LONDON FIRE BRIGADE

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Freedom of Information request reference number: 8202.1

Date of response: 11/01/2024

Request:

Would it be possible for you to answer some simple questions in relation to your FireFighter life critical breathing air.

1. Is your breathing air tested to BS EN 12021 (2014)
2. Do you charge your breathing apparatus cylinders to 300bars pressure.
3. Is your breathing air tested by your Fire Service personnel or a contractor?
4. Is your breathing air tested monthly or every three months?
5. If every three months does your high pressure compressor/s have a constant air quality monitoring device?
6. Do you allow your compressor/s to remain in service is it fails to meet the minimum standard of BS EN 12021 (2014)
7. If a breathing air compressor fails to meet the standards above do you have a lock out procedure.
8. Other than testing the air quality at source do you have a "random cylinder air testing policy".
9. Would it be possible to have any fire service policy, procedures or risk assessments in relation to the above under freedom of information.

Response:

1. **Is your breathing air tested to BS EN 12021 (2014)**

   Yes all (London Fire Brigade) breathing air is tested and compliant with the requirements set out in BS EN 12021 (2014).

2. **Do you charge your breathing apparatus cylinders to 300bars pressure**.

   Yes, all of the current LFB breathing air cylinders have a rated fill pressure of 300 bar. By design the cylinders can also be overfilled by up to 10% of their working pressure. As such LFB cylinders are filled to between 300 and 330 bar.

3. **Is your breathing air tested by your Fire Service personnel or a contractor?**

   Breathing air samples are taken following a strict sampling procedure to ensure consistency and are sent to an independent scientific advisor for testing.

4. **Is your breathing air tested monthly or every three months?**

   Breathing air samples are taken and submitted for testing on a monthly basis.

5. **If every three months does your high pressure compressor/s have a constant air quality monitoring device?**

   We have systems at all three charging locations that monitor the live air quality.

6. **Do you allow your compressor/s to remain in service is it fails to meet the minimum standard of BS EN 12021 (2014).**

   No, if the air sample exceeds the concentrations of determinants as set out in BS EN 12021 (2014) the compressor is taken out of service. It is then isolated, physically marked with signage as being out of service until the necessary remedial work is carried out. Once the air quality is adequate to satisfy the requirements of BS EN 12021 (2014) the compressor is returned to service.

7. **If a breathing air compressor fails to meet the standards above do you have a lock out procedure.**

   No, if the air sample exceeds the concentrations of determinants as set out in BS EN 12021 (2014) the compressor is taken out of service. It is then isolated, physically marked with signage as being out of service until the necessary remedial work is carried out. Once the air quality is adequate to satisfy the requirements of BS EN 12021 (2014) the compressor is returned to service. Likewise, all LFB Cylinders are marked with a unique asset number, this is recorded along with the date of the cylinder charge, charging room location and time when each This information permits the tracking of cylinders which are used across the brigade. If an air sample fails to meet the criteria as set out in BS EN 12021 (2014) cylinders are recalled from across the LFB areas and are returned to the charging rooms to be discharged and refilled.

8. **Other than testing the air quality at source do you have a "random cylinder air testing policy".**

   When any reactive maintenance is carried out to the compressor a random air quality sample is taken.

9. **Would it be possible to have any fire service policy, procedures or risk assessments in relation to the above under freedom of information.**

   Please see below for the LFB internal policy, number 466: *RPE - breathing apparatus – operational procedures*.

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LFB
LONDON FIRE BRIGADE

Policy number: **466**
Version date: 31 January 2024

Respiratory protective equipment - breathing apparatus - operational procedures

NEW POLICY POSITION

This policy should be read with:

PN476 – RPE – BA – MSA M1– technical information
PN760 – Respiratory protective equipment – MSA connected firefighter telemetry system – technical information
PN798 – RPE – ancillary equipment – technical information
PN1000 – Fire contaminants

Official

Policy summary

This policy details the procedures to be adopted when self-contained breathing apparatus (BA) is used.

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- Responsible Head of Service is the Assistant Commissioner, Operational Policy
- Responsible team is RPE and Hazmat PPE

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1. Introduction

1.1 Respiratory protective equipment (RPE) will be used when firefighters are committed to atmospheres with the potential to cause respiratory discomfort or injury. Incident commanders (IC) are to ensure that a sufficient level of control (both incident management and breathing apparatus control) is in place to support BA wearers and to prevent the uncontrolled use of BA resources. BA is the default level of RPE for fires and other incidents presenting a respiratory hazard.

1.2 This policy must be used in conjunction with other operational procedures to resolve incidents where respiratory protection is considered necessary.

1.3 The command details in this policy complement policy number 987 - Incident Command - Organisation at Incidents and policy number 986 - Command skills - knowledge, skills, and competence.

1.4 Technical guidance for standard duration breathing apparatus (SDBA) and extended duration breathing apparatus (EDBA) can be found in policy number 476 - Respiratory protective equipment – breathing apparatus – MSA M1 – technical information.

1.5 Guidance for BA telemetry can be found in policy number 760 - Respiratory protective equipment - MSA connected firefighter telemetry system – technical information.

1.6 For incidents requiring respirators see policy number 759 – Respiratory protective equipment - protection against particulates – operational procedure.

1.7 This policy has been prepared by the RPE and Hazmat PPE Team. If you have any questions relating to this policy, please email RPE and Hazmat PPE mailbox.

2. Purpose of BA procedures

2.1 The purpose of BA and associated control procedures is to reduce the risk of respiratory discomfort or injury to firefighters and provide safe systems of work when BA is used. It is important that firefighters who may be required to wear BA or undertake BA control duties always understand and properly implement these procedures.

2.2 This policy has regard to the following RPE legislation and approved codes of practice as well as other health and safety legislation:

- National Operational Guidance Programme – Foundation for Breathing Apparatus.
- National Operational Guidance Programme – Breathing Apparatus Training Specification.
- Control of Substances Hazardous to Health Regulations: 2002.
- Ionising Radiations Regulations: 2017.
- Control of Lead at Work Regulations: 2002.
- Control of Asbestos Regulations: 2012.
- Dangerous Substances and Explosive Atmospheres Regulations: 2002.
- Confined Spaces Regulations: 1997.
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations: 2013.

3. Definition of terms

- **BA sector** – is a functional sector with a designated sector commander BA. This will support BA operations, resourcing and logistics and any other BA requirements (this is the new term for BA main control).
- **BA team** – a number of BA wearers designated to work together in the risk area.
- **BA wearer** – all firefighters trained and nominated to wear breathing apparatus.
- **Communications operative (Comms-Op)** – the firefighter responsible for maintaining communications between BA teams and entry control point (ECP).
- **Distress signal unit (DSU)** – an automatic or manually actuated alarm that indicates a BA wearer is in distress.
- **Entry control operative (ECO)** – the firefighter responsible for monitoring and maintaining the entry control board (ECB).
- **Entry control point (ECP)** – the position for the command and control, deployment and monitoring of BA wearers into a risk area.
- **Entry control point supervisor (ECPS)** – provides a greater level of control at an ECP and is appointed when stage 2 entry control is used.
- **Entry point (EP)** – point of entry into a risk area.
- **Incident commander (IC)** – the officer in overall command of an incident at a particular time (see policy number 431 – Incident commander and monitoring officer). This term is used throughout the policy to identify the individual that has responsibility for ensuring the practices and procedures detailed in the policy are put in place and carried out. (The implementation of, and the functions within, the procedures may be delegated to another individual, but responsibility for them remains with the IC).
- **Low pressure warning** – electronic or pneumatic warning that the safety margin has been reached.
- **New entry** – the BA wearer is wearing BA for the first or second time, the BA set has cylinder contents at or above the minimum entry pressure of 240 bar when reporting to the ECO.
- **Officer in charge (OIC)** – officer in charge of the watch when on station.
- **Re-entry** – the BA wearer has closed down BA set and is redeployed to complete a specific task that does not include firefighting (210 bar minimum and no longer than 15 minutes duration).
- **Respiratory risk** – this type of risk will be associated with hazardous atmospheres with the potential to cause respiratory injury if the face mask were removed.
- **Responsible officer** – officer appointed by the IC who will be responsible for an entry control point and the briefing/debriefing of BA teams.
- **Safe air** – an environment where the air is breathable and will not be harmful nor require the use of respiratory protection – Safe air must be determined by a risk assessment conducted by the incident commander. The use of a gas detection monitor (GDM) is a control measure within this assessment.
- **Time of warning** – time at which low pressure warning actuates.
- **Time to warning** – remaining working duration until actuation of low-pressure warning.

- **Turn-around pressure (TAP)** – the pre-determined cylinder pressure at which the BA team should commence withdrawal from the risk area so that the ECP is reached before the low-pressure warning actuates. This TAP should be reviewed by the wearers, although the ECO must be informed of any change (for example where wearers reach their TAP but are working very close to their known exit).

4. Wearing of BA

4.1 At any incident, the IC is responsible for ensuring that RPE is worn whenever there is a risk of firefighters suffering respiratory discomfort or injury. Where any doubt exists as to the presence of a respiratory risk, the IC will conduct a risk assessment, consider the use of a Gas Detection Monitor (GDM) and give instructions for RPE to be used. BA is the default level of RPE for fires and other incidents presenting a respiratory hazard. Firefighters are reminded that the products of combustion at car and electric vehicle fires are particularly hazardous, and BA must always be worn.

4.2 BA is normally worn on the authority of the IC; however, firefighters can request to wear it for respiratory protection and such requests must be considered as part of the normal risk management process. There may be exceptional circumstances (safety reasons) where firefighters may need to wear a BA set without obtaining the IC's permission first; justifiable examples include a sudden change of wind direction affecting a pump operator, where safety would be compromised if they were to leave the pump unattended. In such instance's firefighters must don BA and inform the IC and ECO of that decision as soon as possible.

4.3 Entry to the risk area is defined by the position of entry control. All staff proceeding past entry control must wear RPE.

4.4 Firefighters are only to be committed to the risk area wearing BA on the instructions of the IC once the required level of BA entry control is in place.

4.5 BA teams must consist of a minimum of two BA wearers. The nominated BA team leader must have radio communications. BA teams should be kept as small as practicable. Exceptions to this rule would include car fires, external rubbish fires, hot cutting and working at the head of an aerial appliance.

4.6 Whilst larger BA teams can reduce workloads this may lead to difficulties in communications between BA team members. Good practice would be to use multiple BA teams of two who can, if required, work together.

4.7 Where a fire or risk of fire is still present BA teams must be committed with extinguishing media. The IC should ensure sufficient BA teams are deployed to ensure firefighting BA teams do not have to separate for hose management whilst inside structures.

4.8 No search and rescue team should operate inside a structure that contains smoke filled compartments that have the potential for any form of rapid fire progression without the protection of suitable and sufficient fire extinguishing media (either carried by them or by another BA team).

4.9 Hose management team(s) must operate behind the protection afforded by the firefighting team they are supporting. The firefighting team being supported must take all reasonable measures to ensure the conditions the hose management team are operating in pose no risk of any form of rapid-fire progression.

4.10 BA wearers (both SDBA and EDBA) are only to be used for a 'second wear' in exceptional circumstances (i.e., to save a saveable life).

5. Hazards

5.1 The hazards listed below can reasonably be expected to be encountered at incidents where breathing apparatus is worn.

5.2 This list is not exhaustive, and the IC should be aware there maybe additional hazards arising from the incident which require a risk assessment and may or may not be indicated by a GDM and are not specific to the use of breathing apparatus:

- **Atmosphere** – the atmosphere can be oxygen deficient, toxic, or flammable or contain dust or particulates, heat and steam, biohazards, aerosols and/or radiation.
- **Temperature** – heat (conducted, convected, radiated, steam contact and reactive chemicals) cold (cryogenic, decompressing gases, ice, cold water, wind chill and very cold metal objects).
- **Physiological strain** – raised core body temperature, leading to exhaustion and poor decision making.
- **Psychological strain** – conditions at an incident or physiological strain, leading to increased emotional response and poor decision making.
- **Reduced visibility** – smoke and any physical barrier screening another hazard.
- **Electricity** – electrocution or electric shock.
- **Cables and structural failure** – entrapment and or entanglement.
- **Environmental** – weather, terrain, height, unsafe structures, confined spaces and topographical.
- **Hazardous materials** – any materials covered by policy number 796 – HAZMATS – fires and incidents involving hazardous substances.
- **Manual handling** – SDBA weighs approximately 13kg and EDBA weighs approximately 19.5kg. Together with full firefighting personal protective equipment (PPE) this amounts to a significant additional load for the wearer.
- **Fire contaminants** – The products of combustion can have long term ill health effects and can be absorbed into the body via inhalation, ingestion, and dermal absorption. It is important that firefighters minimise exposure to fire contaminants by following the procedures in this policy and Policy number 1000 – fire contaminants.

6. Operational pre-planning

6.1 Fire and rescue services are required to identify risks and collect information indicating where there may be hazards to firefighters. This may include information gained under fire and rescue service legislation 7(2)d visits etc., industrial on-site plans and risk-based geographical information. Information collected may be used for developing plans and for briefing BA wearers.

6.2 Information gathered during pre-planning should identify locations that may require additional control measures and therefore enhanced operational resources, such as guidelines, extended duration breathing apparatus (EDBA) or telemetry repeaters. The strategic siting and arrangements for mobilising suitable resources to implement these additional control measures should also be identified during this process.

6.3 To ensure the safety and effectiveness of communications with BA teams, local planning arrangements should identify where there may be limited penetration of radio signals into buildings and into

structures below ground. Steps may be taken at this preplanning stage to enhance the effectiveness of radio and telemetry communications within structures.

7. Breathing apparatus wearer

Nominated BA wearer station duties

7.1 Ensure that personal competence and BPAs are kept up to date, if lapsed inform OIC.

7.2 Firefighters have a responsibility to ensure that they are physiologically and psychologically fit to wear BA.

7.3 When nominated as a BA wearer firefighters must:

- Carry out a 'before use fit check' of their BA face mask and half mask respirator (see policy number 476 – Respiratory protective equipment – breathing apparatus – MSA M1 – technical information).
- Carry out an 'A' test of the BA set and ancillary equipment (see policy number 476 - Respiratory protective equipment – breathing apparatus – MSA M1 – technical information). An 'A' test is carried out, when taking over a BA set, following a cylinder change and when nominated to test any 'spare' BA set.
- In exceptional circumstances (where firefighters are unable to record the completed test results), verbally confirm with their watch officer that the BA set has been checked and is working satisfactorily. If committed to a risk area firefighters will ensure that 'test not recorded' (TNR) is entered onto the ECB by the ECO.
- Report to the watch officer any defects and or missing equipment immediately.
- Ensure a BA set that fails testing is not worn until the reason for the failure is rectified.
- Inform the watch officer if the BA logbook shows that a BA set has not been worn under controlled conditions (e.g., for any drill that does not involve real fire training) within the last 28 days and carry out a 28 day test as detailed in policy number 476 - Respiratory protective equipment – breathing apparatus – MSA M1 – technical information.
- Be aware of the nominated firefighters responsible for BA entry control, the BA team leader, and the ECO roles.

Nominated BA wearer incident duties SDBA

Rigging

7.4 Nominated BA wearers must not get rigged in BA en-route to incidents.

Radio communications

7.5 Communication between BA teams and the ECO is essential to the effective command and control of an incident and the safety and welfare of BA wearers. All relevant information should be shared.

7.6 Dedicated BA C1 radio interface (C1 or BARIE) provides BA wearers with effective communication and must be used whenever available. If dedicated C1 sets are not available a minimum of one handheld radio per BA team must be carried.

7.7 The IC will undertake a risk assessment (RA) to determine the possibility of an explosive atmosphere being present and consider control measures such as the use of a GDM to monitor for flammable limits.

7.8 In all instances where initial BA teams are deployed into compartments where a potentially explosive atmosphere may be present only C1 sets with a IIA or IIC radio can be worn, as they are the only radios that are intrinsically safe.

Note: The handheld Tait TP9355 incident ground radios must not be used in potentially explosive atmospheres.

7.9 Radio communications equipment must be worn by all BA wearers and must be tested prior to entering the risk area.

7.10 Information regarding the BA team's progress and any hazards identified should be regularly transmitted to the ECO or Comms-Op and recorded. Wearers should be aware that other BA teams will be using the same radio channel and therefore keep such messages concise.

7.11 If a BA team has an unexpected or sustained loss of communications with the ECO or Comms-Op, the team leader will decide whether to withdraw. If both telemetry and radio signal is lost the BA team must withdraw to a point where communications can be restored. The positions where telemetry and radio signal are regained should be landmarked for deployment of telemetry and radio repeaters.

7.12 If there is unexpected or sustained failure of communications with any BA team, an assessment of risk must be undertaken by the officer responsible for the ECP and they must decide whether a BA emergency team should be committed to investigate. If there is any doubt, the officer responsible for the ECP must be informed immediately, a BA emergency team must be briefed and committed by them, and the IC must be informed.

7.13 Standard communications discipline as used with main scheme radio should be maintained and, in any emergency, the message must be prefixed as 'priority'. If a BA team is unable to communicate on the BA channel, they should use the general incident command channel.

7.14 Normally, BA communications between teams will be via the ECO. However, circumstances may arise where BA teams need to communicate directly with other teams by radio. In such cases, teams should identify themselves and the team(s) they wish to contact through their unique incident call sign (see paragraph 7.20 below designation of ECP and BA team call signs). As long as radio traffic is kept to a minimum, this should not prevent risk-critical information from being passed between BA teams.

7.15 Where a radio leaky feeder is in use BA teams must use the appropriate channel to communicate.

7.16 For further information see relevant policies for the Tait TP9361 IIA and IIC intrinsically safe radios.

Briefing from IC or Sector Commander

7.17 The whole BA team must receive and confirm understanding of a briefing prior to deployment and, as a minimum, this must include:

- The situation.
- Any identified hazards.
- Where and how they are to enter the risk area.
- Team objectives and their part in the IC's plan.
- Any limitations on wear duration (on instructions from the officer responsible for the ECP).
- Any questions the team may have.

7.18 For further information on the Structured Briefing Model see policy number 986 - Command skills - knowledge, skills, and competence (section 5. Interpersonal Communication – 5.4. Structured Briefing Model).

Don and start

7.19 BA wearers must:

- Don and start in safe air (see appendix 2 of this policy).
- Carry out buddy checks to ensure RPE and PPE are correctly fitted and that no skin is exposed.

Entry control point (booking in)

7.20 BA wearers reporting to an ECP must:

- Inform the ECO if they have already worn BA at the incident and ensure ECO records 'test not recorded' (TNR) on the ECB prior to entry.
- Ensure at least 240 bar pressure reading when reporting to the ECO. Calculate and select the required turn-around pressure (TAP) in agreement with the officer responsible for the BA ECP and the BA team leader.
- Confirm nominated radio channel and test communications equipment with ECO or Comms-Op.
- Establish and confirm a call sign with ECO or Comms-Op. The BA team(s) will use call signs linked to the ECP 'BA team alpha one', 'BA team alpha two' and so on.
- Don BA set and hand BA tally to the ECO before entering the risk area ensuring the tally is placed in the ECB with the 'time in' completed.
- Ensure a BA telemetry signal is established prior to entering the risk area (unless informed that manual calculations are being used).

Low battery warning (Control Module)

7.21 If the Control Module 'reduced battery level' icon and alarm actuates prior to booking in at the ECP, the BA wearer must:

- Withdraw from the ECP.
- Take BA set out of service and replace onto the appliance to recharge.

7.22 If the Control Module 'reduced battery level' icon and alarm actuates when the BA set is being worn in the risk area the BA wearer can continue with deployment and must:

- Inform the ECO or Comms-Op immediately.
- Following withdrawal from the risk area take the BA set out of service and replace BA set onto the appliance to recharge.

Deployment within the risk area and close personal contact

7.23 BA wearers deployed in the risk area must:

7.24 Operate the 'incident state' function of the Control Module when appropriate after the scene of operations has been reached (see policy number 476 – respiratory protective equipment – MSA M1 – technical information).

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7.25 Immediately inform ECO or IC if circumstances mean the team have to change their objectives, briefed tasks or part in the IC's plan whilst deployed in the risk area.

7.26 Always carry out safe movement, utilising safe and effective search and rescue techniques.

7.27 When committed to carry out a search on one particular wall, except in exceptional circumstances, BA teams must remain on this wall as on the return journey, it will lead them to an ultimate place of safety.

7.28 Perform safe and effective firefighting where there is, or is likely to be, a fire or flammable atmosphere. For hose management teams see paragraph 4.8 above.

7.29 Promote and maintain regular communication with BA team leader and other BA team members and update them regarding any relevant information.

7.30 Maintain close personal contact when visibility is impaired, as described in paragraph 7.32. Close personal contact is necessary to ensure the safety of firefighters, and to facilitate the exchange of information within the BA team.

7.31 Risk assess the conditions and select the appropriate level of close personal contact used unless otherwise directed by the briefing officer. For example, a higher risk may be found in large complex premises, or when there are significant indicators of fire and or extremely low visibility. A lower risk may be found in domestic premises, or during post-fire ventilation, damping down and cutting away operations, when the fire risk has been controlled and visibility has improved.

7.32 Depending on visibility and the perceived level of risk, adopt a hierarchical approach to deciding which method to use, as per below:

- Attachment by short BA personal line.
- Actual physical contact between each BA team member.
- Within physical touching distance.

Note: In circumstances where all BA team members are in contact with a hose reel, delivery hose or casualty, wearers are deemed to be in physical contact, providing they maintain visual (line of sight) and verbal contact (this does not include radio communication).

7.33 Review the level of close personal contact used at regular intervals and consider the use of BA personal lines. The effects of heat and physical exhaustion may impair wearer's decision making as time within the risk area increases.

7.34 Only briefly separate when encountering hazards such as stairs or vertical ladders. Separation should only be to the minimum extent necessary, and no more than the distance created by the hazard.

7.35 Regularly check pressure readings and monitor air consumption (and prompt other BA team members to do so) to allow sufficient duration to withdraw to the ECP before low pressure warning actuates. Pressure checks must be carried out more frequently when working hard, as this can have significant effect on air consumption rates and consequently duration times.

7.36 Regularly check for telemetry signal (Solid radio icon on the Control Module display and buddy lights either green, yellow, or red indicating cylinder pressure). When out of telemetry signal contact ECP via radio communication to update on safety and wellbeing of the team (this must include regular updates for the team's lowest BA set pressure).

7.37 Assist the BA team leader with brief and task, memorising route in and out of the risk area (take regular landmarks throughout movement) and pass radio messages to ECP if required to do so by BA team leader.

7.38 Constantly monitor conditions and re-evaluate risk, be especially observant with regards to signs of potential backdraught and flashover (paying particular attention to the colour, volume, and pressure of smoke) and the integrity of the structure/compartments for signs of potential collapse and inform the team leader of the need to withdraw if required.

7.39 Monitor conditions using thermal imaging camera (TIC) remember above, below and concealed (ABC).

7.40 Ensure that they have provision for firefighting or gas cooling where there is, or is likely to be, a fire or flammable atmosphere, as they make their way out of the risk area. A relief BA team can use a hose reel for self-protection when travelling inwards and then hand this over to the withdrawing BA team when taking over a branch for example. Firefighting media may only be left in areas unaffected by fire or fire gases within a structure. However, BA teams may decide to leave other equipment in the hazard area to reduce the workload when withdrawing as long as this does not compromise the safety of the BA team or other teams in the hazard area.

7.41 Be aware of the signs and symptoms of heat stress and monitor the physiological effects for self and team. See section 23 of this policy and policy number 284 - Metabolic heat stress.

7.42 Inform the BA team leader should they display any of the symptoms of a heat-related condition.

7.43 Not remove their face mask or disconnect their lung governed demand valve (LGDV) within the risk area.

Air management

7.44 Each wearer will consume air at a different rate and in relation to factors such as body mass, individual levels of fitness, PPE in use, psychological stress, work rate, tasks undertaken, environmental conditions and the wearer's reaction to the situation. It is the BA wearers responsibility to manage their air appropriately. Therefore, each wearer must:

- Carry out regular pressure checks to monitor their consumption (update ECP with readings when out of telemetry signal).
- Inform BA team leader of their pressure readings on a regular basis so that work can be shared out evenly amongst the team in order to maximise the use of the remaining working duration (see team and task rotation in section 7.46).
- Inform the BA team leader of any variation in their expected air consumption rate.
- Carry out own 'turn around' calculations, use the incident state function of the Control Module if appropriate for the task and agree with the BA team leader the pressure at which the team will need to consider exiting the risk area.
- Return to the ECP before their low-pressure warning begins to sound. Inform the team leader who should inform ECP immediately if they become aware that this cannot be achieved.

7.45 In assessing working duration, team leaders and wearers should consider all aspects of the incident. These include:

- The air consumed to reach the scene of operations.
- The potential for physiological and psychological stress and or distress because of environmental conditions or workload (e.g., high temperatures, humidity, casualty rescue etc.).
- The physical conditions and/or depth of penetration into the risk area, such as any confined space.
- The likelihood that conditions on the exit route may have deteriorated.
- Information received from the ECO or Comms-Op and other BA teams.
- That consumption rates on the way out may be higher due to the natural effects of physical exertion or increased workloads (casualty rescue etc.).
- Any relocation of ECP.

Team and task rotation

7.46 This is a technique used to ensure that all members of a BA team that are committed to a risk area consume approximately the same amount of air (especially important when wearing EDBA).

7.47 This is a simple method and involves all BA team members sharing tasks, roles, and functions. Examples include:

- Rotating the BA team members through different positions when carrying equipment or a casualty on a stretcher.
- All BA team members 'taking turns' at undertaking a specific task.
- All BA team members rotating through the number one position and leading the BA team (the designated BA team leader will, however, always remain in command of the BA team).

7.48 BA team leaders must ensure that team and task rotation is applied although it is equally important that all BA wearers consider its application and prompt the BA team leader if necessary.

Search plans and records

7.49 Plans, either pre-prepared or drawn up following the debrief of BA teams (especially if identifying landmarks or hazards), significantly improve the quality and effectiveness of the BA team briefing and therefore, the safety and effectiveness of the BA team(s). On occasions plans can be drawn at the scene with the help of owners/occupiers and these can be very effective. Consider the use of the initial command wallet (ICW) or forward information board (FIB) for this purpose.

7.50 These records should be used to determine the search procedure for subsequent BA teams deployed into the risk area during the incident. These records can be subsequently used for operational audit, training and investigation, where required.

Search and rescue methods

7.51 BA wearers observing the search criteria and the nature and parameters of the operational brief in a disciplined way is critical to the safety and effectiveness of search and rescue operations.

7.52 Clear information on the layout of a building and the location of persons may not be readily available. It is important therefore that a clear record of the tasks and the area of search allocated to teams are recorded to prevent duplication of effort when additional teams are committed as the incident progresses and the early use of searched tags, available within the fire initial response equipment (FIRE) bag should be used to assist BA wearers internally. This may only become available as the first BA teams begin to exit the building and can provide information on the internal layout and the extent of their search completed.

7.53 Clarity on the extent of a search must be understood. Briefings must stipulate whether an area is to be checked or cleared as this may be the difference between knocking on a door to see if anyone is in or forcing entry to carry out a thorough search. This will be important where whole floors of large buildings such as hotels or high rise residential flats need to be searched.

7.54 Search and rescue methods are dependent on intelligence gathered at the time and teams must be made aware of the possibility that casualties may have moved within the building from their last known location. The search brief for a BA team may require the search to commence either at:

- The point of entry.
- The point of greatest danger for casualties within an area.
- Close to the likely seat of fire.

- Designated point within the structure.

7.55 Suitable plans of the structure, annotated with areas still to be searched and those already searched, landmarks (orientation reference points) and hazards identified, should be produced wherever possible. These plans can provide additional information that may be used during briefing and debriefing BA wearers to enhance the safety and effectiveness of BA search and rescue teams.

7.56 The BA team must follow all appropriate safe systems of work, search and rescue procedures and safe movement techniques in reaching the designated point for the start of the search, and during the search itself.

7.57 Compartment search procedure (compartment clearance following left or right hand wall) is used in London. This is a systematic and effective method for searching structures in order to locate the fire and carry out rescues.

7.58 For detailed information regarding this search and rescue method, refer to appendix 7.

Search and rescue operational practice

7.59 Search and rescue procedures involving the use of BA should be planned following a suitable and sufficient assessment of risk. At larger and more complex incidents, the IC may determine a need for a strategic overview of the various search and rescue activities in each sector and at each ECP. They may then appoint a dedicated search co-ordinator who will establish manageable spans of control, identify areas to be searched and produce suitable search plans. See policy number 803 – Search and rescue procedures within structures.

7.60 The ECO should maintain plans and search records at the ECP. These and all other information relating to the operation should be duplicated at command support.

7.61 BA teams must ensure that details of areas searched are communicated to the ECO, who will communicate with the incident, operations, or sector commander. A comprehensive search and rescue record can then be established at command support, which will preclude duplication of search and rescue activity. The quality and effectiveness of the BA team's debriefing processes are therefore critical to the safety and effectiveness of the overall search plan.

7.62 The officer briefing must provide clear, unambiguous briefings and instructions to BA wearers. This will include the route to be used by BA team(s) when progressing through the building or structure and the search and rescue method or procedures to be employed. Disciplined and systematic observance of the search brief by BA wearers is essential. They must assume responsibility for confirming their understanding of the briefing and instructions and once deployed, follow their instructions without variation, except in extreme circumstances involving life-threatening situations.

Rescue of a casualty

7.63 On locating a casualty, the default position should always be to remove to safe air whilst taking note of their position when found.

7.64 The BA team leader must:

- Take pressure readings from the BA team.
- Inform ECP and state location.
- Perform a secondary sweep of the immediate vicinity.
- Remove the casualty to safe air as quickly as possible.

7.65 Where the individual is clearly deceased and not likely to be affected by a developing fire, they should be left in situ. If there is any doubt the default position should be to remove a casualty for treatment. If a decision is made to leave an individual in situ, then this is to be immediately communicated to the IC

via ECP so that a command decision can be made. The IC's command decision should take into account advice from on scene paramedics and the need to save a saveable life. In these circumstances the use of a decision log should be used as a set of contemporaneous notes. For further guidance on recording decisions see policy number 828 - Recording decisions at incidents.

7.66 Wherever possible, radio communications should be used to request assistance. If radio communications are not available, BA wearers may gain the attention of other team members or BA teams by slow, loud, and regular hand clapping. These actions do not constitute a distress signal.

7.67 Where a breathing apparatus team plans to exit with a casualty, it is essential that a pressure reading is taken, and a calculation made on the air required to leave the risk area unless they are already close to an exit. If there is an insufficient air supply to exit with the casualty, the team must request additional assistance from the ECP.

7.68 On exiting the risk area, further pressure readings should be taken when reaching familiar landmarks. By recalling earlier pressure readings/calculations, team members will be able to determine whether they can leave the risk area with the casualty or progress as far as possible before having to leave the casualty with another BA team. The team must remain in communication with the ECP so that appropriate support and additional risk control measures can be introduced where necessary.

Entry control point (booking out)

7.69 BA wearers exiting the risk area shall:

- Immediately report to the ECP, close down BA set and collect BA tally from the ECO.
- Assist BA team leader with debrief (as required) ensuring that any information that may assist other BA teams entering the risk area, or the IC, is made known to the officer responsible for the ECP. It may assist to draw a basic plan (or use plans available) to identify the route, any hazards, location of casualty(s), landmarks and clearly mark areas that have been searched to assist any further BA teams.

BA set testing (incident ground 'A' and 'B' test)

7.70 A BA wearer can only carry out one incident ground 'A' test on their BA set. The BA set is not to be used after the second wear unless a 'B' test has been carried out. If a BA set that has already been worn is then allocated to another BA wearer a 'B' test must be completed. The operational support unit (OSU) with BA maintenance resource pack must be in attendance to enable a 'B' test to be carried out.

7.71 BA sets that have become heavily contaminated must be 'B' tested before being worn again.

7.72 Carry out all incident ground testing away from the risk area so that any DSU sound will not be heard by wearers in the risk area or interpreted as coming from inside the risk area.

Damping down and cutting away

7.73 During damping down and cutting away operations where fire compartments remain hot/warm the minimum RPE level is breathing apparatus. Unseen fire gases will still be present so therefore particulate filters will not provide the correct level of protection.

Nominated BA wearer incident duties EDBA

7.74 This section provides further guidance for EDBA; however, wearers must be aware that standard BA procedures still apply.

7.75 EDBA crews, and EDBA support crews (that have been tasked with 'twinning up') must ensure that their entry control tally has an EDBA red tether attached to the safety key split ring, and that a twin cylinder cover is fitted (for anti-entanglement protection).

7.76 EDBA is provided to give an enhanced duration where long travel distances or the conditions likely to be encountered make SDBA less effective, such as incidents below ground or when searching large buildings. It is not provided in order to increase the amount of work BA wearers can undertake within the risk area.

7.77 Due to the demands that wearing EDBA will place on wearers it is important that BA team leaders, IC or Sector Commander and wearers pay particular attention to their mental and physical well-being. Anyone who has doubts about their own or another's ability to withstand the demands placed upon them as EDBA wearers are to bring these to the attention of their watch officer and or IC.

7.78 EDBA wearers and their watch officers have a responsibility to ensure they are fit to wear EDBA given the potential additional physiological demands that may be involved. See policy number 935 – Fitness policy for uniformed operational staff.

7.79 For specific technical information regarding EDBA see policy number 476 – Respiratory protective equipment – breathing apparatus – MSA M1 – technical information.

Nominated BA wearer post wear duties

7.80 On completion of a BA wear, ensure self and other team members are not suffering the effects of heat stress and on the instructions of a relevant officer relax PPE, allow to cool down, hydrate as soon as possible, rest and recuperate.

7.81 BA wearers must report any injury, safety, or near-miss events to the IC.

7.82 When doffing the BA set and structural PPE, follow the procedures described in Policy number 1000 – fire contaminants to minimise the risk of exposure to the products of combustion.

7.83 On return to station ensure that the appropriate testing and cleaning is carried out on BA set and ancillary BA equipment and appropriate logbook and records are completed.

8. BA team leader

Nominated BA team leader incident duties

8.1 A member of the BA team will be nominated as team leader by the IC or Sector Commander. This must not be a firefighter on development.

8.2 The BA team leader should not perform all team tasks personally and tasks should be shared between team members i.e., use of TIC and operation of firefighting media.

8.3 The BA team leader is responsible for the BA team whilst in the risk area and when making decisions must consider:

- The IC or Sector Commanders briefing.
- Their knowledge and experience.
- Any information received from outside the risk area.
- Visual and other 'cues' inside the risk area (noise, temperature).
- Evidence gathered from situation, task, and event.

- Information from equipment, such as the Control Module and TIC.
- Information from other BA team members.

8.4 The duties of BA team leaders are to:

- Ensure the whole BA team is fully briefed (and understanding of brief is confirmed) by the briefing officer before deployment into the risk area and is debriefed on exit from the risk area and that any relevant information is passed to the ECO, IC, Sector Commander, or other BA teams.
- Ensure appropriate firefighting equipment is provided and tested before entering the risk area where there is, or is likely to be, a fire or flammable atmosphere (hose management teams see paragraph 4.8).
- Lead the team to complete allocated tasks and return to ECP.
- Promote and maintain regular communications within the BA team.
- Co-ordinate pressure and telemetry signal checks ensuring that the BA team return to the ECP before any BA set low pressure warning operates and having regard to limits previously agreed with the IC or Sector Commander to prevent undue exposure to known harsh conditions.
- Test communications equipment with the ECO or BA communications operative. Ensure that the required radio channel is selected and locked if possible.
- Monitor working conditions to identify any adverse and changing conditions, such as temperature change/rise or change in smoke colour/pressure and assess their impact on BA team members and their working duration.
- Exchange information on pressure readings with the ECO if loss of telemetry signal occurs.
- Regularly pass information on conditions, premises layout, hazards and BA team status to the ECO or Comms-Op.
- Ensure that when BA teams in the risk area meet each other, team leaders exchange all relevant information.
- Ensure that BA wearers committed as a BA team remain together and exit at the same time and location. BA teams must never be split.
- Decide whether to continue to carry out operations if radio communications with the ECP fail, recognising that a BA emergency team may be committed to investigate.
- Prompt BA team members to undertake task rotation and air management. Objectives defined in pre-entry briefings should be re-assessed in the light of the prevailing conditions if necessary.
- Ensure that if it is felt necessary to deviate from the teams brief that this is communicated to the IC or Sector Commander prior to any change in tactics.
- Prompt all BA team members operate the 'incident state' function on the Control Module when conducting operations in BA, this will be communicated to the ECO on the ECB. It is good practice to contact the ECO by radio to confirm this operation. For more information on the incident state function see policy number 476 – respiratory protective equipment – MSA M1 – technical information.
- Ensure that any unintended actuation of the 'incident state' function is communicated to the ECO. In this circumstance, the BA team may continue to complete their task.
- Provide feedback to the officer responsible for the ECP on exit from the risk area.

8.5 The BA team leader must withdraw the BA team and inform the ECO or Comms-Op if any of the following occur:

- Any BA team member has an uncontrolled loss of air.
- A BA set low pressure warning actuates.
- Any BA team member seems unwell or confused.
- Any BA team member's Control Module display becomes faulty or unreadable.
- A BA set DSU actuates within the team (ECO should also be alerted to this by the ECB).
- Any BA team member indicates they may have been exposed to an irrespirable atmosphere due to a dislodged or defective face mask.
- A sustained and/or unexplained breakdown of both radio and telemetry communications (withdraw the BA team to a point where communications can be restored).
- Any BA team member reaches a pre-determined pressure reading set by the briefing officer, following an assessment of physiological risk and other relevant information. For example, in the case of chemical protective clothing (CPC), by determining sufficient time for decontamination procedures to be carried out within the 20 minute recommended wear time.
- An emergency evacuation signal sounds and receipt is confirmed with ECO or Comms-Op (ACME thunder whistle, radio comms or telemetry).
- Loss of firefighting media.
- Conditions in the risk area have deteriorated to the extent that BA team members are exposed to an unacceptable level of risk.

8.6 In any of the above circumstances the team must withdraw together, and the team leader must consider operating their DSU (if none are already actuating) to summon assistance from other BA teams and to alert the ECO via telemetry communication.

8.7 If the BA team are unable to withdraw, they must immediately go into entrapped procedure (see section 13 of this policy) and inform ECO or Comms-Op if possible.

8.8 If the decision is made to withdraw the BA team prematurely from the risk area inform the ECO or Comms-Op if possible.

9. BA emergency team

9.1 The IC must nominate a BA emergency team as soon as resources allow.

9.2 The BA emergency team must be nominated and maintained throughout BA operations. This is a dedicated role (and the team must not be used as the 'next team in' just because they are rigged and ready to deploy) and this team must only be used for other tasks in exceptional circumstances i.e. to save a saveable life.

9.3 The BA emergency team must be:

- Led by a minimum rank of leading firefighter (LFF).
- As a minimum at least as large as the largest BA team or teams working together on the same task. When resources allow it is good practice to maintain a ratio of two BA emergency team members to one BA team member being monitored/rescued within the risk area and in the event of BA emergency team committal i.e.BA emergency team of four to BA team of two.
- Rigged to at least the same level of PPE/RPE as BA teams already committed see paragraph 29.34 below.

- Switched to the same radio channel as BA teams already committed to enable the emergency team leader to monitor and communicate with committed BA teams.
- The BA emergency team(s) will adopt call signs linked to the ECP 'BA emergency team alpha one', 'BA emergency team alpha two' and so on.
- A BA emergency team should consist of BA wearers who have not previously been committed to the risk area, unless the knowledge of those wearers is required to allow the team to be effective (e.g., their previous wear means that they know the route/layout in a complex building).

9.4 The crew of a pumping appliance will be used to provide the firefighters for the BA emergency team see paragraph 29.32 below (or crew of an FRU when EDBA emergency teams are required, such as high-rise incidents).

Note: Resuscitators must not be taken into the risk area, consider 'emergency air supply equipment (EASE) bag' procedure.

Nominated BA emergency team incident duties

9.5 A nominated BA emergency team shall provide the following equipment to their nominated ECP:

- An additional ECB and HUB set up and annotated 'BA emergency team' or 'BAET' for use by the BA emergency team if committed.
- One 'EASE bag' carried by every two/four BA wearers in the BA emergency team see paragraph 9.3 above.
- A charged 45 mm second jet (if not already in place). Where resources allow this should be from an alternative pump and water supply.
- Consider other items of specialist equipment such as, breaking-in-gear and stretcher.

9.6 Once established the BA emergency team must:

- Don BA emergency team armbands (stowed in EASE bag pocket).
- Monitor briefing/debriefings for all other BA teams committed and exiting from that ECP.
- Monitor radio messages sent and received to and from that ECP.
- Familiarise themselves with building layout/construction and plan alternative emergency egress points.
- Plot the locations of BA teams already committed from that ECP.
- Provide a full brief to any relief BA emergency team sent to that ECP.

BA emergency team actions on locating distressed BA wearer(s)

9.7 Following the search and location of distressed BA wearer(s) the BA emergency team shall:

- Silence the distressed BA wearer(s) DSU to improve communications. Use EASE bag Control Module safety key to silence actuating DSU. Return the safety key to the EASE bag once distressed BA wearer is removed to safe air.
- If possible, get the distressed BA wearer(s) to confirm the nature of the emergency.
- Inform ECP that distressed BA wearer(s) have been located and request any further assistance that is required.

- Take pressure readings of both distressed BA wearers and the BA emergency team to assess if sufficient duration remains to withdraw and any requirement to supplement air.
- Render any on scene emergency assistance as required.
- Following assessment of risk, determine and implement a safe action plan to remove distressed BA wearer(s) from the risk area.

10. Cable entanglement

10.1 BA teams must always use safe movement procedures, as this will help to identify any fallen cables and enable BA team members to avoid entanglement.

10.2 Any BA wearer encountering fallen cables must immediately inform all BA team members, other BA teams and the ECO or Comms-Op of the location of cables encountered. The ECO must also ensure that the presence of this hazard is communicated to the IC or Sector Commander.

10.3 BA teams must risk assess the need to travel through areas where fallen cables are encountered, using alternative routes if available.

10.4 Where a BA team member becomes entangled and is unable to free themselves, they must immediately:

- Inform all other BA team member(s) and remain as still as possible to prevent further entanglement.
- Carry out cable entanglement procedure (Cable entanglement training BPA appendix 5 of this policy).

10.5 If any BA team member is in distress as a result of cable entanglement their DSU must be actuated immediately.

10.6 On the release of an entangled team member, the BA team leader in consultation with BA team members must establish if they can continue with operations. They must inform the ECO of their decision and the ECO must convey this information to the IC or Sector Commander.

If any DSU has been operated the BA team must withdraw.

10.7 ECOs being informed of BA team entanglement must inform the officer responsible for the ECP.

10.8 ICs or Sector Commanders being informed of BA team entanglement must:

- Ensure that the officer responsible for the ECP briefs and commits the BA emergency team.
- Consider declaring a "firefighter emergency" (see Policy number 985 – Operational Safety Management - Knowledge skills and competence – NOG).
- Consider isolation of electrical supplies.
- Commence accident investigation (all instances of cable entanglement are to be recorded).

11. Distress signals

11.1 A DSU must be operated immediately by a BA team member if they:

- Become lost or disorientated.
- Become confused or distressed.

- Become trapped or injured and in difficulty.
- Have problems with their BA set.

Note: **Do not wait** – inform ECO or Comms-Op to summon assistance.

11.2 BA team(s) hearing a distress signal must advise the ECO or Comms-Op and must keep them informed of their actions.

11.3 On hearing a distress signal the team leaders of all BA teams are to direct their BA teams to investigate the source of the sound. Rendering assistance to a BA wearer in distress takes precedence over other tasks, subject to:

- Having sufficient reserves of air to enable effective assistance to be given.
- Whether the BA team is already undertaking a rescue or maintaining egress routes for other BA teams within the risk area.
- Not taking unnecessary risks, such as entering large or complex areas if unable to retrace their steps.

11.4 The team leader of the BA team sounding the DSU must consider whether the team should withdraw or remain stationary until they are located by a responding BA team/emergency team.

11.5 The use of radio communications will assist the ECPS/ECO or IC/Sector Commander to determine the nature of the distress and assist in providing an appropriate response.

11.6 When making the decision to withdraw after actuation of a DSU, BA team leaders must consider:

- How close they are to the exit.
- How close they are to the fire or other hazard.
- Whether staying where they are puts them in further/greater difficulties/increased risk.
- Whether attempting to withdraw puts them in further/greater difficulties/increased risk.
- Proximity of and how other BA teams may be able to assist (communicate assistance required if appropriate).
- Impact of the fitness or condition of BA team members on their ability to withdraw.
- Informing the ECP, including the phrase 'firefighter emergency', stating the nature of the distress and current location and intentions. However, in an emergency, any BA team member may send this message.
- Retracing steps to the ECP. If this is not possible, locate an alternative exit (for example window or door) in the immediate vicinity, then attempt to attract attention or decide to remain at the current location or relocate to a safe waiting area.
- Informing the ECP of each BA wearer's cylinder pressures if telemetry signal is lost.

11.7 It should be noted that some devices sound like a DSU. All such sounds should be investigated and, if it is not a DSU, inform the IC or Sector Commander (and other BA teams) via the ECO or Comms-Op.

Accidental actuation of distress signals

11.8 If during a BA wear a distress signal is actuated accidentally, BA teams must:

- Contact the ECO or Comms-op by radio immediately and inform them of accidental distress signal actuation (ECO or Comms-op to inform IC/sector commander immediately of accidental actuation).

- Withdraw to entry control to receive their tally key and cancel their distress signal.

11.9 ECO to:

- Establish the wellbeing of the BA team.
- Establish if all BA team wearers have sufficient air to continue operations.
- Allow BA team to re-commit and continue operations as long as all BA wearers have remained under air, there is no requirement to make new entry control records.

11.10 For more information on cancelling distress signals see policy number 476 – Respiratory protective equipment – breathing apparatus – MSA M1 – technical information.

12. Partial breathing apparatus set removal for self-rescue

12.1 Partial breathing apparatus set removal is an additional technique for self-rescue available to BA wearers in extreme circumstances where no safe means of egress from the risk area is available or where adopting entrapped procedure presents an intolerable risk to the safety of the BA team.

12.2 Partial BA set removal includes removal of BA set backplate and harness although not the face mask in order to enable the BA set and wearer to pass through an opening that would otherwise prevent egress.

12.3 In those rare circumstances where a BA wearer has become trapped and the dangers are too great to await rescue, partial BA set removal may be deemed the only technique available.

12.4 Before commencing partial BA set removal to negotiate any obstruction or restriction on egress from a risk area, the BA team leader should seek further guidance, additional instructions and details of other actions being undertaken from the ECP. The BA team leader should also investigate the availability of any safe alternative exit routes and consider adopting the entrapped procedure.

12.5 Partial BA set removal is a technique available to BA wearers for self-rescue in extreme circumstances, where:

- Egress is through a restricted opening and no other safe means of egress is available.
- Adopting entrapped procedures presents an intolerable risk to the safety of the BA team.
- The technique is carried out systematically under supervision and with assistance from other BA wearers.
- The BA team leader should consider the physiological and psychological effects of the environment and the increased air consumption of wearers during partial BA set removal.
- Frequent pressure readings must be undertaken and, if out of telemetry signal communicated to the ECP via radio communications.

13. Entrapped procedure

13.1 The aim of the entrapped procedure is to allow a BA wearer to maximise the duration of the available air in their BA set in the event of becoming trapped or being unable to withdraw from the risk area.

13.2 The low-pressure warning operates (at 84 bar pressure) when sufficient air remains for 10 minutes duration at a consumption rate of 50 litres per minute for SDBA and 17 minutes duration at a

consumption rate of 58 litres per minute for EDBA. These times can be greatly extended by reducing demand.

13.3 No provision exists to conserve the air supply for compressed air BA other than by the wearer moderating demand by reducing their breathing rate.

13.4 When the BA wearer becomes aware that it is not possible to exit the risk area the following actions must be taken:

- Contact ECO or Comms-Op by radio (if possible).
- Operate one team members DSU (normally the member in distress/lowest pressure).
- Relax as much as possible in the circumstances by assuming a reclined or seated posture.
- Breathe calmly to minimise demand, stay in physical contact with other team members and conserve air by keeping verbal communication to a minimum.

13.5 In circumstances where the DSU of a BA wearer in distress cannot be activated, the DSU belonging to another member of the team must be operated.

13.6 Do not operate the additional flow button on the lung governed demand valve (LGDV). Do not adjust the cylinder valve other than to ensure it is fully open.

13.7 Once the safety margin has been reached the low-pressure warning will actuate. The electronic warning consumes no air, and the pneumatic warning consumes a small amount (under 5 lpm). Consider exchange of air procedure.

14. Emergency exchange of air

14.1 The BA set is fitted with a 'rescue hose' which allows exchange of air to be completed.

14.2 Where a BA team member becomes aware that they are low on air they must immediately:

- Inform all other BA team members.
- Carry out exchange of air procedure (see appendix 2 of this policy).

14.3 Following exchange of air, the donor must contact the ECO or Comms-Op with following information:

- BA team location.
- Whether or not they are adopting entrapped procedure.
- Whether or not they are exiting the risk area.
- That exchange of air has taken place and the BA wearers affected.

14.4 The recipient then activates their DSU.

14.5 The BA team will either exit the risk area or adopt entrapped procedure.

Exchange of air and gas tight suit (GTS)

14.6 In order to supplement the air supply to a GTS wearer without compromising the GTS it is necessary to use an EASE bag. The EASE bag must be packaged so that the EASE bag connection is easily accessible from the bag. This can then be connected to the GTS external coupling at the wearer's left hip.

14.7 If this is not immediately possible, use any method to get into the suit and connect to the BA wearer's rescue hose.

Exchange of air during GTS decontamination

14.8 GTS wearer's reporting for decontamination with a Control Module pressure reading of 100 bar or below must have their air supply supplemented by use of an EASE bag as per paragraph 14.6 above, this is supplied and connected by decontamination operative one (Decon Op 1-dirty). See policy number 584 – Firefighter decontamination for further information.

14.9 When the wearer's GTS has been removed to waist level a Control Module reading must be taken. If the Control Module reading is 90 bar or below, Decon Op 2 (clean) provides another EASE bag as per paragraph 14.6 above and presents the wearer with the EASE bag connection. The wearer connects the BA set rescue hose to the EASE bag connection and proceeds to ECP. Decon Op 2 (clean) will carry the EASE bag for the wearer.

14.10 The ECO will monitor the cylinder pressure for the EASE bag in use.

15. Guidelines

15.1 The term 'guideline' refers to a special line that is used either as a main guideline, to carry out an initial search and indicate a route between an ECP and the scene of operations, or as a branch guideline, used where it is necessary to traverse or search more than six metres off a main guideline. The same methods and guidance apply to both types of line.

Use of guidelines

15.2 Guidelines are only to be used on the instructions of the IC. The deployment of breathing apparatus guidelines must be determined on the basis of a suitable and sufficient assessment of risk and in accordance with the incident plan. The IC should also consider using alternative or simultaneous operational tactics, these may include adopting tactical ventilation techniques and or additional access points.

15.3 IC should use building plans and/or external reconnaissance to assess the internal distances BA teams may be required to travel.

15.4 Stage 2 entry control procedures and appropriate BA emergency arrangements must be established before BA guideline operations can start.

15.5 The purpose of a BA guideline is to enable:

- BA teams to locate the scene of operations.
- BA teams to enter and search large or complex buildings or structures.
- Subsequent BA teams to locate other BA teams.
- A BA team in a risk area to retrace their steps to the ECP.

15.6 Main guidelines must be used:

- Where no other suitable means exist for tracing the way out of a risk area, such as when hose lines are submerged or tangled, or premises layout is complex.

Note: BA wearers cannot currently be committed into high expansion foam.

15.7 Branch guidelines are used:

- When there is a need to search off the main guideline a distance greater than can be achieved with the full length of a personal line (i.e. 6 m).
- Branch guidelines must not be extended.

15.8 No more than two main guidelines and four branch guidelines can be in use from any single ECP.

Laying guidelines

15.9 It is recommended that guidelines are laid by EDBA teams (air consumption is likely to be high due to the stop-start and time-consuming nature of completing this task).

15.10 Only one main guideline is to be laid along any single route from an ECP. During the initial laying along a corridor from an entry point (EP) this may be unavoidable until the guidelines split (if this is unavoidable, two guidelines must not be laid along the same wall).

15.11 The BA guideline laying team has sole responsibility for laying the guideline along an access or egress route; they should not be drawn into other activities. A guideline laying team should therefore be supported by a firefighting team where there is, or is likely to be, a fire or flammable atmosphere.

15.12 BA guideline laying and search teams must not enter a risk area where there is, or is likely to be, a fire or flammable atmosphere, without appropriate firefighting media. This equipment may be carried by the search team themselves, or preferably by support firefighting BA teams working closely with them.

15.13 The BA guideline laying team must not operate ahead of any firefighting BA team because the firefighting BA team will adopt fire suppression techniques to render the environment safe. If the firefighting BA teams have to withdraw, the BA guideline laying team must also withdraw.

15.14 Additional support BA teams should be deployed in conjunction with a BA guideline laying or search and rescue BA team for actions such as:

- Firefighting and gas cooling.
- Hose management.
- Thermal imaging camera use.
- Support for casualty retrieval.

15.15 A main guideline leading from an ECP must be designated 'A' or 'B', using a tally. The relevant tally must be attached securely to the line by the ECO before the BA team enters the risk area.

15.16 The BA guideline must be secured to an immovable object outside the risk area in safe air before any BA team enters the risk area unless the guideline is being used to extend an existing main guideline.

15.17 The BA guideline must be secured at intervals to suitable objects along the route by members of the BA team. The guideline should be kept as taut as possible using as few tie-off points as necessary. The line should be kept off the floor, preferably between shoulder and waist height, and secured to the side of the search area (left or right hand wall as per brief).

15.18 Guidelines must not cross over each other inside a building or structure or share tie-off points. If two guidelines converge, one of them must be terminated and secured to a tie-off point six metres or more from where the guidelines would have met.

15.19 Where practicable guidelines must not be laid closer than six metres to one another as this may lead to confusion when BA teams are traversing them.

15.20 When searching rooms that are known or discovered to be small, the guideline should be gathered up and taken out of the room to shorten the route and use the guideline more efficiently. Update the ECO with this information via radio communications and on exit with the debriefing officer. It must be made clear to subsequent BA teams that this area has been searched. The advantage here is that:

- The guideline can be used more effectively for extending further into the incident.
- Time will be saved when exiting as only the most direct route will be marked.
- If exiting carrying casualties, there will be fewer tie-off points and doorways to negotiate.

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15.21 A main guideline may be extended. However, consideration must always be given to how long BA wearers can work, the conditions and their potential effects on BA wearers, the distance to be covered (particularly if rescues are necessary) and the potential for incident escalation.

15.22 When a guideline route involves a vertical ladder, a tie-off point must be created at the bottom and the top of the ladder. BA teams should take into account the position of these points when tying off to avoid hindering subsequent BA wearers using the ladder.

15.23 When laying a guideline, teams should not pass closed doors without first investigating around the doorway. The door sweep procedure may be adopted following an appropriate risk assessment and in conjunction with normal firefighting and /or fire-gas suppression techniques for protecting BA teams. The firefighting BA teams supporting the guideline-laying team must undertake these checks and techniques.

15.24 As well as establishing landmark features for the BA team and checking for casualties behind doorways, these techniques will:

- Contribute to maintaining safe access and egress for that team and subsequent BA teams.
- Assist in identifying and dealing with any fire compartments.

15.25 A main guideline can be extended by clipping the snap-hook of another line onto the looped end, leaving the bag in place as a clear marker that the line has been extended.

15.26 Where a main guideline is being extended, the BA team leader must inform the ECP, who will then ensure a suitable and sufficient record is maintained and inform the IC/Sector Commander as appropriate.

Branch guidelines

15.27 Branch guidelines must be used where the distance of the area of search from the main guideline is greater than the length of one personal line (six metres). No more than four branch guidelines can be deployed from a single ECP.

15.28 The branch guideline must be referenced according to its main guideline and the number of the branch guideline; for example, main guideline 'A', branch guideline '1'. Any branch guideline tally must be secured to the line by the ECO before the BA team enters the risk area.

15.29 Branch guidelines are designated numerically, '1', '2', '3' or '4', by the ECO, with the number of holes in the tally representing the branch guideline number. It is essential that once deployed, all references to branch guidelines are related to their tally number, not to their numerical position in relation to the ECP.

Following a guideline

15.30 When leaving a main guideline and joining a branch guideline, the BA team leader must inform the ECP to record that this transition has occurred.

15.31 When re-joining a main guideline from a branch guideline, the BA team leader and all members of the BA team must check the first set of tabs encountered to make sure they are travelling in the correct direction and then, for recording purposes, inform the ECP point that this transition has occurred.

15.32 At all times, the BA team leader must maintain close communication with the ECP.

15.33 The use of guidelines is covered in Babcock training note GL 001 Guideline Procedures and see appendix 4 of this policy for guideline team leader best practice assessment (BPA).

16. Bridgehead or forward BA entry control point

16.1 This may be implemented by an IC or Sector Commander when there is a requirement to provide an ECP at some distance from the initial point of access into a building or risk area, whilst still remaining in safe air, at incidents such as those involving high rise buildings or large, complex structures like shopping malls.

16.2 This allows the deployment of BA teams from safe air within a structure whilst being as close as practical to the scene of operations.

16.3 The location of the ECP in these circumstances will be determined by the IC or Sector Commander based on any site-specific plan, the operational plan and the level of risk faced by BA teams.

16.4 A bridgehead or forward BA entry control point must be sited in safe air and with regard to the following factors:

- The potential for the incident to escalate.
- Availability of access and egress points to the risk area.
- BA team safety and welfare.
- Availability of water supplies.
- Effective communications with BA teams, IC and/or Sector Commander.
- The level of supervision and support necessary for the ECO.
- The distance from the initial point of access to the ECP.

16.5 See also policy number 467 - Breathing apparatus sub surface procedure and policy number 633 - High rise firefighting.

17. Working in high expansion foam (Hi-Ex foam)

17.1 BA wearers cannot currently be committed into high expansion foam.

18. Chemical protective clothing

18.1 When GTS is being worn the ECO and the wearer should be aware that the recommended maximum period for wearing GTS is 20 minutes. Agreement for an extension to the wearing time must be agreed with each wearer, not with the team leader alone.

18.2 Working duration may be extended where the work rate is low, or the weather conditions are cool or shortened where work rate is high, or the weather conditions are hot. When a work time has been agreed between the IC and each wearer this information must be conveyed to the ECO and noted on the inscription panel of the ECB.

18.3 Working duration will always be subject to the over-riding consideration that the BA team **must be withdrawn immediately if any wearer shows symptoms of heat stress**. For this reason, all firefighters should be made aware of the symptoms of heat stress (see policy number 284 - Metabolic heat stress), and of the appropriate treatment for it, this is particularly relevant for EDBA wearers.

18.4 When stage 1 BA entry control is operating, wearers must remain in sight of the ECO and stage 2 entry control must be introduced if the wearers need to operate out of sight of ECO.

Low battery warning automatic distress signal unit (DSU)

18.5 If the Dräger Bodyguard 1000 DSU (worn on the outside of CPC) low battery warning signal actuates prior to booking in at entry control the CPC wearer must:

- Withdraw from the ECP.
- Remove the Dräger Bodyguard 1000 DSU and resources permitting, have the unit replaced and continue with operations.

18.6 If the Dräger Bodyguard 1000 DSU low battery warning signal actuates while CPC is being worn in the risk area the wearer must:

- Inform the ECO or Comms-Op immediately.
- The CPC wearer can continue with deployment within the risk area.
- Following withdrawal from the risk area the DSU must be taken out of service until battery replacement has been completed.

19. Aerial appliances and ladders

19.1 If firefighting operations are taking place from an aerial cage/head or if the risk assessment indicates that the cage/head may become enveloped in smoke, BA must be worn by the firefighters working at the cage/head.

19.2 When the IC risk assesses that BA is not required at least one firefighter working at the cage/head must wear a GDM on their tunic. This is to ensure early warning of the presence of fire gases and to ensure that the aerial can be trained away from the risk area to prevent exposure.

19.3 If the GDM alarm actuates, the cage/head must be trained away from the smoke/fire gases and the IC/Sector Commander informed. If the GDM alarm has actuated BA must be worn to prevent firefighter exposure to fire gases.

19.4 When the IC deems it necessary for BA wearers to work from the cage/head of aerial appliances they must be controlled through the appropriate stage of BA entry control. The ECO must make an entry on the ECB of the location of the wearer (denoted by the word Aerial) and that they are working alone.

19.5 Where it is necessary for a BA team to enter a building or structure at or above ground level by use of turntable ladder or pitched ladder, an ECP must be established at ground level in a safe area adjacent to the ladder.

19.6 A BA wearer working at the cage/head of an aerial appliance must:

- Use communications to remain in contact with the aerial operator and the ECO.
- Stay on the cage/head.
- Wear a safety harness and lanyard attached to an anchor point.

19.7 On all occasions where BA is being used on aerial appliances the base operator must ensure a clear view of the cage/head whenever possible. Should the cage/head be enveloped in smoke or be otherwise out of view, the base operator must confirm with the BA wearer that it is safe to continue operations and should inform the IC or Sector Commander of the changed situation.

19.8 Aerial appliance cages must not be used as ECPs.

19.9 Where an aerial appliance is used to provide means of access for BA wearers, or where the cage is occupied by BA wearers whether or not they are aerial operators, the operation of the appliance will

only be by means of the base console. This must be sited in safe air. The operator at the base console must not wear or need to wear any full face RPE as vision may be restricted by the face mask.

19.10 When an aerial appliance or ladder is used for access by BA teams it must not be repositioned under any circumstances until the BA team(s) have returned and been brought down to ground level.

20. Distress to wearer (DTW) procedure

20.1 If a DTW incident occurs the IC must inform Control, request the attendance of a senior accident investigator (SAI) and implement the procedure detailed on BA aide memoire No. 5 – Distress to wearer procedure (see appendix 1).

Definition of DTW

20.2 Any malfunction of a BA set, which is likely to or has the potential to deprive the wearer of air or expose them to a contaminated atmosphere (this includes cosmetic smoke), and that is discovered or occurs during:

- Actual use (operational or training).
- Any checks before use in a contaminated atmosphere (don and start or incident ground 'A' test).
- When BA is being worn after leaving a contaminated atmosphere.
- Where, due to restriction in the wearer's ability to operate the controls or remove the face mask, there is an actual or potential deprivation of air to the wearer.
- Where a defective BA set harness prevents the set continuing to be worn by pulling on the face mask causing potential deprivation of air.

20.3 Malfunctions found during routine testing or maintenance is not reportable under Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR 1995).

20.4 If any malfunction or fault occurs that does not fall under the definition of a DTW although an examination of the BA set is required (due to a safety event or investigation) this will fall under the 'special examination' procedure.

20.5 BA sets that require 'special examination' must be forwarded to Operations Support Group (OSG) using the equipment impounding box to preserve evidence. It should be clearly stated on the transport form that the BA set requires special investigation.

20.6 The term malfunction does not include leakage into a face mask due to poor face fit or a failure arising from an external source, such as falling debris or entanglement.

20.7 For advice contact the respiratory protective equipment logistics officer (RPELO), who is available 24/7 and can be contacted via Resource Management Centre (RMC) or Control.

21. Working with other brigades

21.1 Other fire and rescue services (FRS) may use different operational procedures and types of BA equipment and it is therefore important that a London Fire Brigade officer attends to liaise, communicate, and resolve operational differences.

21.2 BA wearers from different FRS may be committed at the same incident if:

- They only use the equipment from their own FRS.

- They are under the control of an ECO/ECPS with ECBs from their own FRS.

21.3 BA teams must only consist of BA wearers from the same FRS. Where BA teams from more than one FRS have been committed to the same incident, each FRS will have its own ECB. Each ECP BA emergency team must support BA wearers from the same FRS and be equipped with the appropriate 'EASE bag' (or second set) as rescue equipment. This rescue equipment must be compatible with that being worn by the BA team they are covering.

22. Working with other agencies

22.1 There are a number of other agencies using BA equipment (such as scientific advisor, police and ambulance services) that may be required to attend the same incident and memoranda of understanding (MOU) have been agreed to detail the arrangements in place for working with them.

22.2 The Brigade via its training partner provides these agencies with initial and continuation training.

22.3 At incidents requiring other agencies to wear BA, where the Brigade is in attendance, BA entry control procedures will be managed by firefighters.

22.4 Due to differences in breathing rate and RPE manufacturer, other agencies must provide their own ECO and ECB.

23. Welfare of BA wearers

23.1 The welfare of BA wearers must be considered and monitored whenever BA is deployed.

23.2 The IC may appoint a welfare officer to assist with the safe and effective management of personnel and provide them with welfare support (see policy number 987q - Welfare officer - incident command - organisation at incidents – SOP).

23.3 Firefighting PPE is essential for personal protection. However, while providing a thermal barrier to protect the wearer from high temperatures, it also prevents the dissipation of body heat as the wearer starts to work and will contribute to a rise in core body temperature. This will increase the likelihood and onset of heat stress.

23.4 The selection of PPE for BA wearers must be appropriate for the environment into which they are to be deployed and tasks to be undertaken (e.g., CPC may not require firefighting PPE to be worn underneath).

23.5 It is imperative for all firefighters to remain properly hydrated whilst on duty.

23.6 It is recommended that a BA wearer consumes 500 ml of water within the 30 minutes prior to working in BA.

Dealing with physiological effects of working in hot and humid conditions

23.7 The IC or Sector Commander must take account of the effects that working in hot and humid conditions can have on the body. All firefighters must be aware that physiological stress may occur at any time and not just when wearing BA.

23.8 Particular attention should be given to firefighters who have been working in confined spaces with limited ventilation, such as basements or ships' holds. If the work has been particularly arduous, recovery time should be extended see paragraph 23.13 below.

23.9 BA wearers may be subjected to heat in three different ways:

- **Environmental conditions** – heat generated by the environment in which a BA wearer is working. This is absorbed by the BA wearer increasing core body temperature.
- **Metabolic heat generation** – this is the heat created by the BA wearer through normal functions. This increases substantially when the BA wearer starts to work harder.
- **Psychological stress** – may also increase the rate of metabolic heat generation.

23.10 Wherever possible firefighters intended to be used as BA wearers should not be used for other tasks requiring high levels of physical effort (such as transporting equipment upstairs during high-rise incidents) as this will raise their core body temperature potentially leading to the early onset of heat stress and a loss in effectiveness whilst wearing BA.

23.11 ICs, Sector Commanders, BA wearers and ECOs must take all possible steps during an incident to mitigate the build-up of BA wearers' core body temperature before committal. Research has identified that there are various methods to limit heat build-up, and to ensure that these effects are minimised. Where possible:

- IC or Sector Commander to establish a shaded holding and recovery area, away from the immediate risk area, where BA wearers can muster and rest.
- BA wearers within the holding and recovery area should relax their firefighting PPE to allow their body to cool as normal (where BA emergency teams are standing by at the incident, they are to remain fully rigged subject to considerations as per paragraph 9.3 above).
- Drinking water must be available at the holding and recovery area to allow firefighters to re-hydrate, use of personal water bottles should be encouraged (at hazardous materials incidents drinking water is only to be allowed under the direction of the HMEPO or SA).
- Recognise the stresses of the tasks that BA wearers are required to complete. Ensure that BA teams are relieved at appropriate intervals.

23.12 To optimise recovery between BA wears and maximise performance and safety before being redeployed, BA wearers must be given a period of time to rest and rehydrate. Paragraph 23.12 below details guidance on rest and rehydration periods; however, the time given should be based on the task undertaken, duration and conditions encountered by wearers. If wearers are not going to be redeployed in BA, they can undertake other work subject to the IC's or Sector Commanders risk assessment.

Note: BA wearers should only be committed for second wears in exceptional circumstances only (i.e., to save a saveable life). See paragraph 26.30 for information on second wears.

23.13 Following BA wears within the risk area the minimum rest and recovery periods are:

- Following ambient BA wear, 30 minutes rest and consume 500 ml of cool water.
- Following hot and humid BA wear, 60 minutes rest and consume 1000 ml of cool water.

23.14 These rest and recovery periods will only be shortened in exceptional circumstances i.e., to save a saveable life when no fresh BA wearers are available.

23.15 Once the recovery period has elapsed or clearance has been given to leave the rest area, firefighters will report to the IC or Sector Commander for redeployment.

23.16 See policy number 284 - Metabolic heat stress for more information.

24. Pressurised workings

24.1 There are broadly two types of environment where pressurised atmospheres may be encountered. These are referred to here as 'elevated pressures' and 'commercial workings'. See National Operational Guidance: Sub surface, height, structures, and confined spaces.

24.2 The task of firefighting and rescuing people in pressurised workings is principally the responsibility of the on-site contractor. The Brigade would continue to respond to a call to pressurised workings and stand by to give advice and provide backup facilities if necessary. See policy number 118 - Pressurised workings.

25. BA entry control

BA entry control procedures

25.1 Disciplined adherence to BA entry control procedures, briefings and instructions is critical to the safety and effectiveness of BA operations and BA teams.

25.2 The level of BA entry control and the number of BA wearers committed must be communicated to Control to enable monitoring officers to gather relevant information.

25.3 The first BA entry control point established at the incident will be designated 'ECP alpha', the second 'ECP bravo', and so on.

25.4 Where possible, when an existing ECO at an ECP is replaced, this should be done at a time when no BA wearers are committed through that particular ECB. A structured exchange of information must take place between ECOs under the strict supervision of the officer responsible for the ECP.

25.5 The purpose of BA entry control procedures is to provide a consistent method for the safe and effective command, control, and management of BA operations.

- BA control procedures must be used whenever BA is worn.
- There are two stages of BA entry control, stage 1, and stage 2.
- The highest stage of BA entry control in use at any one ECP will be adopted by all other ECPs in use at the same incident.

25.6 SDBA and EDBA wearers must be committed through their own ECB by their own ECO and must not be mixed on any one ECB.

Stage 1 BA entry control for single wearer

25.7 There may be operational circumstances where one BA wearer for firefighting would suffice. In these circumstances a minimum of BA stage 1 entry control will be applied. Examples of these circumstances include car fires, rubbish fires, hot cutting and working a monitor at the head of an aerial appliance.

This procedure can only be applied in the following circumstances:

- Operations are not within a building or structure. A single BA wearer is not to enter a building, structure, or any other significant risk area alone.
- The BA wearer is always in view of the IC or other nominated officer or crew member and can be quickly removed from the risk area.

25.8 The IC:

- Initiates the use of stage 1 single deployment following a suitable and sufficient assessment of risks versus likely benefits.

- Informs Control that stage 1 single deployment procedures are in use.
- Establishes arrangements for communication between the BA wearer, the crew member monitoring the BA wearer and the IC.

25.9 The monitoring crew member:

- Maintains visual contact with the BA wearer.
- Monitors the activities and working environment of the BA wearer.
- Establishes and maintains communications with the BA wearer and the IC.

Note: the monitoring crew member should be a junior officer or a firefighter who is not on development.

25.10 The BA wearer:

- Will not enter any building or structure.
- Remains in view of the monitoring crew member.
- Maintains communication with the monitoring crew member.

Stage 1 BA entry control

25.11 This is the minimum level of BA entry control necessary whenever BA is used:

- Incident requires a limited number of BA wearers over a limited period of time.
- Incident and any structures involved are small and not complex.
- Limited to six wearers deployed into the risk area at any one time.
- Limited to one ECP.
- The IC must nominate a BA emergency team as soon as resources are available.
- When resources permit the IC will nominate a Comms-Op.

Stage 2 BA entry control

25.12 Stage 2 BA entry control should be used to meet the demands of larger and or more complex incidents.

25.13 The full extent of BA emergency team arrangements must be determined on the basis of a risk assessment by the IC.

25.14 The entry control point supervisor (ECPS) must be appointed when stage 2 BA entry control procedures are used, this rank must be a minimum of LFF.

25.15 Stage 2 procedures are to be used when **any** of the following apply:

- More than one ECP is required.
- More than **six** wearers are deployed into the risk area at any one time.
- The incident and structures involved are complex and or the increased deployment of BA, plus the increased risks associated with BA operations, demand a greater degree of control and supervision.
- BA operations are likely to be protracted.

- Guidelines are required.
- The risks presented to BA teams demand a higher level of BA emergency provision, involving the need for BA emergency teams.
- EDBA is required.
- BA telemetry repeater(s) is deployed.
- Confirmed basement fire (where size and layout indicate stage 2 is appropriate).
- BA emergency team(s) have been committed.
- When chemical protective clothing wearers are out of the line of sight of ECP.
- When other agencies are being committed in BA.

Note: Both emergency and relief BA teams must be established at stage 2.

Note: All BA team members must be equipped with the same type of BA (either SDBA or EDBA) and emergency teams rigged to the highest level of RPE in use e.g. EDBA.

26. Entry control operative (ECO)

26.1 An ECOs responsibility is for the control and management of the ECP as described in this policy. An ECO is not responsible for supervising the tasks allocated to BA teams. This responsibility rests with the IC or Sector Commander.

26.2 The ECO is a dedicated role and must not be involved or allocated any other tasks.

Nominated ECO station duties

26.3 Ensure personal competence and BPAs are kept up to date, if lapsed inform OIC.

26.4 When nominated by a watch officer an ECO (or nominated firefighter for CU only equipment) is responsible for the examination and testing of the following:

- Ensure the ECB, HUB and its telemetry functionality is fully tested (see policy number 760 - Respiratory protective equipment – MSA connected firefighter – technical information).
- ECO surcoat.
- Chinagraph pencils (black) – stowed in ECB cover.
- Evacuation whistle – stowed in ECB cover.
- Main guideline tallies A+B and branch guideline tallies 1-4 (FRU only) – attached to guideline bag 'D' ring.
- BA aides memoire set of 14 – stowed in ECB cover.
- BA guidelines.
- IEC pack (resuscitator).
- ECB tripod and bracket.
- Thermal imaging camera.
- Telemetry repeaters (PL and FRU only).

- Ensure that the EASE bag and cylinder is available (PL and FRU only).

26.5 ECO must report to the watch officer any defects and or missing equipment immediately.

Nominated ECO incident duties

26.6 BA aide memoire No. 1 is provided for incident ground use (see appendix 1).

26.7 The ECO is responsible for one ECB only, and a maximum of six BA wearers.

26.8 For actions in the event of an accidental actuation of a distress signal see paragraphs 11.8 and 11.9 of this policy.

Setting up an ECP

26.9 The ECP is the position for the command and control, deployment and monitoring of BA wearers committed to a risk area and should be sited under the direction of the IC or Sector Commander.

26.10 The ECO will:

- Set up ECB on tripod, complete ECB location label, inscription panel and ensure correct time is displayed (ECP can consist of more than one ECB, only one alphabetical call sign will apply to an ECP).
- Ensure that the HUB is positioned to receive line of sight telemetry signals from BA wearers and forward telemetry information to the ECB.
- Don 'ECO' surcoat (if nominated as BA emergency team ECO use emergency team armbands stowed in the EASE bag).
- Wear a GDM.
- Provide IEC pack (resuscitator).
- Provide EASE bag (PL and FRU only).
- Switch incident ground radio to BA channel (if BA Comms-Op is nominated switch to command channel).
- Prompt IC to provide BA emergency team when resources permit.

Briefing and debriefing

26.11 The ECO is not responsible for the briefing and debriefing of BA teams, this must be undertaken by the IC or Sector Commander.

26.12 The ECO should confirm their own understanding of the briefing and debriefing given to BA teams with the briefing officer and update the ECB with key information.

First wear (new entry)

26.13 BA wearers reporting to the ECO must have at least 240 bar cylinder pressure (minimum entry pressure) and the ECO enters new entry records onto the ECB.

26.14 The ECO will:

- Check BA team are correctly rigged in RPE/PPE with no exposed skin.

- Receive BA tallies, check wearer and cylinder pressure information are correctly entered (pressures must be at least **240** bar) and enter 'time in' using the ECB clock.
- Ensure that EDBA wearers have fitted the twin cylinder cover and that their tallies have a red tether attached to the safety key split ring.
- Enter BA tallies into ECB ensuring telemetry signal is achieved (if manual calculations are required see aide memoire No. 11), assign a team number and bracket BA team together on the ECB tablet display.
- Identify the team leader (who must wear comms) by placing the letters 'TL' against wearers name on the inscription panel of the ECB.
- Enter BA team location on the inscription panel of the ECB.
- Enter task, extinguishing media (including weight of attack), turn around pressure (TAP), turnaround time (TAT) when appropriate and any appropriate resources on the inscription panel of the ECB (see Appendix 8 for suggested abbreviations).
- Inform BA team(s) of ECP call sign (ECP alpha, ECP bravo etc).
- Confirm BA team(s) call sign, the BA teams callsign will match the team number assigned on the ECB tablet display when logging on BA wearers (BA team alpha one, BA team alpha two etc).
- Carry out radio communications check with BA team(s).
- Check wearer's electronic personal dosimeter (EPD) as they enter suspected/confirmed radiation incidents and record the reading in the 'IN' section on the back of the BA tally.

26.15 Where a BA team temporarily withdraws but does not remove their face masks (for example to collect equipment) they can immediately return to the risk area without fresh records or amendments being made. The Control Module incident state 'on withdrawal' function would not be actuated in this case.

Communications to IC, BA teams and other ECPs

26.16 In the absence of a BA Comms-Op the ECO must:

- Maintain communications with BA teams operating inside the risk area.
- Inform the officer responsible for the ECP of any prolonged breakdown in communications with BA teams (prompt IC or Sector Commander to consider use of telemetry repeaters).
- Inform other ECPs if any BA teams report to the ECP that are not under your control.
- Forward on information to the officer responsible for the ECP of any relevant update from BA teams and record this time of update on the inscription panel of the ECB.
- Inform BA teams if there is any relocation of the ECP.

26.17 Advise BA teams of the location and tasks of adjacent BA teams during operations and record the information so that it is available for briefing or debriefing of BA teams.

Monitor ECB

26.18 The ECO must monitor the wearers air consumption rates and prompt team and task rotation if required. If the briefing officer for the ECP has stipulated that a BA team must return to the ECP at an earlier pre-determined time the ECO must advise the BA team(s) to withdraw at the agreed time.

26.19 Acting on the instructions of the IC/Sector Commander, restrict the length of exposure in difficult or strenuous conditions and determine an earlier time of exit from the risk area.

26.20 When prompted to do so by BA team leaders record details of landmarks and lowest team pressure on the inscription panel of the ECB. This is to aide BA team calculations when exiting the risk area if required (see paragraph 7.68).

26.21 The ECO must monitor the telemetry data and signal displayed on the ECB (radio icon against each BA wearer channel). The ECO must make immediate radio contact with any BA team(s) when loss of telemetry signal is identified to confirm the safety and wellbeing of the team and, if radio contact fails, inform the officer responsible for the ECP and the officer responsible must commit a BA emergency team to investigate. The IC or Sector Commander must consider if circumstances require a 'Firefighter Emergency' to be declared.

26.22 If telemetry signal loss is prolonged and cannot be re-established (BA team welfare has been confirmed by radio contact), the ECO must inform the IC or Sector Commander who shall consider deploying telemetry repeaters. This decision will be dependent upon the nature and type of incident, i.e., complexity of task, numbers of BA teams committed and whether the incident is sub-surface or likely to be protracted.

26.23 For more detailed information on the use, deployment and methods of maintaining the signal of telemetry equipment through the use of telemetry repeaters, see policy number 760 - Respiratory Protective Equipment – MSA connected firefighter telemetry equipment – technical information.

Withdrawal of and close down of BA teams

26.24 If the ECO receives an 'on withdrawal' signal from a BA wearer or wearers committed to the risk area, they will report this directly to the officer responsible for the ECP. An immediate assessment of risk should be undertaken to identify the subsequent actions to be taken.

26.25 The ECO will:

- Inform IC or Sector Commander if BA teams are being withdrawn prematurely.
- Ensure all BA wearers have closed down and purged their BA set prior to removal of BA tally from ECB (BA wearers will not be logged off from telemetry unless this sequence is carried out).
- Return BA wearers' tallies as they pass back through ECP and direct them to report to the IC or Sector Commander for debriefing.
- Check with BA team members if they feel any signs of heat-related conditions such as dizziness, nausea, abdominal pain, or a burning sensation of the skin following their withdrawal from the risk area.
- Check wearer's EPD as they withdraw from suspected/confirmed radiation incidents and record the reading in the 'OUT' section on the back of the BA tally. Note and inform the IC or Sector Commander of any change in the reading.

26.26 When a BA wearer requires decontamination after exiting from the risk area, the decontamination director may request the BA wearer's DSU key to deactivate the unit when removed from the wearer (see policy number 584 – Firefighter decontamination).

26.27 If a BA tally fails to log off from the ECB, the ECO can perform a 'manual log-off' (see BA aide memoire No. 10).

Re-entry

26.28 This occurs following withdrawal and closing down, if the BA team is required to re-enter the risk area to perform a specific task, such as equipment collection or a simple ventilation task like opening a window.

26.29 After withdrawing and closing down, a BA team can re-enter the risk area to perform a specific task (other than firefighting) provided that:

- The BA team have remained under the control and supervision of the ECP.
- There are no doubts about the fitness and wellbeing of any BA wearer, and they must confirm that they are fit and well for the task to be undertaken.
- All BA team members have a cylinder pressure of at least 210 bar. Pressures in excess of 210 bar will be recorded on the BA tally as 210 bar for the purposes of the task and for control of the BA team.
- The task identified by the IC or Sector Commander will be of short duration and the IC or Sector Commander considers the BA wearers have sufficient air to complete it and return to ECP before the low pressure warning actuates. The 'time in' will be recorded on the BA tally and a time of warning (TOW) for 15 minutes later entered into the inscription panel. The words 're-entry' and the task being performed must also be entered on the inscription panel of the ECB (the BA team will be recommitted using manual calculations).

26.30 Other than in exceptional circumstances EDBA wearers should not be used for 're-entry' tasks.

Second wear (new entry)

26.31 In exceptional circumstances (i.e., to save a saveable life) the IC or Sector Commander can recommit BA wearers for a second wear at the same incident if no fresh BA wearers are available.

26.32 The IC or Sector Commander must carry out an assessment in consultation with the BA wearers in order to be satisfied that the BA team are rested, re-hydrated and fit for a subsequent entry. Fresh ECB records are required. See section 23 - Dealing with physiological effects of working in hot and humid conditions for the minimum rest and recovery periods between BA wears.

26.33 Except in exceptional circumstances EDBA wearers should not be used for a 'second wear' in either SDBA or EDBA.

26.34 In addition to paragraph 26.13 above the ECO will:

- Record 'second wear' on the inscription panel of the ECB.
- Record 'test not recorded' (TNR) on the inscription panel of the ECB.

Emergency evacuation procedure

26.35 An emergency evacuation signal (selective or all) is an emergency procedure and must not be used for any other purpose.

26.36 After transmitting an emergency evacuation signal, a 'confirm' signal must be sent from each BA wearer to the ECP. In the event of the 'confirm' signal not being received by the ECP, and BA wearers cannot confirm evacuation through radio communication, the ECO must consider implementing BA emergency procedures.

26.37 After sending an emergency evacuation signal, it is imperative that the officer responsible for the ECP checks to ensure that all BA wearers committed to the risk area through their ECP are in telemetry signal range. If this is not the case, the officer responsible for the ECP must try to establish radio communications with all BA teams committed to the risk area.

26.38 If stage 2 entry control is in operation the IC must ensure that any decision to conduct an emergency evacuation of all firefighters is communicated to all ECPs.

26.39 If it is not possible to establish communications with BA teams, BA emergency procedures must be implemented.

26.40 For further information see policy number 985 – operational safety management – knowledge skills and competence.

Committing BA emergency teams

26.41 It is essential that the ECO notifies the ECPS, Sector Commander or IC that a BA emergency exists. Take whatever practicable action possible in the circumstances.

26.42 If stage 2 entry control is in operation all other ECPs must be informed of the BA emergency.

26.43 The officer responsible for the ECP is responsible for activating emergency procedures and the deployment of BA emergency teams, including BA emergency team support arrangements. This officer is also responsible for all other BA entry control procedures relating to BA emergency team deployment, including:

- Briefing and debriefing BA emergency teams.
- Maintaining a suitable record of all relevant operational and risk information, decisions made, and tasks given to BA emergency teams.
- The brief must be repeated by the BA emergency team leader and acknowledged by the officer giving the briefing to ensure that the whole BA team understands the details.

26.44 Depending on the nature of the BA emergency, and to ensure suitable protection of the BA emergency team, the officer responsible for the ECP may identify the need to deploy firefighting, hose management and casualty handling BA teams in addition to the first BA emergency search and rescue team (those support teams must be committed through the emergency team ECB).

26.45 Where BA wearers require or appear to require emergency assistance, the officer responsible for supervising the ECP must take immediate steps to contact all BA teams in the risk area who may be affected. Other BA teams in the risk area should be given information that may allow them to help affected wearers exit the risk area safely. Radio and telemetry, where available, may assist in identifying the team and wearers.

Note: None of the above precludes anyone with responsibilities or duties at the ECP from initiating a 'firefighter emergency' radio message where necessary.

26.46 Once a BA firefighter emergency has been declared, Control must be informed immediately. The radio message must include the phrase 'firefighter emergency'.

26.47 Contingency arrangements must include suitable protection for BA emergency teams entering risk areas containing potentially flammable, explosive, or other hazardous materials. Consideration must be given to support arrangements for deployed BA emergency teams, considering the extreme physiological demands placed on BA wearers tasked with assisting or rescuing colleagues in distress.

26.48 BA emergency teams must be committed using an additional ECB and HUB set up and annotated 'BA emergency team'. An additional ECO must be nominated to operate the emergency team ECB as soon as resources allow.

26.49 The ECO must inform the officer responsible for the ECP who will brief and commit a BA emergency team when:

- A BA team or wearer has not returned to the ECP by their time of low-pressure warning and cannot be contacted to confirm their safety and wellbeing.
- A DSU is heard to have been actuated or is indicated to have been actuated on the ECB.
- Where audible or visual indications suggest a BA team or wearer appear to be in distress or imminent danger.
- A prolonged and unexplained breakdown in communications has occurred.

- A BA team or wearer has requested assistance.

Distress to wearer (DTW)

26.50 If a DTW is reported (see section 20 above), notify the IC or Sector Commander who will nominate an officer to impound the BA set. Give the nominated officer BA aide memoire No. 5.

Manual calculations of duration

26.51 Manual calculations are not intended as a replacement for the loss of telemetry signal once BA operations have started, the deployment of telemetry repeaters is provided to restore signal loss.

26.52 The equipment providing the telemetry function is extremely robust. Telemetry system failure is very rare, and any loss of signal is most likely due to intentional blocking i.e., counter-terrorism measures.

26.53 Manual calculations will only be used on authority of the IC or Sector Commander. They will be used when:

- All BA wearers are unable to log onto the ECB and achieve a BA telemetry signal when starting BA operations.
- An ECB display fails (LCD clock must still operate), and no replacement ECB is available.

26.54 Guidance on how to use manual calculations can be found in BA aide memoire No. 11 – Using manual calculations of duration.

Committing BA teams using manual calculations of duration

26.55 If on starting BA operations all BA wearers are unable to achieve telemetry signal, the ECO on the authority of IC or Sector Commander will commit BA teams using manual calculations.

26.56 The ECO will:

- Check BA team are correctly rigged in RPE/PPE with no exposed skin.
- Receive BA tallies, check wearer and cylinder pressure information are correctly entered (pressures must be at least 240 bar) and enter 'time in' using the ECB LCD clock.
- Enter BA tallies into ECB, calculate TOW (see BA aide memoire No.11) and bracket BA team together with the lowest TOW written outside the brackets on the inscription panel of the ECB.
- Enter BA team location on the inscription panel of the ECB.
- Carry on as per paragraph 26.13 fifth bullet above.

Manual calculations of duration for BA teams already committed

26.57 If during operations an ECB display fails (LCD clock must still operate) and no replacement ECB is available, the ECO will:

- Use radio communications to contact and verify BA team safety and wellbeing, request status and pressure readings.
- Inform IC or Sector Commander that ECB failure has occurred, and that BA team welfare has been established, then prompt the IC or Sector Commander that BA teams should be withdrawn from the risk area unless risk assessment allows the BA team to carry on with task.

- Using original 'time-in' from BA tallies entered into ECB, calculate TOW (see BA aide memoire No. 11) bracket BA teams together and write lowest TOW outside the brackets on the inscription panel of the ECB.
- Use radio communications to inform BA team of TOW and request regular pressure reading updates from BA team leader.

26.58 BA entry control operations will either be telemetry or manual (calculations) and will not be mixed on any one ECB (other than the use of re-entry as per paragraph 26.29 bullet 4 above).

ECO post incident duties

26.59 On return to station the ECO must ensure that:

- The appropriate testing is carried out on ECB, HUB and ancillary equipment as per section 26.
- Any defective equipment is removed from service and that defects and or missing equipment is reported to the watch officer.

27. Entry control point supervisor (ECPS)

27.1 An ECPS is responsible for the control and management of the ECP, and the firefighters designated to the support tasks under stage 2 entry control procedures.

27.2 The nominated ECPS is to supervise BA procedures at their allocated ECP. The ECPS should not normally record details of BA wearers onto an ECB and should use an ECO for that purpose.

27.3 A stage 1 ECO who has handed over to a stage 2 ECPS will remain at the ECP to carry out the ECO role.

Nominated ECPS incident duties

27.4 BA aide memoire No. 2 is provided for incident ground use (see appendix 1).

27.5 When nominated the ECPS will:

- Don 'ECPS' surcoat (insert available from CU).
- Ensure each ECB has a dedicated ECO.
- Ensure ECPS's name is recorded on the ECB location label.
- Nominate Comms-Op for the ECP and hand them BA aide memoire No. 4.
- Switch their incident ground radio to the incident command channel.
- Ensure that the LCD clock on any additional ECBs are synchronised with the initial ECB before they are brought into use.
- Nominate BA emergency team and have them standing by at the ECP (see section 9).
- A BA emergency team must be at least the size of the largest BA team committed from the ECP (see paragraph 9.3 above) and rigged to at least the same level of PPE and RPE. The BA emergency team must have one EASE bag per two monitored BA wearers.
- Ensure an additional ECB has been supplied by the initial BA emergency team.
- A BA emergency team that is committed must be replaced immediately.

- Nominate an EDBA emergency team and have them standing by at the ECP before committing an EDBA team.
- Inform IC or Sector Commander of the number of BA wearers committed and when additional BA wearers are required.
- Ensure that briefing of BA teams takes place before they are committed.
- If a BA team(s) exit the risk area and report to an ECP different from the ECP that they were committed through, the committing ECP must be informed, and the BA team(s) sent back to their original ECP to collect their BA tallies.

BA sector

- Inform BA sector of the number of BA wearers committed and when additional BA wearers are required.
- Ensure that briefing of BA teams takes place at least five minutes before they are due to be committed. Record the time of the request on the ECB.
- Ensure exiting BA teams return to BA sector for further instruction following de-brief.

27.6 If BA guidelines are used the ECO under the supervision of the ECPS will:

- Attach main guideline tallies to main guideline(s) and, if used, branch guideline tallies to branch guideline(s) and ensure that the tabs indicate the correct egress direction.
- Ensure main guideline(s) is secured to an immovable object outside of the risk area at the ECP and that details are entered on the appropriate ECB.
- Record, monitor and log guideline use, including identifying which guideline each team is laying, following or searching from.
- Confirm that all BA teams are made aware when a main or branch guideline is in use or is to be laid.

28. BA communications operative (Comms–Op)

28.1 BA aide memoire No. 4 is provided for incident ground use (see appendix 1).

28.2 An ECO will initially also perform the role of the BA Comms-Op. When resources permit, the role of the ECO and the BA Comms-Op should be separated, and this must be considered by the IC or Sector Commander if the incident escalates or the level of risk increases.

28.3 The BA Comms-Op will report to and take instruction from the officer responsible for the ECP and work alongside the ECO.

28.4 The function of the BA Comms-Op will be to send and receive messages between BA teams and the ECP. Communications will be undertaken in liaison with the ECO and the officer responsible for the ECP. The ECO/ECPS will be responsible for communications between the ECP and the IC, Sector Commander and other ECPs dependant on the stage of BA entry control.

28.5 The duties of a BA Comms-Op are to:

- Don the "BA Comms-Op" surcoat (insert available from CU).
- Switch incident ground radio to the channel being used by BA teams.
- Stay next to and liaise with the ECO(s) and ECPS for their respective ECP.

- Verify call signs and test communications with BA team(s) prior to entry into the risk area.
- Monitor BA team progress within the risk area.
- Inform and update the officer responsible for the ECP of any relevant information received relating to the progress of BA operations or hazards encountered.
- Inform the officer responsible for the ECP of any prolonged breakdown in communications with BA teams (prompt IC or Sector Commander to consider use of telemetry or radio repeaters).
- Pass messages relating to status changes of BA teams to the ECO, for recording onto the ECB. Consider use of BA communications board at four pump incidents and above (carried on OSU).
- Only communicate with BA teams committed from their ECP.
- Respond immediately to priority messages.
- Prompt BA teams to take regular pressure readings if required (e.g. if BA team have gone out of telemetry signal range or have been committed using manual calculations).
- Inform BA teams if there is any relocation of the ECP.

28.6 In an emergency or where a distress signal is heard or indicated on the ECB, the BA Comms-Op must inform the ECO and ECPS (under stage 2) of the emergency and attempt to:

- Identify and locate the BA team in distress.
- Assist the ECO or ECPS and IC or Sector Commander to co-ordinate rescue operations using BA emergency teams and BA teams already committed.

28.7 The BA Comms-Op will not be allocated or undertake any other BA entry control duties.

29. Officer in charge, Incident or Sector Commander

Officer in charge (OIC) station duties

29.1 Ensure personal competence and BPAs are kept up to date for self and watch firefighters.

29.2 Maintain an understanding of the duties of a BA wearer, BA team leader, ECO, ECPS and BA Comms-Op.

29.3 At the start of each duty period the OIC is responsible for the following:

- Nominate suitably qualified and competent firefighters to wear BA for each appliance and update with any changes required during shift.
- Nominate suitably qualified and competent firefighter(s) to assume the duties of ECO and update with any changes required during shift (this nomination should consider any other specific duties any firefighters may have at an operational incident).
- Ensure all nominated wearers have BA radio communications.
- Ensure that unallocated BA sets are tested, and the cylinder pressure recorded on the BA tally. In the name section, the word 'spare' is to be inserted. The BA logbook is to be completed by the tester.
- Ensure that the appropriate tests of BA and associated equipment are carried out, and that the test records are accurately maintained. The name of the ECO(s) and the nominated wearers of BA sets

and communications equipment are recorded on StARS along with the nominated chemical protective clothing (CPC) wearers.

- Ensure that BA sets and associated equipment are maintained in a clean, safe and serviceable condition and are available for operational use.
- Ensure equipment reported as being defective has been removed from service, defects are reported, and POMS orders raised for replacements.
- Ensure equipment reported as missing is investigated and POMS orders raised for replacements.

29.4 Every effort should be made to ensure that the full complement of BA sets for every appliance is maintained at all times. The servicing and replacement of BA sets is a priority to be carried out at the earliest opportunity. Appliance commanders must inform Control their appliance is not available for mobilising whenever less than two BA sets are available. Contact logistics manager at RMC on extension 88321 for 'urgent' replacement of BA set(s).

29.5 During visits carried out under section 7(2)d of the Fire and Rescue Services Act 2004 consider premises that may require the use of telemetry repeaters to maintain telemetry signal with BA teams, this should where possible also indicate suitable locations for repeaters to be placed during use.

Incident and Sector Commander incident duties

29.6 The generic role of the IC with regard to command and control is described in policy number 987 - Incident command - Organisation at incidents. This section of the policy deals with the specific responsibility of the IC with regard to BA when in use at an incident.

29.7 The IC on the basis of a suitable and sufficient risk assessment shall decide whether BA is required to deal with the incident. The IC may delegate the deployment of BA wearers to Sector Commanders.

29.8 The circumstances of the incident, such as the number and urgency of any rescues, will determine what resources are committed and when. However sufficient resources to achieve an objective should be available prior to resources being committed. If necessary, objectives must be limited to fit the available resources. Sufficient resources must be requested as soon as possible.

29.9 As part of the risk assessment the structural integrity of the building or risk area must be considered.

29.10 The outcome of the risk assessment will be used to determine appropriate procedures and the level of BA command and control to be used for all ECPs in operation.

29.11 All firefighters should be made aware of what stage BA entry control is in operation.

29.12 Control must be made aware of the level of BA entry control in use and the number of BA wearers committed at any one time.

29.13 The IC must ensure that the highest stage of BA entry control in use at any one ECP will be adopted by all other ECPs in use at the same incident.

29.14 The IC should communicate the location of all ECPs to the operations and/or SCs, all ECOs, all ECPSs, the BA sector commander and command support as appropriate.

29.15 The IC should nominate and brief safety officers on their specific role requirements, including BA operations.

29.16 The IC/Sector Commander must ensure that a structured and comprehensive handover takes place, and all relevant information is transferred and understood when firefighters responsible for managing an ECP are replaced.

29.17 The IC or Sector Commander will be responsible for the number of ECPs and will identify a suitable ECP location which must be in safe air and sited:

- To minimise background noise.

- As near to the scene of operations as possible.
- To take into consideration weather conditions (wind direction).
- In such a position that it should not be necessary to reposition the ECP if the incident escalates.

29.18 The IC or Sector Commander will:

- Concentrate effort and resources into maintaining a high degree of command and control during BA operations.
- Consider what resources are available prior to committing BA teams.
- Establish the fire contamination disrobe and cleaning area.
- Nominate an officer to be responsible for each ECP, confirming the role and responsibility of the ECO, who shall manage and monitor the implementation of BA entry control procedures.
- Ensure arrangements are in place for communicating with the officers responsible for the ECPs.
- Nominate BA team members. Where possible the team leader should lead team members drawn from their own station.
- Consider the physiological and psychological effects that previous activities may have on an individual or team's wellbeing and their ability to undertake their tasks safely when deployed to use BA.
- Determine and communicate the appropriate structural search procedures (see appendix 7 Search procedure).
- Consider means of escape for BA wearers.
- Ensure suitable and sufficient emergency arrangements and consider the provision of BA emergency teams during the initial stages of operations and nominate a BA emergency team as soon as resources allow.
- Where the provision of BA emergency teams is considered necessary, but resources are not immediately available, they must consider restricting BA operations pending their arrival.
- Be aware that securing a separate water supply for BA emergency teams as specified in paragraph 9.5 should be seen as best practice but this may not always be possible e.g. at some high-rise incidents.
- Consider and make arrangements for BA wearer welfare requirements (where BA sector commander has not been appointed). The welfare of BA wearers should be addressed and appropriately resourced on every occasion that BA is deployed.
- Where possible, take action to improve the working conditions of BA teams deployed in the risk area, for example, by using tactical ventilation or cooling techniques to reduce temperatures.
- Ensure appropriate provision of 'relief' BA teams at ECPs in a timely fashion.
- Assess the need to use BA guidelines:
  - Consider the use of alternative or simultaneous operational tactics.
  - Regularly review the use of BA guidelines.
  - Ensure use of additional BA support teams in conjunction with guideline laying teams.
  - Implement appropriate BA emergency procedures as necessary.
  - Inform Control that BA guidelines are in use.

29.19 The IC will assess the need to appoint a BA Sector Commander.

29.20 Where the IC or Sector Commander has determined the need to deploy EDBA above that already in attendance, the following message should be sent: "From..... at.....; EDBA required; tactical mode....." in accordance with appendix 1 of policy number 518 – Messages from incidents. This will result in Control mobilising three FRUs for EDBA along with three EDBA support pumps.

29.21 If telemetry signals are lost and telemetry repeaters are required, they are available from any attending PL (1x) or FRU (2x).

Briefing and debriefing of BA teams

29.22 A BA team must be fully briefed by the IC or Sector Commander (not the ECO) and confirm their understanding before they are deployed into the risk area.

29.23 The IC is to ensure that the ECO is made fully aware of the BA team's brief/plan/objective and outcome following debrief.

29.24 The IC or Sector Commander will make arrangements to record and store all briefing and debriefings for use at hot debrief, operations debrief and command review, safety events and inquiries. The forward information board (FIB) carried on all pumping appliances will perform this function during incidents (see policy number 820 – Forward information board). Use of BA briefing form which should be retained and handed to CU on completion of incident.

29.25 Key information should be recorded appropriately. A suitable and sufficient record of search and rescue instructions and briefings to BA teams, debrief intelligence and any other relevant operational and planning information should be maintained at the ECP. This risk-critical information impacts directly on the effective command and control of any incident involving BA and the tasks allocated to subsequent BA teams.

29.26 Records should be maintained, not just for the duration of the incident but for subsequent audit, training, and investigation purposes. These provide a contemporaneous record of the instructions given to BA teams and information gained at the debrief on completion.

29.27 The allocated tasks of BA wearers should be confirmed, communicated, and recorded before deployment. BA wearers deployed into risk areas should be informed of their tasks, such as firefighting, search and rescue, guideline laying or other specific tasks. Following a suitable and sufficient assessment of risk, tasks may be combined, for example, firefighting and search and rescue.

29.28 The IC or Sector Commander must consider and include the following points when briefing and debriefing. The situation, hazard, objective, plan, any questions, comms and confirmation (SHOPAC) briefing model should be used for both briefing and debriefing see policy number 986 - Command skills - knowledge, skills, and competence (section 5. Interpersonal Communication – 5.4. Structured Briefing Model).

Briefing

- Brief the whole BA team not just the team leader (include BA emergency teams if established).
- Brief them before starting up.
- Confirm radio communication availability and call signs.
- Define allocated tasks, such as firefighting equipment and tactics, search and rescue, identifying hazards and ventilation.
- Define any restrictions on what they can do, such as duration limits to prevent over exposure of BA teams during known severe conditions see paragraph 26.18).
- Define the location of where:

- They will be working and the route they should take, where possible making reference to a site or building plan to help the team to visualise their route and area of responsibility.
- Any persons that may be involved were last known to be.
- The fire is known or suspected to be.
- Other BA teams are working and what they are doing.
- Specific area to be searched and the search procedure and equipment to be used.

- The nature and frequency of progress reports required.
- Location and nature of any known hazards.
- The level of BA command and control procedures in use.
- BA emergency and contingency arrangements.

29.29 Under certain circumstances, the briefing officer for an ECP may stipulate that BA teams must return to the ECP at an earlier pre-determined time. This will be determined on the basis of an assessment of risk, contingent on the tasks BA team(s) are expected to undertake, the conditions under which they are expected to work and any physiological considerations.

Debriefing

- Debrief immediately after BA teams close down (include BA emergency teams if established).
- Obtain an update on all of the elements in the original briefing so that a developing picture can be obtained.
- Obtain information about the heat, smoke, and fire conditions. Some of the danger signs are heat damaged and or steaming PPE on exiting, signs of exhaustion, and air consumption significantly above the normal consumption considering the tasks undertaken.
- The essential elements of the debriefing should also be recorded.

29.30 It is essential that all information obtained from the debriefing is brought to the attention of the IC or Sector Commander and used to inform and update the overall plan.

BA emergency team provision

29.31 The IC must nominate a BA emergency team as soon as resources allow.

29.32 If the IC has considered the requirement for a BA emergency team. They must order an additional pumping appliance whose crew will perform the role of BA emergency team.

29.33 As part of ensuring BA wearers' welfare and physiological readiness for deployment, account should be taken of ambient temperatures and weather conditions when deciding on the standard of dress and other provisions necessary for the BA emergency team on standby.

29.34 Consideration must be given to:

- Numbers in the BA emergency team, considering the working environment.
- Distance from the ECP.
- Size of the BA team requiring assistance.

29.35 The IC must consider the demands likely to be made on those BA wearers and should consider using them to only undertake specific functions, such as searching for missing BA wearers in a known area. If the BA emergency team is committed to locate a BA team, they should be briefed to locate the BA

team and immediately report back (either by radio or physically) the condition and circumstances of the BA team.

Assessment of minimum RPE levels using GDM

29.36 The IC/Sector Commander should make full use of GDMs when carrying out their risk assessment of the conditions within and around the incident. For example, GDMs should be used:

- At the ECP and at the bridgehead to ensure the air remains safe for those not wearing RPE.
- By at least one team member when working in and around the risk area when RPE is not being worn.
- When making the decision to reduce the RPE level from BA, when teams are working within the risk area following damping down operations.
- By at least one team member when teams are to enter structures during the closing down phase of operations such as fire investigation or allowing third parties to enter the structure.
- By at least one team member working at grass fires when BA is not being used to monitor the unseen fire gases.

OIC post incident duties

29.37 Ensure the BA wearers' welfare with regards to rehydration and recovery.

29.38 Ensure BA wearers that have been through the fire contamination disrobe procedure are given time to shower and replace PPE.

29.39 On return to station ensure firefighters carry out the appropriate cleaning, testing and inventory checks of BA sets and ancillary equipment and complete appropriate records.

29.40 Ensure firefighters remove from use any equipment reported as defective.

29.41 Ensure POMS orders are raised to replace any consumed cylinders, defective and or missing equipment.

30. BA sector

30.1 This is not a separate stage of control although it is set up in addition to stage 2, to co-ordinate and support BA resourcing, logistics and operations at incidents where a large number or additional BA resources are required.

30.2 The BA sector will be commanded by a BA sector commander (minimum rank of station commander – SC) and is appointed by the IC. Responsibility for BA sector may, on the instruction of the IC, be passed to a more senior officer as the incident develops. The officers must ensure that a comprehensive brief takes place when responsibility is transferred. The officer handing over must remain with the senior officer to assist as this is a command support function of the BA sector. The BA sector assistant will wear the 'BA sector assistant' surcoat.

30.3 The BA Sector Commander is responsible to the IC for establishing additional control to co-ordinate all BA requirements.

30.4 The BA sector function should be supported by the crew of a pumping appliance and command unit.

BA Sector Commander incident duties

30.5 BA aide memoire No.3 is provided for incident ground use (see appendix 1).

30.6 The duties of a BA sector commander are to:

- Don 'BA sector' commander surcoat (available from the CU).
- Set up a BA communications network with each ECPS and the IC. Ensure incident ground radio is switched to the incident command channel. Do not use the BA channel.
- Ensure the BA sector board clock is synchronised with the initial ECB clock.
- Identify the location of each ECP, record the name of each ECPS on the BA sector board/command support software (CSS).
- Ensure stage 2 entry control is applied to all ECPs and that all ECPs are correctly resourced.
- Regularly update the IC with an accurate assessment of BA resources, requirements and operational activities.
- Establish and record the requirements for relief BA teams required by ECPS.
- Record and update the information on the BA sector board. Maintain suitable and sufficient resilient records.
- Have available sufficient BA wearers to provide relief teams required by each ECPS and dispatch them to arrive at the ECP in sufficient time before they are required.
- Provide BA emergency team to stand by at each stage 2 ECP. In addition, a reserve BA emergency team should standby at BA sector when resources permit.
- Establish and monitor a BA equipment pool.
- Be responsible for BA wearer welfare and establish an appropriate area for hydration, rest and recuperation.
- Recommit SDBA (for second wear only) wearers if no fresh BA wearers are available, ensure they have had the minimum rest and recovery period specified in paragraph 23.12 and there is no reason to doubt the wearer's fitness.

Note: BA wearers (both SDBA and EDBA) must only be used for a 'second wear' in exceptional circumstances (i.e. to save a saveable life).

- Set up a BA maintenance area away from the scene of operations (ensure BA maintenance resource pack is available – RPE resource pack number 11 on OSU).
- Ensure any 'DTW' procedures and notifications are followed.
- Use an additional BA sector board to record other Brigade's/agencies' BA commitment/availability at the incident.

30.7 The following resources, in line with the conditions encountered by BA teams and prevailing weather conditions (including those forecast), may be considered in a BA team rest and recovery area (the list below is not exhaustive):

- Covered structure.
- A means to provide cooling assistance to BA wearers.
- Thermal blankets.
- Benches and tables.

- Lighting.
- First-aid kit.
- Resuscitation equipment.
- Automatic defibrillator.
- Dry clothing.
- Drinking water and cups.
- Toilets.
- Positive pressure ventilation fans.
- Medical assistance.

31. Respiratory protective equipment logistics officer (RPELO)

31.1 The duty RPELO is drawn from personnel of the Operational Support Group (OSG) and provides on call assistance, advice and incident support on a 24/7 basis.

31.2 The RPELO can be contacted via the logistics manager in RMC or Control.

31.3 The main roles of the RPELO are to:

- Co-ordinate the operations of OSG and manage its resources in the event of a major or catastrophic incident.
- Provide support and resources to the incident ground such as bulk supplies of breathable air and/or hot cutting oxygen cylinders.
- Provide guidance in matters relating to RPE.
- Manage and deploy the OSG personnel recall system.
- Assist accident investigators with RPE related safety events.
- Resolve issues relating to correctly fitting RPE (face-fit testing).

31.4 The RPELO can be identified on the incident ground by a yellow surcoat with the word 'RPELO' on the back and front.

31.5 An RPE support unit crewed by OSG personnel, carrying bulk supplies of cylinders and related equipment can be mobilised by the duty RPELO or on request from an incident. When attending incidents these personnel are identified by a yellow surcoat with the words 'RPE Support' on the back and front.

31.6 The RPE support unit provides an emergency response and has an approximate maximum attendance time of 60 minutes during normal working hours and 90 minutes at night and at weekends.

32. Additional reading – other documents national and policy

- National Operational Guidance Programme – Foundation for Breathing Apparatus. https://www.ukfrs.com/foundation-knowledge/foundation-breathing-apparatus
- National Operational Guidance Programme – Breathing Apparatus Training Specification. https://www.ukfrs.com/training-specification/breathing-apparatus
- Control of Substances Hazardous to Health Regulations: 2002.
- Ionising Radiations Regulations: 2017.
- Control of Lead at Work Regulations: 2002.
- Control of Asbestos Regulations: 2012.
- Dangerous Substances and Explosive Atmospheres Regulations: 2002.
- Confined Spaces Regulations:1997.
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations: 2013.

33. Training notes

- BA 001 Introduction to Respiratory Protective Equipment.
- BA 002 PSS 7000 BA Set.
- BA 003 Cylinder and Ancillary Equipment.
- BA 004 Wearer's Guidance.
- BA 005 Safe Movement: Doors, Stairs and Land Marking.
- BA 006 Search and Rescue Procedures.
- BA 007 BA Entry Control.
- BA 008 BA Entry Control – Telemetry.
- BA 009 'B' Test.
- BA 010 Donning, Starting and Closing Down.
- BA 012 'A' Test.
- BA 017 Emergency Procedures.
- BA 018 BA Communications Equipment.
- BA 022 Emergency Procedures – Second Set.
- BA 023 Cylinder and Consumption rate Calculations.
- BA 027 Respirator Face mask.
- GL 001 Guideline Procedure.
- HAZ 002 Gas Tight Suits.

34. Glossary RPE generic terms

- ADSU - Automatic distress signal unit.
- BA - Breathing apparatus.
- C1 - C1 BA radio interface.
- Comms - Communications.
- Comms-Op - Communication operative.
- CPC - Chemical protective clothing.
- CU - Command unit.
- DSU - Distress signal unit (automatic or manually operated).
- DPFM - Dual purpose face mask.
- EDBA - Extended duration breathing apparatus.
- ECB - Entry control board.
- ECO - Entry control operative.
- ECP - Entry control point.
- ECPS - Entry control point supervisor.
- EMU - Electronic monitoring unit.
- EP - Entry point
- ESA - Einheit Stecken Anschluss filter (meaning standard plug-in connection).
- FC - Filter cartridge.
- FRU - Fire rescue unit.
- GDM - Gas detection monitor
- GTS - Gas tight suit.
- HMEPO - Hazardous materials and environmental protection officer.
- HSE - Health and Safety Executive.
- HUB - Telemetry HUB.
- IC - Incident commander.
- IS - Intrinsically safe.
- LCD - Liquid crystal display.
- LED - Light emitting diode.
- LPW - Low pressure warning (can be electronic or pneumatic in operation).
- LPM - Litres per minute.
- LTS - Liquid tight suit.
- OIC - Officer in charge.
- OSG - Operations Support Group (new department name for PEG and BDC)

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- OSU - Operational support unit.
- POMS - Purchase order management system.
- RA - Risk assessment.
- RPE - Respiratory protective equipment.
- RPELO - Respiratory protective equipment logistics officer.
- SA - Scientific advisor.
- SAI - Senior accident investigator.
- SDBA - Standard duration breathing apparatus.
- TAP - Turn-around point.
- TAT - Turn-around time.
- TNR - Test not recorded.
- TOW - Time of warning (audible and visual warnings to indicate end of working duration).
- TTW - Time to warning (end of working duration and the start of safety margin).
- USAR - Urban search and rescue.

DRAFT

Appendix 1: Appendix 1: BA aide memoire 1, 2, 3, 4, 5, 7, 10, 11, 12, 13 and 14

(Note: aide memoire number 6 can be found in policy number 376 - Cylinder procedure, aide memoire numbers 8 and 9 can be found in policy number 759 – protection against particulates – operational procedure).

BA AIDE MEMOIRE No.1

Stage 1 Entry Control Operative Duties

LFB

The Entry Control Operative (ECO) is responsible for one Entry Control Board (ECB) only and a **maximum of six BA wearers.** The ECO will not be involved with or be allocated any other tasks.

Setting up Entry Control Point (ECP)

1 Establish ECP under direction of Incident Commander (IC) or Sector Commander. Set up ECB and HUB, complete inscription panel, and ensure correct time is displayed. Don 'ECO' surcoat. Wear a Gas Detection Monitor (GDM).

2 Provide Immediate Emergency Care (IEC) pack (resuscitator).

3 Switch radio to BA channel (if BA Comms Op is nominated switch to command channel) – Comms-Op duties see aide memoire No. 4.

4 Prompt IC to provide BA emergency team when resources permit.

5 Record the key information from BA team briefing/debriefing onto ECB/Forward Information Board (FIB).

First wear (new entry)

6 Check BA team RPE/PPE no exposed skin. Receive BA tallies, check wearer and cylinder pressure (**min 240 bar**) and enter 'time in' using the ECB clock.

7 Enter BA tallies into ECB ensuring telemetry signal is achieved (if manual calculations are required see BA aide memoire No.11) bracket BA teams together. Write TL against the BA Team Leader.

8 Enter BA team location in the inscription panel of ECB and enter task, extinguishing media/resources.

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First wear (new entry) (continued)

9 Inform BA team(s) of ECP call sign (ECP alpha, ECP bravo etc). Confirm BA team(s) call sign (BA team alpha one, BA team alpha two etc) and record on the inscription panel of ECB. Carry out radio comms check with BA team(s).

10 At suspected/confirmed radiation incidents record EPD reading in the 'IN' section on the back of the BA tally.

Withdrawal of and close down of BA teams

11 Inform IC or Sector Commander if BA teams are being withdrawn prematurely.

12 Ensure BA wearers have closed down/purged BA set prior to return of BA wearers' tallies and direct them to report to the IC or Sector Commander for debriefing.

13 At suspected/confirmed radiation incidents record EPD reading in the 'OUT' section on the back of the BA tally. Inform IC or Sector Commander of any change.

14 BA wearer requires decon, decon director may request wearer's Distress Signal Unit (DSU) key.

Re-entry

15 If after withdrawing and closing down, in exceptional circumstances a BA team can re-enter to perform a specific task (other than firefighting) provided that:

- BA team members have at least 210 bar cylinder pressure. Pressures in excess of 210 bar will be recorded on the BA tally as 210 bar.
- Record 'time in' on BA tally and Time of Warning (TOW) for 15 minutes later on the inscription panel. Words 're-entry' and task performed entered on the inscription panel (**the BA team will be recommitted using manual calculations**).

Second wear (new entry)

16 In exceptional circumstances BA wearers can be used for a second wear if no fresh BA wearers are available.

17 In addition to 'first wear (new entry)' procedure above the ECO will:

- Record 'second wear' on the inscription panel of the ECB.
- Record 'test not recorded' on the inscription panel of the ECB.

Committing BA emergency teams

18 It is essential that the ECO notifies the officer responsible for the ECP or IC that a BA emergency exists. The officer responsible for the ECP must brief the BA emergency team(s) prior to committing them.

19 BA emergency teams must be committed using an additional ECB annotated 'BA emergency team'. Operated by an additional ECO.

20 ECO must inform officer responsible for the ECP/IC if:

- BA team/wearer has not returned to ECP by TOW and cannot be contacted.
- DSU is heard or is indicated to have been actuated on the ECB.
- Where indications suggest BA team or wearer are in distress or danger.
- Prolonged and unexplained breakdown in communications has occurred.
- BA team or wearer has requested assistance.

DTW/BA defects

21 If a BA wearer reports a BA set defect or a Distress to Wearer (DTW) occurs inform IC/Sector Commander and give nominated officer BA aide memoire No. 5.

BA AIDE MEMOIRE No.2

Stage 2 Entry Control Point Supervisor Duties

(Minimum role: Leading Firefighter)

LFB

Stage 2 procedures are to be used when any of the following apply:

- More than one Entry Control Point (ECP) is required.
- More than six wearers are deployed into the risk area at any one time.
- BA operations are likely to be complicated or protracted.
- Guidelines are required.
- Risks presented demand a higher level of BA emergency provision involving the need for BA emergency teams.
- Extended Duration Breathing Apparatus (EDBA) is required.
- BA telemetry repeater(s) are deployed.
- Confirmed basement fire (size/layout indicate Stage 2 is appropriate).
- BA emergency team(s) have been committed.
- Chemical Protective Clothing (CPC) wearers are out of the line of sight of the ECP.
- When other agencies are being committed in BA.

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Entry Control Point Supervisor (ECPS) duties

1 Stage 1 Entry Control Operative (ECO) handing over to ECPS will remain to carry out ECO role.

2 When nominated the ECPS will:

- Don 'ECPS' surcoat – insert available from Command Unit (CU).
- Ensure each Entry Control Board (ECB) has a dedicated ECO.
- Ensure ECPS's name is recorded on the ECB below that of the ECO.
- Nominate Comms-Op and hand them BA aide memoire No 4.
- Switch your incident ground radio to the incident command channel.
- Ensure that the clock on any additional ECB is synchronised with the initial ECB before they are brought into use.
- Nominate BA emergency team (BAET) and have them standing by at an ECP.
- Ensure that a BA emergency team is at least the size of the largest BA team committed (with a ratio of two BAET to one BA wearer when resources allow) and rigged to at least the same level of PPE and RPE. The BA emergency team must have one 'Emergency Air Supply Equipment (EASE) bag' per two monitored BA wearers.
- Ensure an additional ECB and HUB is supplied by the BA emergency team.
- A BA emergency team that is committed must be replaced immediately.
- Nominate EDBA emergency team and have them standing by before committing an EDBA team.
- Inform Incident Commander (IC) or Sector Commander of the number of BA wearers committed, and when additional BA wearers are required.
- Ensure that briefing of BA teams take place before they are committed.
- If BA team(s) exit the risk area and report to an ECP different from the ECP that they were committed through, the committing ECP must be informed, and the BA team(s) sent back to their original ECP.

BA Sector

- Inform BA sector of the number of BA wearers committed and when additional BA wearers are required.
- Ensure that briefing of BA teams take place before they are due to be committed. Record the time of the request on the ECB.
- Ensure exiting BA teams return to BA sector for further instruction following de-brief.

BA Guidelines

If BA guidelines are used the ECO under supervision of the ECPS will:

- Attach main guideline tallies to main guideline(s) and if used, branch guideline tallies to branch guideline(s).
- Ensure main guideline(s) is secured at the ECP and that details are entered on the appropriate ECB.
- Confirm that all BA teams are made aware when a main or branch guideline is in use or is to be laid.

BA AIDE MEMOIRE No.3

BA Sector Commander Duties

(Minimum role: Station Commander)

LFB

Responsibility for BA sector may, on the instruction of the Incident Commander (IC), be passed to a more senior officer as the incident develops. In these circumstances the initial BA Sector Commander will remain with the senior officer to assist.

The BA sector function should be supported by the crew of a pumping appliance and command unit.

The duties of a BA sector commander are to:

- Don 'BA Sector Commander' surcoat – available from Command Unit (CU).
- Set up a BA communications network with each Entry Control Point Supervisor (ECPS) and the IC. Ensure fire ground radio is switched to the incident command channel. Do not use the BA channel.
- Ensure the BA sector board clock is synchronised with the initial ECB clock.
- Identify the location of each Entry Control (ECP), record the name of each ECPS on the BA sector board/Command Support Software (CSS).
- Ensure Stage 2 entry control is applied to all Entry Control Points (ECPs) and that all ECPs are correctly resourced.
- Regularly update the IC with an accurate assessment of BA resources, requirements, and operational activities.
- Establish and record the requirements for relief BA teams required by ECPS.
- Record and update the information on the BA sector board. Maintain suitable and sufficient resilient records.

- Have available sufficient BA wearers to provide relief teams required by each ECPS and dispatch them to arrive at the ECP in sufficient time before they are required.
- Provide BA emergency team to stand by at each Stage 2 ECP. In addition, a reserve BA emergency team should standby at BA sector when resources permit.
- Establish and monitor a BA equipment pool.
- Be responsible for BA wearer welfare and establish an appropriate area for hydration, rest, and recuperation.
- Re-deploy or rest and recommit BA wearers who have already been committed to the incident.
- Recommit Standard Duration Breathing Apparatus (SDBA) (for second wear only) wearers if no fresh BA wearers are available, they have had the minimum rest and recovery period (following ambient BA wear 30 minutes rest and consume 500ml of cool water, following hot and humid BA wear 60 minutes rest and consume 1000ml of cool water) and there is no reason to doubt the wearers fitness. **BA wearers (both SDBA and Extended Duration Breathing Apparatus EDBA) must only be used for a 'second wear' in exceptional circumstances.**
- Set up BA maintenance area away from the scene of operations. Ensure BA maintenance resource pack is available – RPE resource pack number 11 on Operational Support Unit (OSU).
- Ensure any 'Distress to Wearer (DTW)' procedures and notifications are followed.
- Use an additional BA sector board to record other Brigades/agencies BA commitment/availability at the incident.

BA AIDE MEMOIRE No.4

BA Communications Operative

LFB

The duties of a BA Comms-Op are to:

- Don the 'BA Comms-Op' surcoat – insert available from Command Unit (CU).
- Switch incident ground radio to the channel being used by BA teams.
- Stay next to and liaise with the Entry Control Operative (ECO) and Entry Control Point Supervisor (ECPS) for their respective Entry Control Point (ECP).
- Verify call signs and test communications with BA team(s) prior to entry into the risk area.
- Monitor BA team progress within the risk area.
- Inform and update the officer responsible for the ECP of any relevant information received relating to the progress of BA operations or hazards encountered.
- Inform the officer responsible for the ECP of any prolonged breakdown in communications with BA teams (prompt Incident Commander (IC) or Sector Commander to consider the use of telemetry or radio repeaters).
- Pass messages relating to status changes of BA team to the ECO for recording onto the Entry Control Board (ECB). Consider use of BA communications board at four pump incidents and above (carried on Operational Support Unit (OSU)).
- Only communicate with BA teams committed from their ECP.
- Respond immediately to priority messages.
- Prompt BA teams to take regular pressure readings if required (if BA team have gone out of telemetry signal range or have been committed using manual calculations).
- Inform BA team if there is any relocation of the ECP.

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BA Aide Memoire No.4 BA Communications Operative

In an emergency or where a distress signal is heard or indicated on the ECB, the BA Comms-Op must inform the ECO and ECPS (under stage 2) of the emergency and attempt to:

- Identify and locate the BA team in distress.
- Assist the ECO or ECPS and IC or Sector Commander to co-ordinate rescue operations using BA emergency teams and BA teams already committed.

NOTE:

The BA Comms-Op will not be allocated or undertake any other BA entry control duties.

BA AIDE MEMOIRE No.5

Distress to Wearer Procedure (DTW)

LFB

Incident Commander (IC) to ensure DTW procedure is implemented following BA wearer distress.

If a DTW incident occurs the IC must inform Control and implement the procedure detailed below.

1 **BA set impounded by nominated officer**

2 Record Control Module pressure and number of completed turns to close cylinder valve. Replace Control Module key and tally ensuring the tally identification number corresponds with Control Module identification number.

NOTE: Do not interfere with the BA set in any other way.

3 Request equipment impound box and Senior Accident Investigator (SAI) via Control. Check the forms in the impound box.

4 Put the BA set in a secure place and keep under observation until SAI arrives.

NOTE: If the BA set is contaminated, put it in a plastic bag.

5 Fill out the forms that are supplied with the equipment impound box.

SAI is responsible for:

- Putting set in equipment impound box.
- Sealing box with security tags.
- Completing defects sheet and handover sheet.
- Placing envelope on lid.
- Sending direct to Operations Support Group (OSG) via day van service.

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BA AIDE MEMOIRE No.7

Connecting an Entry Control Board (ECB) to a HUB

LFB

A HUB can support up to 3 ECBs and up to 18 BA wearers.

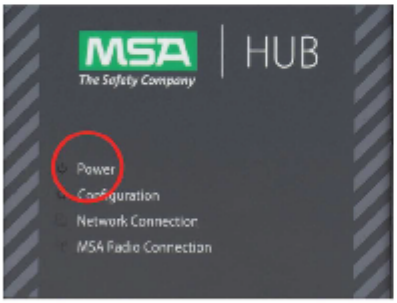
It is good practice to always bring a HUB when setting up entry control, but there may be exceptional circumstances when:

- A HUB becomes defective immediately prior to use.
- An ECB becomes defective before/during use.

In the event of a complete failure of all BA telemetry, use manual calculations of duration (see Aide Memoire No.11).

In all instances of equipment failure, arrange replacement equipment with Operations Support Group as soon as practicable.

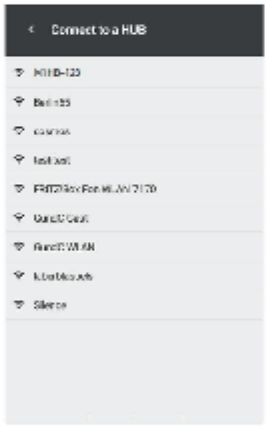
First time connection of an ECB and HUB



Switch on the HUB by pressing the On/Off button on the right panel of the device and wait for the HUB to boot up (solid green power light on the front of the HUB).

First time connection of an ECB and HUB (continued)

Switch on/wake up the ECB by pressing the green button (long press to switch on, short press to wake up) on the right of the device.



On first boot of the ECB tap on the HUB ID that you want to connect to. If the ECB is already on, navigate to the 'Change Wi-Fi' button in the menu options.

The HUB ID will match the barcode on the rear of the HUB (e.g. M1HB–1234).

Enter the WIFI password to connect the ECB to the HUB.

PASSWORD = lfb39536

Note: Once an ECB is connected to a HUB, the password is no longer required for reconnection.

BA AIDE MEMOIRE No.10

BA Entry Control Manual Log On and Off

LFB

Manual log on (suspected BA tally RFID fault)

An unsuccessful log on is identified by the message '**Could not connect to the M1 control module**' or '**Connection failed**'.

The Entry Control Operative (ECO) shall carry out the following manual 'log on' procedure:

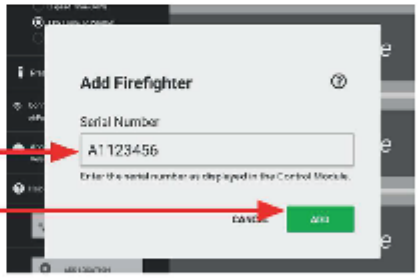
1 Tap the menu icon located on the top left side of the display (three horizontal lines next to the clock).

2 Tap the 'Add firefighter' button.

3 Tap the 'Serial number' box to reveal the number keypad.

4 Enter the alphanumeric serial number located on the back of the tally.

5 Tap the 'Add' button (the 'Add' button will highlight in green when a valid serial number is entered).



An audible beep will be heard from the Control Module and the Entry Control Board (ECB) will display a prompt to create a new team or add to an established team if the manual log on is successful.

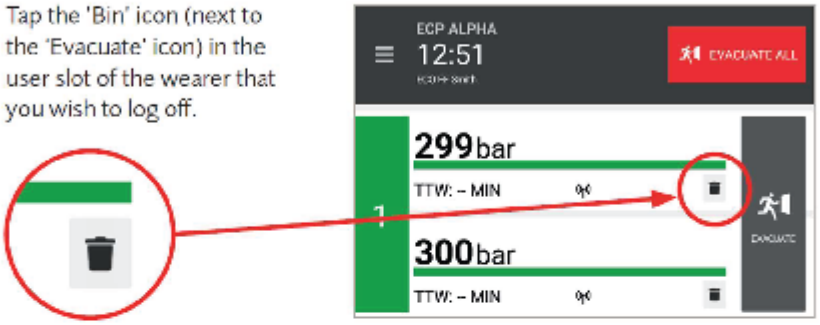
NOTE:

If the above is not achieved this indicates that the BA set is defective and should be taken off the run.

Manual log off

The ECO shall carry out the following manual 'log off' procedure:

1 Tap the 'Bin' icon (next to the 'Evacuate' icon) in the user slot of the wearer that you wish to log off.



2 When the 'Remove Firefighter' message is displayed, tap the red 'Remove' button.

NOTE:

The BA set must be purged of air and the Control Module shut down to completely disconnect wearer from the system.

BA AIDE MEMOIRE No.11

BA – Using Manual Calculations of Duration

LFB

Committing BA teams using Manual calculation of duration

1 If, on starting BA operations, all BA wearers are unable to achieve telemetry signal connection, the Entry Control Operative (ECO) on the authority of the Incident Commander (IC) or Sector Commander will commit BA teams using manual calculations.

- Check BA team are correctly rigged in RPE/PPE with no exposed skin.
- Receive BA tallies, check wearer and cylinder pressure information are correctly entered and enter 'time in' using the Entry Control Board (ECB) clock.
- Enter BA tallies into ECB, calculate 'Time of Warning' (TOW), bracket BA team together, and write the lowest TOW outside the brackets on the inscription panel.
- Enter BA team location on the inscription panel of the ECB.
- Carry on as per BA aide memoire No.1.

Manual calculations of duration for BA teams already committed

2 If during operations an ECB display fails (LCD clock must still operate) and no replacement ECB is available, the ECO will:

- Use radio communications to contact and verify BA team safety, wellbeing and request status and pressure readings.
- Inform the IC or Sector Commander that an ECB failure has occurred, and that BA team welfare has been established, then prompt the IC or Sector Commander that BA teams should be withdrawn from the risk area unless a risk assessment allows the BA team to carry on with the task.
- Using original 'time in' from BA tallies entered into the ECB, calculate TOW and bracket BA team together and write the lowest TOW outside the brackets.

Manual calculations of duration for BA teams already committed (continued)

3 Use radio communications to inform BA team of TOW and request regular pressure reading updates from BA team leader.

4 BA entry control operations will be telemetry or manual (calculations) and will not be mixed on any one ECB.

How to use manual calculations

1 Use pressure reading entered on the BA tally and cross reference with the duration table (below). Take note of the 'Working duration' (minutes) columns against the pressure shown under the 'Cylinder pressure' column.

2 Add the time in minutes (Working duration) noted to the time displayed on the ECB clock and write this TOW against the wearers BA tally on the inscription panel of the ECB. Bracket the BA team together and write the lowest TOW outside the bracket.

EXAMPLE:

SDBA pressure reading 300 bar and ECB time 12:00hrs.

12:00hrs + 26 minutes = TOW 12:26hrs.

MANUAL TIME TO WHISTLE – 300 BAR

Cylinder pressure	Working duration (minutes)		
BAR	SDBA 6.8L	EDBA 13.6L	TAP
300	26	45	195
290	25	43	190
280	23	41	185
270	22	39	180
260	21	37	175
250	20	35	170
240	19	32	165
RE–ENTRY			
210	15	15	

Hard work will reduce duration

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BA AIDE MEMOIRE No. 12

Maintaining Telemetry Signal – Deployment Options

LFB

Loss of signal following successful 'log on' to Entry Control Board (ECB)

Ensure ECB is mounted on tripod correctly and HUB is sited as to send and receive messages from BA wearers and ECB in relation to operations.

↓

Loss of signal?

↓

Deploy repeater (Pump Ladder (PL)/Fire Rescue Unit (FRU)).

↓

Loss of signal?

↓

Deploy repeater (PL/FRU).

↓

Loss of signal?

↓

Deploy repeater (PL/FRU).

↓

Loss of signal?

↓

Deploy repeater (PL/FRU).

NOTE:

Up to four repeaters can be deployed at an entry control point in any order as required.

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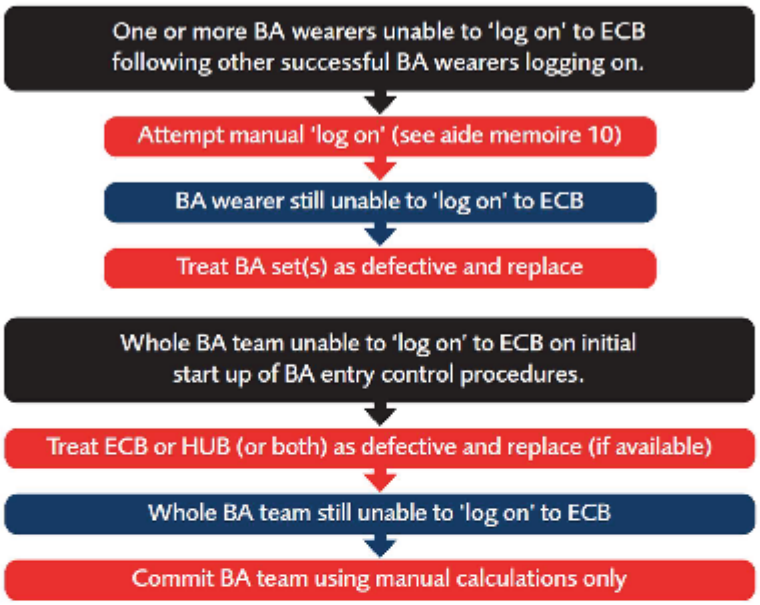
Aide memoire No.12 BA – Maintaining Telemetry Signal – Deployment options

How to resolve initial BA set telemetry 'log on' failure(s)



NOTE:

- Entry Control Operative (ECO) must contact BA teams via radio when telemetry signal is lost, and BA teams should withdraw if both radio and telemetry signals are lost.
- Basement, sub-surface, and high-rise structures have the potential to severely reduce the telemetry signal propagation.
- Stone construction structures have the potential to severely reduce the telemetry signal propagation.
- Premises found to have telemetry signal propagation issues during incidents/ visits should have this information entered on the Operational Risk Database for future use.
- Respiratory Protective Equipment Logistics Officer (RPELO) is available via Resource Management Centre (RMC) for telemetry signal related advice during large or protracted incidents.

BA AIDE MEMOIRE No.13

Emergency Firefighter Decontamination

LFB

Personnel in firefighting PPE

	TASK	OPERATIVE
	NOMINATE ROLES: **Decontamination Director** (minimum leading firefighter) **Two decontamination operatives** **One support officer** (as a minimum)	**Incident Commander/** **Decontamination Director**
1	Don full BA facemask with P3 filter and nitrile gloves (minimum level of PPE) – if time permits, don Liquid Tight Suit (LTS).	Decontamination operatives
2	Lay out a salvage sheet beside the wearer to provide a 'clean path' onto which to stand. Also provide a charged hose reel set on flush.	Support officer
3	If the wearer is donned in BA, maintain the facemask seal, and remove the BA set from the wearers shoulders – one operative should continue to support the weight of the BA set whilst the second operative continues the disrobe process.	Decontamination operatives
4	Remove wearers helmet and gloves and place clear of wearer – instruct wearer not to touch contaminated firefighting PPE with unprotected hands, even in an attempt to assist the disrobe.	Decontamination operatives

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Aide memoire No.13 Emergency Firefighter Decontamination

	TASK	OPERATIVE
5	Unfasten Velcro on fire tunic and then unfasten zip. Remove tunic from shoulders – ensuring tunic is turned inside out as removed.	Decontamination operatives
6	Grasp the cuff of the tunic and instruct the wearer to withdraw their arm – remind them of the need to work their thumb out of the thumb loop and then place their arms across their chest without coming into contact with contaminated clothing. Repeat with other arm.	Decontamination operatives
7	Keep tunic inside out and place clear of the wearer.	Decontamination operatives
8	Pull firehood over the head (back to front) being careful not to dislodge BA facemask. Allow firehood to remain looped around the supply hose of the BA set.	Decontamination operatives
9	Provide disrobe pack and wearers footwear if available.	Support officer
10	Remove overtrouser braces from shoulder and allow to fall to waist.	Decontamination operatives
11	Roll down leggings – inside out – to boot level. Grasp each boot in turn and instruct wearer to step from boot onto salvage sheet.	Decontamination operatives
12	Remove wearers facemask and reset the first breath button.	Decontamination operatives

Aide memoire No.13 Emergency Firefighter Decontamination

TASK		OPERATIVE
13	Move away from decontamination zone for assessment by Incident Commander (or Hazardous Materials and Environmental Protection Officer (HMEPO)).	Wearer
	If wearer reports any discomfort, such as irritation or burning sensation to the skin then continue to disrobe and shower using hose reel.	Incident Commander/ Decontamination Director
14	Dry and re-robe – use the re-robe pack provided (if available).	Decontamination operatives
	Consider medical attention for wearer dependent on level and type of contaminant and any reported signs or symptoms.	Incident commander
15	All firefighting PPE should be double bagged and labelled 'for examination by SA' when resources permit, BA to be double bagged.	Decontamination operatives

BA AIDE MEMOIRE No.14

Suggested working abbreviations for use on entry control boards

LFB

It is recommended that Entry Control Operatives (ECOs) use the following abbreviations on entry control boards (ECBs) to achieve consistency across entry control points and other Fire Rescue Services (FRS). All firefighters at an incident should use the same abbreviations.

NOTE:

Whilst working abbreviations may be deemed appropriate for use on the ECB any additional BA records maintained at the entry control point or at a BA sector command should be written in full (consider use of a BA comms board).

BGL	Branch guideline (1,2,3,4)
CFFT	Compartment firefighting team
CL	Casualty located
COMMS	Communication equipment; including handheld radio and C1/BARIE
CSP	Compartment search procedure
DSP	Directional search procedure
FFT	Firefighting team
HM	Hose management
HRJ	Hose reel jet
J	Main jet/branch (45mm, 70mm)
LH	Left-hand (denoting orientation of search)
MGL	Main guideline (A, B)
RE	Re-entry
RH	Right-hand (denoting orientation of search)
SRT	Search and rescue team
TAP	Turn around pressure/ point
TAT	Turn around time
TIC	Thermal image camera
TL	Team leader
TOW	Time of warning
TTW	Time to warning

Entry control board abbreviation examples

Example 1: House fire (stage 1)

ECB ENTRY	WRITTEN IN FULL
BA team alpha 1: **FFT** 45mm **J RH DSP** 1st floor bedroom.	BA team alpha 1: firefighting team, 45mm jet, right-hand, directional search procedure, 1st floor bedroom.
BA team alpha 2: **HM** for alpha 1 **RH DSP** 1st floor bedroom.	BA team alpha 2: hose management for BA team alpha 1, right-hand directional search procedure, 1st floor bedroom.

Example 2: Commercial fire
(stage 2, multiple entry control points and BA guidelines in use)

ECB ENTRY	WRITTEN IN FULL
BA team alpha 3: **CFFT** for alpha 4, 45mm **J RH MGL A** ground floor.	BA team alpha 3: compartment firefighting team, supporting BA team alpha 4, 45mm jet, right-hand, following main guideline 'A'.
BA team alpha 4: **MGL A. RH**-lay ground floor.	BA team alpha 4: laying main guideline 'A' on right-hand lay ground floor.
BA team alpha 5: **HM** for alpha 3, 45mm **J RH MGL A** ground floor.	BA alpha team 5: hose management for BA team alpha 3, 45mm jet, right-hand, following main guideline 'A', ground floor.
BA team bravo 1: **SRT LH CSP** 45mm **J** 1st floor.	BA team bravo 1: search and rescue team, left-hand, compartment search procedure, 45mm jet on 1st floor.
BA team bravo 2: **HM** for bravo 1 **LH** 45mm **J CSP** 1st floor.	BA team bravo 2: hose management for BA team bravo 1, Left-hand, 45mm jet, compartment search procedure on 1st floor.

Appendix 2: Don, start, exchange of air and close down BPA

Best Practice Assessment Review Sheet			MSA M1	
Name:	Pay No:	Base:	Date:	

MSA M1 Breathing Apparatus – DON and START UP			
DON			
EV	**CHECK IN ORDER**	**P**	**NYP**
1	**REMOVE** fire helmet.		
2	**CONNECT** face mask to shoulder strap snap hook and **CHECK** LGDV is securely connected to the face mask. *Note: Use top upper head harness buckle metal loop to attach mask to snap hook.* **DON** the BA set.		
3	**SECURE** and **ADJUST** the waist buckle and **ADJUST** the shoulder straps. *Note: Most of the BA set weight should be carried on the hips.*		
4	**PRESS** the first breath button (red) on the LGDV to ensure the LGDV is locked.		
5	**HOLD** and **POSITION** the Control Module as required, and **FULLY** open the cylinder valve. *Note: ENSURE there is the minimum entry pressure of 240 bar in the cylinder.*		
6	**REPLACE** fire helmet and **PLACE** fire gloves into leg pocket.		

DRAFT

START UP			
EV	CHECK IN ORDER	P	NYP
7	**REPORT** to the committing officer for briefing.		
8	**REMOVE** the fire helmet.		
9	**DON** the face mask and adjust the head harness (lower two straps first, then the middle two). **BREATHE** normally.		
10	**TEST** the constant flow of air to the face mask by briefly operating the purge button on the front of the LGDV **ONCE ONLY**.		
11	**TAKE** a deep breath and **HOLD**. **LISTEN** for any outward leakage from the face mask (approximately 8 seconds) and adjust mask if required.		
12	**REPLACE** fire hood, fire helmet and fire gloves, **ENSURE** all PPE is worn and the fire hood is donned correctly. *NOTE: Fire hood should be tucked behind C1 comms interface.*		
13	**CHECK** that your partner/team are ready (PPE and RPE buddy check).		
14	**REPORT** to ECO and hand in BA tally (hold up Control Module and state rank, name and cylinder pressure), ensure you have telemetry signal before entering the risk area. *Note: If all BA team members are unable to achieve initial telemetry signal, then use ECB manual duration tables.*		

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MSA M1 Breathing Apparatus – EXCHANGE OF AIR PROCEDURE			
EV	**CHECK IN ORDER**	**P**	**NYP**
15	**RECIPIENT** holds up Control Module towards the Donor stating, **"I NEED AIR"**.		
16	**DONOR** checks own Control Module to ensure they have sufficient air to assist.		
17	**DONOR** informs Recipient **"I CAN GIVE YOU AIR"**.		
18	**DONOR** removes rescue hose from securing straps of own BA set and removes protective blank caps.		
19	**RECIPIENT** removes rescue hose from securing straps of own BA set and removes protective blank caps. *Note: Donor to assist if recipient is unable.*		
20	**DONOR** takes recipients rescue hose and makes the connection. **BOTH** wearers breathe normally throughout procedure.		
21	**RECIPIENT** operates manual DSU.		
22	**RECIPIENT** links arms with Donor.		
RESET EQUIPMENT, REVERSE ROLES OF BA TEAM MEMBERS AND CONTINUE			
EV	**CHECK IN ORDER**	**P**	**NYP**
23	**RECIPIENT** holds up Control Module towards the Donor stating, **"I NEED AIR"**.		
24	**DONOR** checks own Control Module to ensure they have sufficient air to assist.		
25	**DONOR** informs Recipient **"I CAN GIVE YOU AIR"**.		
26	**DONOR** removes rescue hose from securing straps of own BA set and removes protective blank caps.		
27	**RECIPIENT** removes rescue hose from securing straps of own BA set and removes protective blank caps. *Note: Donor to assist if recipient is unable.*		
28	**DONOR** takes recipients rescue hose and makes the connection. **BOTH** wearers breathe normally throughout procedure.		
29	**RECIPIENT** operates manual DSU.		
30	**RECIPIENT** links arms with Donor.		
DISCONNECT WEARERS – ENSURE THAT PROTECTIVE BLANK CAPS ARE REPLACED			
EV	**CONFIRM VERBALLY WITH INDIVIDUALS**	**P**	**NYP**
31	If sufficient air is **AVAILABLE**, team will leave the incident and report to the ECO.		
32	If sufficient air is **UNAVAILABLE**, team to adopt the entrapped procedure.		

MSA M1 Breathing apparatus – CLOSE DOWN			
EV	**CHECK IN ORDER**	**P**	**NYP**
33	**REPORT** to the ECO and await instruction to close down.		
34	**REMOVE** fire helmet and fire gloves. Avoid touching the outside of the fire gloves where possible. **DON** nitrile gloves before handling contaminated PPE/RPE.		
35	**PULL** fire hood over the head (from back to front) being careful not to dislodge the BA face mask. Allow the fire hood to remain looped around the in-line LGDV hose of the BA set.		
36	**HOLD** breath, **PRESS** the red LGDV button, **RELEASE** head harness straps and **REMOVE** face mask by grasping the LGDV and lifting the face mask over the top of head. *Note: If you are unsure which button is the first breath button, hold LGDV in place and quickly press both.*		
37	**EXTEND** all head harness straps.		
38	**CONNECT** the face mask to the shoulder strap snap hook, **REPLACE** fire helmet and **PLACE** fire gloves into left leg pocket.		
39	**CLOSE** cylinder valve and **OPERATE** the purge button of the LGDV. *Note: The BA set must be closed down with all pressure removed to ensure BA set is logged off of the telemetry system correctly.*		
40	**COLLECT** BA tally from the ECO. **REPLACE** key into the Control Module.		
41	**DOUBLE PRESS** either green mode button on the Control Module to cancel the pressure alarm.		
42	**DOUBLE PRESS** either green mode button again on the Control Module to enter standby mode.		
43	**REPORT** to the committing officer for debrief.		
44	**POST FIRE PRE-CLEAN** BA set, face mask and bag (wear half mask fitted with P3). *Note: Follow fire contaminants procedure if required.*		
45	**RETURN** the BA set to the appliance, **PLACE ON CHARGE** and **RE-STOW** the face mask in its bag.		

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Assessors Notes (Don, Start and Close Down)

EV 2, 5, 7, 11, 12, 14, 33, 35, 36, 37, 39, 40, 41, 42, 43 (shaded NYP) are risk critical evolutions.
Candidate failure to address these areas correctly must initiate urgent training and reassessment.

EV 1, 3, 4, 6, 8, 9, 10, 13, 34, 38, 44, 45 (un-shaded NYP) are non-risk critical evolutions.
Candidate can be prompted by the assessor.

Assessors Notes (Exchange of Air)

EV 16, 20, 21, 24, 28, 29 (shaded NYP) are risk critical evolutions.
Candidates failure to address these areas correctly must initiate urgent training and reassessment.

EV 15, 17, 18, 19, 22, 23, 25, 26, 27, 30, 31, 32 (un-shaded NYP) are non-risk critical evolutions.
Candidates can be prompted by the assessor.

Note: When a BA set has been used for the sole purpose of demonstrating this don, start, exchange of air and close down the wearer will not have to complete a 'B' test. If pressure has dropped below **270** bar, carry out a cylinder change followed by an 'A' test.

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Appendix 3: Entry control operative BPA

Best Practice Assessment Review Sheet			MSA M1
Name:	Pay No:	Base:	Date:

MSA M1 - Entry Control Operative			
Note: This BPA requires entry control and at least one BA team to be established.			
EV	**CHECK IN ORDER**	**P**	**NYP**
1	**DISCONNECT** the ECB and HUB from charge and remove from stowage.		
2	Visually **INSPECT** the HUB and Identify: 1. There is no damage to any of the HUB or its components. 2. The antenna, charging connection, carrying strap and protective feet are fitted correctly. 3. The HUB is switched on and the power LED is illuminated. 4. The battery status of the HUB is sufficient.		
3	Visually **INSPECT** the ECB and identify: 1. There is no damage to the ECB or its components. 2. The carrying strap and protective cover are fitted correctly. 3. The battery status of the ECB is sufficient.		
4	**SET UP** the ECB on the tripod and bracket adapter. **POSITION** the HUB so that it has line of sight to the entry point.		
5	**DON** ECO surcoat and gas detection monitor (GDM).		
6	**COMPLETE** the location label text boxes on the ECB.		
7	**WAKE** the ECB and ensure it is connected to the HUB.		
8	**SYNCHRONISE** the LCD clock with the tablet display clock of ECB.		
9	**CHECK** the backlight function of the LCD clock of ECB.		
10	**LOG ON** BA team Alpha 1. Consider the first BA wearers tally as defective – **DEMONSTRATE** the manual log on procedure using BA aide memoire if required. All other BA wearers can be logged on automatically.		
11	**RECORD** BA wear details and brief for BA Alpha team 1 on the inscription panel of the ECB. • Who is the team leader? • Location. • Turn around pressure. • Brief. EXAMPLE BRIEF: Ground floor, firefighting, left hand wall with 45mm jet.		

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12	**NAVIGATE** the ECB menu and identify: • Time of warning. • Time to warning. • Elapsed time.		
13	**QUESTION**: BA Alpha team 1s team leader has a much lower duration than BA wearer number 2, what should the ECO's actions be? **ANSWER**: Contact the BA team and ask if they are ok, why has their breathing rate increased and to consider task rotation.		
14	**QUESTION**: What actions would the ECO take when BA teams go out of telemetry range (Radio lost link)? **ANSWER**: Contact the BA team by radio. If appropriate, consider the use of telemetry repeaters.		
15	BA Alpha team 1 to send 'Reached incident' message from their Control Modules. ECO to identify and **CONFIRM** message and **DEMONSTRATE** an understanding of what it means. **ANSWER**: Firefighters have reached the scene of operations and are now firefighting. The Control Module has now set a turnaround pressure based on the amount of air consumed to reach the incident.		
16	**CONFIRM** an understanding of the 'Withdrawal alarm' and how it is different from the 'On withdrawal' message. **ANSWER**: The 'Withdrawal alarm' actuates when the pressure threshold set by sending the 'Reached incident' message has passed. ECO and BA wearers to consider whether to withdraw or continue operations.		
17	BA Alpha team 1 to send 'On withdrawal' message from their Control Modules. ECO to identify and **CONFIRM** message and **DEMONSTRATE** an understanding of what it means. **ANSWER**: BA team are withdrawing from the risk area.		
18	ECO to confirm Time of warning (TOW) with BA Alpha team 1. **QUESTION**: What is the pressure threshold of the low pressure warning and what occurs if a BA wearer reaches TOW. **ANSWER**: The low pressure warning actuates at 84 bar pressure. ECB displays low pressure alarm, and the wearer slot is red.		
19	BA Alpha team 1 actuates a distress signal (either manual or automatic). ECO **CONFIRMS** distress signal actuation on ECB.		
20	**DEMONSTRATE** the distress signal cancellation procedure.		

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21	**QUESTION**: When is it appropriate to cancel a distress signal. **ANSWER**: When there is an accidental actuation of the distress signal, it is early in the BA wear and there is sufficient air to complete the task.		
22	**QUESTION**: What are the differences between the manual alarm (DSU) and automatic alarm (ADSU) and what are the ECOs actions upon distress signal actuation. **ANSWER**: DSU is a manual alarm actuated by the firefighter pressing and holding the manual alarm button. ADSU is an automatic distress signal indicating that the Control Module (and by implication the firefighter) is not moving. ECO to immediately attempt radio contact with BA team, inform the incident commander and commit a BA emergency team.		
23	**INSTRUCT** the ECO to carry out a selective evacuation of BA Alpha team 1. ECO to identify when all BA Alpha team 1 wearers have confirmed evacuation message received.		
24	**QUESTION**: If there is more than 1 BA team logged on to the ECB where is the 'evacuate all' button and what does it do? **ANSWER**: When more than 1 BA team is logged on to an ECB, a red 'evacuate all' button will be displayed on the top right hand corner of the tablet display. Tapping this button will send an evacuation message to all BA teams logged on to the ECB.		
25	**LOG OFF** BA Alpha team 1. Consider BA team leaders tally is defective and **DEMONSTRATE** the manual log off procedure using the BA aide memoire if required. Log off other BA wearers automatically.		
26	**QUESTION**: How do you identify the battery charge level on the ECB and HUB? **ANSWER**: The ECB displays a low battery icon at the top of the tablet display when it passes less than 25% battery power. The HUB battery status LEDs illuminate depending on how much charge it has.		
27	**QUESTION**: What are the minimum requirements for Re-entry? **ANSWER**: 210 bar pressure and 15 minutes of duration entered on the ECB. Enter TOW and re-entry on the inscription panel and write the specific task being carried out.		

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28	**QUESTION**: Why do BA wearers need to close down the BA set and purge the air from their BA sets before returning to the ECO to retrieve their BA tally? **ANSWER**: To ensure that the Control Module will turn off once the safety key is inserted and that the BA set logs off the telemetry system fully.		
29	**QUESTION**: What are the criteria for committing BA teams using manual calculations of duration? **ANSWER**: If all BA wearers are unable to log onto the ECB and achieve a telemetry signal when starting BA operations and on the instructions of the IC or Sector Commander.		
30	**QUESTION**: Can the ECO commit BA teams using telemetry and manual calculations on the same ECB? **ANSWER**: No, BA entry control operations will either be telemetry or manual calculations and must not be mixed on any one ECB.		
31	**QUESTION**: Why does the ECO record landmarks and lowest team pressure on the inscription panel of the ECB when informed of landmarks by the BA team leader? **ANSWER**: To aide the BA teams calculations when exiting the risk area if required.		
32	**DEMONSTRATE** putting the ECB back on charge first, then into sleep mode before returning it to its stowage. **NOTE**: *it is important that this sequence is carried out in this specific order so as to not wake the ECB again when the charger is connected.*		
33	**DEMONSTRATE** putting the HUB back on charge and return it to its stowage.		

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Appendix 4: Guideline team leader BPA

Best Practice Assessment Review Sheet			BA Guideline
Name:	Pay No:	Base:	Date:

LAYING THE GUIDELINE			
EV	CHECK IN ORDER	P	NYP
1	**CHECK** that the guideline bag is located on the correct side for laying.		
2	**CHECK** that additional guideline bag is located on team members 'D' ring.		
3	**IDENTIFY** suitable tie off points and demonstrate appropriate knots.		
4	**COMMUNICATE** effectively with team members.		
5	**DEMONSTRATE** the correct method when leaving a guideline bag to withdraw, **OKB** (overhand knot, karabiner, bag).		
6	**DEMONSTRATE** the correct method when picking up a guideline to extend, **BKO** (bag, karabiner overhand knot).		
NAVIGATION ALONG THE GUIDELINE			
EV	CHECK IN ORDER	P	NYP
1	**IDENTIFY** key features in order to retrace a route in limited visibility.		
2	**COMMUNICATE** clear and concise instructions on landmarks/direction changes.		
3	**DEMONSTRATE** the correct procedure when passing teams on the guideline.		
4	**IDENTIFY** guideline tabs and branch tallies.		
SEARCHING OFF A GUIDELINE			
EV	CHECK IN ORDER	P	NYP
1	**DEMONSTRATE** correct search patterns and techniques.		
2	**REMAIN** within six metres of the guideline.		
3	**IDENTIFY** hazards through correct safe movement.		
4	**LOCATE** casualties through the correct search procedure.		
5	**DEMONSTRATE** correct actions in accordance with safe casualty handling and removal.		
6	**IDENTIFY** guideline tabs and branch tallies to enable safe egress.		

Note: BPA exercise should be conducted with supporting firefighting team. For additional information see Babcock training note GL 001 Guideline Procedures.

Appendix 5: Cable entanglement – training BPA

Best Practice Assessment Review Sheet			MSA M1
Name:	Pay No:	Base:	Date:

CABLE ENTANGLEMENT – BEST PRACTICE ASSESSMENT			
EV	**CHECK IN ORDER**	**P**	**NYP**
1	**ENTANGLED** wearer clearly states, **"I AM ENTANGLED IN CABLES"**.		
2	**RESCUER** clearly states, **"STAY STILL AND CROSS YOUR ARMS AT CHEST HEIGHT"**.		
3	**ENTANGLED** wearer crosses arms at chest height to protect BA set hoses.		
4	**RESCUER** to approach with caution using safe movement procedures to identify any cables and prevent becoming entangled.		
5	**RESCUER** to locate cables by completing a head-to-toe sweep using the backs of hands.		
6	**RESCUER** uses their own cable cutters to cut cables if unable to remove cables by hand. *Note: Caution must be taken to avoid cutting BA set hoses.*		
7	**RESCUER** repeats the above process until all cables are removed.		
8	**RESCUER** re-stows cutters.		
9	**ON RELEASE** the BA team leader in consultation with BA team members must establish if they can continue with operations.		
10	**WITHDRAW**: **INFORM** ECO and **WITHDRAW** to the ECP. ECO must convey this information to the IC or sector commander.		
11	**IF THE WEARER CANNOT BE RELEASED** by their BA team member the ECO must be informed (information should be provided to assist the emergency team i.e. location, conditions and Control Module pressure reading) and the entangled wearer's DSU **MUST** be operated.		

Note: Ensure as part of this procedure that BA wearers are aware of ECOs actions as per section 10 Cable Entanglement above.

ECOs being informed of BA team entanglement must inform the officer responsible for the entry control point.

Appendix 6: Partial BA set removal – training BPA

Best Practice Assessment Review Sheet			MSA M1
Name:	Pay No:	Base:	Date:

PARTIAL BA SET REMOVAL – BEST PRACTICE ASSESSMENT			
EV	**CHECK IN ORDER**	**P**	**NYP**
1	**TEAM LEADER** (TL) to make decision to carry out partial BA set removal after assessing the space the team intend to move through is suitable for all wearers. TL **MUST** communicate their intentions to ECO that partial BA set removal procedure is being carried out.		
2	The **FIRST WEARER MUST** carry out pressure gauge readings and calm and control their breathing. **ADOPT** a kneeling or sitting position to minimise the risk of dropping the BA set and position themselves as close as possible to the space to minimise the amount of time the backplate is not being worn.		
3	**WEARER** to loosen the waist belt fully, then disconnect the waist buckle.		
4	**WEARER** to loosen the shoulder straps fully and remove the **LEFT ARM** first. *Note: This ensures the pneumatic hoses will not become tangled around the wearer.*		
5	**WEARER** to then remove **RIGHT ARM**, slide the BA set off of the back and bring the BA set in front of the wearer. *Note: Care should be taken to not drop or strike the BA set.*		
6	**WEARER** to organise BA set so that loose straps are tucked away (to prevent any risk of entanglement or damage).		
7	**WEARER** should loop **BOTH SHOULDER STRAPS** over one arm and **HOLD** onto the Control Module so pressure readings can be taken.		
8	**WEARER** can now position themselves so they can pass through the space **FEET FIRST**. **WEARERS** should sweep their feet to clear any debris and establish when they are through the space. *Note: If wearer need to pass through space in a different manner, a dynamic risk assessment must be carried out to ensure the safest system or method can be utilised.*		
9	Once through the space the wearer should again **ADOPT** a kneeling or sitting position. **PLACE** the BA set backplate in front of them and organise the shoulder straps and waist belt in preparation to don the BA set again.		
10	**WEARER** now dons the BA set shoulder straps (right arm first). The wearer can then fasten the waist buckle and adjust the straps, so the BA set is secure.		

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11	The **FIRST WEARER** can now communicate to their team that the space is clear, and they can commence their BA set partial removal procedure. **INFORM** the ECO that the first wearer is successfully through the space and the BA set is now being worn correctly.		
12	The **SECOND WEARER** must inspect the space to ensure that no obstructions or issues have occurred as a result of the first wearer passing through before attempting the BA set partial removal.		
13	Once the **SECOND WEARER** is through the space, the team should carry out buddy checks to ensure the BA sets are secured and PPE is fitted correctly. **INFORM** the ECP that the BA set partial removal procedure is complete and continue to exit the risk area.		

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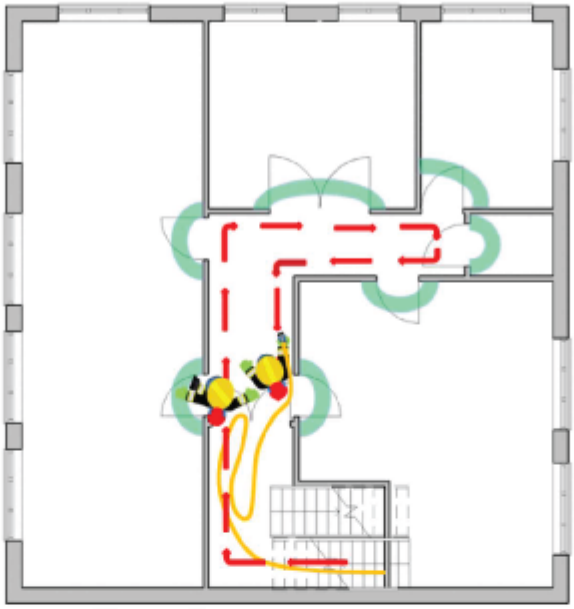
Appendix 7: Search procedure

Compartment search procedure

1. This procedure is suitable for a range of structures, particularly multi-compartmented structures which may have interconnecting rooms.
2. The fundamental principle of this procedure is that a BA team will attempt to fully search each compartment they enter before moving on to the next compartment.
3. On receiving and confirming their brief, the BA team will go through entry control and enter the risk area. The search may start at the point of entry or from a designated point according to the brief. At all times within the risk area the BA team will maintain a left or right hand orientation and use the corresponding wall as their fixed reference point. At the point designated in the brief they will commence a compartment search procedure.
4. On entry into the first (primary) compartment to be searched, the perimeter and, in the case of small-to-medium sized compartments, the centre of the compartment, are searched at the same time. As the BA team do so each door encountered is checked and swept for casualties, immediately visible or within touching distance, from the doorway.
5. Once a full circuit of the compartment has been carried out the team progresses into the first door they encountered on their search to carry out this procedure again. This promotes the concept of fully searching compartments before progressing on to the next identified compartment, enabling accurate recording of the search and assists teams with orientation whist operating in low visibility conditions. Compartment search procedures can also assist with the efficient management of firefighting hose due to the fact that hose is always returned to the initial compartment after subsequent compartment searches have been carried out.
6. The use of the diagonal search technique should be considered for medium size compartments. The use of BA personal lines will assist BA teams to do so, and in this case, the BA team leader must maintain contact with the wall. The BA team members (up to a maximum of four and connected by their short personal lines), can then search the centre of the compartment. This ensures that no team member is more than 6m from the team leader and no more than 1.25m from each other.
7. In large compartments, it may not be possible for a BA team to systematically search and clear the entire space, whilst remaining in touch contact with the wall. In such situations, where it is determined that these larger compartments also need to be searched, alternative procedures and techniques should be considered. Examples might include the use of larger BA teams, multiple BA teams searching the compartment in a co-ordinated manner, tactical ventilation, and breathing apparatus guidelines/branch guidelines.
8. On completion of the search, or at the pre-planned turn-around pressure, or at any point during the wear as the BA team leader determines, the BA team leader must ensure that orientation with the wall is maintained, albeit the direction of travel reversed in order that the team may exit the structure. The team should landmark objects or features to assist in this orientation. Examples of this are large objects of furniture, changes in levels or doorways or openings.
9. If a large, multiple compartment premises is to be searched, the brief must be clear as to whether every compartment is to be fully searched or checked for occupants. This could be the difference between knocking on the door or forcing entry. In a premise such as a hotel full of fire doors, it may be impractical to force entry into each compartment.
10. The use of tactical ventilation can be very effective to improve conditions for both the teams searching as well as those being rescued, but this must only be carried out on the orders of the IC. For further information refer to Policy number 883 – Tactical Ventilation.



Example of a BA team performing an initial entry into the first compartment, checking and sweeping doorways, using the compartment search procedure.

Progressive example of a BA team performing a left hand compartment search.

11. Movement within each compartment is colour coded to illustrate the sequence of movement between compartments when progressing the search.

12. A door sweep is a search that should be carried following correct door procedure, to check the immediate area around the door for casualties and signs of fire in that compartment.

Advantages of compartment search procedure

- Systematic: Each compartment is mapped out systematically as the BA teams progress, which allows for ease of orientation and a search record to be established in a systematic way.
- Suitable for a range of structures, particularly complex multi-compartmented structures with many interconnecting rooms, where a methodical approach to the mapping out of compartments may be appropriate.

Limitations of compartment search procedure

- Large compartments may not be able to be fully cleared due to unsearched area/s in the centre of the compartment being unable to be accessed by the BA team, whilst following the procedure safely.
- Disciplined and systematic observance of the search brief by the BA team is essential.

Directional search procedure

1. This method of search is particularly suitable for smaller buildings, where compartments have standard and recognisable layouts; the procedure is practical to adopt and compartments can be cleared as the directional search progresses, often making the procedure time efficient.

2. This procedure is easier to perform as a BA wearer, however there is an increased risk of BA teams inadvertently missing a fire compartment or risk area (depending upon the building layout), which could compromise their means of escape should the incident develop. Additionally, firefighting hose management may be more difficult due to the fact that steps must be retraced throughout the search route to retrieve it or to exit. Search and rescue operations should therefore be comprehensively coordinated, with an effective search plan and recording process.

3. The fundamental principle of this procedure is that BA teams will search in a specific left or right hand direction. The overall intention of the procedure is to clear all compartments but not necessarily before moving between compartments.

4. The fundamental difference between this and compartment search procedure is that here a BA team will immediately progress through the first door they locate in any compartment in the specified left or right hand direction, before fully searching the compartment they are currently in.

5. On receiving and confirming their brief, the BA team will move to the point of entry and enter the risk area. The search may start at the point of entry or from a designated point as per the brief given at the entry control point. At all times within the risk area the team will maintain a left or right hand orientation using the left or right hand wall as their fixed reference point. At the point designated in the brief they will commence a directional search procedure.

6. On entry to the compartment from where the search is to commence, the BA team will attempt to maximise the area searched within the entire structure by attempting to search the perimeter and the centre of any compartment at the same time, using the same methods (including door sweeps) as detailed in compartment search procedure.

7. On completion of the search, or at the pre-planned turn-around pressure, or at any point during the wear as the BA team leader determines, the BA team leader must ensure that orientation with the wall is maintained, albeit the direction of travel reversed in order that the team may exit the structure.

Progressive example of a BA team performing a left-hand directional search.

8. This illustrates the basic principle of the procedure. It does not cover all possible compartment configurations and is not to any specific scale.

9. A door sweep is a search that should be carried following correct door procedure, to check the immediate area around the door for casualties and signs of fire in that compartment.

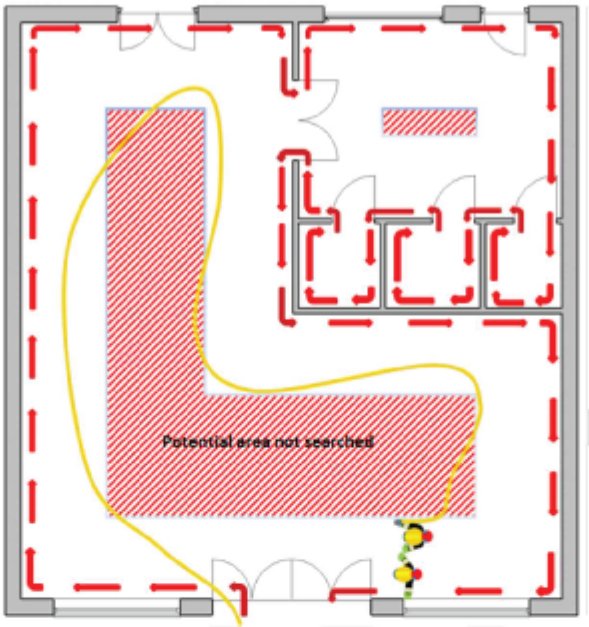
Advantages of directional search procedure

- A systematic and relatively simplistic procedure to apply.
- More suitable for certain types of structure; particularly domestic and smaller commercial properties, where, due to the size of normal compartments and standard and recognisable layouts, the procedure is most practicable to adopt and all rooms are largely cleared as the directional search progresses.

Limitations of directional search procedure

- In larger compartments multiple teams will be required to be committed in a co-ordinated way to ensure the compartment is searched and team safety is maintained.
- This method does not necessarily clear a compartment before the BA team move on to the next compartment, due to the area in the centre of the compartment being unable to be accessed by the BA search team whilst following the procedure safely.
- There is the potential to pass a fire compartment, which may compromise the means of escape for BA teams, unless search and rescue operations are comprehensively co-ordinated and an effective search plan and record process established.

Searching large compartments



Progressive example of a BA team performing a left-hand directional search of large compartments

Left/right-hand orientation

1. Both compartment and directional search procedures will employ a left- or right-hand orientation. This means that the team leader will use and follow the left- or right-hand wall as their fixed reference point to ensure the search is orientated and systematic. This left- or right-hand orientation will apply as soon as a BA team passes through the point of entry and throughout their time in the risk area.
2. In larger compartments, multiple teams will need to be committed in a co-ordinated way to ensure the compartment is thoroughly searched and team safety is maintained. The directional search procedure does not necessarily mean that a team will clear a compartment before moving on to the next compartment.
3. It may not be possible to search large compartments entirely using conventional search procedures, as BA teams may not be able to access the centre of the compartment safely, whilst maintaining contact with a fixed reference point. When large compartments are encountered, additional control measures may need to be implemented to enable a complete search. This may include the use of thermal imaging equipment, tactical ventilation and BA guidelines.
4. The team leader will use and follow the left- or right-hand wall as their fixed reference point to ensure the search is orientated and systematic. This left- or right-hand orientation will apply as soon as a BA team passes through the point of entry and throughout their time in the risk area.
5. Other than under the most extreme and exceptional circumstances, when visibility is poor or deteriorating the BA team leader must remain in contact with the wall or with fittings integral to the wall at all times. Maintaining the wall as a fixed reference point, either by touch or vision, is a cornerstone of the safety and effectiveness of these procedures.

Appendix 8: Suggested working abbreviations for use on entry control boards

Suggested working abbreviations for use on entry control boards It is recommended that ECOs use the following abbreviations on entry control boards to achieve consistency across entry control points and other FRS. All firefighters at an incident should use the same abbreviations.

Note: Whilst working abbreviations may be deemed appropriate for use on the ECB, any additional BA records maintained at the entry control point or at BA sector command should be written in full.

- BCL - Branch guideline (1, 2, 3, 4).
- CFFT - Compartment firefighting team.
- CL - Casualty located.
- COMMS - Communication equipment; including handheld radio and BARIE.
- CSP - Compartment search procedure.
- DSP - Directional search procedure.
- FFT - Firefighting team.
- HM - Hose management.
- HRJ - Hose reel jet.
- J - Main jet/branch (45mm, 70mm).
- LH - Left-hand (denoting orientation of search).
- MGL - Main guideline (A, B).
- RE - Re-entry.
- RH - Right-hand (denoting orientation of search).
- SRT - Search and rescue team.
- TAP - Turn around pressure/point.
- TAT - Turnaround time.
- TIC - Thermal image camera.
- TL - Team leader.
- TOW - Time of warning.
- TTW - Time to warning.

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Entry control board abbreviation examples

Example 1: House fire (stage 1)	
ECB entry	**Written in full**
BA team alpha-1: FFT 45mm J RH DSP 1st floor bedroom	BA team alpha-1: firefighting team, 45mm jet, right-hand, directional search procedure, 1st floor bedroom.
BA team alpha-2: HM for alpha-1 RH DSP 1st floor bedroom	BA team alpha- 2: hose management for BA team alpha-1, right-hand directional search procedure,1st floor bedroom.
Example 2: Commercial fire (stage 2, multiple entry control points and BA guidelines in use)	
ECB entry	**Written in full**
BA team alpha-3: CFFT for alpha-4, 45mm J RH MGLA ground floor	BA team alpha 3: compartment firefighting team, supporting BA team alpha-4, 45mm jet, following main guideline 'A'.
BA team alpha-4: MGLA, RH-lay ground floor	BA team alpha-4 laying main guideline 'A' on right-hand lay ground floor.
BA team alpha-5: HM for alpha-3, 45mm J RH MGLA ground floor	BA team alpha-5: hose management for BA team alpha-3, 45mm jet, right hand, following main guideline 'A'.
BA team bravo-1: SRT LH CSP 45mm J 1st floor	BA team bravo-1: search and rescue team, left-hand, Compartment search procedure, 45mm jet on 1st floor.
BA team bravo-2: HM for bravo 1 LH 45mm J CSP first floor	BA team bravo-2: hose management for BA team bravo-1, left-hand, 45mm jet, Compartment search procedure on 1st floor.

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Document information

Dates

Issue status	Date
Issued	17 November 2006
Reviewed as current	31 January 2024
Last amended	
Next review due	31 January 2027

Assessments

An equality, sustainability or health, safety and welfare impact assessment and/or a risk assessment was last completed on:

EIA	15/11/2023	SDIA	10/02/2021	HSWIA	21/12/2023	RA	28/04/2023

Audit trail

Listed below is a brief audit trail, detailing amendments made to this policy/procedure.

Page/Paragraph nos.	Brief description of change	Date
Throughout	Full rewrite to align policy with National Operational Guidance	14/02/2018
Page 29 para no 34.3	Wording added for ECO to 'ensure that the tabs indicate the correct egress direction.	08/03/2018
Page 54 appendix 2	Don and start up section updated to include placing personal line karabiner and gloves into leg pockets.	03/04/2018
Page 24 para no 31.8	Updated to include turn around pressure (TAP)	05/04/2018
Page 26 para no 31.26	Wording updated for emergency team ECO	20/04/2018
Page 62 appendix 5	Cable entanglement training BPA added	23/04/2018
Page 32 para no 30.2	'Check date and time' wording against thermal image camera deleted.	25/04/2018
Page 24 para no 31.8	Updated to include turn around time (TAT)	30/04/2018
Throughout Page 4, para 3.2 and 3.18 Page 13 para 12.1 Page 19 para 21.3	This policy has been reviewed as current with the changes made. BA sector reword and turn around pressure (TAP) additional wording. Second jet reword. Aerial appliance changed to read turntable ladder.	22/05/2018 22/05/2018

Page/Paragraph nos.	Brief description of change	Date
Page 32 para 38.7 and 38.9 Page 33 para 40.2 Page 56 appendix 2	Water supply additional bullet added and EDBA reword. BA sector additional wording. Close personal contact note added to BPA. Please re-read the content to familiarise yourself.	
Page 22, para 26.5	New paragraph inserted to provide more clarification on optimising recovery for BA wearers.	21/06/2018
Throughout Page 7 para 7.2 Page 8, 9 and 57 Para 7.20 – 7.23 and note Page 21 para 23.2	Minor amendments made throughout. Placing radio on centre loop of tunic wording deleted. Close personal contact additional information added. Separate sector requirement removed.	05/02/2019
Page 21, para 24.1	Examples of other agencies added.	29/08/2019
Throughout	Links and references to PN431 – Incident commander and monitoring officer now updated due to policy amendment.	31/10/2019
Page 8, para 7.14 Page 55, appendix 2 Throughout	TAP on ECB information added. Requirement to place karabiner in pocket removed due to the new retractable lines being issued. Note re EV 7 also removed. Role to rank updates (note: aides memoires 2 and 3 will be updated on next hard copy change).	12/12/2019
Throughout	Full rewrite to align policy with National Operational Guidance and incorporation of search procedures from policy number 803. Updated to incorporate the use of GDM for RPE level assessment.	16/08/2022
Throughout	Cross references updated.	21/10/2022
Throughout	Cross references updated.	07/11/2022
Throughout	Radio channels updated from 1 to 9, 5 to 13 and 6 to 11.	29/09/2023
Throughout	Reference to cancelled PN118 – pressurised workings updated to PN983 – tunnels – nog.	25/10/2023
Throughout Sections 9, 14, 21, 26 Page 20, para 9.6 bullet 1	Full rewrite and reformatting to further align policy with National Operational Guidance and reflect technical changes due to the implementation of the MSA M1 BA set. Replacement of second set bag and procedures with EASE bag. Instruction for BA emergency teams to don BAET armbands.	31/01/2024

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Page/Paragraph nos.	Brief description of change	Date
Sections 7, 8	Introduction of the 'incident state' function of the MSA Control Module to automatically calculate TAP.	
Section 17	Capability to commit BA wearers into Hi-Ex foam removed until foam replacement and trial of MSA BA set in foam conducted.	
Page 33, para 22.4	Capability to commit LAS HART BA wearers through LFB entry control removed due to incompatibility of equipment and risk of skills fade for previous ECB.	
Appendix 1,2 ,3 ,5 ,6	All appendices updated to reflect technical changes required by MSA BA set.	

Related policies

Listed below are all the related policies:

Policy number	Name of policy
PN466a	Stage 1 entry control - breathing apparatus – SOP
PN466b	Stage 2 entry control - breathing apparatus - SOP
PN466c	Breathing apparatus (BA) sector - breathing apparatus - SOP
PN466d	Communications operative - breathing apparatus - SOP
PN466e	Distress to wearer (DTW) procedure - breathing apparatus - SOP
PN 476	RPE – BA – MSA M1 – technical information
PN 760	Respiratory protective equipment – MSA connected firefighter telemetry system – technical information
PN 798	RPE – ancillary equipment – technical information
PN 467	Breathing apparatus sub-surface procedure - NOG

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