

book

## 1. JAWS (Jannatec Advanced Warning System)

### 1.1 JAWS



**JAWS**

(Jannatec Advanced Warning System)

VES ID: VB1690

Module Duration: About 25 minutes

## ***1.2 Introduction***

# **Introduction**

### ***1.3 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.

## 1.4 Context

### Introduction

#### Context

The instructions and guidance contained within this module are comprehensive and follow safety standards which you will be required to observe on an ongoing basis.

It is recognized, however, that this module does not cover every circumstance that could arise and for that reason it is intended as a training aid only.

This module is to be used as training material and best practice reference. It does not replace detailed technical guidance, for example, equipment manufacturer's documentation or legal documentation (Mines Acts). We recommend that you be familiar with the information contained in these documents.





## 1.5 Context

### Introduction

#### Context

Upon completion of each section of this module, you will be given an opportunity to submit questions to obtain clarification of any content you are not sure of.

You will also be required to complete a brief survey designed to support continual improvement to your Vale learning experience.



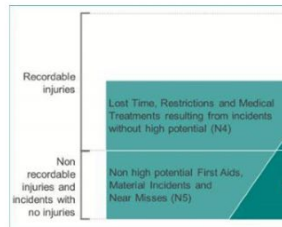
## 1.6 Purpose

### Introduction

#### Purpose

While the overall objective is to reduce or eliminate workplace hazards, it should be recognized that not all workplaces within Vale operations can be made free of all hazards.

Critical to safe operation is the ability to recognize and control hazards that may cause injuries, equipment damage, or even worse, fatalities.



Our injury and fatality index includes the numbers for Fatalities, Recordable High-Potential Potential events (N3), Recordable Injuries (N4), and Other Non-Recordable Incidents (N5).



## 1.7 Module Objectives

### Introduction

#### Module Objectives

After completing this 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.



## 1.8 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.



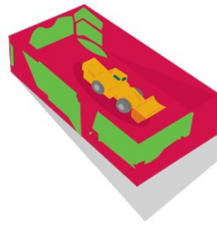
## 1.9 Reduced Visibility

### Introduction

#### Overview

These animated depictions demonstrate just how poor the line of sight is for operators of scoops. It is your responsibility to stay clear of large equipment underground and make operators aware of your presence.

- Not Visible
- Visible



## 1.10 Got a Question?

### Introduction

#### Got a Question?

Submit your question here using Valeforms, be sure to include your first name last name and contact information.

[CLICK HERE!](#)



## 2. About JAWS

### 2.1 About JAWS





## 2.2 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

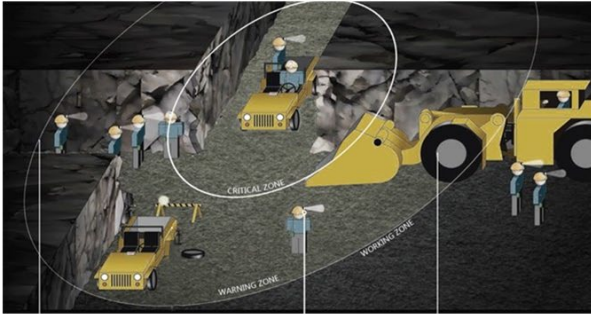


JAWS is a proximity detection system, which differs from collision avoidance. It will not stop vehicles but is merely a safety system that assists in providing enhanced situational awareness by letting workers know when vehicles are near by and allowing vehicle operators to know when vehicles, personnel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

2.3 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

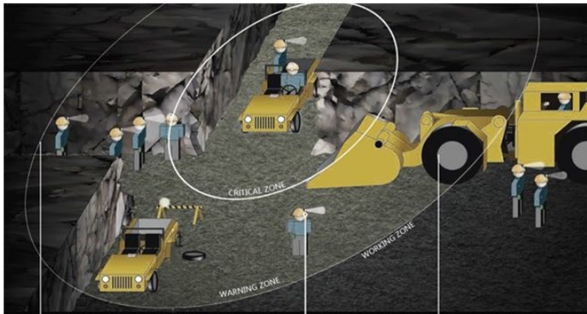
Personnel to Vehicle	Fixed Hazards	Vehicle to personnel:	Vehicle to Vehicle
Working personnel and approaching vehicles receive warnings when within hazard zone.	Fixed hazards will only be seen when a vehicle is in an 'OFF' state,	SmartHelmets quickly warn pedestrians of approaching vehicles or hazards.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

## 2.4 How it Works

### About JAWS

#### How it Works



The JAWS system used at Voisey's Bay 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.

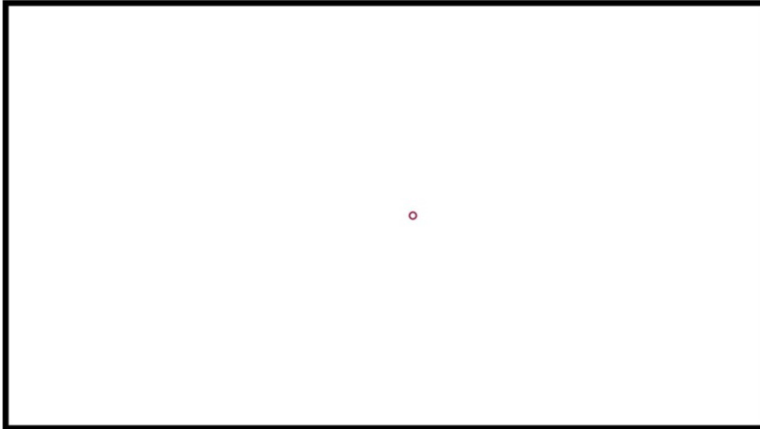
## 2.5 How it works

### About JAWS

#### How it Works



JAWS uses three zones to alert mobile equipment operators of objects they need to be aware of:



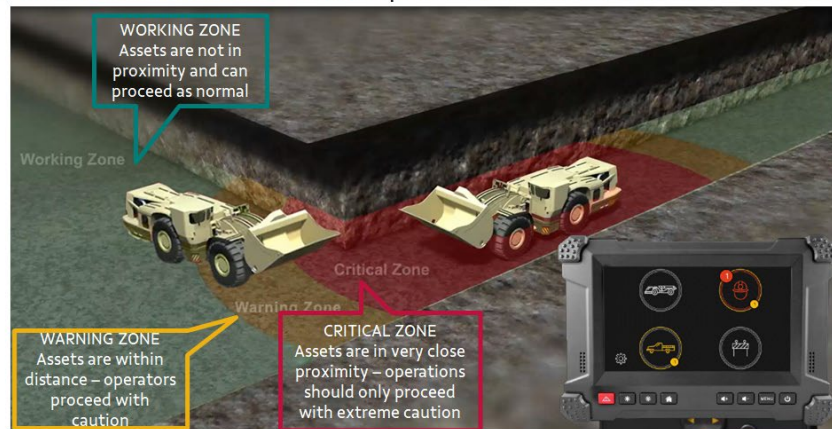
## 2.6 How it works

### 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,

## 2.7 How it works

### About JAWS

#### How it Works

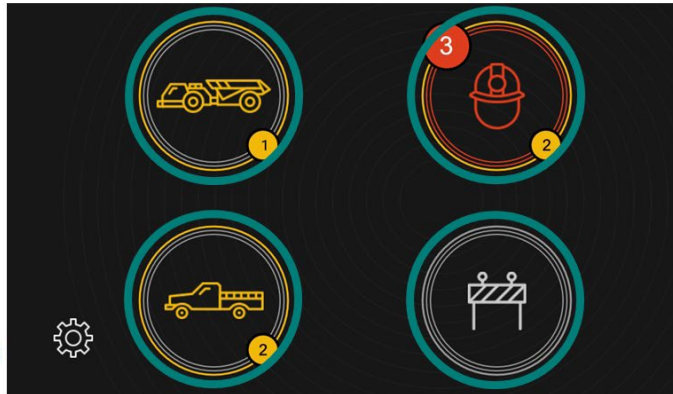


#### SMARTVIEW SCREEN – Functions

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.



## 2.8 How it works

### About JAWS

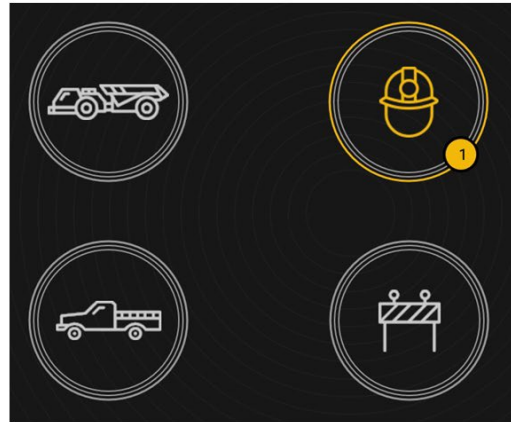
#### How it Works



#### 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





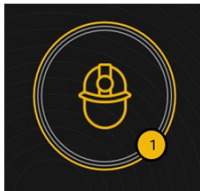
## 2.9 How it works

### 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.

## 2.10 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.**

## 2.11 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.*

## 2.12 Critical proximity warning

### About JAWS

#### How it Works



#### SMARTVIEW SCREEN – Functions

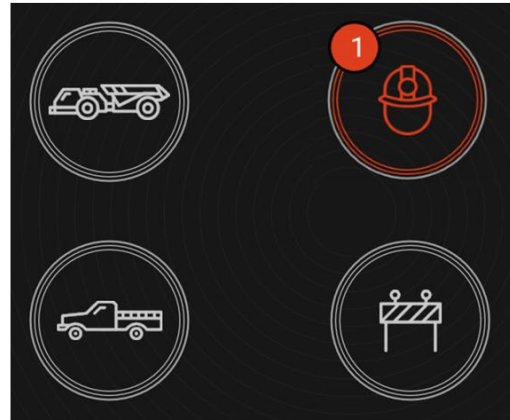
##### Critical proximity warning

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.**

## 2.13 Assets remain in critical zone warning

### About JAWS

#### How it Works

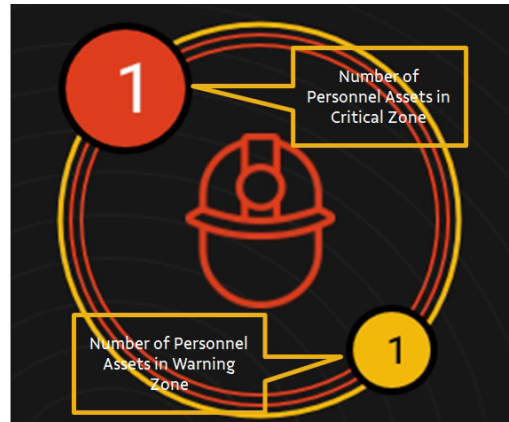


#### SMARTVIEW SCREEN - Functions

##### 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).



## 2.14 Assets remain in critical zone warning

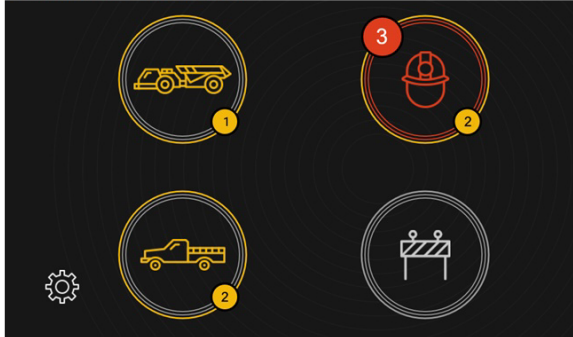
### About JAWS

#### 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.

## 2.15 Assets remain in critical zone warning

### About JAWS

#### How it Works



#### SMARTVIEW SCREEN – Functions

##### Volume and Screen Brightness



Volume is controlled using the volume up and down buttons on the tablet front.

The volume cannot be muted unless you have administrator access. It is set by default to only go to 40% of max volume.

Screen Brightness can be adjusted by pressing the 'sun' button. Left is for brighter and right is for dimmer.

By default, the tablet cannot be completely dimmed.



Volume and brightness are the only hard keys that should ever need to be used by operators. Installers and administrators have different access.



## 2.16 Got a Question?

### Introduction

#### Got a Question?

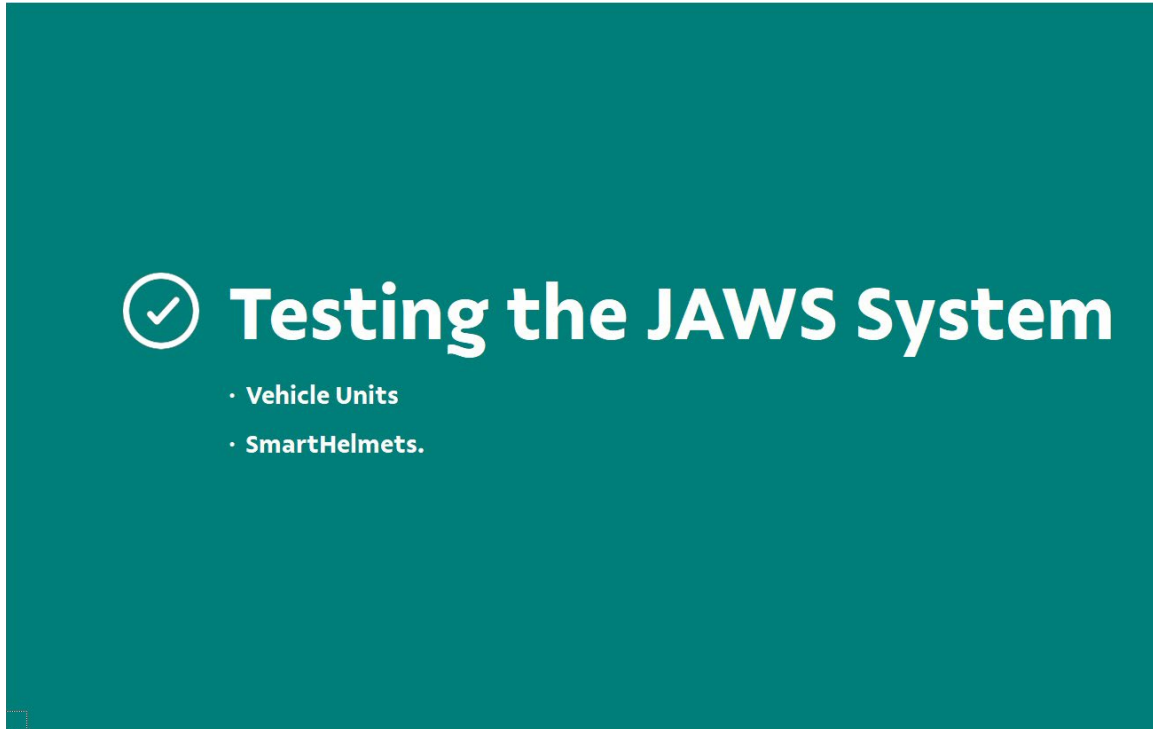
Submit your question here using Valeforms, be sure to include your first name last name and contact information.

[CLICK HERE!](#)



## 3. Testing the Jaws System

### *3.1 Testing the JAWS System*



## 3.2 Testing - Vehicle Units

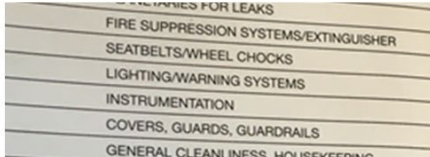
### Testing the JAWS System

#### 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.\*\***

### 3.3 Testing - Vehicle Units

#### Testing the JAWS System

##### Vehicle Units

##### Prior to Shift - Steps

- 1 Vehicle operator turns on ignition of vehicle
- 2 The SmartView vehicle unit will power up and the Vale Home Safe logo will appear.
- 3 A disclaimer will then appear which will need to be acknowledged by the operator.
- 4 If not acknowledged, the unit will continue to beep.



### 3.4 Testing - Vehicle Units

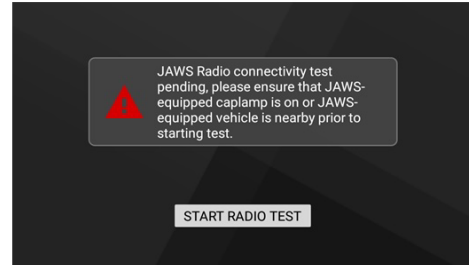
#### Testing the JAWS System

##### 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.

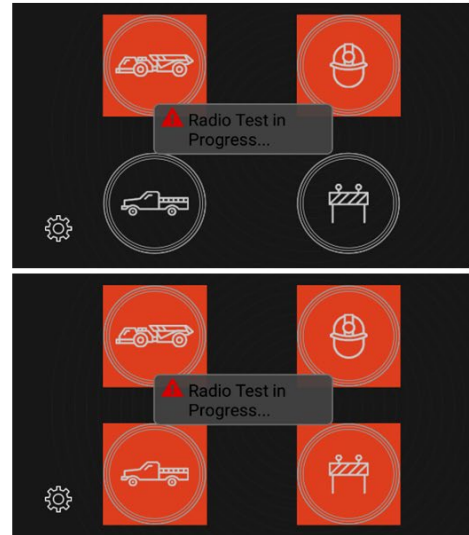
### 3.5 Testing - Vehicle Units

#### 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.



### 3.6 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.





### 3.7 Testing - Vehicle Units

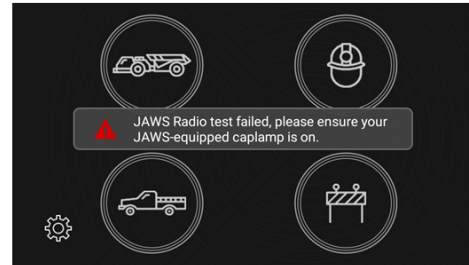
#### Testing the JAWS System

##### 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.



### 3.8 Notifications – Blank Screen

#### Testing the JAWS System

##### Vehicle Units

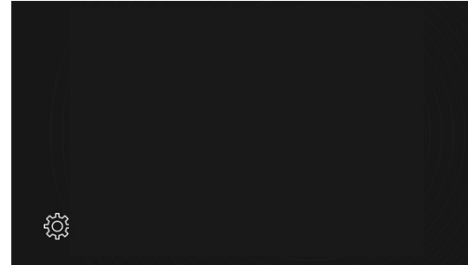
##### Notifications – Blank Screen

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.



### 3.9 Notifications – Master Switch Detection /Attempted Shutdown

#### Testing the JAWS System

##### Vehicle Units

##### Notifications – Master Switch Detection /Attempted Shutdown

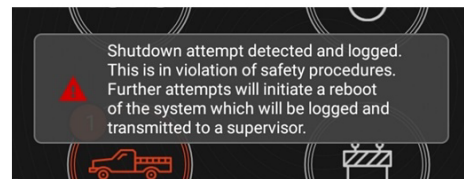
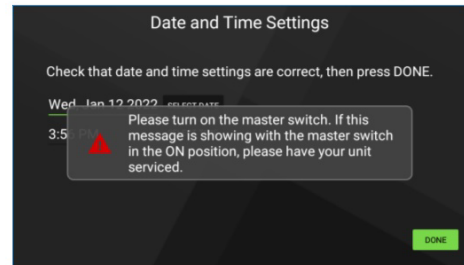
In order to ensure the power is not drawn dead on the system, this error will display for 60 seconds or until the master switch is in the 'on' position and recognized as functional by the application.

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.



### 3.10 Notifications – Network Error

#### Testing the JAWS System

##### Vehicle Units

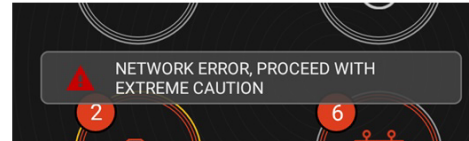
##### Notifications – Network Error



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.**



### 3.11 SmartHelmet Functionality - Proximity Alerts

#### Testing the JAWS System

##### SmartHelmet Functionality

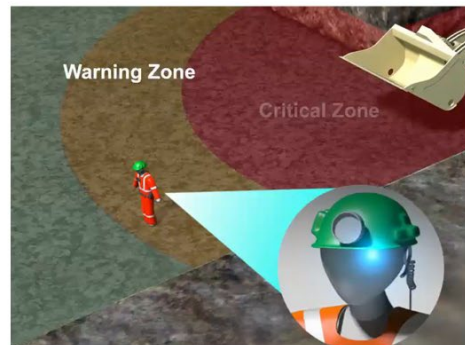


##### Proximity Alerts

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.

### 3.12 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!!**

### 3.13 SmartHelmet Functionality - Turning On/Off

#### Testing the JAWS System

##### SmartHelmet Functionality

##### Turning On/Off

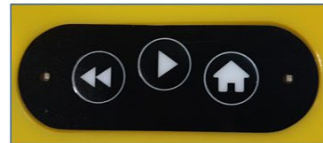
Ensure you have placed a fully charged battery into the battery compartment.

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



### 3.14 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.

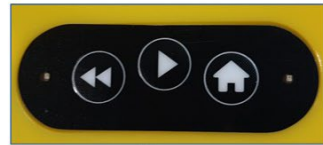
Simply press and hold until the high-vis LED lights go off – this will indicate the power has been turned off to the helmet.



You should never disable JAWS while in a working situation.



ON/OFF



Home

### 3.15 Smartheelmet Testing - Prior to Shift - Steps

#### Testing the JAWS System

##### Smartheelmet 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.



### 3.16 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.

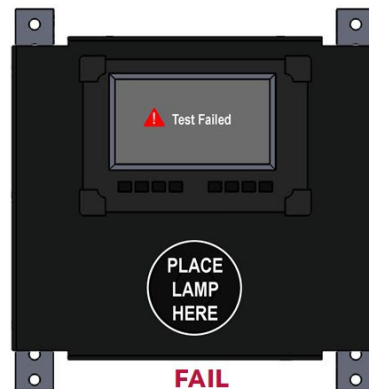
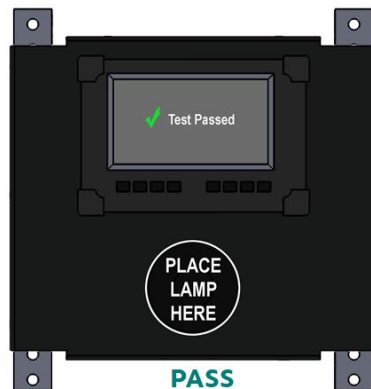


### 3.17 Testing - Vehicle Units

#### Testing the JAWS System

##### Smarthelmet Testing

##### Prior to Shift - Steps



These devices are part of a safety system and should not be tampered with at any time. Use only as directed.

### 3.18 Got a Question?

#### Testing the JAWS System

##### Got a Question?

Submit your question here using Valeforms, be sure to include your first name last name and contact information.

[CLICK HERE!](#)



## 4. Conclusion

### 4.1 Conclusion



✓ Conclusion

## 4.2 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.

