

Emergency Management Services

Operate Breathing Apparatus

Training and Assessment Strategy

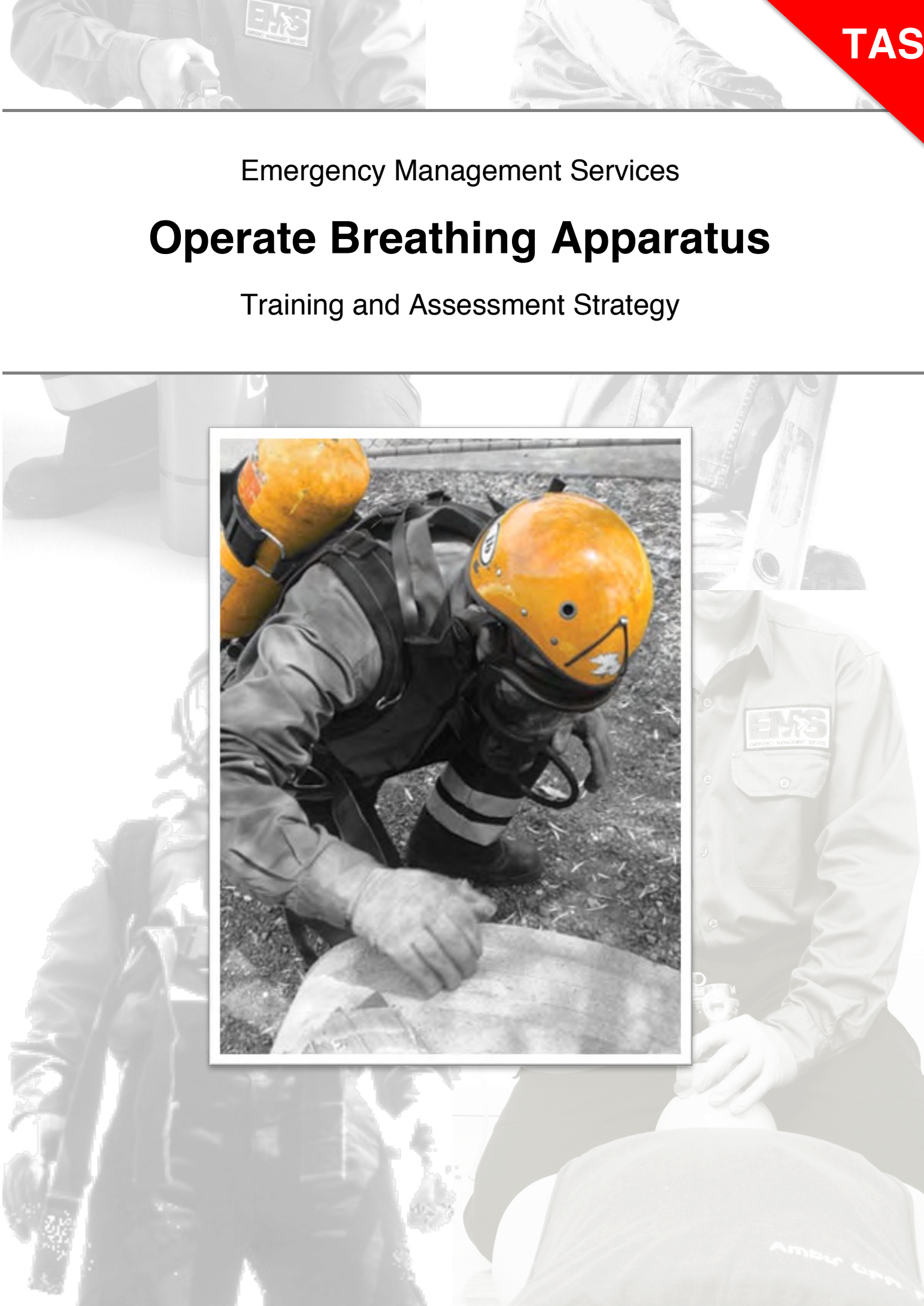


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Training and Assessment Strategy

Purpose

This document forms the guide to delivering and assessing the Units of Competency embedded in the Breathing Apparatus Course

The Breathing Apparatus Program is designed to cover the competencies required by persons who are required as part of their vocation to wear and work whilst wearing supplied air breathing apparatus. This course does not cover semi closed or closed circuit systems.

Vocational Target

This course is delivered and assessed at a vocational level of 2. Graduates at this level will have knowledge and skills for work in a defined context and/or further learning Course Duration

The course is run over a period of 4 hours and can be integrated into other training courses such as the Confined Space Skill Set.

Delivery Mode

This program will be delivered over 4 hour period in one complete session consisting of both practical and theoretical training. All training will be delivered face to face. The course is designed to be primarily practically based with a small amount of theory in a classroom environment.

Duration

The course is designed to be delivered over a 6-hour period of instruction based on a class size of up to 12.

If the unit is being delivered as part of a confined space package atmospheric hazards will be covered during that course and will reduce the time required to deliver the BA. Additionally the BA practical training can be conducted in conjunction with the Confined Space Entry Practical.

Assessment Requirements

The assessment requirements are both formative and summative in nature and will include practical assessments, oral questioning and group discussions. The assessment will take place at varying times throughout the course.

Further details on assessment requirements can be found in the Assessor Guide located within this document.

Award and Recognition

Units of competency awarded once the candidate is found competent by assessment

MSMWHS216 Operate breathing apparatus

Prerequisites

There are no knowledge prerequisites applicable.

Fitness Requirements

The Breathing Apparatus course is a very practical course and requires a certain level of fitness. Persons participating in the course should feel comfortable in confined spaces, comfortable covering their face with a blacked out mask and be able to carry approximately 10 kilos on their back whilst carry out various tasks.

Clothing Requirements

Work clothing is required when conducting practical activities. A minimum of long sleeved shirt with long pants and sturdy footwear. Thongs, Sandals, High Heels and Shorts, Skirts and Dresses are not permitted to be worn during practical sessions.

Trainer Competencies

To be eligible to Train and Assess the Breathing Apparatus Course, EMS Trainers and Assessors must meet the following minimum requirements prior to conducting the course.

Qualifications

- Cert IV Training and Assessment (including the LLN Unit of competency)
- Breathing Apparatus competencies equivalent to the level being trained.

Vocational Experience

- At least 2 years experience working with Breathing Apparatus.
- Experience in hazard identification and managing risk.

Overview of topics

Introduction

Legislation and Governance
Definitions
The Respiratory System
Atmospheric Hazards
Overview of the Breathing Apparatus
Limitations of the Breathing Apparatus
Personal Distress Units

Pre Operational

Planning for Entry
Cylinder Durations and Working Times
Pre Operational Checks

Operate in Breathing Apparatus

Donning the Breathing Apparatus
Conducting Work in Limited Visibility
BA Control
Emergency Procedures

Conclude Operations

Removing the Breathing Apparatus
Clean and Service Breathing Apparatus
Return BA to Operational Status

Lesson Plan – Operate Breathing Apparatus

1. Preamble

- Welcome participants and introduce yourself.
- Provide an overview of what to do in the event of an emergency.
- Identify the exits, toilets and other facilities.
- Provide an overview of the course and timeframes.
- Detail break times. *
 - Breaks should be given at 1.5 hour intervals. Where the course is being run concurrently with other units the break times of the larger course will be applied.



Ask each participant to introduce themselves.

*Find out where they are from and the role that they are employed to do.
Ask the participants if they have ever worked in BA before.*

Ask each participant to identify what he or she would like to get out of the course.

Write these down next to the persons name so you can refer to them later.

2. Introduction

2.1. Legislation and Governance

Provide a brief overview of the following in relation to Breathing Apparatus.

- WHS Act and Regulations and how they apply to managing risk.
- Guidance material for RPEs

AS1715-2009 Selection, Use and Maintenance of Respiratory Protective Equipment

This standard sets out requirements, performance and testing of RPE (Respiratory Protection Devices) for design manufacture

AS1716-2012 Respiratory Protective Devices

This standard sets out requirements for the selection, the use and maintenance of RPE (Respiratory Protection Devices) for use in the workplace.

2.2. The Respiratory System

2.2.1. The breathing process

Discuss the process of respiration.

- Consists of the Upper and Lower Respiratory Tract
- Responsible for the transfer of O₂ to the body and vital organs and CO₂ waste from the body.
- Regulates PH of the Bloodstream.
- Average respiration rate for an adult is 12 to 15 breaths per minute.
- Breathing process is necessary to sustain life

2.3. Atmospheric Hazards

2.3.1. Composition of the atmosphere

- Review the composition of the atmosphere
20.9% O₂, 78% Nitrogen and other trace elements.

2.3.2. Atmospheric Hazards requiring RPE (BA)

- Provide an overview of the following hazards that are mitigated by the use of BA by explaining the HOTS Acronym;

Heated Atmospheres

- Heated atmospheres can be due to a fire, industrial process such as an oven or kiln. Temperatures as low as 44°C for 5 to 6 hours and 65°C for 2 seconds are enough to cause a burn injury.

Oxygen Deficient Atmospheres

Oxygen deficient atmospheres can be caused by the following

- Organic Decomposition
- Oxidation of Metals
- Displacement (with other gas)
- Combustion

Toxic Atmospheres

- Caused by the introduction of a toxic vapour or gas such as CO₂, CO, H₂S, SO₂

Smoke

- Smoke is the result of a fire or other work process.

2.3.3. Irrespirable Atmospheres

Discuss these common irrespirable atmospheres and how they affect the body.

Asphyxiates

Displace oxygen and affect the worker by this restriction to available oxygen.

Irritants

Irritate the respiratory system causing discomfort and an inability to breathe without discomfort.

Toxic

These are gasses that directly harm or interact with the body.

Explosive

These atmospheric contaminants are highly flammable and create, amongst other hazards a risk of explosion.

2.3.4. Effects of common gasses found in the workplace.

Nitrogen (N)

Used in industry for a variety of processes, commonly being used to purge vessels of flammable gasses and vapours.

Nitrogen is non-toxic to the body but an increase in the level of Nitrogen in the atmosphere will create a reduction in the amount of available oxygen available in the atmosphere simply by displacement.

Oxygen (o₂)

Used in industry for welding and other processes. Oxygen is found in the atmosphere and is the essential gas used by the body to sustain life.

Oxygen is generally non-toxic but can be toxic when used over extended periods of time or breathed at pressures greater than 1 atmosphere such as when diving.

Carbon Dioxide (CO₂)

CO₂ is an asphyxiate at low levels and a Toxic Irritant at high levels.

CO₂ is commonly used in industry as a firefighting medium, carbonating beverages and pushing beer as well as many other industrial processes.

Carbon Monoxide (CO)

Carbon Monoxide is a by product of burning fossil fuels. Internal combustion engines, gas and fuel heaters and fires all produce CO as part of their operation.

Carbon Monoxide is toxic and can be fatal at relatively low levels. E.g. The TWA for CO is 30ppm or 0.003%. Carbon monoxide is harmful when breathed because it displaces oxygen in the blood starving the cells of oxygen. CO in the blood stream accumulates over time and prolonged exposure to relatively low amounts can still be fatal.

Hydrogen Sulphide (H₂S)

Hydrogen Sulfide is commonly found in drains and sludge. It is a byproduct of rotting organic matter.

Hydrogen Sulfide is highly toxic in low concentrations (as little as 10 PPM or 0.001% in air).

Methane (CH₄)

Commonly encountered in mining processes, Methane is a flammable gas that is produced naturally in environments with little or no oxygen by bacteria that feast on decomposing organic matter, such as grasses and wood.

Methane is a highly flammable asphyxiate. It is non-toxic to the body but will cause the reduction of available oxygen in the atmosphere simply by displacement.

2.4. Explosive and Flammable Atmospheres and Dust

Discuss the dangers of Explosive Atmospheres.

It is important to note that when dealing with exposure to flammable atmospheres and dusts, Breathing apparatus and other RPE (Respiratory Protective Equipment) will not reduce the

risk of explosion or fire to the wearer and as such additional control measures will need to be identified and implemented before conducting work.

2.5. Overview of Breathing Apparatus

2.5.1. Types of RPE available

Outline the different types of Respiratory Protection Equipment available and their differences.

P1, P2 and P3 Face masks
Filter Respirators
Compressed Air Breathing Apparatus (Open circuit and Closed Circuit)
Air Line Respirator (Compressed air to pressure reducer the facemask)
Air Hose Respirator (Fan forced air to facemask)
Positive Pressure – (Facemask is pressurized between 2 and 4 millibars above atmospheric pressure)
Escape Sets (short term BA)
O2 Generators (produce O2 through chemical reaction)

2.6. Limitations of Breathing Apparatus

Discuss the various limitations and considerations when using the different types of RPE listed below.

2.6.1. Limitations of P1, P2, P3

- Discuss the limitations of the P1, P2, P3 Respiratory Protection.
- Does not protect against Oxygen Deficient or Heated Atmospheres.
- Must be specific type for hazard otherwise will not provide protection.
- Limited Lifetime based on exposure levels.

2.6.2. Limitations of Air Line Supplied Breathing Apparatus

Discuss the limitations of Air Line Supplied Breathing Apparatus

- Hose entanglement.
- Facial Hair.
- Depending on system operator may be unaware of air content available.
- Relies on others to maintain the bank of cylinders.

2.6.3. Limitations of the SCBA

Discuss the limitations of the BA set

- Limited duration (one or two cylinders)
- Facial Hair.
- Can be cumbersome in confined spaces.
- Weight of cylinder.
- Limited duration.

2.6.4.Components of the SCBA

Discuss the components of the Self Contained Breathing Apparatus including the following;

Air Cylinder	Cylinder construction, capacity, and operating pressures	
Face Mask	Covers the wearers face and controls the atmosphere breathed by the wearer.	
Demand Valve	Controls the air flowing into the facemask. Has 3 stages. Park, Pressurise and Purge.	
Speech Diaphragm	Permits the wearer to speak clearly whilst wearing a facemask.	
Exhalation Valve	Allows air to be expired from the mask without letting air in.	
Ori-nasal Cup	Ensures that exhaled air is directed to the exhaust valve. Must be in place as it reduces rebreathing.	
Back Plate Straps	Harness that attaches the set to the wearer	
Cylinder mount	Attaches the cylinder to the back plate	
Pressure Reducer	Reduces the pressure to a working pressure within the set.	
Supply Hose	Supplies pressurized air to the demand valve and pressure gauge	
Pressure Gauge	Indicates the pressure available in the cylinder and therefore the amount of air left.	
Low Pressure Warning Whistle	Operates at 55 + / - 5 Bar	

2.7. Common Faults with SCBA and Possible Solutions

Facemask Leaking

Potential Cause

- Facial Hair impeding seal
- Straps not adjusted correctly
- Exhaust valve not seating correctly
- Demand valve malfunction or sticking

Rectification

- Ensure wearer is clean shaven
- Adjust facemask straps to fit correctly
- Check exhaust valve operation
- Check operation of demand valve

Air not being supplied to facemask

Potential Cause

- Cylinder empty
- Air line not connected properly
- Cylinder not turned on

Rectification

- Change cylinder
- Check air line is connected properly
- Turn cylinder on

Air leaking from cylinder valve

Potential Cause

- O-ring missing or damaged
- Incorrect cylinder installed (i.e. 300 Bar on 200 Bar set)

Rectification

- Change O-ring
- Install correct cylinder

2.8. Personal Distress Units

2.8.1. What is a PDU

- Provide an overview of the PDU including the different types available.
- Provide an overview of how the work.

2.8.2. Operation

- Demonstrate how to wear and operate the PDU.

2.8.3. Servicing and Maintenance

- Outline the servicing and maintenance procedures including changing the batteries.

3. Pre Operational

3.1. Planning for Entry

3.1.1. Working as a Team

- Highlight the requirement to working a minimum of 2 persons when wearing BA
- Discuss the reasons for working in a team.

3.1.2. Rescue Procedures

- Discuss the importance of planning and setting up for rescue prior to operating in BA.
- Consideration should be given to the use of Tag Lines, Harnesses and Standby Teams.

3.1.3. Pre Use Medicals

Under the Australian Standard 1715-2009 persons required to use BA should undergo an initial screening to ensure that they are suitable and able to operate effectively using respirators or BA. This should include both the Physical requirements as well as the psychological requirements.

3.2. Cylinder Durations and Working Times

3.2.1. Types of cylinders

- Detail the different types and sizes of cylinders available.
- The different sizes and their construction (Steel, Aluminum, Fiber wrapped).
- Service intervals, testing and operational lifespan.

3.2.2. Air Consumption Rate

- Discuss the average adult respiratory rate at rest. (12 to 16 breaths per minute)
- Outline the average adult lung capacity. (4 to 6 litres)
- Discuss tidal volume for an average adult. (Approx. 0.5 litres)
- Discuss how the average adult respiratory rate increases during activity.

Outline the average air consumption rate used when calculating air consumption for an adult worker wearing BA and highlight that this is only used as a guide. (40 litres per minute which is based on an average adult walking at a speed of 6 kilometers per hour)

3.2.3. Cylinder Capacity

Outline the method of calculating the amount of gas in a cylinder.

Cylinder Capacity = Water Capacity x Fill Pressure

3.2.4. Total Cylinder Time

Discuss the method of calculating the total time that a cylinder would last for.

Total Cylinder Time* = Cylinder Capacity / Air Usage

Demonstrate the method of calculating the cylinder duration for a standard 300 BAR cylinder.

3.2.5. Working Duration

Explain the working duration of a cylinder and how to calculate this.

Outline issues that would affect the working duration, i.e. exertion or environment, fitness level etc.

Working Time = Total Cylinder Time – Safety Margin (10 minutes average)

Highlight the importance basing the working duration off the person with the shortest working duration

*Note. Cylinders that have a working duration of 15 minutes or less are escape cylinders only and are not suitable for work.

3.3. Pre Operational / Post Operational Checks

Demonstrate the pre operational (same as Post Operational) checks that are required prior to using the BA.

Physical Inspection

- Ensure set is not contaminated with dirt or any other contaminate.
- Look for any physical signs of damage or wear on the set.
- Check all straps and harness and buckles.
- Check facemask for cracks in screen
- Check elasticity of mask straps and serrations on strap are not worn.
- Check Ori-nasal cup and exhaust valves
- Check Demand valve and ensure it is in “park mode”
- Check cylinder for damage or corrosion

High Pressure Test / Leak Test

- Turn on cylinder valve
- Ensure demand valve is in “park mode”
- Check air pressure – (must be at least 80%)
- Check for any leaks in the set.
- Turn off set
- Wait 30 seconds
- Recheck cylinder pressure. (If pressure still reads the same the set passes the leak test).

Low Pressure Warning Test

- Ensure the set is pressurized (check gauge contents).
- Slowly release air by operating the purge valve whilst watching the pressure gauge.
- The low-pressure alarm should operate when the gauge needle hits the red zone. An allowance for + - 5 bar is acceptable.

If a DPU is attached to the unit a functional test should be conducted on the PDU.

 *Pre / Post Operational Checks.*

Have participants work in pairs and take turns conducting the pre operational checks on the BA set.

3.4. Reporting and rectification of faults

Discuss the reporting procedure when faults are found and how to arrange rectification of these.

If any fault or damage is found with the equipment it will need to be recorded and logged, and reported to the appropriate personnel/workers in the manner that is required by your organisation.

3.5. BA Control

3.5.1. Overview of BA control

- Discuss the purpose of BA Control.
- Outline where and when it should be used.
- Outline Stage 1 and Stage 2 BA Control.
- Highlight the importance of a BA Control Officer.
- Demonstrate the use of the BA Control Board.
- Explain the use of BA Control in an emergency.

3.6. Emergency Procedures

- Discuss the requirements for Emergency and Rescue Procedures.
- Provide an overview of the BA Backup Requirement.
- Discuss the operation of the PDU in an emergency.
- Discuss the process for initiating emergency procedures.
- Demonstrate the use and response to the operation of the PDU.
- Discuss the lost procedure (turn 180 Degrees and follow the left or right hand wall out).

3.7. Entrapment Procedure

- Discuss the entrapment procedure.
 - Locate in a safe place.
Move to a safe location or the safest location available. Consider seeking shelter from any hazards such as falling debris etc.
 - Stop strenuous activity and rest.
Have the casualty minimise activity in order to slow down their rate of breathing maximizing the duration of available air.
 - Activate PDU and call for help.
Activate the wearers PDU and if possible call for assistance using available communications equipment such as a radio.
 - Rest and Remain Calm.
Essential to maximizing available air, keep calm try to keep you respiratory rate slow as possible.

4. Operate in Breathing Apparatus

4.1. Donning the Breathing Apparatus

Demonstrate the procedure for donning the BA set using the coat method.

4.2. Doffing the Breathing Apparatus

Demonstrate the procedure for doffing the BA set

 *Don and Doff BA Set.*

Have participants work in pairs and take turns assisting one another don and doff the BA set following the donning and doffing procedures.

4.3. Conducting Work in Limited Visibility

Explain the procedures for working in limited visibility

Discuss the use of Tag lines.

Demonstrate the shuffle procedure when moving through unknown territory. (Small steps waving back of hand up and down in front)

 *Work in limited visibility*

Have participants work in pairs. Have one of the pairs don a BA set and place the blackout mask over their mask. From there the participant is to walk to the other side of the room and back to their seat following the wall. The other participant in the pair will assist by leading the person in the blacked out mask so as not to endanger them. Once completed the pair is to swap over.

5. Conclude Operations

5.1. Removing the Breathing Apparatus

Review the procedure for doffing the BA set.

Ensure the demand valve is managed to prevent the uncontrolled escape of air.

5.2. Changing Cylinder

Review the procedure for changing the cylinder.

Highlight the importance for checking the O-ring is in place.

Ensure that the new cylinder is at least 80% full.

5.3. Clean and Service Breathing Apparatus

Demonstrate the cleaning and maintenance process (RSLRD)

Rinse the mask in cool fresh water

Spray with BA disinfectant

Leave for 10 minutes

Rinse again with cool fresh water

Dry with a lint free cloth or low pressure air. (a chux works well)

Change the cylinder (if required)

5.4. Return BA to Operational Status

Discuss the importance of conducting a pre operational check on the set prior to storing.

 *Clean and Service BA.*

Have participants work in pairs to clean and service the BA set ready for the next use.

Training Package Overview

Elements and Performance Criteria

Elements describe the essential outcomes		Performance criteria describe the performance needed to demonstrate achievement of the element	
1	Conduct pre-donning checks and tests on breathing apparatus	1.1	Inspect breathing apparatus for immediate use in accordance with procedures
		1.2	Report/record faulty or damaged equipment in accordance with procedures
2	Operate breathing apparatus	2.1	Identify, monitor and control hazards in accordance with the procedures
		2.2	Establish and maintain communication with appropriate personnel throughout the activity
		2.3	Use breathing apparatus for the required activities in accordance with procedures
		2.4	Monitor remaining working time available and return to a respirable atmosphere as required
		2.5	Implement entrapment procedures in accordance with procedures
		2.6	Maintain personal safety at all times
3	Conclude operations in accordance with procedures	3.1	Close down breathing apparatus set
		3.2	Remove breathing apparatus set
		3.3	Undertake after-use cleaning and maintenance of breathing apparatus
		3.4	Make equipment ready for operational use

Requirements for Assessment

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and must include the ability to:

- conduct pre-donning tests on breathing apparatus
- correctly don and operate breathing apparatus
- identify hazards and apply control measures according to procedures
- communicate while using breathing apparatus
- determine the available working time from a breathing apparatus set
- correctly close down, remove and clean breathing apparatus
- report faults and/or damage to breathing apparatus.

Knowledge Evidence

Evidence must be provided that demonstrates knowledge of:

- the effects of irrespirable atmospheres on the body and the need for protective equipment
- characteristics, component parts, operation of compressed air breathing apparatus
- operational testing, standard operating procedures (SOPs) and safe work practices when wearing breathing apparatus
- use of procedures, personal lines and tallies
- pre-use tests and checks
- breathing apparatus control
- entrapment procedures
- communications while wearing breathing apparatus.

Assessment Conditions

- Competency must be achieved before performing this work unsupervised. Therefore this unit will typically be assessed off the job. Where assessment is undertaken on the job appropriate supervision and safety precautions must be provided.
 - The unit should be assessed holistically and the judgement of competence based on a holistic assessment of the evidence.
 - The collection of performance evidence:
 - should provide evidence of the ability to perform over the range of situations which might be expected to be encountered, including typical disruptions to normal, smooth work conditions
 - must include the use of breathing apparatus, appropriate tools, equipment and safety gear requiring demonstration of preparation, operation, completion and responding to problems
 - may use industry-based simulation particularly where safety, lack of opportunity or significant cost is an issue.
 - Off-the-job assessment must sufficiently reflect realistic operational workplace conditions that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
 - Assessment in a simulated environment should use evidence collected from one or more of:
 - walk-throughs
 - demonstration of skills
 - industry-based case studies/scenarios
 - 'what ifs'.
 - Knowledge evidence may be collected concurrently with performance evidence (provided a record is kept) or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept).
-
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
 - Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.
 - The regulatory framework will be reflected in workplace policies and procedures and is not required to be independently assessed.
 - Foundation skills are integral to competent performance of the unit and should not be assessed separately.
 - As a minimum, assessors must satisfy the Standards for Registered Training Organisations 2015 assessor requirements.
 - Knowledge evidence may be collected concurrently with performance evidence (provided a record is kept) or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept).
 - Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
 - Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.
 - The regulatory framework will be reflected in workplace policies and procedures and is not required to be independently assessed.
 - Foundation skills are integral to competent performance of the unit and should not be assessed separately.
 - As a minimum, assessors must satisfy the Standards for Registered Training Organisations 2015 assessor requirements.

Theory Answer Template

Question 1. Prior to using a BA you must conduct a

- A. Pre Operational Check**
- B. Post Operational Check
- C. Non Operational Check
- D. All of the Above

Question 2. What does the term SCBA stand for

- A. Self Contained Breathing Apparatus**
- B. Self Contained Backup Apparatus
- C. Standard Compressed Breathing Apparatus
- D. Self Carried Breathing Apparatus

Question 3. Which of the contaminates below would produce an irrespirable atmosphere?

- A. Nitrogen
- B. LPG
- C. Oxygen
- D. Carbon Monoxide**

Question 4. The Demand Valve attaches to which part of the BA

- A. The Crotch Strap
- B. Under the Back Plate
- C. The Face Mask**
- D. Directly to the Cylinder

Question 5. When would you intentionally operate a PDU

- A. When you are finishing your work and about to leave
- B. Prior to starting your work
- C. In the event of an emergency requiring assistance**
- D. You are never to operate the PDU

Question 6. A Stage 1 BA Control board is usually associated with

- A. A task that involves only 1 entry point**
- B. A task that involves multiple entry point
- C. A task that involves only vertical entry points
- D. A task that involves only 1 worker

Question 7. What is indicated by a high pitched whistle coming from your BA Set

- A. Low Air**
- B. Flammable Atmosphere
- C. There is a leak in the system
- D. You have reached your working duration

Question 8. A Stage 2 BA Control board is usually associated with

- A. A task that involves only 1 worker
- B. A task that involves only 1 entry point
- C. A task that contains vertical entry points
- D. A task that involves 2 or more entry points**

Question 9. What are the main steps of the entrapment procedure.

- 1. Stop strenuous activity and rest**
- 2. Activate PDU and call for help**
- 3. Rest and Remain Calm**
- 4. Locate in a safe place**

Question 10. List 6 components of the SCBA

Answers to reflect parts associated with the SCBA Set used in training.

Question 11. When would you carry out an inspection on the SCBA?

Prior to use and at the conclusion of servicing, cleaning.

Question 12. List the cleaning procedure to be followed for cleaning the Facemask.

- R. **Rinse in water**
- S. **Spray with BA cleaner**
- L. **Leave for 10 minutes**
- R. **Rinse in fresh water**
- D. **Dry with compressed air / absorbent wipe**

Question 13. List 4 Hazards That you could encounter whilst wearing BA in a confined space.

Answer may be any reasonable hazard that could be found in a confined space

Question 14. For each of the Hazards listed above write down 1 control method to remove, make safe or reduce the hazard.

Answer must be a suitable control measure to control the hazards identified in question 13

Question 15. Calculate the cylinder duration based on the following information.

Cylinder Volume **4 Litres**
Cylinder Pressure **300 BAR**

Air Consumption of Wearer **40 Litres per minute**

The Cylinder Duration is 30 minutes $(300 \times 4) / 4$