

Santa Barbara City Fire Department - Standard Operating Procedures <b>Training Operations</b>	Code: <b>A-IV-3</b>
<b>Air Management/NFPA 1404</b>	
Chapter: IV SCBA	Revised: 7/20/15 Pages: 5

**Purpose:**

To establish department policy consistent with NFPA 1404 (Standard for Fire Service Respiratory Protection Training) and OSHA 29 CFR 1910.134 with regards to SCBA air management practices when operating in an IDLH atmosphere.

**Introduction:**

NFPA 1404 recommends that firefighters exit the IDLH atmosphere **before** their low-air alarm activates. Federal guidelines currently set this low-air alarm figure at 25% of the cylinder volume, 2013 guidelines raised the low-air alarm to 33% of the cylinder volume. Our next generation of SCBA packs due in late 2014 will comply with the 33% rule of reserve air. This air is to be considered your emergency reserve in the event that something goes wrong. It is no longer accepted practice to work until the low air alarm activates and then hope you can exit the IDLH atmosphere before running out of air. The Current NFPA 1404 makes specific reference to air management in an IDLH environment, the self contained breathing apparatus use in training, and the frequency and level of training to be maintained.

“Air Management” needs to be an integral part of our emergency operations while working in an IDLH environment. Air management is a practice, a philosophy, and a mind-set to make all members aware as a team of their air supply.

**Policy:**

Air Management Philosophy

1. **Don't** breathe smoke
2. Your air is your responsibility
3. An alarm-free fire ground

Rules of Air Management:

1. Exit **BEFORE** you use your reserve air
2. A low-alarm indicates use of reserve
3. Alarm activation is an ‘immediate action item’

In order to comply with NFPA 1404, it is the responsibility of all members to monitor their air supply and know how much air they have and when they need to begin exiting the IDLH atmosphere. The goal is to begin your exit with enough air that you can make it out without the low-air alarm activating. This is known as the ‘Rule of Air Management’ (ROAM). Following this rule will help make you safer by maintaining the last 25% / 33% of your air as an emergency supply in case something were to go wrong. Working into your low-air alarm period is betting your life that everything will go right on your way out.

## Air Management

Factors that influence when to begin your exit will vary. Work load, physical conditioning, rate of breathing, stress level, fire conditions, size of the structure, visibility, and how far you have worked your way into the hazardous area all factor in. As an example, the time required to exit a 900 square foot residence should be less than the time required to exit a commercial structure and therefore adjusted accordingly.

Crews shall base their decisions off of the lowest volume reading of the crew as to when to exit. This may require members to rotate positions of heavy work vs. lighter work so that air consumption is more equalized.

Every member shall check their SCBA at the beginning of the shift to insure that they have a full cylinder, pack is in a working and ready state, and the pass device works. On the fire ground every firefighter is responsible for managing their personal air supply and frequently communicating the status of their air supply to the company officer. In turn, the company officer will give frequent progress reports including air status to command.

Furthermore all members shall:

1. Check: SCBA, air bottle pressure (minimum of 4050 psi), check functions after use and at relief without exception.
2. Cause: SCBA repair and replacement to be addressed immediately when need is discovered.
3. Participate in annual proficiency testing at the company level with regard to proper donning, use and familiarity with SCBA
4. Company Commanders SHALL ensure all members participate in quarterly, company based drills. Members are encouraged to drill more frequently but in no case less than quarterly.
5. Incorporate a realistic scenario whenever possible during SCBA or “Buddy Breathing” drills.
6. Ensure that all provisions listed above are complied with. All annual and quarterly training shall be properly documented in FireHouse using the proper training codes assigned.

Prior to entry into the hazard zone, the company officer will brief his/her crew on the plan for achieving the tactical objectives including exiting the hazard zone together. This insures the crew has a “round trip ticket” into and out of the hazard zone safely.

Activation of the low-air warning is an ‘immediate action’ item for the individual and the crew involved. Immediate action is described as notifying command of low-air alarm activation and immediately exiting the IDLH atmosphere intact as a crew and notifying command that you are out with a PAR after exiting. If a crew member is unable to exit due to being lost, trapped, or injured and immediate May-Day shall be called. Furthermore, when remaining air supply in the SCBA cylinder reaches the 15%-18% range a May-Day should be called if personnel are still inside an IDLH atmosphere and will be unable to exit in 5 minutes.

## Air Management

In a situation that is not an urgent May-Day situation such as a low air activation while still inside an IDLH atmosphere but near an exit and able to reach the exterior safely, the notification from the crew to command shall include the following information:

- Their unit signature
- Their location
- Acknowledgement of a crew member's low-air warning bell is ringing
- Estimation of how close they are to an exit
- PAR when clear of the IDLH atmosphere

The crew should then consider reporting to REHAB if needed before reengaging or receiving a new assignment.

Members exiting prior to their low-air alarm will be allowed to get another bottle and re-enter the work area before going to rehab. If a low-air alarm activates within an IDLH atmosphere, the user shall immediately let their supervisor know what their status is. Command may decide to send the crew to rehab since they exceeded the normal work period. Members must report to rehab as required.

### **Rehabilitation:**

Identified work-to-rest intervals should require a 10-minute company rehab including rest, hydration, and a medical evaluation of the crew's readiness before re-assignment at the completion of the 10-minute rehab.

Work-to-rest guidelines to be considered:

- One '30-minute' bottle without adhering to the Rule of Air Management
- One '45-minute' bottle following the Rules of Air Management
- 20 minutes of intense work
- Two '30-minute' bottles following the Rules of Air Management
- Two '45-minute' bottles following the Rules of Air Management with a rest and hydration period between bottles

After the initial rehab, crews should continue to report to Rehab after each (one) bottle use throughout the remainder of the incident.

### **Overhaul Policy and the Rules of Air Management:**

Overhaul is necessary to assure that the fire is out and will not rekindle. However, the post-fire environment is dangerous due to irritants, toxic gases, and carcinogens in the atmosphere. Crews must wear their SCBA during this overhaul phase of firefighting to protect themselves. The SBFDD has adopted a comprehensive respiratory protection program that mandates the wearing and use of SCBA during all phases of the fire and adheres to safe and effective air management practices.

There should be an air support unit on scene when doing overhaul requiring more than one bottle. Fire crews will be breathing through many SCBA bottles during overhaul, so the air unit must be there to refill and/or replace empty bottles in a timely fashion.

## Air Management

Firefighters should follow the Air Management Policy during overhaul. The policy is not to breathe smoke, period.

Firefighters should ensure they are out of the hazardous environment before their low-air alarm warning activates. Again, this gives firefighters a safety margin should they become trapped or lost in the structure.

Monitoring shall be conducted and confirmed all-clear prior to doffing SCBA during overhaul operations.

### **Training:**

#### Recruit Training:

All training related to the use, maintenance, and care of respiratory protection equipment shall be provided before the using a SCBA in an IDLH atmosphere. Records of all respiratory protections training shall be maintained, including training of personnel involved in maintenance of equipment. Air Management shall be included in the curriculum of the SCBA training during the academy and each new firefighter must understand and comply with the standard prior to any live fire training or entering any IDLH atmosphere.

#### Annual Training:

Face piece seal capability of the SCBA for each member qualified to use a SCBA shall be verified by fit testing on an annual basis and any time new types of SCBA are issued. Only members with a properly fitting facepiece shall be permitted by the fire department to function in a hazardous atmosphere with a SCBA.

The department shall be responsible for establishing a program that provides members with training in the proper and safe use and the limitations of the SCBA, related equipment, and to include the rules of Air Management. The program also shall provide a means of evaluating member performance in the use of respiratory protection equipment and member's knowledge of the respiratory equipment used.

All members permitted to use a SCBA shall, at least annually, successfully demonstrate their ability to meet the performance standards by the Sbfd.

#### Quarterly:

Company Commanders shall ensure all members participate in quarterly, company based drills. Members are encouraged to drill more frequently but in no case less than quarterly.

# Air Management

## Summary of Key Points:

- Always start with a full SCBA cylinder
- Have a round trip ticket plan (entry and exit plan)
- Everyone is responsible for their own air management
- Captains monitor crew's air supply
- IC is to be aware of crew's timing in an IDLH atmosphere
- Everyone exits and is out of the IDLH area prior to low air alarm activation
- Low-air warning while operating in an IDLH is considered an air emergency and requires immediate action. Immediate action is to include Notification to Command and exiting the IDLH atmosphere intact as a crew.
- May-Day should be called if unable to leave the IDLH atmosphere before exhausting emergency reserve of air supply

## READY:

Prior to crews entering an IDLH atmosphere, members should do a R.E.A.D.Y. check to catch any potential issues that could cause problems once inside the hazardous environment. Studies have shown that many problems on the fire ground are attributed to the omission of one or more of these.

**R**adio – verify radios are on and everyone is on the correct channel.

**E**quipment – everyone has the equipment needed to do their task. Verify each members PPE is in place and secured.

**A**ir – each member should do an air check and verify they have enough air.

**D**uties – all members know the assigned duties.

**Y**es – When all the above is good, you may enter the IDLH atmosphere.

Once inside remember to monitor your air supply. The HUD will show an amber light when the air cylinder reaches 50% of its volume. The only way to know how close you are to your low-air alarm is to read the pressure gauge. Remember, the last 25% / 33% of remaining air is your emergency reserve should something go wrong. Plan your exit so that you have enough air to make it out of the hazardous environment before the low-air alarm activates. This will require periodic air checks.