

<p style="text-align: center;"><b>DAVIE COUNTY, NC</b>  <b>FIRE MARSHAL'S OFFICE</b>  STANDARD OPERATING GUIDELINES</p>	REVISION DATE  6/4/2018
<p style="text-align: center;">SUB DOCUMENT</p> <p style="text-align: center;"><b>SELF CONTAINED BREATHING APPARATUS  (SCBA)</b></p>	SAFETY  PAGE 1 OF 11
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**1. Definitions**

- Hazardous Atmosphere – Any atmosphere that is oxygen deficient or that contains a toxic or disease-producing contaminant. A hazardous atmosphere may or may not be immediately dangerous to life or health (IDLH).
- Oxygen Deficient Atmosphere – Oxygen concentrations less than 19.5%
- Respiratory Hazard – Any exposure to products of combustion, superheated atmospheres, toxic gases, vapors, or dust, potentially explosive or oxygen deficient atmospheres, or any condition that creates a hazard to the respiratory system.
- SCBA – Self Contained Breathing Apparatus
- Use SCBA – The term “use” in this section shall indicate that the fire fighter shall be wearing, and breathing air from, the SCBA
- Wear SCBA – The term “wear” in this section shall indicate that the fire fighter shall be wearing the SCBA, but not breathing air from the cylinder. The fire fighter shall be capable of breathing air from the cylinder within 15 seconds when wearing SCBA.

**2. SCOPE: All Members**

- 2.1. Only those fire fighters who have successfully completed the North Carolina DOI FF I SCBA Qualification Class shall be permitted to use SCBA under emergency conditions in an IDLH atmosphere.
- 2.2. All fire fighters shall annually demonstrate SCBA proficiency in accordance with the practices set forth in this section and in the SCBA Refresher.
- 2.3. SCBA shall be used by all personnel who are exposed to respiratory hazards, or who may be exposed to such hazards without warning. Personnel, who are operating in the areas that may be subject to the hazards with sufficient warning to don SCBA, shall wear SCBA.

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- 2.4. SCBA shall be used by all personnel operating in confined spaces, below ground level, or where the possibility of a contaminated or oxygen deficient atmosphere exists until, or unless it can be established by monitoring and continuous sampling, that the atmosphere is not contaminated or oxygen deficient. Carbon Monoxide, in excess of 35 ppm, shall be considered a contaminated environment.
- 2.5. SCBA shall be used in accordance with the manufacturer's recommendations.
- 2.6. Firefighters using SCBA shall operate in teams of two or more. These teams will be in direct communication with each other through visual, physical, safety guide rope, or verbal means of communications to coordinate their activities, and are in close proximity to each other, to provide assistance in case of emergency.
- 2.7. When fire fighters are involved in operations that require the use of SCBA, an Accountability Officer shall be assigned to remain outside the area where SCBA is required. This Accountability Officer shall be responsible for maintaining a constant awareness of the number and identity of personnel using SCBA, their location, function, and time of entry.
- 2.8. Beards and/or facial hair that interferes with the face piece seal are prohibited.
- 2.9. Fire fighters, for whom a medium-sized face piece is too small or large, shall be provided with a face piece that is individually fitted (small or large). All SCBA on the apparatus shall be equipped with a medium-size face piece.
- 2.10. When a member must wear corrective lenses while using SCBA, the member shall be issued a personal face piece with a spectacle kit. Use of standard eye glasses with SCBA is prohibited.
- 2.11. Use of soft contact lenses with SCBA is permitted. Use of hard contact lenses is prohibited. (NFPA 1500)
- 2.12. The SCBA face piece and head harness with straps shall be worn under protective hoods.

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- 2.13. When the SCBA cylinder valve is opened, the integrated Personal Alert Safety System (PASS) is automatically activated. If a fire fighter experiences problems such as becoming lost, trapped, injured, or running out of air, the PASS shall immediately be manually activated to the full alarm function. Fire fighters hearing a PASS activation should immediately notify command. If a fire fighter becomes incapacitated, immobile or inactive, the PASS will automatically activate.
- 2.14. The “Buddy Breathing” connection should be used only in emergency situations. Use of this feature may result in two fire fighters reaching a low air condition at the same time. This shall be used only as an absolute emergency last resort.
- 2.15. Fire fighters using SCBA shall leave the hazardous atmosphere with their partner at the onset of the quarter service life, “low air”, alarm activation.
- 2.16. Fire fighters assigned to work in attic spaces or other areas where dust or particulate problems are present shall use filter masks. If conditions warrant, SCBA may be required.
- 2.17. After each use, both prior to, and after re-servicing, SCBA shall be placed on apparatus with all straps extended, all valves closed, and high-pressure air bled from the system.
- 2.18. After use, SCBA shall be cleaned and re-serviced in accordance with the manufacturer’s recommendations. Cleaning and re-servicing shall be done only by (or under the direct supervision of) those members certified by Scott. Service work shall be performed only by those individuals so certified. SCBA inspection forms shall be completed after each inspection, or repair.
- 2.19. All SCBA Integral PASS devices shall be tested daily and after each use. PASS shall be maintained in accordance with the manufacturer’s instructions. PASS batteries will be changed per the manufacturer’s recommendation or as needed.
- 2.20. All SCBA shall meet the requirements of NFPA 1981 at the time of purchase.

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2.21. Compressed gaseous breathing air in SCBA cylinders shall meet the requirements of the compressed Gas Association, G-7.1 Commodity Specifications for Air, with a minimum air quality of Grade D and a maximum dew point of minus 15 degrees F. The air compressor shall be tested to ensure compliance with this section. (NFPA 1500)

2.22. SCBA cylinders shall be hydrostatically tested according to the manufacturer's instructions.

**3. Scott 4.5 Self Contained Breathing Apparatus**

**3.1. Objective:**

To ensure all Davie County Fire Marshal Office (DCFMO) personnel are trained in the safe use, maintenance, routine inspection, and cleaning of SCBA prior to use. SCBA, its use, maintenance and training shall meet all applicable NFPA and OSHA standards.

**3.2. Specifications:**

3.2.1. The SCBA used is the Scott Aviation 4.5 Air-Pak 50 with an AV-3000 face piece.

3.2.2. Additional features are the Pak-Alert 1000 pass alarm and emergency breathing support system (EBSS).

**3.3. Marking SCBA**

3.3.1. All SCBA will be identified by a Yellow Label with black lettering, with the Unit Identification number followed by the SCBA number.

3.3.2. This number will be matched to a master file kept at the DCFMO.

3.3.3. The master file will include serial number, regulator number, problems, repairs, date of repairs, routine operational inspection as specified and yearly operational testing.

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#### 4. Use of SCBA

- 4.1. SCBA shall only be used by certified persons as outlined within this document.
- 4.2. They shall be worn by all personnel who may be in an area that may be an Immediately Dangerous to Life and Health (IDLH), oxygen deficient or contaminated atmosphere. This includes but is not limited to:
  - Structural incidents
  - Vehicle fires
  - Chemical spills
  - Below grade rescues
  - Trash and dumpster fires
  - Calls involving unknown leaks
  - CO >35 ppm
- 4.3. The use of SCBA shall not be discontinued at any incident until either the user exits the hazardous atmosphere or the air is determined to be safe by an appropriate meter used by a trained operator.

#### 5. Usage

- 5.1. All personnel will be initially trained in its use, care, and maintenance as outlined in this document and will be recertified annually.
- 5.2. Personnel shall be required to complete and pass a respiratory exam/medical evaluation prior to using a SCBA.
- 5.3. They will be required to complete and pass this exam periodically to maintain their status to use a SCBA.
- 5.4. No individual with facial hair that interferes with or impinges on the face piece seal shall be allowed to don or use SCBA equipment.

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- 5.5. Eyeglasses will only be allowed with a frame designed for and used with the AV-3000 face piece.
- 5.6. Contact lenses are permitted to be used.
- 5.7. The SCBA will be donned per appropriate procedures with all straps securely fastened.
- 5.8. Every effort should be taken to keep debris and liquid from entering the inside the SCBA face piece.
- 5.9. SCBA should never be laid in dirt or on dirty areas.
- 5.10. Each Firefighter should be limited to a maximum of 2 consecutive cylinders at any incident.
- 5.11. They should be evaluated to ascertain if they are fit to return to service only after adequate rehab and clearance by an EMS officer or member.
- 5.12. SCBA shall be cleaned and disinfected after every use per manufacture recommendation and OSHA requirements.

**6. Fit Testing**

- 6.1. Each member must pass a “Fit Test”, as administered by the DCFMO or approved agency, prior to being allowed to use a SCBA in any IDLH atmosphere.
- 6.2. “Qualitative” fit testing shall be performed on all persons to ensure a proper seal for the selected SCBA.
- 6.3. If a person fails the “Qualitative” testing for whatever reason, a “Quantitative” test shall be administered.
- 6.4. They shall be required to complete and pass the fit test annually, when they request a test or anytime the Fire Marshal feels it necessary due to change in a person’s facial structure i.e. Weight loss or gain, dentures, cosmetic surgery, scarring, etc.

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6.5. Personnel shall only wear the size mask used to pass their latest fit test for both emergencies and training exercises.

6.6. An atmosphere of “artificial” smoke will be treated as an IDLH atmosphere in training sessions.

**7. Training**

7.1. Initial training shall be conducted in a formal NCDOI training course.

7.2. Personnel must fully participate and complete NCDOI FF 1 or equivalent including all practical exercises and written exams.

7.3. They must then demonstrate competency to the DCFMO Training Officer, or his designee.

7.4. Only after all pertinent training as outlined herein is complete and documented can an individual operate as a certified SCBA user.

7.5. Except under training conditions, fire department personnel should only use DCFMO breathing apparatus.

**8. Inspection**

- Routine inspection, by DCFMO FD trained personnel, will be done on a daily basis at a minimum and consist of the following: \*see attached check sheet
- Defined as personnel currently certified by the DCFMO to use SCBA.
  - Bottle-clean, no damage, full, no leaks, hydrostatic date.
  - Straps-clean, no damage, extended.
  - Hoses-clean, no damage or leaks.
  - Frame-clean, no damage
  - Mask-clean, no damage, straps extended, no leaks.

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- Operation-donning switch, purge valve, Pass alarm, low pressure alarm.
- Readiness-getting SCBA ready for use after inspection.
- All problems of any of the above are to be corrected if possible or the SCBA is to be placed out of service and a repair notice to be filed with the Fire Marshal.

**9. Cleaning and Disinfecting**

- 9.1. OSHA 1910.134, Section B5 requires respirators be cleaned and disinfected regularly after each use or more often as necessary.
- 9.2. Cleaning shall be conducted to remove dirt and grime as needed.
- 9.3. Disinfecting shall be done after every use of mask and shall utilize a 1:1,000 hypochlorite solution allowing a minimum of two minutes before rinsing.
- 9.4. The mask shall be thoroughly rinsed and dried prior to being placed back in service.

**10. Storage**

- 10.1. All masks shall be properly stored in their protective bag on the apparatus if so equipped.
- 10.2. Spare SCBA bottles shall be stored in a bracket or storage well on the apparatus as designed or in a rack at the station.
- 10.3. The cap on the bottle outlet shall be in place while in storage.

**11. Testing and Repairs**

- 11.1. All SCBA will be tested annually and whenever an operational problem is recorded.
- 11.2. This shall be done by qualified personnel and a record of each test placed in the master file of the specific SCBA.



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11.3. No repairs shall be made to any SCBA except by personnel trained and certified by the manufacture and certified by the DCFMO.

11.4. An exception to this section is the replacement of the high pressure “O” ring and regulator/mask gasket which can be performed by personnel approved by the DCFMO.

**12. Air Quality**

12.1. Air quality analysis for breathing air meets the requirements for Type 1 (gaseous) Grade D breathing or better as described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989.

12.2. Documentation of above shall be requested Quarterly of each year from our supplier(s).

**13. Procedure**

13.1. The pressure reducer is designed as a two stage system.

13.2. If the first stage malfunctions, the second stage will take over and the pak vibralert will activate the same as a low pressure warning.

13.3. The user and partner are then to immediately exit the hazardous environment and place the pak out of service.

13.4. The signal to be used to signal your partner that you have a problem with your S.C.B.A. is to place your hand over the front of the lens on their S.C.B.A. mask.

13.5. A malfunction of the mask regulator can be overcome by activating the purge valve and supplying a continuous supply of air.

13.6. Care should be taken to open the purge valve only enough to give adequate supply of air or excess air loss will result.

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**14. Pak Alert 1000 Distress Alarm**

- 14.1. Each pak has a Pak Alert 1000 PASS which is battery operated and integrated with the air circuit of the SCBA.
- 14.2. PASS alarm protection is activated as soon as the air circuit of the air pack is activated.
- 14.3. The system will activate either when the unit fails to detect motion in approximately 20 seconds or manually by depressing the red button on the front of the control console.
- 14.4. Only after SCBA is turned off can the Pak Alert 1000 be shut off.
- 14.5. After air is bled down, press and release the reset button twice.
- 14.6. In the event of an accidental alarm, press and release the reset twice. This will reset the alarm without turning off unit.

**15. Emergency Breathing Support System (EBSS)**

- 15.1. Each pak is equipped with an EBSS system. This is to be used when a firefighter's pak runs out of air or is otherwise inoperable. This procedure is intended to provide a safe air supply while exiting the hazardous environment. Use and training will be in accordance with Scott manual 89194-01 11/94 and DCFMO SOG's.

**16. Air Cylinders**

- 16.1. The air cylinders selected for use with DCFMO SCBA are the 4500 psi carbon wrapped cylinder made by Luxfer to be specifically used with Scott Aviation SCBA.
- 16.2. They have a shelf life of 15 years and need to be hydrostatically tested by an authorized and certified person within 5 years of previous hydrostatic test date.

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16.3. All cylinders shall be visually inspected for damage, defects, and hydrostatic test date on a monthly basis at a minimum and any time the cylinder is refilled. Cylinders shall be refilled in accordance with manufacture's instructions (See Fill Stations/Cascades).

**17. Annual Recertification**

17.1. To maintain certification to use SCBA, a member annually must complete a fit test, medically cleared, complete refresher training, and demonstrate competency in all areas of SCBA, and maintain approval to use SCBA from the Training officer.

**18. Instruction Manuals**

18.1. The DCFMO has a set of manuals for each part of the SCBA (Air pak, EBSS, and Pak Alert 1000). It will be the Training Officers responsibility to maintain these manuals and ensure each member has reviewed and understand them initially and on a regular basis. §NFPA 1500, 1981, 1901, 1971, OSHA CFR 29 1910.134 and all other applicable standards.