	OPERATING HERO BLAST BAG	
	Hazard Identification, Risk Assessment and Control	
Authorised by: MTI GROUP	**Purpose**	This procedure defines the processes to be followed in order to identify health and safety hazards, assess the risks associated with hazards relating to use of aerosol inflated blast hole blocker.
	Scope	This risk Assessment details the safe handling procedures for aerosol-inflated blast hole blockers and positioning of the blast hole blocker in a blast hole.
	Responsibility	Any personnel using Hero blast bag products are responsible for compliance with and implementing this procedure in their area of responsibility.

1 Introduction

This procedure defines the processes to be followed to identify health and safety hazards, assess the risks associated with each hazard and apply controls (where required) to reduce associated risks. This document is specific to the MTi Group BLASTBAG HERO™ range of products and provides information for the following products:

Model	Part #	Hole Diameter	Bags/Box
EMU – HERO	**33-034**	**311mm**	**20**
WOMBAT – HERO	**33-059**	**270mm**	**25**
PLATYPUS – HERO	**33-046**	**230mm**	**25**
BILBY – HERO	**33-028**	**203mm**	**30**
KOALA – HERO	**33-039**	**165mm**	**30**
QUOKKA – HERO	**33-051**	**76-115mm**	**35**

2. Risk Assessment

When assessing risk, the likelihood of the hazard occurring and the potential consequences if the hazard occurred are to be considered, as described in the following tables.

Qualitative measures of Likelihood

Level	Descriptor	Description
A	Almost certain	Daily Occurrence: Common or frequent.
B	Likely	Weekly Occurrence: Has happened or a near miss has occurred within PDL Toll.
C	Possible	Monthly Occurrence: Could occur or has been known to have occurred else where.
D	Unlikely	Annual Occurrence: Feasible to occur, not known to have occurred else where.
E	Rare	Once in 5 years: Whilst feasible, considered to be highly unlikely but not impossible.
F	Extremely Rare	< Once in 5 years: Practically impossible.

Qualitative Measures of Consequence

Level	Descriptor	Example Detail Description
1	Insignificant	No injuries would be expected, possible minor discomfort. Insignificant financial loss
2	Minor	Minor / in-house first aid treatment, able to return to work immediately with no lost time. Minor financial loss
3	Moderate	External medical treatment required possible lost time injury. Moderate Financial Loss

4	Major	Extensive injuries, lost time injury, hospitalisation. High financial loss
5	Catastrophic	Potential death or permanent disability. Detrimental financial loss

Qualitative Risk Analysis Matrix – Level of Risk

Likelihood	Consequences				
	Insignificant 1	**Minor** 2	**Moderate** 3	**Major** 4	**Catastrophic** 5
A (Almost certain)	**H**	**H**	**E**	**E**	**E**
B (Likely)	**M**	**H**	**H**	**E**	**E**
C (Moderate)	**L**	**M**	**H**	**E**	**E**
D (Unlikely	**L**	**L**	**M**	**H**	**E**
E (Rare)	**L**	**L**	**M**	**H**	**H**
F (Extremely Rare)	**L**	**L**	**L**	**M**	**M**

Legend - E: Extreme Risk; **H:** High Risk; **M:** Moderate Risk; **L:** Low Risk

RISK ASSESSMENT: OPERATING HERO BLAST BAG

STEP	ACTIVITY	HAZARD(S) IDENTIFIED	RISK(1)	RISK CONTROL(S) REQUIRED	RISK (2)
1.	**Selection**: Select correct size BLASTBAG™ plug for appropriate hole.	Muscular /joint pain Slip/Trip	D1 Low Risk	Stretch prior to activity Clear work area, manual handling SOP	F1 Low Risk
	and remove from carton just prior to use.	Aerosol Can exploding	F3 Moderate Risk	Storage in accordance with AS2278-2008. Do not expose to direct sunlight.	F2 Low Risk
	If present, check Chemeleon™ safety logo to make sure bag has been stored safely. If not present, check bag for elevated temperature.	Can bursting	F3 Moderate Risk	Check label and understand how it works before handling. Read SOP.	F1 Low Risk
	If DANGER is activated OR can is hot, use in accordance with 6.2	Can Bursting	F3 Moderate Risk	Dispose correctly	F1 Low Risk
2.	**Positioning:** Determine depth. Grasp the canister firmly in one hand and with one firm movement of the thumb activate the latching mechanism of the aerosol until the latch clicks and a steady stream of gas is expelling from the canister.	Pinch Point Muscular /joint pain Slip/trip RSI	C1 Low Risk	PPE-Gloves Stretch prior to activity Clear work area	F1 Low Risk

3.	Quickly lower the BLASTBAG™ plug down to the required depth until the drop cord is tight.	Muscular /joint pain Slip/Trip	D2 Low Risk	Stretching prior to activity Clear work area	F1 Low Risk
4.	After 15 - 30 seconds the BLASTBAG™ plug will grip walls of the blast hole. Tugging the drop line will confirm the bag has gripped the walls of the blast hole.	Muscular/Joint Pain Slip/Trip	C3 Moderate	Stretching prior to activity Clear work area	F1 Low Risk
5.	A firm upward pull on the drop line will break the tag from the top of the BLASTBAG™ plug when in position allowing the drop cord to be retrieved.	Muscular/Joint Pain Slip/Trip	C3 Moderate	Stretching prior to activity Clear work area	F1 Low Risk
6.	**Removal:** If the bag needs to be removed from the blast hole this can be done by bursting the bag in situ, waiting for deflation and then retrieving the bag.	Foreign body in eye Cut/Impale Asphyxiation, Freeze burn from liquid gas, Stored energy constrained by bag.	E4 High	Stretching prior to activity Correct PPE Clear working Area Well ventilated area Do not breathe in gas vapour. Conduct risk assessment to ensure there is no stored energy held in place by bag.	E2 Low Risk
7	**Important Steps:** For best results in all ground types, wait 10-15 min before loading on top of BLASTBAG™ plug and 30 min if ambient is less than 15 degrees C	Hole slumping and misfires	D3 Moderate	Follow SOP	F3 Low Risk
	Always kick in at least 2 boot loads of drill cuttings to protect bag from falling stemming or debris	Slip /Trip	C3 High	Stretch prior to activity and ensure even footing	E2 Low Risk
	For shale bands or muddy condition it is best to use 2 bags to increase wall contact and reduce the chance of slippage.	Hole slumping and misfires	C3 High	Wait at least 5 minutes for lower bag to complete inflation otherwise risk overpressure and bursting	E3 Moderate Risk

2 SAFETY AND HAZARDS

2.1 Aerosol canister prone to de-crimp if exposed to elevated temperatures or direct sunlight for prolonged periods of time.

2.2 Aerosol canister exploding after being punctured or incinerated.

2.3 Debris in eyes and or propellant in face if lanced incorrectly.

2.4 Freeze burn from liquidified gas propellant.

2.5 Inhalation risk where inflated bag is discharged in enclosed area or many bags are lanced in quick succession - hazard inherent in all self-inflating bags due to oxygen displacement.

3 SAFE HANDLING PROCEDURES

3.1 Storage:

Store as per AS2278-2008 and Australian dangerous goods code. Do not store above 50C, do not store in direct sunlight, keep BLASTBAG™ plugs in box until ready for use.

3.2 Transport:

Transport as UN3363 Class 9, Hazchem code 2YE.

3.3 Disposal:

If Chemeleon™ Label present, check if safe. Then bag can be disposed of normally by first initiating the bag and allowing it to fully inflate with no gas in liquid form. Bag should then be pierced in a well-ventilated area and allowed to deflate prior to disposal. If an inflated bag needs to be removed from a blast hole, lance in position and remove from hole using drop cord, avoid breathing in gas. Although gas is non-toxic, excessive levels can present asphyxiation risks as gas cannot be substituted for breathable air.

3.4 Overheating:

Aerosol cans may explode due to expansion of gas if overheated.
If Chemeleon™ Safety Label present, check if indicator reads DANGER or HOT!
If hot, do not approach BLASTBAG. Make all crew and supervisor aware and allow product to cool, remove from heat source if safe to do. Once safe, dispose of product.

3.5 Spills:

Spills or leaking cans should be moved to a well-ventilated area and handled with correct PPE.

3.6 Enclosed areas:

Although contents of aerosol are non-toxic, injuries may be sustained through asphyxiation if cans are allowed to discharge in a confined space.

4 MATERIALS / EQUIPMENT

BLASTBAG™ contains the following materials:

- Plastic outer scuff bag.
- Plastic inner bladder bag x 2.
- Internal aerosol can – aluminium filled with HFC-134a.

Proper installation of a BLASTBAG™ requires the following materials:

4.1 Drop cord (string or rope)

4.2 PPE

4.3 Bust and Retrieval Tool




5 SAFE WORKING PROCEDURE

5.1 Select correct size BLASTBAG™ plug for appropriate hole and remove from carton just prior to use.

5.2 Determine what depth the bag is to be placed in the hole.

5.3 Prepare drop cord allowing an extra 1.5m to prevent a RSI from bending.

5.4 Either tie or clip the drop cord onto the hang tab:

1. Top hole for shallow hole (requires low force ~7kg force to break)
2. Bottom hole for deep holes (requires high force ~15kg force to break)

5.5 Grasp the canister firmly in one hand and with one firm movement of the thumb push in the latching mechanism of the aerosol until the latch clicks and a steady stream of gas is expelling from the canister.

1. First indent for fast inflation
2. Second indent for slow inflation (ensure hand is not obstructing trigger from the back)

5.6 The BLASTBAG™ plug will now begin to inflate. Note after the mechanism has been latched the inflation process can not be stopped, but can be slowed by turning bag upside down.

5.7 Quickly lower the BLASTBAG™ plug down to the required depth until the drop cord is tight.

5.8 After approximately 15 - 30 seconds the BLASTBAG™ plug will grip the walls of the blast hole.

5.9 Tugging the drop line will confirm the bag has gripped the walls of the blast hole.

5.10 A firm upward pull on the drop line will break the tag from the top of the BLASTBAG™ plug when in position allowing the drop cord to be retrieved.

5.11 If the bag needs to be removed from the blast hole this can be done by bursting the bag in situ using a special tool, waiting for deflation and then retrieving the bag with the drop cord.

5.12 If a slower inflation time is required, the HERO model is equipped with a second speed achieved by pressing the trigger to the second notch. An additional tag can also be attached to the bottom of the

bag and the bag introduced into the hole inverted. This will slow the release of gas further but is only recommended in holes up to 230mm, do not invert bag if there is no hangtab to facilitate connection with drop cord.

5.13 For best results in all ground types, wait 10-15 min before loading BLASTBAG™ plug and 30 min if ambient is less than 15 degrees C (double times if bag has been inserted upside down)

a. For shale bands or mud condition (or when heavy rain is predicted) it is best to use 2 bags to increase wall contact and reduce the chance of slippage.

b. Always kick in at least 2 boot loads of drill cuttings to protect bag from falling stemming and larger debris.