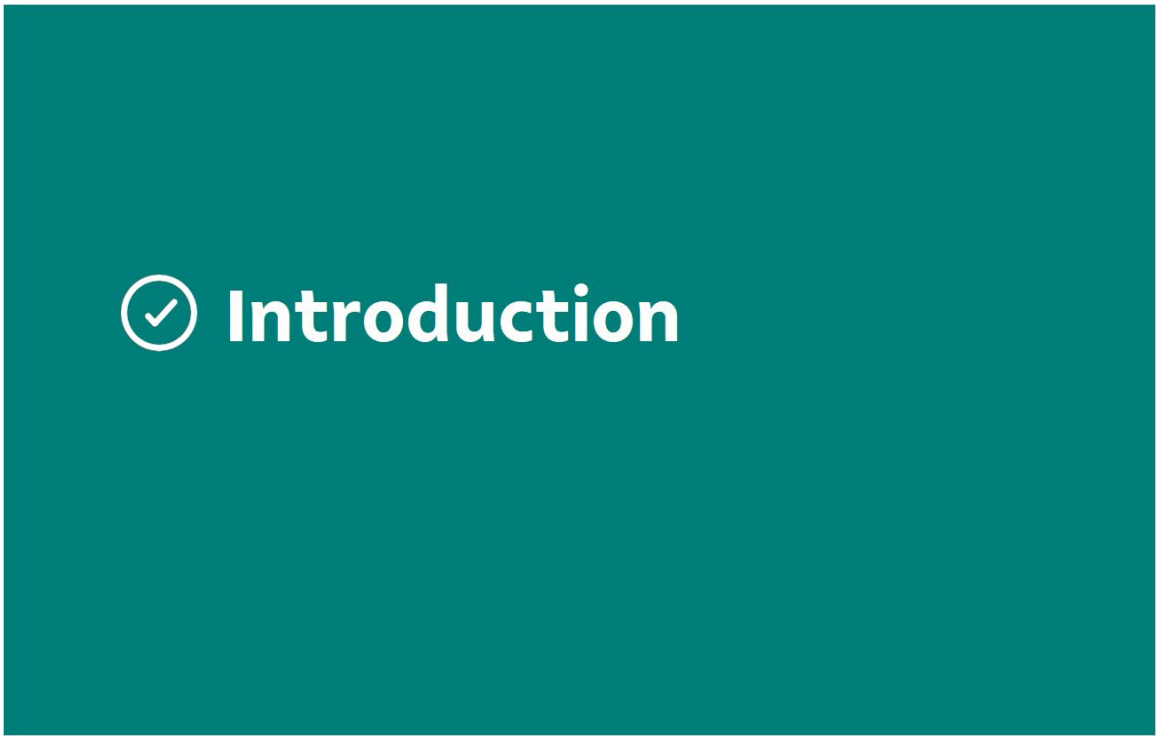
- All persons must exhibit and maintain a high degree of good housekeeping at their place of work.
- Good housekeeping and safety go hand in hand.
- Garbage is to be placed in suitable containers provided and the lids kept on the cans.



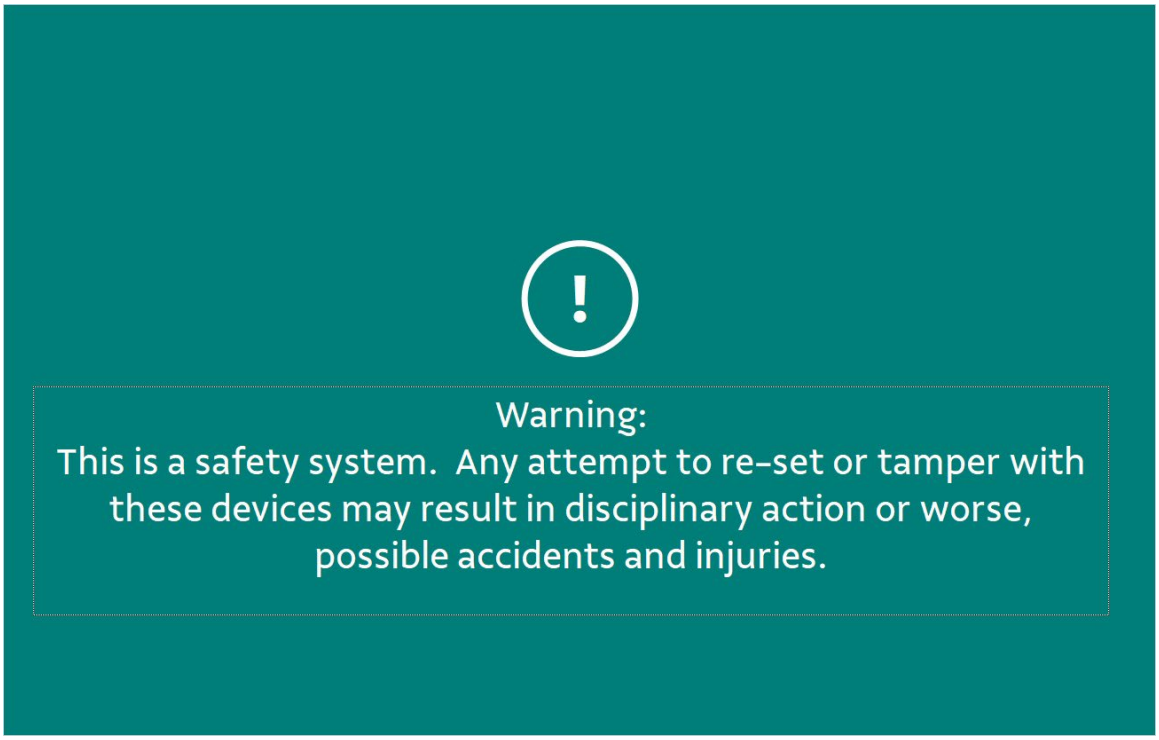
5. JAWS - (Jannatec Advanced Warning System)

5.1 JAWS

5.2 Introduction



5.3 Warning


Warning:
This is a safety system. Any attempt to re-set or tamper with these devices may result in disciplinary action or worse, possible accidents and injuries.

5.4 Module Objectives

Introduction

After completing this section of the module, you will be able to:

1. Explain what the JAWS system is;
2. Explain how the JAWS system works;
3. Describe what zones and assets are;
4. Explain how the JAWS screen functions;
5. Perform a prior to shift test of the vehicle unit;
6. Describe the Smartview screen notifications;
7. Properly use and test Smarthelmets.

5.5 Overview

Introduction

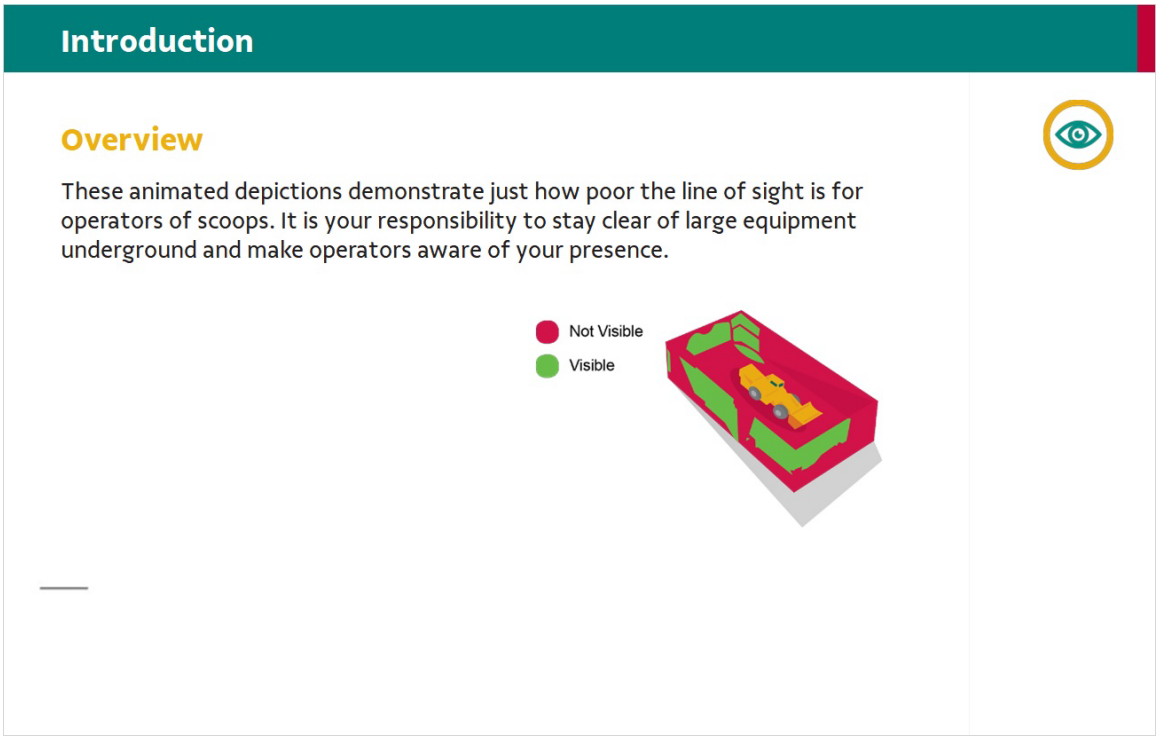
Overview

Throughout mining operations there are tasks that require the use of mobile equipment. These can include equipment such as scoop trams, haulage trucks, graders, forklifts that move around the operation.

Be aware that the operator is doing the task they are assigned and you may be entering their work area.

Therefore maintain situational awareness with regards to mobile equipment and the associated hazards such as overhead pipes or structures, operator's visibility and reaction time, as well as the equipment's route of travel.

5.6 Reduced Visibility



5.7 About JAWS

5.8 What is JAWS?

About JAWS

What is JAWS?

JAWS is a proximity detection system that has been implemented at Vale mines to improve situational awareness of vehicle operators and personnel.

JAWS also alerts personnel that vehicles are approaching or nearby so that workers are made aware of any hazardous situation and can take precautions to avoid accidental contact with mobile equipment.

(JAWS) screen installed in a Toyota Land Cruiser

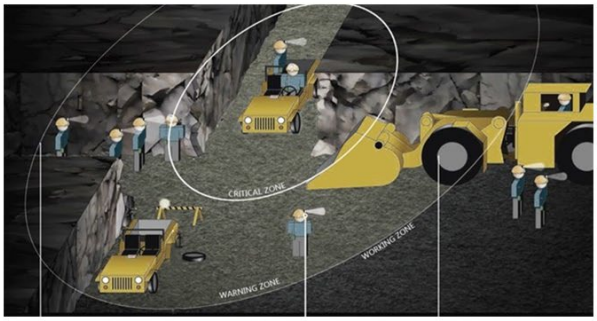
BE AWARE

JAWS is a proximity detection system, which differs from collision avoidance. It will not stop vehicles but is merely a safety system that assists in providing enhanced situational awareness by letting workers know when vehicles are near by and allowing vehicle operators to know when vehicles, personnel or fixed hazards are near by.

5.9 JAWS

About JAWS

How it Works



Radio signals are used to relay proximity alerts to warn vehicle operators and personnel of potential hazards, such as:

- Personnel to vehicle
- Fixed hazard to vehicle
- Vehicle to personnel
- Vehicle to vehicle

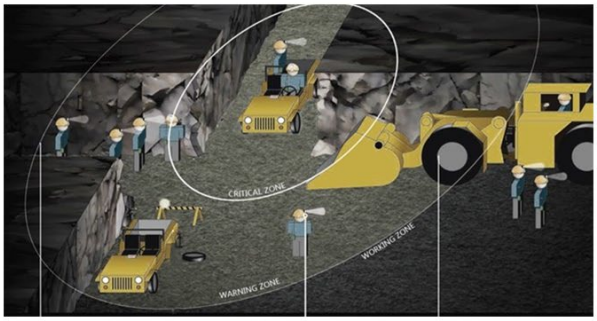
Personnel to Vehicle	Fixed Hazards	Vehicle to personnel:	Vehicle to Vehicle
Working personnel and approaching vehicles receive warnings when within hazard zone.	Fixed hazards will only be seen when a vehicle is in an 'OFF' state,	SmartHelmets quickly warn pedestrians of approaching vehicles or hazards.	Operators warned of approaching vehicles before they come into sight.

! Be aware that even WITHOUT any power in the mine, as long as the vehicles and SmartHelmets have power, the JAWS proximity detection system will still function, as it does not rely on any other sources of power or infrastructure.

5.10 How it Works

About JAWS

How it Works

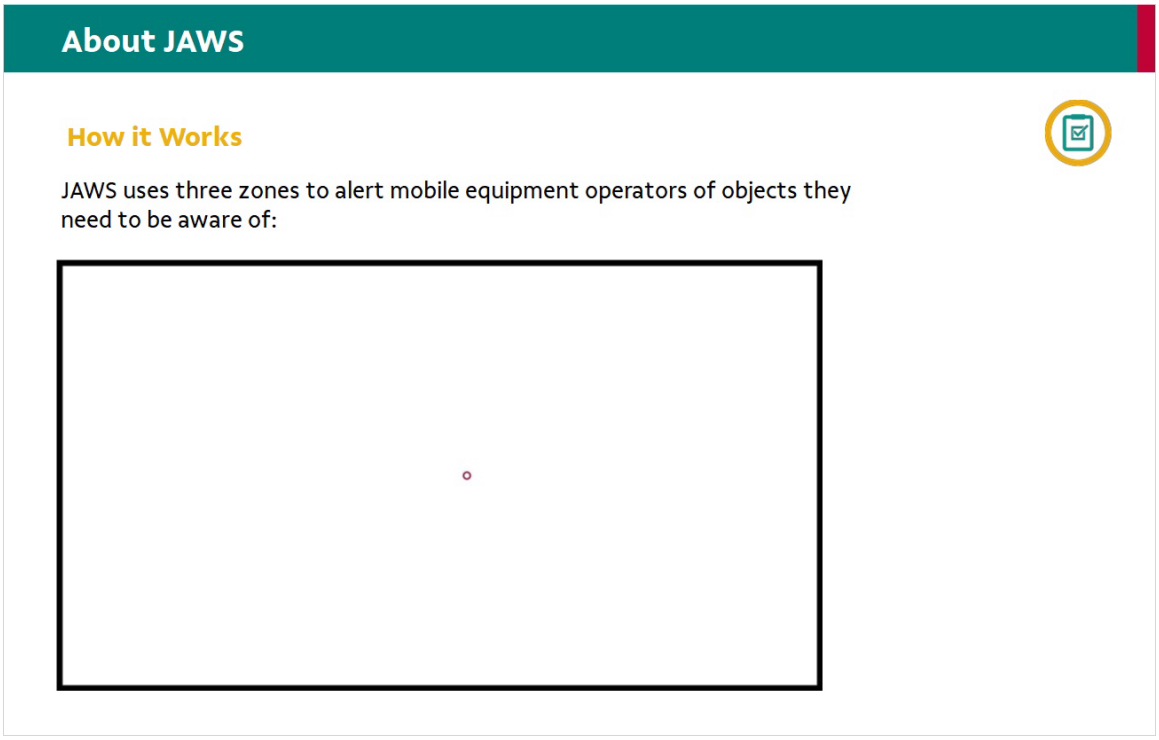


The JAWS system is equipped with a specific function that switches the unit from surface to underground, as it is not intended for surface use.

It uses powered beacons at the portal to detect what mode to put the JAWS application in to.

With these beacons, if there is no power and they pass the portals, the application will not change. To ensure the system can be placed in the right mode, if there is no power, there is Internal functionality built into the application that will provide notifications to ensure it is set in the correct mode, surface vs. underground.

5.11 How it works

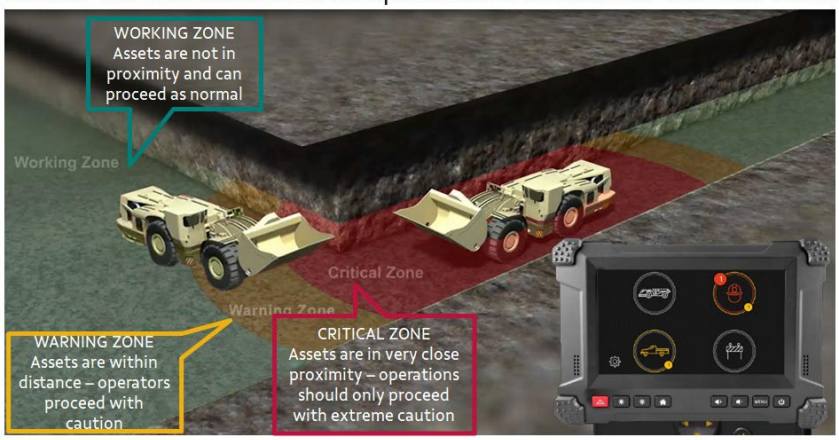


5.12 How it works

About JAWS

How it Works

This system should not take the place of common safe practices that have been used for years. It is meant to enhance situational awareness for operators and workers alike and make a safer environment.



The distance of zones is not set to specific numbers because it is based on radio signal strength which can vary due to conditions and environment. Remain alert of your surroundings at all times,

5.13 How it works

About JAWS

How it Works

SMARTVIEW SCREEN – Functions

The JAWS display screen is divided into 4 quadrants:

- Quadrant 1 – Primary movers
- Quadrant 2 – Personnel
- Quadrant 3 – Light equipment
- Quadrant 4 – Fixed hazards
  (vehicles in off status register as fixed assets)

All proximity events are stored on SmartView units and database for analysis and review in the case of incidents.

5.14 How it works

About JAWS

How it Works

SMARTVIEW SCREEN – Functions

The display screen provides the following alerts to equipment operators;

- Initial proximity warning
- Critical proximity warning
- Assets remain in critical zone warning

5.15 How it works

About JAWS

How it Works

SMARTVIEW SCREEN – Functions

Initial Proximity Warning

Outer circle and icon turn yellow and the number in small yellow circle increases accordingly.

Critical Proximity Warning

Upon entry into the critical zone, the entire screen has the asset that entered the critical zone in red for a short period and the audio tone is sounded.

Asset Remains In Critical Zone

Two inner circles remain red and quantity of assets in critical zone is indicated within red circle.

Note: Audible alert will sound if another asset enters critical zone.

5.16 Initial proximity warning

About JAWS

How it Works

SMARTVIEW SCREEN – Functions

Initial proximity warning

The initial proximity warning alerts operators that an asset has entered the warning zone from the working zone.

The outermost circle around the asset type turns yellow. The number of assets in the warning zone is indicated within the same-coloured smaller circle.

The numbers will increase and decrease as assets enter and exit zones accordingly.

This image depicts what the screen display will look like with multiple different assets in the warning zone simultaneously.

** Operators should proceed with caution.*

5.17 Critical proximity warning

About JAWS

How it Works

SMARTVIEW SCREEN – Functions

Critical proximity warning

A critical proximity warning alerts operators that an asset has come into the critical zone.

The image of the associated asset type fills the entire screen (red) for a short duration, and an audible alert provides notification to indicate an asset has entered critical zone.

The quadrant remains **RED** indicating the number of assets in critical range, found beside the asset type.

If an asset leaves the critical zone and then returns, the entire screen turns red for short duration, and an audible alert provides notification, each time an asset enters or exits the critical zone.

** Operators should proceed with extreme caution.*

5.18 Critical proximity warning

About JAWS

How it Works

SMARTVIEW SCREEN – Functions

Critical proximity warning

After the initial critical alert is complete, the screen will revert to four quadrants and the two inner circles will remain red.

The number of assets remaining in the critical zone will be displayed in the smaller red circle, as shown on the right.

If assets decrease, this number will change, however if assets in the critical zone increase, the audible tone will alarm upon zone entry.

If an asset exits the critical zone and re-enters, the audio will sound to ensure operators are always notified of any entry to the critical zone.

** Operators should proceed with extreme caution.*

5.19 Assets remain in critical zone warning

About JAWS

How it Works

SMARTVIEW SCREEN – Functions

Multiple Assets/Zones

If there are assets in both the warning and critical zones, the number in the red circle indicates quantity of assets in critical zone and the number in the yellow circle indicates the quantity of assets in the warning zone.

Again, both numbers increase and decrease according to zones. In this instance, if the worker in the warning zone moves to the critical zone, the critical zone (red) number would increase to 2 and the warning zone number would be blank (or zero).

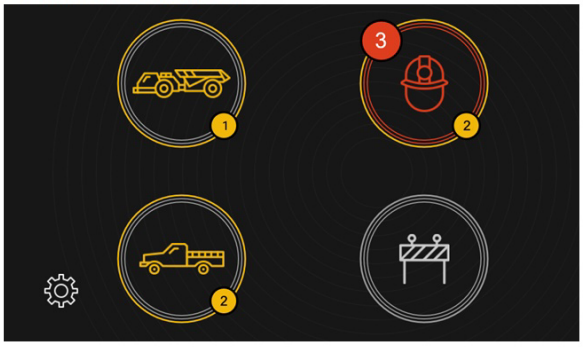
5.20 Assets remain in critical zone warning

About JAWS

How it Works

SMARTVIEW SCREEN – Functions

Multiple Assets/Zones



If there are assets in both the critical and warning zone, the large circles will remain coloured accordingly.

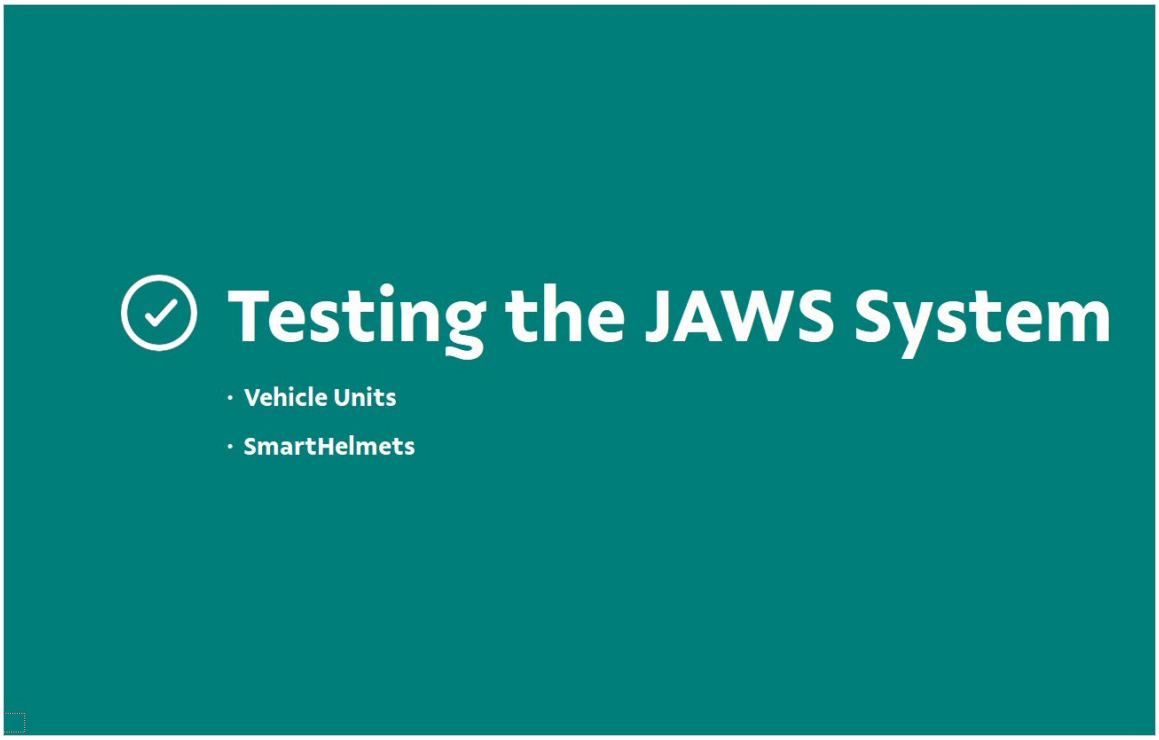
The small filled circles will indicate the quantity of assets in each zone.

If there are multiple different assets, each quadrant will function the same and display all assets in all zones.

The image on the left indicates that there are multiple assets in range, and there are multiple personnel assets in both the warning zone and the critical zone.

5.21 Assets remain in critical zone warning

5.22 Testing the JAWS System



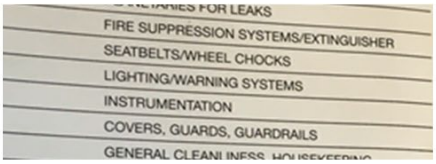
5.23 Testing - Vehicle Units

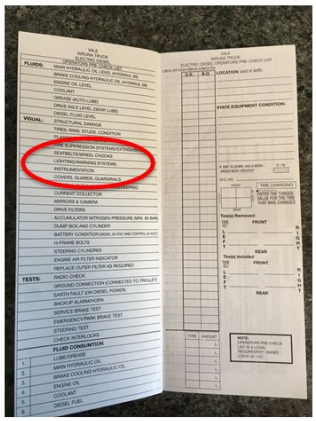
Testing the JAWS System

Vehicle Units

Prior to the start of each shift, vehicle operators are to ensure their JAWS unit is functioning properly by performing the following test.

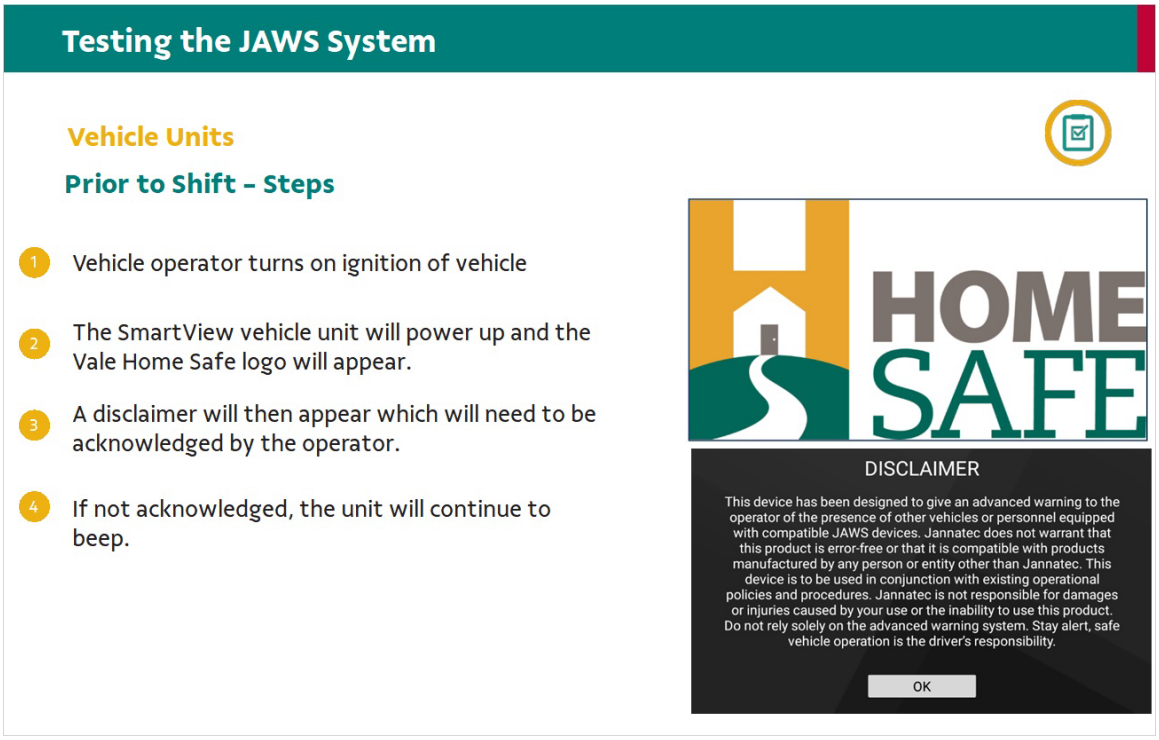
The verification of the Jaws system must be documented on the vehicles pre-op slip. It is to be noted on the slip under "WARNING SYSTEMS".





All system tests are stored in the tablet and are available for review should an incident or accident occur.

5.24 Testing - Vehicle Units



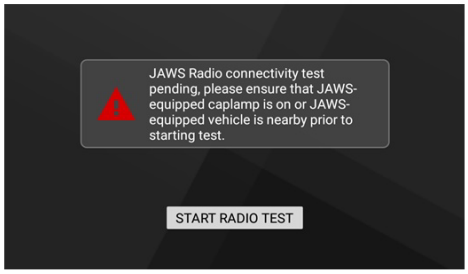
5.25 Testing - Vehicle Units

Testing the JAWS System

Vehicle Units

Prior to Shift – Steps

5. The vehicle operator will be prompted to perform a functional check. You must be near another vehicle or have your JAWS enabled SmartHelmet on to commence this test.
6. If this test is not completed, the unit will commence playing the audible tone which will continue until the test has been completed.
7. Operator presses 'START RADIO TEST' button to initiate test.



! You must have your SmartHelmet on – or be in close proximity to another JAWS equipped vehicle for this test to be successful. Always turn your SmartHelmet ON before starting the radio test.

5.26 Testing - Vehicle Units

Testing the JAWS System

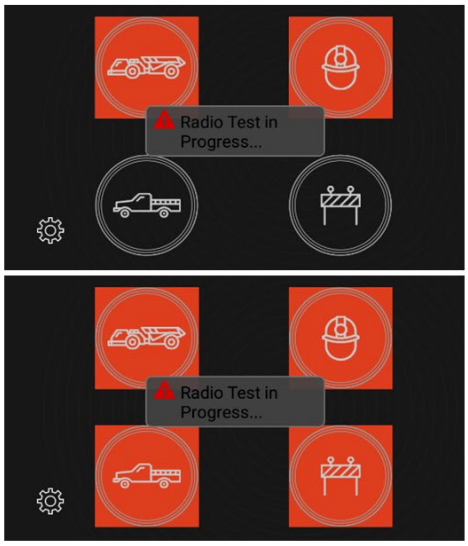
Vehicle Units

Prior to Shift – Steps

8. The test commences to ensure RF functionality is working by displaying the standard JAWS assets on the SmartView screen.

9. Each asset quadrant will turn RED one by one verifying screen functionality.

10. Once the test is complete the unit will indicate a **PASS**/**FAIL** result on screen.



5.27 Testing - Vehicle Units

Testing the JAWS System

Vehicle Units

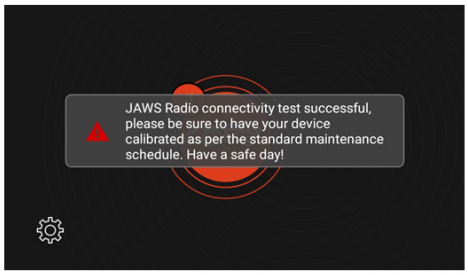
Prior to Shift – Steps

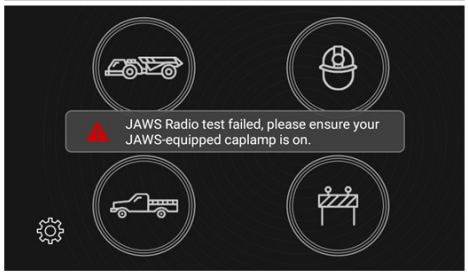
11 If the test result is **PASS**, you will be notified on screen and can proceed with your day.

This not only indicates that the test was successful, it also reminds users to have the device calibrated as per schedule. No action is required at this point.

12 If the test result is **FAIL**, You will be notified on screen that the JAWS radio test failed while also indicating that the JAWS equipped cap lamp should be turned on.

13 You should perform a second test ensuring that the helmet is on or that you are in proximity of another JAWS equipped unit.





5.28 Testing - Vehicle Units

Testing the JAWS System

Vehicle Units

Prior to Shift – Steps

14 If the test result is **FAIL** a second time, the test screen will display again but it will be non-functional. The screen will advise the operator to follow protocol for having the unit repaired or replaced.

The unit will continue to play the audio tone every three (3) seconds while in this state.

5.29 Notifications – Blank Screen

Testing the JAWS System

Vehicle Units

Notifications – Blank Screen

If the SmartView unit at any time goes black while in use, this means there may be an issue with the unit or with the associated wiring/fuses.

You may attempt to turn off both the ignition and the master switch, and then turn the master switch back on and the ignition on.

If the unit does not start back up, you must have the unit serviced and follow operational protocol.

If the above does not work, pressing the buttons or holding the buttons will not solve the problem, you will need to contact your service department or Jannatec for assistance and follow operational protocol.

JANNATEC Technologies

5.30 Notifications – Master Switch Detection /Attempted Shutdown

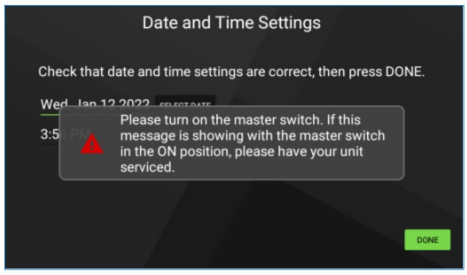
Testing the JAWS System

Vehicle Units

Notifications – Master Switch Detection /Attempted Shutdown

In order to ensure the power is not drawn dead on the system, this error will display for 60 seconds or until the master switch is in the 'on' position and recognized as functional by the application.

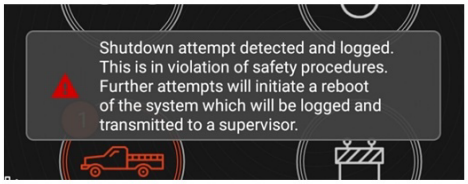
If you see this message, please ensure the ignition and master switch is in the 'ON' position. If the application does not start – please follow operational procedures.



Attempted Shutdown

If you attempt to shutdown this safety device, it is important to note that attempts to shut down will be logged into the internal unit database and to the SD card.

If you press the power button, an audible tone will emit and the warning shown here will appear.



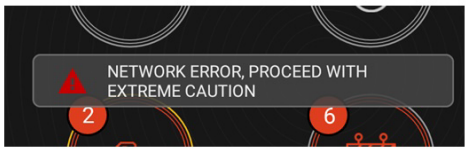
5.31 Notifications – Network Error

Testing the JAWS System

Vehicle Units

Notifications – Network Error

If for any reason there is an issue with the JAWS tag communicating, you will receive the following notification. In general use, this error should clear quickly if it ever appears at all.



In this instance you can attempt to turn off the ignition and master switch and then re-start to re-set.

If this screen persists you should follow operational procedures and contact your service team or Jannatec for assistance. **DO NOT CONTINUE OPERATION IF THIS ERROR PERSISTS.**

5.32 SmartHelmet Functionality - Proximity Alerts

Testing the JAWS System

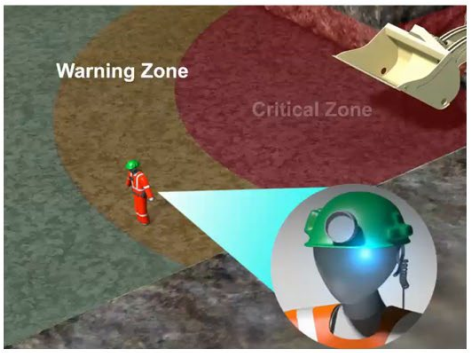
SmartHelmet Functionality

Proximity Alerts

When a worker wearing a JAWS equipped Smart Helmet comes within range of the warning or critical zone of a proximity equipped vehicle, a **BLUE LED** under the brim of the helmet will light up notifying the worker that a vehicle is in the vicinity.

This blue light will remain on until the worker is no longer in the critical or warning zones of that vehicle.

Once the worker is no longer in the critical or warning zone of any vehicle, the LED will turn off indicating to the worker that they are back in the safe 'working zone'.



! Be aware that when the blue light is not on, does not mean you are safe. Always maintain situational awareness and follow safe work practices.

5.33 SmartHelmet Functionality - Proximity Alerts

Testing the JAWS System

SmartHelmet Functionality

Proximity Alerts

The image on the right shows the blue light that is used as your proximity warning.

This blue light will turn on to indicate that a vehicle is nearby or is approaching and may be a hazard.

This light can save you from serious harm – NEVER ignore this warning. If you see this light, take the time to ensure you are aware of your surroundings!

NEVER IGNORE THE BLUE LIGHT!!

5.34 SmartHelmet Functionality - Turning On/Off

Testing the JAWS System

SmartHelmet Functionality

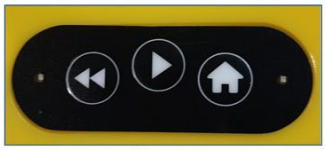
Turning On/Off

Ensure you have placed a fully charged battery into the battery compartment.

To initially turn the High Vis LED's and the JAWS tag on, you MUST press the ON/OFF button on the battery cover.

The High Vis LED lights will light up around the SmartHelmet. The JAWS tag will now function and any time a vehicle is near the blue LED near the 'Back' button under the brim will light up. If there are no vehicles in range the blue LED under the brim will turn off.

ON/OFF



Home

5.35 SmartHelmet Functionality - Turning On/Off

Testing the JAWS System

SmartHelmet Functionality

Turning On/Off

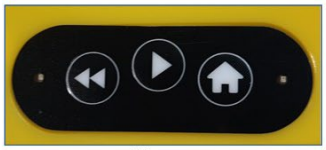
***NEVER* IGNORE THE BLUE LIGHT**

To turn the high-vis LED lights and the JAWS tag OFF – you can press and hold either the 'Home' button on the bottom of the brim or the ON/OFF button on the battery cover.

Simply press and hold until the high-vis LED lights go off – this will indicate the power has been turned off to the helmet.

! You should never disable JAWS while in a working situation.

ON/OFF



Home

5.36 Smarthelmet Testing - Prior to Shift - Steps

Testing the JAWS System

Smarthelmet Testing

Prior to Shift – Steps

Prior to heading underground for each shift, EVERY worker is required to test their SmartHelmet to ensure the JAWS proximity functionality is working.

Smart helmets are supplied/distributed from the Dry attendants, who are responsible for managing smart helmet returns, and some light support.

Always ensure to check out fresh smart helmet batteries before each shift, and return batteries at the end of shift. Batteries will be "checked out" and managed by the Dry Attendant on duty.

5.37 Testing - Vehicle Units

Testing the JAWS System

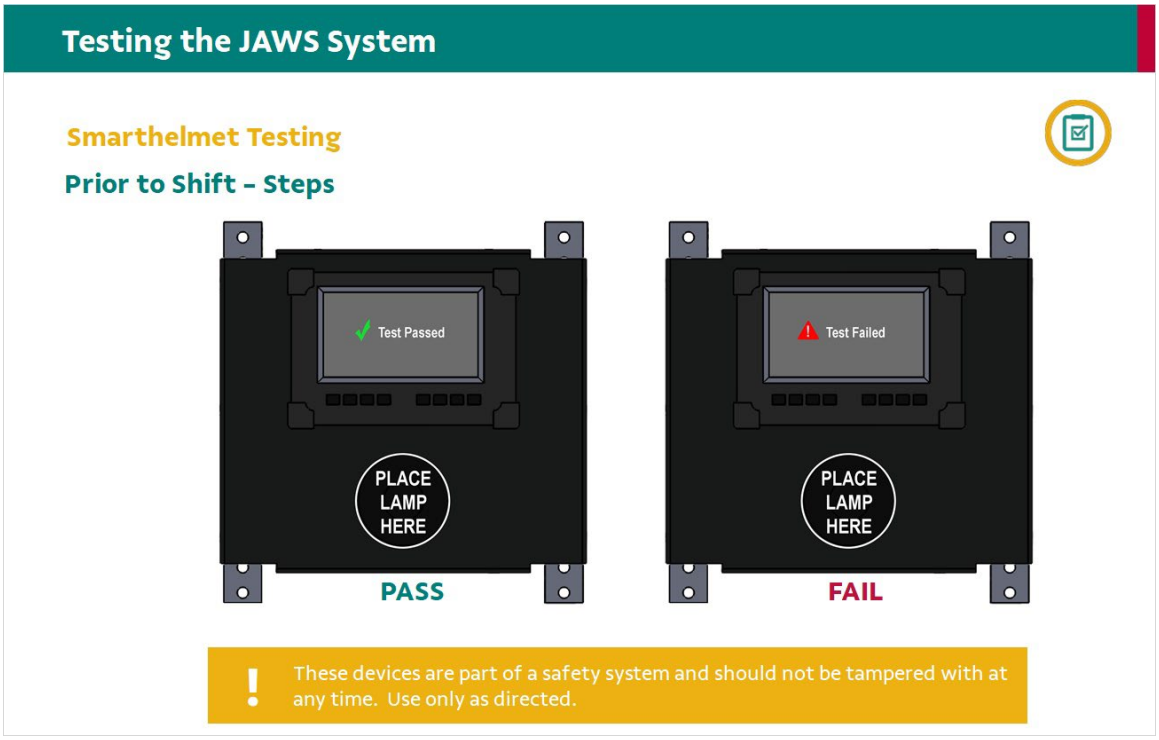
Smarthelmet Testing

Prior to Shift – Steps

1. Place your SmartHelmet on the circular area on one of the personnel verification units. (For best results, always place the helmet front facing the unit while holding the back of the helmet to prevent unwanted interference). HEX ID should display once helmet is near the puck. Confirm HEX ID displayed on personnel verification unit matches the HEX ID assigned to the Smarthelmet
2. Press 'OK' on screen to initiate test.
3. The screen will display a **PASS** or **FAIL**.
4. If your helmet fails, repeat test a second time. If the second test fails, obtain a replacement unit, change the battery and re-perform the test.

! Do not proceed underground if your smarthelmet has not passed.

5.38 Testing - Vehicle Units



5.39 Conclusion

5.40 Conclusion

Conclusion

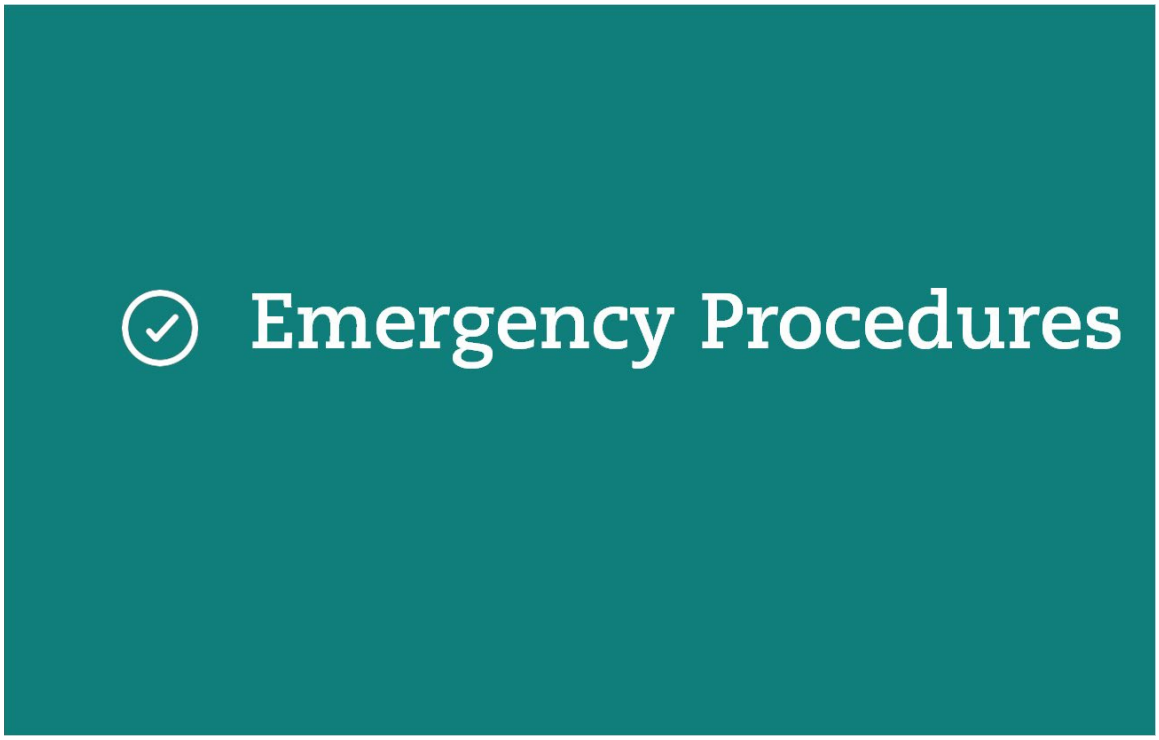
This concludes the material for JAWS (Jannatec Advanced Warning System).

You should now be able to:

- ✓ Explain what the JAWS system is;
- ✓ Explain how the JAWS system works;
- ✓ Describe what Zones and Assets are;
- ✓ Explain how the JAWS screen functions;
- ✓ Perform a Prior to shift test of the Vehicle Unit;
- ✓ Describe the Smartview Screen Notifications;
- ✓ Properly Use and Test Smarthelmets.

6. Emergency Procedures

6.1 Emergency Procedures



6.2 Emergency Evacuation of the Injured

Emergency Procedures

Emergency Evacuation of the Injured

When a serious or disabling injury occurs underground, it is essential that the injured person be removed to medical aid quickly and efficiently; your knowledge of these procedures may save a person's life.

Good communication is a vital part of the emergency evacuation. The speedy and accurate relaying of information about the accident is essential to prevent delays. The person who makes the call for help is to contact first aid. Call from the nearest telephone.

Fire Control Stations - Emergency Phone Numbers

T-1 First Aid call 2302/2528

T-3 First Aid call 2314/2538

Birchtree First Aid call 2653/2694

If you cannot reach first aid, call the Emergency Phone Number.

At T-1 call 2997

At T-3 call 2993

At Birchtree call 2991

6.3 Emergency Evacuation of the Injured

Emergency Procedures

Emergency Evacuation of the Injured

As a last resort, if you cannot get through on the telephone, use the call buzzer "9" in the shaft station.

Give the emergency signal "9", and then the level signal.

The cage tenders will stop whatever they are doing and come to the level.

Note: Do Not Use the Cage or Skip Signal System

6.4 Emergency Evacuation of the Injured

Emergency Procedures

Emergency Evacuation of the Injured

When using the telephone, DO NOT hang up until instructed to do so. The first aid attendant requires the following information:

- The location of the injured person.
- The possible injuries suspected.
- The injured persons name and number (if known).
- The route of travel to the injured person.
- Any special equipment required (jacks, chain blocks etc.)

After making the call, you should remain in the station to escort the first aid attendants to the scene, and help carry their equipment.

To co-ordinate the activities on the level, it is most important that your supervisor be notified as quickly as possible.

***Everyone* is to *know* and *understand* their role in the event of an emergency.**

6.5 Level 2 and Plant Wide Emergency Alarm

Emergency Procedures

Cement Burns

All persons working with cement must be aware of the possibility of cement burns. Due to the greater possibility of infection, burns that are not treated immediately will have more serious complications.

If you suffer cement burns you should do the following:

- Remove your wet clothing immediately.
- Wash the affected area of your skin thoroughly with water.
- Wash out your affected clothing with clear water.
- Report to your supervisor or leave a note saying you have gone for treatment.
- Report to first aid for treatment.

6.6 Fire Underground Procedure

Emergency Procedures

Fire Underground Procedure

Introduction

All persons employed underground or those who are required to go underground for any reason must be instructed on the standard practice for the Procedure In Case of Fire Underground (see below).

When A Fire Is Discovered

If the fire is small and can be easily extinguished, then the person discovering it should extinguish it himself or with the help of others; however the following precautions should be observed.

6.7 Possible Burning Materials

Emergency Procedures

Fire Underground Procedure

Possible Burning Materials

Wood or Similar Material: The fire may be extinguished with water, mud or any ABC rated fire extinguisher.

Electrical Equipment Fire: Water cannot be used. If possible, the power supply should be disconnected. Only dry chemical or CO_2 fire extinguishers may be used. Contact with electrical wires and inhalation of fumes must be avoided.

Combustible Liquids: Water must not be used, as it would spread the fire. Only dry chemical or CO_2 fire extinguishers can be used. In the case of equipment or acetylene fires, water may be used as a coolant.

6.8 Fire Underground Procedure

Emergency Procedures

Fire Underground Procedure

Pertinent Information

If the fire becomes too large to handle or too much smoke exists, the Emergency Phone Number must be called immediately.

T-1 Phone Bank - 5799

T-3 Phone Bank - 5899

B/T Phone Bank - 5999

You must provide the following information:

- Location, type and extent of the fire.
- Who is calling and where you are.

The caller is then to follow the instructions given to him.

6.9 Underground Fire Warning

Emergency Procedures

Fire Underground Procedure

Underground Fire Warning

In the event of a serious fire where it may be necessary to evacuate the mine, all persons underground are warned of the fire when "stench gas" (the gas has an odour of rotten onions) is added to the compressed airlines and the air intake system (fresh air raise).

The gas spreads quickly to all areas. If you detect the gas immediately proceed to the nearest refuge station and will follow the procedures outlined in the section, Procedure at The Refuge Station.

All persons unable to reach a refuge station will proceed to the nearest telephone if possible, and report to the Phone Bank and give their location, name and number. They will then be given instructions on the course of action to follow.

T-1 Phone Bank - 5799

T-3 Phone Bank - 5899

B/T Phone Bank - 5999

6.10 Procedure At The Refuge Station

Emergency Procedures

Fire Underground Procedure

Procedure At The Refuge Station

The first person in the Refuge Station will take charge until the Mine Foreman or other designate arrives. For everyone who enters the refuge station, record their employment number and name, time of entrance, department they work for as well as their Supervisor, and if they are trained in Mine Rescue.

The person in charge shall report the information recorded to the Phone Bank. After the initial call, the Phone Bank is to be updated every 10 minutes as more people arrive in the Refuge Station.

Upon entering the Refuge Station, each Supervisor shall contact and inform the Phone Bank of his location, and the name of each employee reporting to him that shift.

A person will be stationed at the Refuge Station door to allow people to enter and then quickly close the door.

After the door is closed, openings in the door, the drain hole, ventilation pipe, or any other openings to the drift are to be plugged using fire clay or any material available.

In stations equipped with an electric ventilating fan; shut off (unplug) the fan and seal the end of the ducting. This is to control ventilation and maintain good air within the Refuge Station.

6.11 Procedure At The Refuge Station

Emergency Procedures

Fire Underground Procedure

Procedure At The Refuge Station

If the compressed air line is operational, the ventilation hole to the drift should be opened and the air flushed until the stench gas has cleared. After the stench gas has cleared, some air should be kept blowing to maintain air in the Refuge Station. If the compressed air line fails, then the openings to the drift are to be re-sealed. When pressure returns to the airline, resume flushing.

While in the Refuge Station, No Smoking, everyone must sit down and remain quiet. All cap lamps are to be shut off except those that are necessary. All available containers are to be filled with water and all lunches conserved. If the compressed air line is not operational, the person in charge will delegate one person to walk the length of the Refuge Station periodically to circulate the air.

Everyone is to remain in the Refuge Station until instructions on an escape route are received.

Remember: UNDER NO CIRCUMSTANCES will anyone leave the Refuge Station after checking in. The air may appear to be safe and free of gases, but it may contain colourless, tasteless, odourless Carbon Monoxide, which can be very dangerous. Instructions to leave the Refuge Station may only be given by the control centre coordinator.

6.12 Other Areas

Emergency Procedures

Fire Underground Procedure

Other Areas - Inaccessibility to a telephone or refuge station.

In these circumstances, the persons involved will proceed to a location where seals can be erected easily.

An ideal location is where you have access to an air line or air header. If a dead-end drift is available, use it, as it means only one seal has to be erected.

Air seals should be as airtight as possible. Whenever possible, crack the airline or header to produce a fresh air supply to the confined space.

Follow the procedure as set forth in the "Procedure at the Refuge Station".

Remain there until contacted by the mine rescue team.

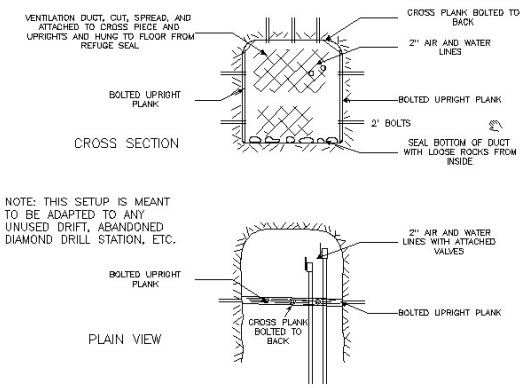


FIGURE 8
TEMPORARY FIRE RETREAT STATION

6.13 Communication

Emergency Procedures

Fire Underground Procedure

Communication

By striking airline or existing pipe, one may be able to direct the rescue team to your location.

The members of the trapped party can carry out this operation in shifts.

6.14 Points To Consider

Emergency Procedures

Fire Underground Procedure

Points To Consider

Pay close attention to the location of supplies and materials in your work area that may be used to construct a temporary fire retreat station.

A seal can be made of anything: planks - ventilation ducting - clothing - boxes - plywood - cement blocks - polyethylene etc. The main concern when building a seal is to make it as airtight as possible.

Should you use a fire extinguisher, do not put it back into its storage area. Inform the supervisor of the area. An empty or partially full extinguisher is useless in the event of another fire.

Note: Under no circumstances should you endanger yourself in trying to put out a fire you can't.

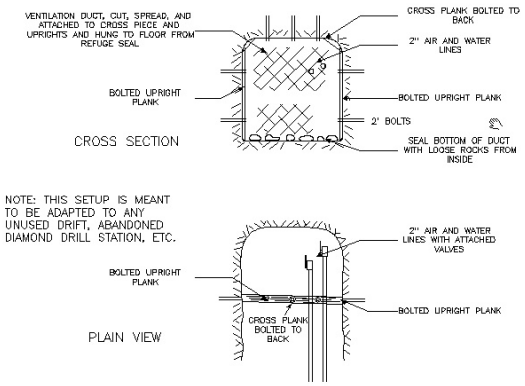


FIGURE 8
TEMPORARY FIRE RETREAT STATION

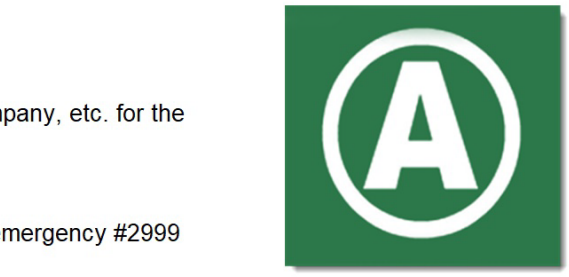
6.15 Mines Surface

Emergency Procedures

Level 2 Emergency

Mines Surface

- Upon hearing the alarm you should:
- Report to the nearest Safe Room.
- Give the person in charge your name, company, etc. for the headcount.
- Sit down and remain quiet.
- If alone, report your location by phone to emergency #2999 and follow the instructions given to you.
- A Level 2 emergency may include environmental events outside the building. (Examples are gross leaks of chlorine gas from the chlorine building.)



***Everyone* is to *know* and *understand* their role in the event of an emergency.**

6.16 Birchtree and T-1

Emergency Procedures

Level 2 Emergency

Birchtree and T-1

- During a Level 2 at Birchtree Mine or T-1 all personnel shall proceed to the shift office and dry area, which are the safe rooms.
- The room will be sealed from outside ventilation. All employees will be accounted for who have tagged in.
- Employees will remain in the room until the "all clear" has been given.
- The plant wide procedure is available in the shift office (T-1), and conference room (Birchtree).

Note: Refer to Figure 4, T-1 Headframe and Figure 6, Birchtree Headframe.

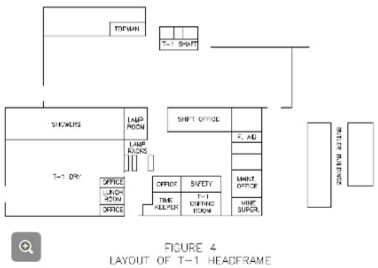


FIGURE 4
LAYOUT OF T-1 HEADFRAME

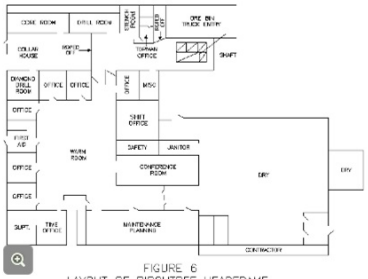


FIGURE 6
LAYOUT OF BIRCHTREE HEADFRAME

6.17 T-3

Emergency Procedures

Level 2 Emergency

T-3

In event of a Level 2 at T-3 Mine the following procedure applies:

Topman will activate Fire procedure upon instructions from control room (EOC ph. 2999) or on direction of Section Coordinator/designate. Forward phones to 1D trailers (Ph 2920) and report to same.

All personnel within T-3 Buildings (Headframe - Butlers - Yard Crew - Shops) will report to shelter / safe place which is the 1D trailer office area and conference room.

An internal Alarm System has been installed and will be activated when required. All persons will check / sign in at the 1D conference room. First person on scene will act as coordinator until replaced by Superintendent or designate.

Coordinator will:

- Assign a person to record all names.
- Assign a person to record all events.
- Assign a person to take charge of all door and vent sealing. (Page two). (Door seal tools and supplies along with instructions are located in 1D trailer storage room.)
- Assign guards on all entrances to safe room. Doors 1, 2 and 3.
- Review with supervision if the First Aid Room is required or not.

6.18 Birchtree and T-1

Emergency Procedures

Level 2 Emergency

T-3

Guards will instruct all persons entering to report in to Coordinator/designate and will not allow anyone to leave.

Guards will maintain door seals.

Hoistman will remain in Hoist room and be prepared to go on breathing air if required.

Superintendent / designate will take charge when they arrive.

All activities are controlled by EOC (2999) in conjunction with mine control centre.

Be sure to return all fan switches to operating position after event is over, remove all seals and discard, replenish sealing material in storeroom, and return all records kept to safety.

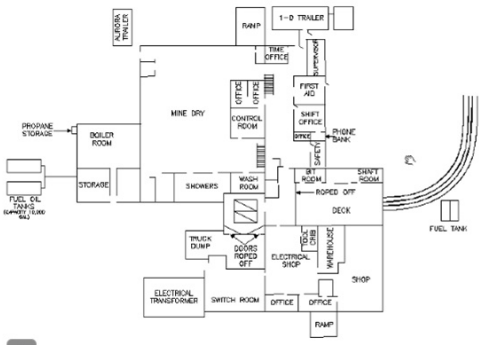


FIGURE 5
LAYOUT OF T-3 HEADFRAME

7. Safety

7.1 Safety

7.2 DO'S and DONT'S

Safety

A few DO'S and DONT'S to help you perform your job properly.

- Do not turn services such as electricity, air or water, on or off, that may affect areas other than your own, without first consulting Vale supervision. IF IN DOUBT, ASK!
- Contractor employees are not to wander into other areas or work sites. They are to stay in their work areas.
- Do not operate company equipment. The Workplace Safety And Health Act Regulations requires that only trained, competent people operate forklifts, locomotives, etc.
- Do familiarize yourself with all Vale standard practices and the Workplace Safety And Health Act Regulations that pertain to the job you are doing.
- You as contractors are required to follow Vale standard practices, all rules and regulations of the Workplace Safety And Health Act as is any Vale employee. Any serious or continued violation of any safety rule may result in expulsion from company property and even the termination of the contract between Vale and the company you represent. The importance of this cannot be overstated. If you are not sure of a particular safety procedure, ask either your supervision or the operating supervisor to clarify it for you.

7.3 Vale Safety Standards

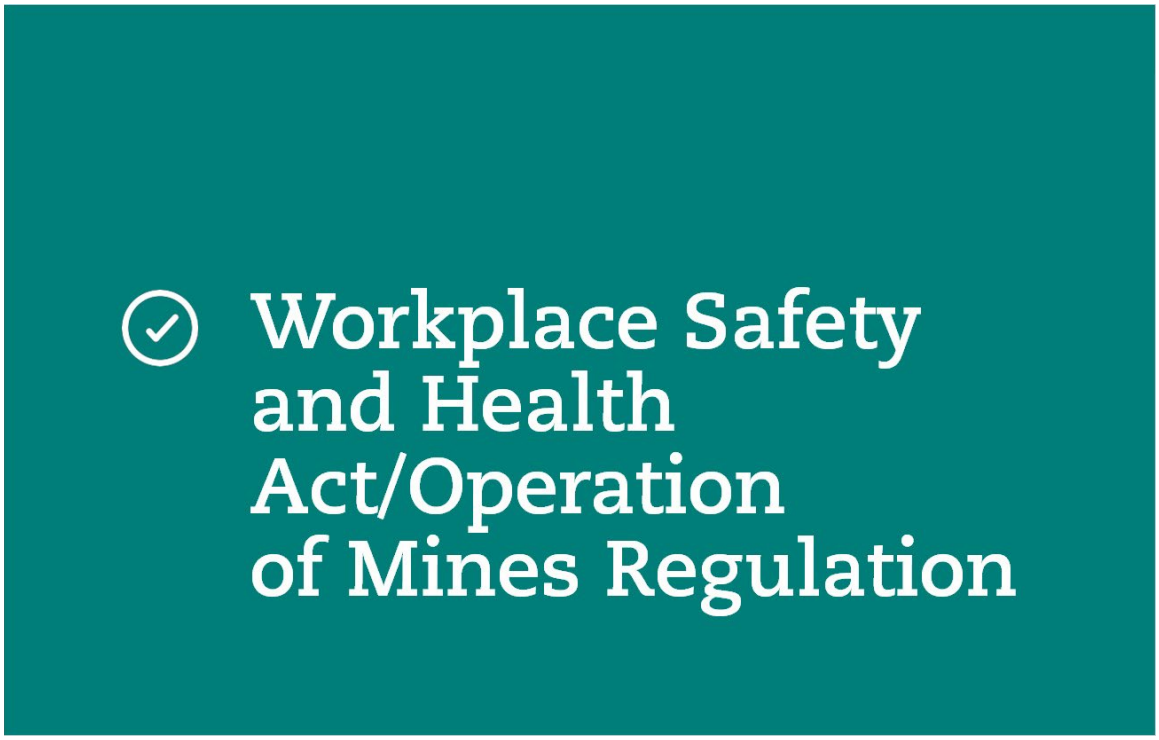
Safety

Vale safety standards include the applicable sections of the Workplace Safety And Health Act and the Operation of Mines Regulation. In addition, the following regulations are quoted from the Vale All Mine Standard Practice.

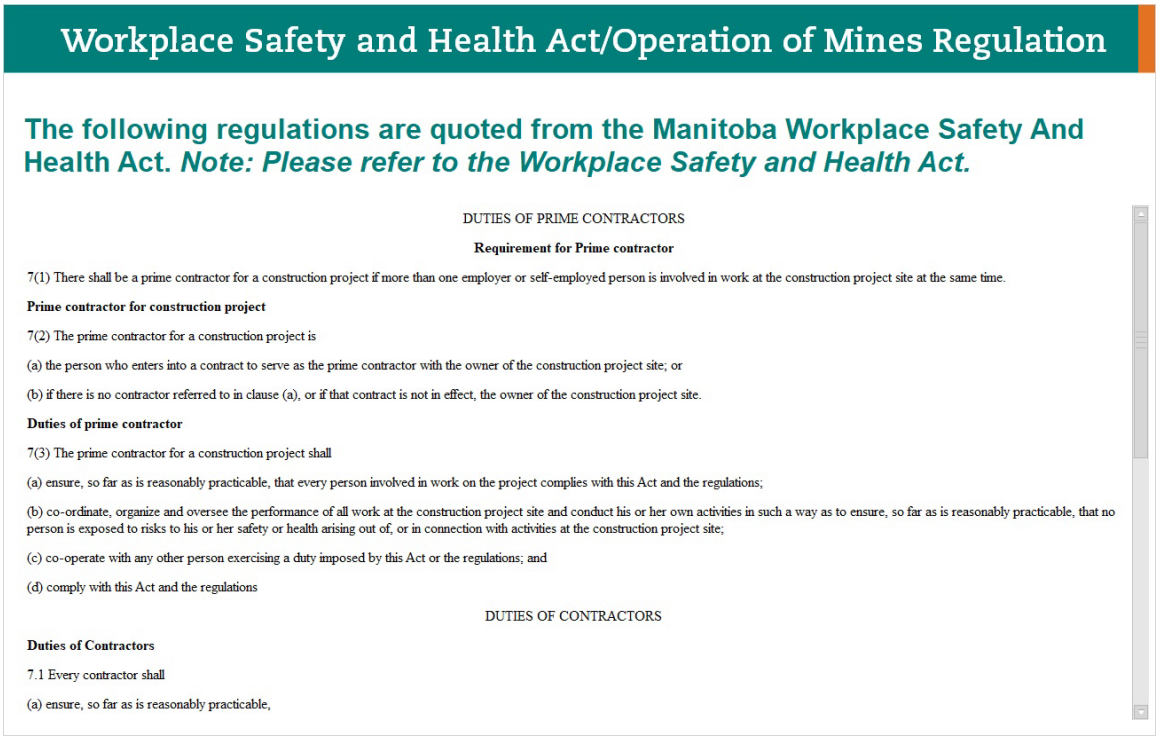
- Any accident resulting in injury or property damage is to be reported to your supervisor as soon as possible and any injury treated in the first aid room.
- All persons are to conduct themselves in an orderly manner on company property.
- Defacing company property is strictly prohibited.
- Persons working in elevated positions are to see that the area below them is adequately fenced off and that signs "Men Working Above" are conspicuously placed.
- No person is to jump on or off or walk beside a moving vehicle.
- All persons are to obey posted signs.
- No unauthorized person may operate any equipment.
- All persons are to observe "no smoking" regulations.
- No one is to work within 12 feet (3.75 Meters) of an open hole or where there is a danger of falling, without wearing a properly anchored safety lanyard.

8. Workplace Safety and Health Act/Operation

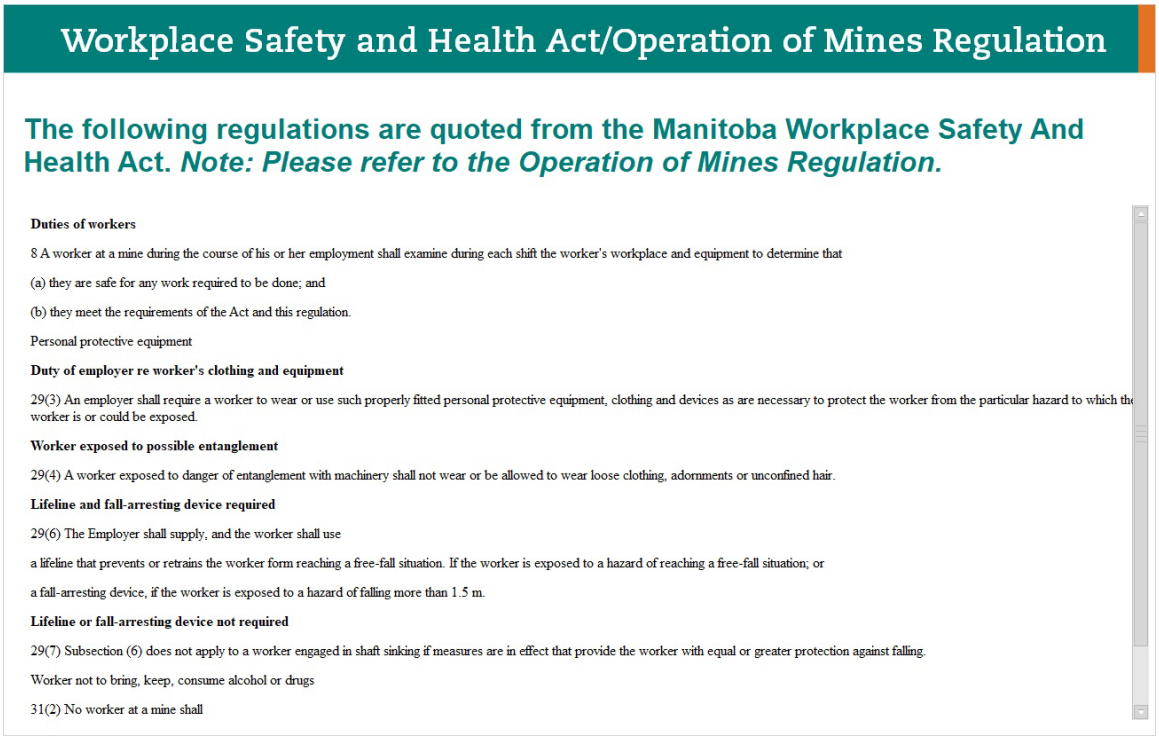
8.1 Workplace Safety and Health Act/Operation



8.2 Workplace Safety and Health Act/Operation



8.3 Workplace Safety and Health Act/Operation



8.4 Workplace Safety And Health Committees

Workplace Safety and Health Act/Operation of Mines Regulation

The Manitoba Workplace Safety And Health Act provides for the establishment of joint labour-management Safety And Health Committees.

The Operation of Mines Regulation adds more detailed requirements.

The specific objectives of a Safety And Health Committee include:

1. Assisting workers and the employer to identify, record, examine, evaluate and resolve safety and health concerns in the workplace;
2. Developing practical procedures and conditions to help achieve the highest possible degree of safety and health in the workplace; and
3. Promoting education and training programs to develop detailed knowledge of safety and health concerns and responsibilities in each individual in the workplace.

8.5 Workplace Safety And Health Committees

Workplace Safety and Health Act/Operation of Mines Regulation

The Manitoba Workplace Safety And Health Act provides for the establishment of joint labour-management Safety And Health Committees.

Use of hazardous chemical substances

37(2) When a hazardous chemical substance or physical agent is used, produced or found in a workplace, the employer shall:

a) Orally inform each worker in the workplace regarding the identification, nature and degree of hazard, and instruct each worker with respect to;

i. Precautions to be exercised in the use, handling and storage of the substance or agent,

ii. Requirements for protection of the worker's safety and health,

iii. The procedure to be taken in the event of an accident, and

iv. The first aid facilities provided, and procedure for rendering first aid;

8.6 Workplace Hazardous Materials Information System (WHMIS)

Workplace Safety and Health Act/Operation of Mines Regulation

Workplace Hazardous Materials Information System (WHMIS)

All hazardous materials brought on site must have WHMIS labels, and if the SDS for the substance is not on our register, an SDS must be provided.

Note: You must go through an approval process before any chemical is brought on site. Refer to WHMIS Program SPI No. 36-8.

8.7 Workplace Hazardous Materials Information System (WHMIS)

Workplace Safety and Health Act/Operation of Mines Regulation

Workplace Hazardous Materials Information System (WHMIS)

The Workplace Hazardous Materials Information System, or WHMIS, is a national system developed by industry, labour and government, designed to provide information on hazardous materials in the workplace.

The Manitoba WHMIS regulation (based on the federal model) is one of many regulations under the Workplace Safety And Health Act in the Province of Manitoba that deals with health and safety on the job.

The objective of the WHMIS program is to ensure the protection of workers from adverse health effects of hazardous materials used or produced in the workplace. WHMIS requires detailed information in the form of labels, safety data sheets (SDS's), and worker education programs.

Employees should observe all warnings and precautions on labels, review the detailed information on the SDS's for all materials used on the job, and attend the WHMIS worker education sessions.

Employees that actively participate in these three components of the WHMIS program will ensure the safe use of all materials on the job.