

An Introduction to *CABA* In-Seam Response Guidelines

by Jamie Bashford



Compressed Air Breathing Apparatus



CABA

This equipment was primarily manufactured as a means to respond to events although of the eight mines producing coal in the Newcastle district of NSW, six are utilising **CABA** as a form of *self-rescuer* during emergencies.

Background

In 2003, the ***NSW Mines Rescue Board***, set about introducing a ***Working Group*** in a bid to address issues within the industry, thus promoting a safer working environment.

The ***Mines Rescue Working Group***, as it is known today, was comprised of key industry stake-holders, to ensure that all interested parties within the industry were involved.

Mines Rescue Working Group

- NSW Mines Rescue Service
- NSW Minerals Council- *Colliery Owners*
- CFMEU- *Const. Forestry Mining and Energy Union*
- APESMA- *Association Of Professional Engineers, Scientists and Managers of Australia*
- MMAA- *Mine Managers Association of Australia*
- Colliery Officials Association- *Mine Deputies*
- Department of Primary Industries- *Government Regulatory Body*

Background

A review of emergency responses identified two primary risks within the current system of ***surface based response***, which when controlled, can give underground mineworkers a greater advantage to save lives.

Background

The two major risks identified from the review were-

The time it takes for ***Surfaced Based Teams*** to respond to an incident, and

The immediate actions taken by many employees once an incident occurs

Surface Based Response

Surface based response by the **NSW Mines Rescue Service** consists of 2 full-time rescue employees and the use of **Mines Rescue Brigadesmen**, who are volunteers, based at each districts collieries



Surface Based Response

Once the emergency system is activated, the station contacts the *Rescue Brigadesmen* by telephone

The ***Newcastle Mines Rescue Service*** currently has 118 volunteer brigadesmen spread across eight collieries

- 92 of which are BA current

Medically Fit and Competent to respond

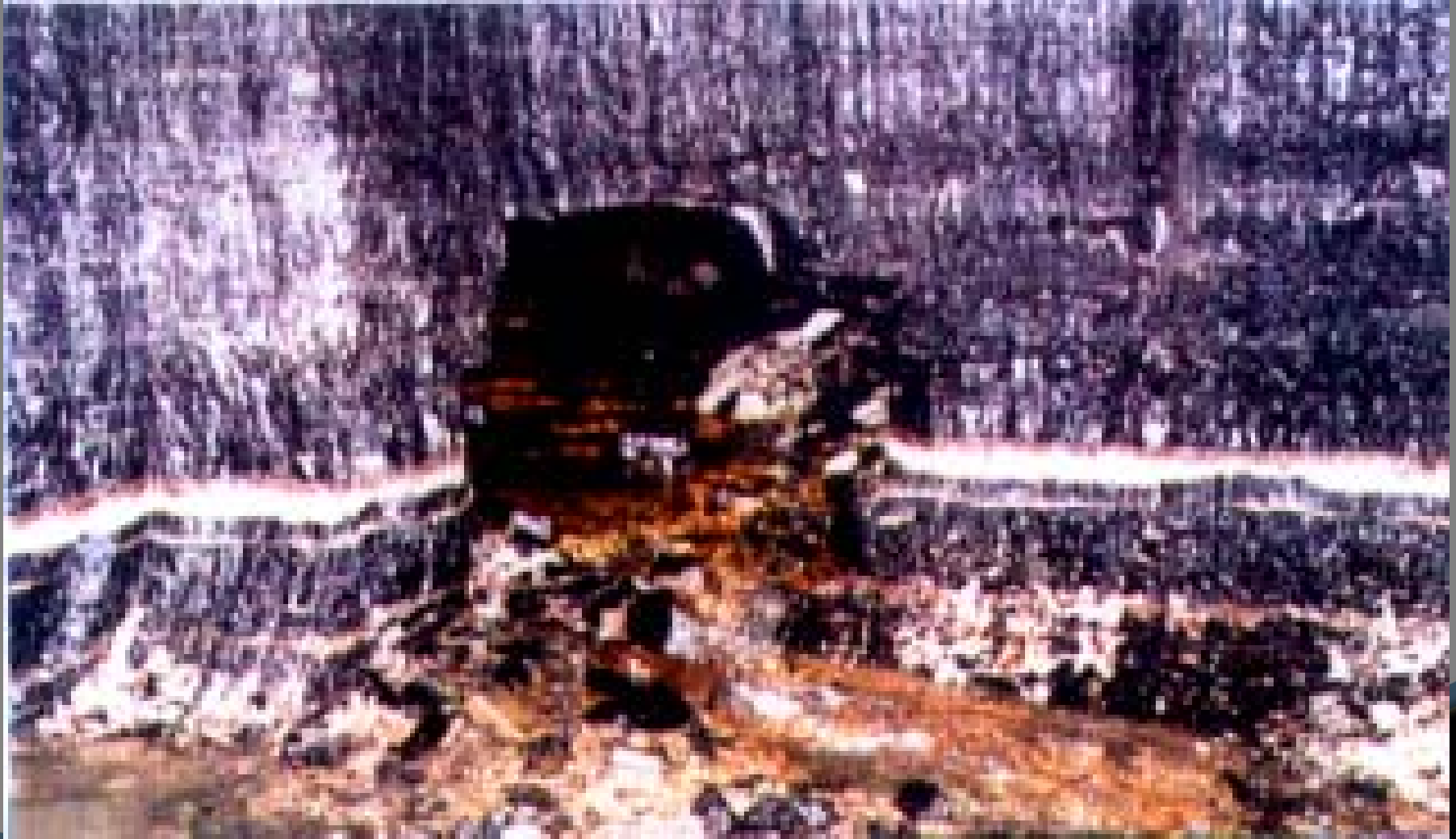
Case Study-Gretley Colliery

Thursday November 14th 1996, when miners holed into old workings, from an abandoned mine which was full of water, an inrush occurred, killing 4 mineworkers-

- **Edward Batterham-** 48 year panel deputy
- **John Hunter-** 36 year old miner
- **Mark Kaiser-** 30 year old mechanical fitter
- **Damon Murray-** 19 year old miner

Case Study-Gretley Colliery

1metre x 1metre hole into old workings



Case Study-Gretley Colliery

The force of the inrush pushed the 35 ton continuous miner back approx. 17.5m (57.5 feet)



Case Study-Gretley Colliery

Shuttle car which was full of coal prior to inrush



Case Study-Gretley Colliery

5.30am- Inrush occurs MW 50-51 Panel

6.05am- Mines Rescue *Duty Officer* receives a call from Gretley Colliery requesting assistance

6.20am- Mines Rescue *Duty Officer* arrives at site to meet with Mine Official and is informed-

- 4 persons are unaccounted for
- Names and caplamp numbers available
- Night shift Undermanager had reached the panel crib room and detected excessive CH₄

Case Study-Gretley Colliery

6.25am- First response vehicle arrives at affected colliery and begins to prepare team equipment

6.45am- Team 1 Leaves surface for FAB

7.00am- Team 2 leaves surface for FAB

Travelling from the surface via rubber tyred vehicles to the affected panel took 30 minutes

Case Study-Gretley Colliery

7.15am- Team 1 goes active from FAB

FAB was located approximately 500m from the affected area

7.55am- Team 2 Goes active from FAB

At approximately 8.15am, both teams report locating all four missing persons

Case Study-Gretley Colliery

Gretley Colliery, at the time, was the closest colliery to the Rescue Station, located only 5.5km (3.5miles) away by road

From the time of the incident occurring to the time it took to for rescue teams to locate the missing persons, took approximately 2 hours.

Case Study-Gretley Colliery

The number of persons killed in the incident could easily have been higher

One of the concerned crew decided to take immediate action and was overcome by blackdamp and passed out, striking his head as he fell

Fortunately, he was standing inside a shuttle car, keeping him out of the water, which at this time was up around the hub of the wheel.

Case Study-Gretley Colliery

The actions of this mineworker, like so many before, show that during an emergency, many employees place themselves at risk by taking action without the benefit of-

- appropriate training
- knowledge
- skills
- equipment

In-Seam Response Guidelines

The intention of the *In-Seam Response Guidelines* is to provide underground employees with the opportunity to respond immediately to *In-Seam* incidents prior to *surfaced based* rescue teams arriving at the incident

Development of Guidelines

The development of ***In-Seam Response Guidelines*** addresses four areas.

They are as follows;

- Process for introduction of In-Seam Response
- Provision of Competent Persons
- Fit for Purpose Equipment, and
- Deployment Procedures

Process for Introduction

Current legislation under the ***NSW Coal Mine Health and Safety Act 2002*** requires that all NSW underground coal mines develop an Emergency Management System.

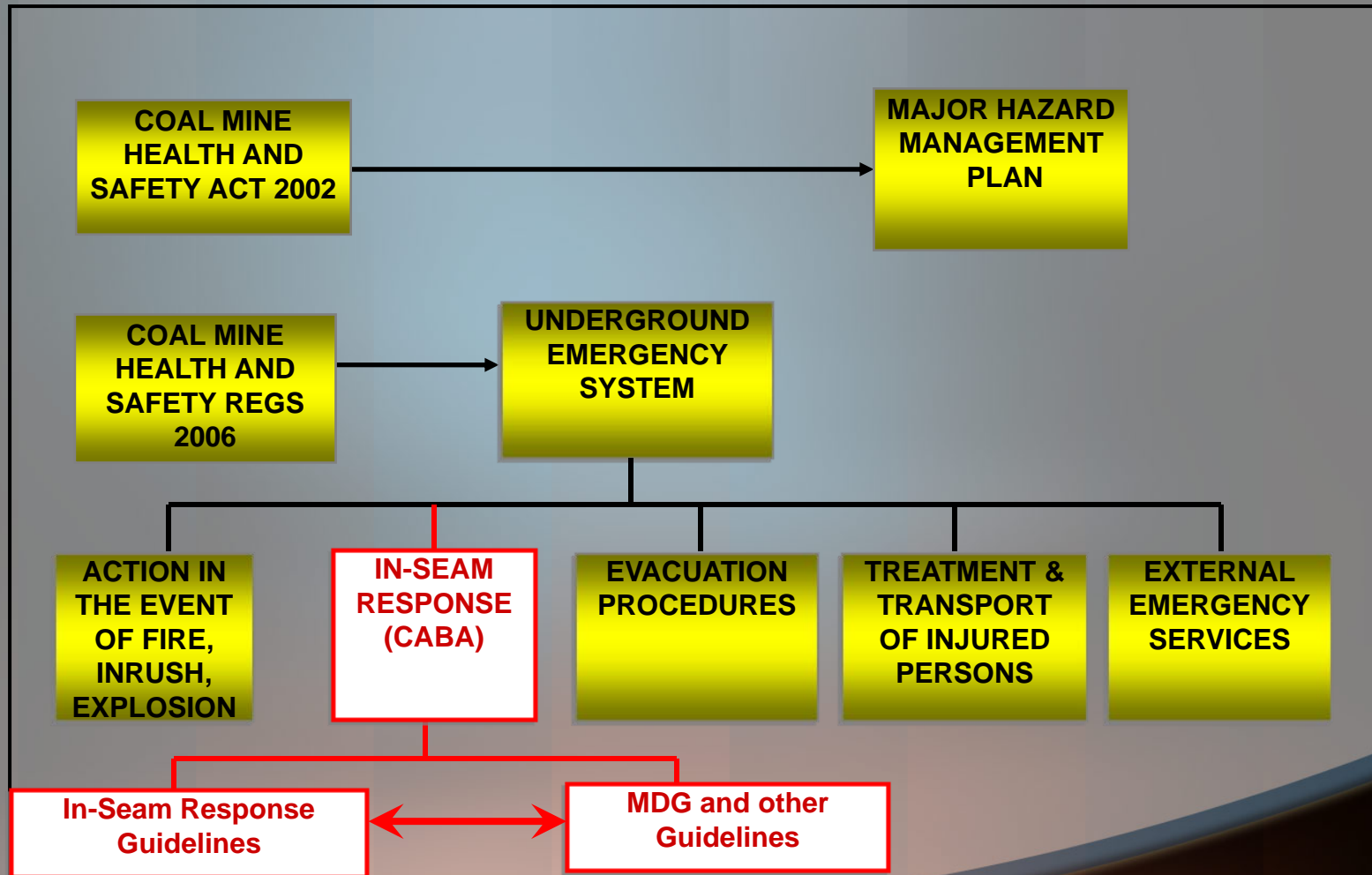
Excerpt:

An emergency management system must adequately address the following, but is not limited to;

- (d) procedures necessary to control or limit incidents and the competence required by people to undertake emergency procedures*
- (f) the identification of personnel and recourses (both internal and external) available in the case of an emergency*

Process for Introduction

Underground Emergency System



Process for Introduction

The recommended process to develop the response system at each colliery is:

- Identify through *risk assessment* major hazards, their location and the types and duration of these incidents
- Determine where the system of in-seam response may be timely and of value in responding

Process for Introduction

- Consider the level of response required to deal with the identified incidents
- Determine the location of CABA and Refill Stations, and
- Determine the number of trained in-seam responders required

Provision of Competent People

Employees who volunteer as responders undergo a medical examination prior to undertaking training.

Periodic medicals will also be undertaken to confirm ongoing fitness.

Provision of Competent People

The training these personnel receive is based under two nationally recognised competencies for the Australian coal industry

Inseam Response

For operations in sight of FAB, and

Aided Rescue

For operations out of sight of FAB-
up to 200m (655 feet)

Provision of Competent People

Inseam Response

Training for this unit includes

- Assess and prepare for responses
- Respond to an incident
- Fire fighting- *main element*
- Gases and gas detection
- Casualty care, and
- Report and debrief

Provision of Competent People

Aided Rescue

Training for this unit includes

- Assess and plan rescue strategy
- Extricate and evacuate to fresh air, and
- Carry out post incident requirements

Level 1 competencies must be completed as a pre-requisite training in Level 2

Provision of Competent People

Myuna Colliery

Myuna Colliery in the Newcastle district is the first coal operation to initiate training and response since the inception of the guidelines in 2006

The mine currently operates with approximately 150 personnel

Provision of Competent People

Training commenced in June 2007, with 32 persons. Twenty two of which were *Mines Rescue Brigadesmen*, the remaining ten positions were filled by the mines Fire Team

Provision of Competent People

To maintain a level of competence, Myuna *In-Seam Responders* will undergo six trainings per year.

If a *Responder* misses two trainings simultaneously, one training must be attended to regain the status of competent.

Fit for Purpose Equipment

The basic requirements for CABA are-

- Complies with Australian Standard for Respiratory Protection
- Greater than 60 minute duration
- Pressure gauge indicating cylinder content
- Pre-operational checklist for apparatus

Myuna Colliery

Myuna Colliery are using Filter Self-Rescuers (belt worn) and CABA suits (cached), as their emergency escape system.

The CABA used contains two 6.8 litre cylinders.

Based on a usage rate of 40 litres per minute, the suit has a duration of 102 minutes once charged to a pressure of 300 Bar



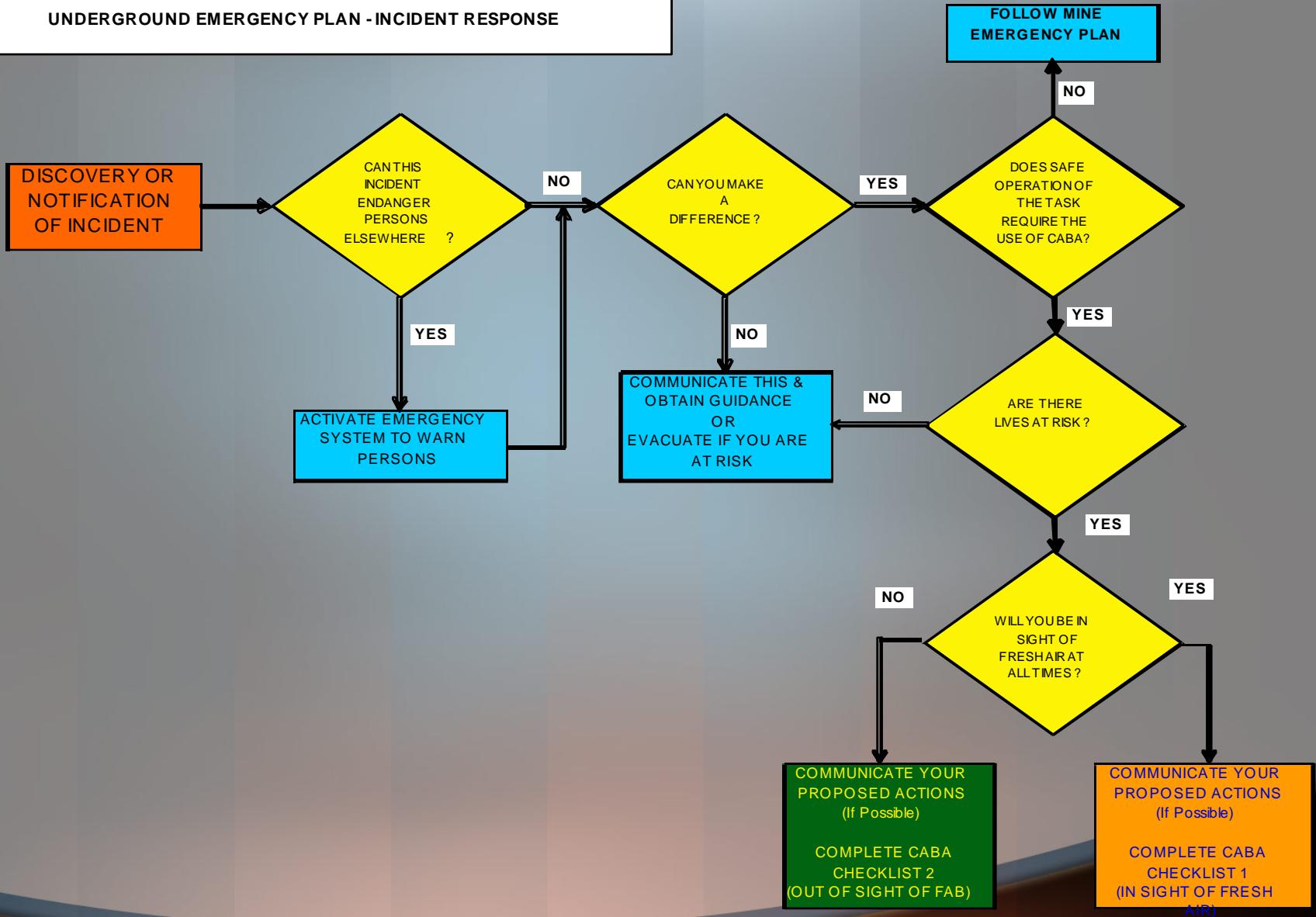
Determining the Need to Respond

To determine whether or not the *In-Seam Response* system is to be activated, the following flow charts and forms were developed

The intent of these forms is to ensure a rapid response without compromising the safety of responders

Determining the Need to Respond

UNDERGROUND EMERGENCY PLAN - INCIDENT RESPONSE



CABA Checklist 1

Mines Rescue Guidelines -CHECKLIST 1

IN SIGHT OF FRESH AIR

First Response For an Unplanned Event - Where the Team Remains in Sight of FAB

If you answer NO to any question then determine what you can do to make it a YES to allow the team to act.

	<i>Tick Answer</i>	No	Yes
1	Is there life at risk?		
2	Are two (2) persons trained in ' <u><i>In-seam Response</i></u> ' ready and willing to respond to the incident ?		
3	Is the task to be performed within their scope of training and abilities ?		
4	Are they fit and properly equipped to respond to task required ?		
5	Have the limits of fresh air been established ?		
6	Do you have a person observing the limits of fresh air ?		
7	Is the ventilation maintaining the limits of fresh air ?		
8	Can you operate constantly staying in view of the person monitoring the fresh air zone ?		
9	Are the strata conditions satisfactory for entry ?		
10	Is it safe to undertake the task without a backup team and additional equipment ?		

Once ALL answers are YES complete CABA Team Control sheet and GO ACTIVE.

CABA Checklist 2

MINE RESCUE GUIDELINES - CHECKLIST 2

OUT OF SIGHT OF FAB

First Response For an Unplanned Event - Where the Team May Need to Proceed Out Of Sight of FAB

	<i>Tick Answer</i>	No	Yes
1	Is there life at risk ?		
2	Are two (2) persons trained in <u>'In-seam Response'</u> and <u>'Aided Rescue'</u> ready and willing to respond to the incident ?		
3	Is the task to be performed within the scope of their training and abilities ?		
4	Are they fit and properly equipped (including a gas monitor) to respond to the task required ?		
5	Have the limits of fresh air been established ?		
6	Is there a person with a gas monitor at the Fresh Air Base (FAB) ?		
7	Is the atmosphere in the area expected to be NON-EXPLOSIVE ?		
8	Is the distance from FAB less than 200 meters ?		
9	Are the strata conditions satisfactory for entry ?		
10	Is a lifeline available if visibility is impaired		
11	Will there be a standby team of 2 men with CABA at the FAB at least within half the time duration of the apparatus ?		

Once ALL answers are YES complete CABA Team Control sheet and GO ACTIVE.

jamie.bashford@rescue.coaiservices.com.au

Limitations

The Guidelines are not intended for use for the following;

- Any occurrence where there is not a risk to life
- Fighting a fire where there is a risk of air reversal
- Post explosion response
- Performing work over extended distances
- Labour intensive tasks where individuals breathing rates are likely to be high over an extended period of time
- Dynamic situations where there is a potential for significant fluctuations in the irrespirable zone

Outcomes

The system is intended to enable effective action to be taken in the period prior to surface based response arriving on the scene.

The system has the potential to save life and prevent small scale incidents developing into major emergencies.

