



ANN ARBOR FIRE DEPARTMENT

Standard Operating Procedures – 2.01 Respiratory Protection



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Approved: Fire Chief Mike Kennedy

I. PURPOSE

[General Industry standard 1910.134](#) of the Michigan Occupational Health Standards requires that a Respiratory Protection Program shall be established whenever respirators are required to be used in an occupational setting. This program is a guideline to prevent employee overexposure to atmospheric contaminants and oxygen deficient atmospheres which are potentially harmful to health.

II. SCOPE AND APPLICATION

This written respirator program is a partnership between the Safety Unit and the Fire Department. It applies to all employees assigned to wear respirators.

III. RESPONSIBILITIES

A. Employer

- i. Determine the need for respiratory protection.
- ii. Establish and maintain a Respiratory Protection Program in compliance, with all requirements of 1910.134 of the Michigan Occupational Health Standards.
- iii. Provide all employees in the program with respirators appropriate to the purpose intended.

B. Employees

- i. Wear assigned respirator when and where required and in the manner in which they were trained.
- ii. Care for and maintain their respirators as instructed and store them in a clean and sanitary location.
- iii. Inform supervisor if the respirator no longer fits well and request a new one that fits properly.
- iv. Inform supervisor or the Program Administrator of any respiratory hazards that are not adequately addressed in the workplace and of any other concerns regarding the program.

C. Program Administrator

- i. The City of Ann Arbor Safety Unit Manager is the Program Administrator. This person administers or oversees the respiratory program including evaluating its effectiveness. The program administrator may designate other employees to carry out specific functions for compliance.

IV. SELECTION OF RESPIRATORS IN THE WORKPLACE AND PROCEDURES FOR USE IN FIREFIGHTING

All personnel expected to respond and function in toxic atmospheres shall be equipped with SCBA and trained in its proper use and care. These respirators shall be used in accordance with the manufacture's recommendations and Michigan Fire Fighters Training Council performance testing guidelines.



ANN ARBOR FIRE DEPARTMENT

Standard Operating Procedures – 2.01 Respiratory Protection



Respirators for IDLH (Immediately Dangerous to Life and Health) Atmospheres

- A. Atmosphere supplying respirators shall be used by all personnel working in areas where:
- B. The atmosphere is immediately dangerous to life and health (IDLH).
- C. The atmosphere is suspected of being IDLH.
- D. The atmosphere may rapidly become IDLH.
- E. All interior structural fires, hazmat response hot zones and confined space entries shall be considered to be IDLH, unless air monitoring proves otherwise.

The fire department shall provide the following respirators for fire department use in IDLH atmospheres:

- A. A full facepiece positive pressure SCBA certified by NIOSH for a minimum service life of thirty minutes, or,
- B. A combination full facepiece pressure demand/positive pressure supplied air respirator (SAR) with auxiliary self-contained air supply for emergency escape certified by NIOSH (for confined space rescue).

Note: [MIOSHA Part 554. Bloodborne Infectious Diseases](#) will regulate respiratory protection and exposure to M. Tuberculosis, that matter will be addressed in a separate program.

V. MEDICAL EVALUATIONS OF EMPLOYEES REQUIRED TO USE RESPIRATORS

Using a respirator may place physiological burdens on firefighters that vary with the type of work in which the respirator is used and the medical status of the employee. Accordingly, each employee must undergo a medical evaluation to determine the employee's ability to use the respirator. All new employees must undergo a medical evaluation prior to being fit tested or required to use the respirator. Medical evaluations shall be administered to all uniformed employees of the fire department annually.

The Safety Unit annually identifies a Physician or other Licensed Health Care Professional (PLHCP) to administer a medical questionnaire to each employee who wear a respiratory. The questionnaire shall be administered confidentially. The questionnaire will determine the need for a follow up physical examination.

Note: Based on a written interpretation from the Michigan Department of Community Health, Division of Emergency Medical Services a licensed paramedic may not independently and exclusively evaluate medical evaluation forms, sign off and issue approval for respirator usage nor are they entitle to do respiratory usage evaluations under the supervision of a licensed physician. The employee shall have the opportunity to discuss the questionnaire and examination results with the designated Physician or Licensed Health Care Professional if so requested.

After an employee has received clearance and begun to wear the respirator, additional medical evaluations will be provided under the following circumstances:

- A. Employee reports signs and/or symptoms related to their ability to use a respirator, such as shortness of breath, dizziness, chest pains, or wheezing;



ANN ARBOR FIRE DEPARTMENT



Standard Operating Procedures – 2.01 Respiratory Protection

- B. The physician or supervisor informs the Program Administrator that the employee needs to be reevaluated;
- C. Information from this program, including observations made during fit testing and program evaluation, indicates a need for reevaluation;
- D. A change occurs in workplace conditions that may result in an increased physiological burden on the employee.

The program administrator, employee and physician would arrange an appropriate time for the exam. All the above exams are paid for by the employer.

VI. FIT TESTING PROCEDURES

All employees wearing respirators must be fit tested with the same make, model, style, and size of respirator that will be used on the job. The training division will oversee and track the fit testing of fire department employees.

Fit tests will be conducted on all employees who use respirators following the initial medical evaluation, at least annually thereafter, or whenever the employer observes or receives a report of changes in the employee's physical condition that could affect respirator fit, or the employee states that the fit of the respirator is unacceptable.

Factors that may affect mask fit are:

- A. Significant weight change.
- B. Significant facial scarring in the area of the facepiece seal.
- C. Significant dental changes.
- D. Reconstructive or cosmetic facial surgery.
- E. Any other condition that would interfere with mask fit.

Fit tests will be administered using an OSHA accepted qualitative or quantitative test in the negative pressure mode. The protocol used will be stated on the fit test record for each employee.

VII. PROCEDURES FOR PROPER RESPIRATOR USE

- A. Employees will use their respirators under conditions specified by this program, and in accordance with the training they receive on the use of each particular model. In addition, the respirator shall not be used in a manner for which it is not certified by NIOSH or by its manufacturer.
- B. All employees shall conduct user seal checks each time that they wear their respirator.
- C. Employees are not permitted to wear tight fitting respirators if they have any condition such as facial scars, beards or other facial hair, or missing dentures that prevents them from achieving a good seal. Employees are not permitted to wear headphones, jewelry, glasses, or other articles that may interfere with the facepiece to face seal.
- D. **Procedures for IDLH (Immediately Dangerous to Life and Health) Atmospheres (2 1n/2 Out):**
 - a. The following are not meant to preclude an Incident Commander from starting suppression (not entering) or rescue operations (entering) in a structural incident.



ANN ARBOR FIRE DEPARTMENT



Standard Operating Procedures – 2.01 Respiratory Protection

The requirement intends that the Rapid Intervention Team (RIT) be established as soon as practical to ensure safety of firefighters, yet not detract from the responsibility to provide rescue and suppression to citizens.

- b. Rapid Intervention Team as described in NFPA 1500 6 5:
 - i. A rapid intervention crew shall consist of at least two members and shall be available for rescue of a member or a team if the need arises. Rapid intervention crews shall be fully equipped with the appropriate protective clothing, protective equipment, SCBA, and any specialized rescue equipment that might be needed given the specifics of the operation under way.
 - ii. The composition and structure of rapid intervention crews shall be permitted to be flexible based on the type of incident and the size and complexity of operations. The incident commander shall evaluate the situation and the risks to operating teams and shall provide one or more rapid intervention crews commensurate with the needs of the situation.
- c. In the early stages of an incident, which includes the deployment of a fire department's initial attack assignment, the rapid intervention crew(s) shall be in compliance with NFPA 1500 6 4.4 and 6 4.4.2 and either one of the following:
 - i. On scene members designated and dedicated as rapid intervention crew(s)
 - ii. On scene members performing other functions but ready to redeploy to perform rapid intervention crew functions. The assignment of any personnel shall not be permitted as members of the rapid intervention crew if abandoning their critical task(s) to perform rescue clearly jeopardizes the safety and health of any member operating at the incident.
 - iii. While working in IDLH atmospheres, during interior firefighting operations in fires that have progressed beyond the incipient stage, or HazMat operations, employees entering will work in teams having a minimum of two (2) persons who remain in visual or voice contact.
- d. Two firefighters shall be located outside the IDLH atmosphere; visual, voice, or signal line communication is maintained between the firefighters in the IDLH atmosphere and the firefighters located outside the IDLH atmosphere.
- e. The firefighters located outside the IDLH atmosphere shall be trained and equipped to provide an effective emergency rescue.
- f. The Incident Commander is notified before the RIT located outside the IDLH atmosphere enter the IDLH atmosphere to provide an emergency rescue. When the "two out" enter to perform rescue, they must first notify the Incident Commander. The department must immediately provide additional assistance.
- g. Once notified, the RIT provides necessary assistance appropriate to the situation. Rescuers shall wear SCBA and appropriate retrieval equipment for removing the employee(s) who enter these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry. This could include a



ANN ARBOR FIRE DEPARTMENT

Standard Operating Procedures – 2.01 Respiratory Protection



charged hose line.

- h. If a firefighter detects a vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece the firefighter will notify their partner and the IC and leave the area immediately.
- E. Nothing in this rule is meant to preclude firefighters from performing emergency rescue activities before an entire team has assembled, however, such action is not to be considered a standard of operation. Whenever the Two In, Two Out rule is not followed, a written report must be submitted to the fire chief, by the individual(s) who were involved in the incident explaining the necessity of doing so.

VIII. CLEANING, DISINFECTING, STORING, INSPECTING, REPAIRING, DISCARDING, AND MAINTAINING RESPIRATORS

- A. The fire department shall provide personnel with a respirator that is sanitary, and in good working order. Fire department personnel shall ensure that respirators are cleaned and disinfected using the procedures recommended by the respirator manufacturer. The respirators shall be cleaned and disinfected at the following intervals:
- B. Respirators issued for the exclusive use of a firefighter shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition.
- C. Respirators issued to more than one firefighter shall be cleaned and disinfected before being worn by different individuals.
- D. Respirators used in fit testing and training shall be cleaned and disinfected after each use.
- E. Respirator face pieces assigned to personnel (personal facepieces) shall be cleaned and disinfected as required by the user of the facepiece.
- F. The face piece shall be placed in a clean, dry container and stored in a manner which prevents deformation of the face seal, other damage or contamination.
- G. Respirator facepieces are stored in fire department issued mask bags.
- H. The cleaning and disinfecting procedure supplied by the manufacturer/seller of the respirator shall be used by the department. Station officers will ensure an adequate supply of appropriate cleaning and disinfection material are at their cleaning station. If supplies are low, employees should contact their supervisor, who will inform the department's officer who orders cleaning supplies.

IX. MAINTENANCE

- A. Respirators are to be properly maintained to ensure that they function properly and adequately protect the employee. Maintenance involves a thorough visual inspection for cleanliness and defects. Worn deteriorated parts will be replaced prior to use. No components will be replaced or repairs made beyond those recommended by the manufacturer. Repairs to regulators or alarms of atmosphere supplying respirators will be performed by the manufacturer or a person certified by the manufacturer.
- B. Air cylinders shall be maintained in a fully charged state and shall be recharged when the pressure falls to 90% of the manufacturer's recommended pressure level. Fire department personnel shall determine that the regulator and warning devices function properly. For fire department respirators, fire department personnel shall:
- C. Each suppression member shall be accountable for one (1) or more SCBA and shall check that SCBA for condition at the beginning of each shift and after each use, or at any other time it may be necessary to render the equipment fully operational.



ANN ARBOR FIRE DEPARTMENT



Standard Operating Procedures – 2.01 Respiratory Protection

- D. Station officers will be responsible for all non-suppression respirators being certified by documenting the date the inspection was performed (at least monthly), the name (or a signature) of the person who made the inspection, the findings, required remedial action, and a serial number or any other means of identifying the inspected respirator.
- E. Provide this information on a tag or label that is attached to the storage compartment for the respirator, or is kept with the respirator, or is included in inspection reports stored as paper or electronic files. This information shall be maintained until replaced following a subsequent certification.
- F. The fire department shall ensure that respirators that fail an inspection or are otherwise found to be defective are removed from service, and are discarded or repaired or adjusted in accordance with the following procedures:
- G. Defected SCBAs shall be tagged forwarded to the Logistics Division for repair.
- H. Repairs or adjustments to respirators are to be made only by persons appropriately trained to perform such operations and shall use only the respirator manufacturer's NIOSH approved parts designed for the respirator;
- I. Repairs shall be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed; and
- J. SCBA repairs including but not limited to reducing and admission valves, regulators, and alarms shall be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer or vendor supplying the equipment to the fire department.
- K. Anytime an SCBA is exposed to pesticides, fungicides, biological agents, radiation sources, insecticides, or other concerning hazardous material, the battalion chief shall notify the Logistics Division, which will exchange and check of the involved SCBA.

X. QUALITY AND QUANTITY OF BREATHING AIR

- A. Breathing air in the SCBA cylinder shall meet the requirements of the Compressed Gas Association G 7.1 1989, COMMODITY SPECIFICATION FOR AIR, with a minimum air quality of Grade D. Private vendors supplying the fire department with compressed breathing air shall provide a copy of the most recent inspection and certification.
- B. The purity of the air from the fire department's air compressor shall be checked by a competent laboratory quarterly. The Logistic Division shall coordinate air testing.
- C. The fire department shall assure that sufficient quantities of compressed air are available to refill SCBA for each incident. This shall be accomplished with the use of the mobile air compressor.
- D. Air cylinders for SCBA shall be filled only by trained personnel.
- E. Compressed oxygen shall not be used in open circuit SCBA.
- F. Standards for breathing air and hazards associated include:
 - i. Oxygen content (v/v) of 19.5-23.5%.
 - ii. Hydrocarbons (condensed) content of 5 milligrams per cubic meter of air or less;
 - iii. Carbon monoxide (CO) content of 10 ppm or less;
 - iv. Carbon dioxide content of 1,000 ppm or less;
 - v. Lack of a noticeable odor.
- G. The fire department shall ensure that cylinders used to supply breathing air to respirators meet the following requirements:



ANN ARBOR FIRE DEPARTMENT



Standard Operating Procedures – 2.01 Respiratory Protection

- i. Cylinders are tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR part 173 and part 178) test requirements of three years for composite cylinders and five years for steel or aluminum cylinders. Note: composite cylinders have a maximum use life of 15 years.
- ii. The moisture content in the cylinder does not exceed a dew point of 50°F at 1 atmosphere pressure.

XI. RESPIRATORY HAZARDS AND TRAINING ON RESPIRATOR USE

The fire department is required to provide training to those who use respirators. The training must be comprehensive, understandable, and occur annually. Documentation of this training shall occur.

The fire department shall ensure that each firefighter can demonstrate knowledge of at least the following:

- A. Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator;
- B. What the limitations and capabilities of the respirator are;
- C. How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions;
- D. How to inspect, put on and remove, use, and check the seals of the respirator;
- E. What the procedures are for maintenance and storage of the respirator;
- F. How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators;
- G. The general requirements of this program.

The training shall be conducted in a manner that is understandable to the firefighter.

Retraining shall be administered annually, or when the following situations occur:

- A. Changes in the workplace or the type of respirator render previous training obsolete;
- B. Inadequacies in the firefighters knowledge or uses of the respirator indicate that the firefighter has not retained the requisite understanding or skill;
- C. Any other situations arise in which retraining appears necessary to ensure safe respirator use.

XII. PROCEDURES FOR EVALUATING THE RESPIRATOR PROGRAM

Each year the assistant chief of health and safety shall initiate a review of the procedures contained in this program. All employees who wear, service or supervise employees wearing respirators shall periodically be asked to provide information on:

- A. Adequacy of the respirator(s) being used.
- B. Accidents, incidents in which the respirator failed to provide adequate protection.
- C. Adequacy of training and maintenance on respirator use.

The Program Administrator shall recommend changes in the program and its implementation based on this information.



ANN ARBOR FIRE DEPARTMENT

Standard Operating Procedures – 2.01 Respiratory Protection



XIII. RECORDKEEPING

The employer (City of Ann Arbor) is required to keep the following records to assure compliance with this written program:

- A. Medical evaluation records
- B. Fit testing records
- C. Annual Respirator Program Review
- D. In addition, the fire department will maintain records of employee training, e.g., date, attendees, trainer(s), subject matter.



ANN ARBOR FIRE DEPARTMENT

Standard Operating Procedures – 2.01 Respiratory Protection



XIV. APPENDIX A – INSPECTION AND CLEANING OF THE SCOTT AV-3000 HT FULL FACEPIECE

Regular Operational Inspection

Before each use of the respirator, perform the following INSPECTION of the facepiece as part of the REGULAR OPERATIONAL INSPECTION of the complete respirator as defined in the USER INSTRUCTIONS supplied with the respirator:

Inspect the facepiece seal and other rubber components for deformation, wear, damage, or cracks.

Inspect the lens and lens frame as follows:

- A. Inspect the lens for scratches, gouges, cracks, crazing, distortion, melting, or any other damage or condition that could impair the user's vision or the operation of the facepiece.
- B. Inspect the lens frame for damage such as cracks or distortion.
- C. Verify that the lens frame screws are present and installed correctly.

Inspect the head harness as follows:

- A. Check that all harness anchors are present and operating properly.
- B. Inspect the head harness for correct installation with all straps oriented correctly.
- C. Inspect the head harness for damage or worn components.

Inspect the voicemitter ducts as follows:

- A. Verify that the voicemitter ducts are properly installed through the facepiece lens.
- B. Verify that each voicemitter duct has an outer grill installed and the grills are not damaged.
- C. If the facepiece has a communications bracket installed, verify that the bracket is not damaged and that it is properly installed and secure.
- D. Inspect the voicemitters for damage and verify that the voicemitters are properly installed and secure in the voicemitter ducts.

CAUTION - Always verify that the proper nose cup is installed prior to donning the AV-3000 HT full facepiece.

Inspect the nose cup as follows:

- A. Inspect the nose cup for cuts or damage. Look for any signs of damage to the facepiece port side of the nose cup where the regulator attaches.
- B. Verify that both inhalation valves in the nose cup are present and properly installed. Inhalation valves must be clean and undamaged. Verify that the valve stems are secure and that the valves lay flat inside the nose cup. See FIGURE 1.



FIGURE 1 Check Inhalation Valves



ANN ARBOR FIRE DEPARTMENT

Standard Operating Procedures – 2.01 Respiratory Protection



- C. Verify that the nose cup is properly installed. Check that the nose cup is properly seated between the flanges of the voicemitter ducts and over the chin cup. See FIGURE 2.



FIGURE 2. Nose Cup Pulled to Outside of Face Seal

Verify that the facepiece is clean.

Adjust the head straps to the full outward position. The facepiece must be complete and in serviceable condition with no worn, loose, or damaged components. If any damage is found, remove the facepiece from service and tag for repair by authorized personnel.

Cleaning and Storage

Supplies needed:

- A. Scott recommended sanitizing or disinfecting cleaner such as Wescodyne Plus. This is a dilute iodine solution.
- B. Drinking (potable) water - running or in a spray bottle
- C. Air supply of lubricant free, dry breathing air, maximum 30 psig, for drying

NOTE - The nose cup is designed to be an integral part of the facepiece and does not need to be removed for cleaning and disinfecting. If the nose cup is removed for inspection, make certain it is reinstalled properly.

Carefully wash the facepiece assembly with Scott recommended cleaner according to the instructions provided with the cleaner and thoroughly rinse in clean water.

If the facepiece is heavily soiled, it may be necessary to first wash the facepiece with a solution of mild soap or detergent in warm water (110° F / 43° C maximum).

- A. If there is dirt or debris in the voicemitter ducts, remove the plastic Voicemitter Grill Covers and clean any trapped debris from the inside of the voicemitter ducts.
- B. Rinse thoroughly and replace the Voicemitter Grill Covers.

To sanitize or disinfect the facepiece, use the Scott recommended sanitizing or disinfecting cleaner according to the instructions provided with the cleaner. Sanitizing or disinfecting may require a specific contact time of the cleaner prior to rinsing.

NOTE - The Scott recommended cleaner may not be effective on head harnesses made of porous material such as Kevlar2 or polyester.



ANN ARBOR FIRE DEPARTMENT

Standard Operating Procedures – 2.01 Respiratory Protection



Rinse with drinking water using a spray bottle or running water.

Shake excess water off of facepiece and then dry with a clean, lint free cloth or gently blow dry with clean, dry breathing air of 30 psig or less pressure. DO NOT use shop air or any other air containing lubricants or moisture.

Dry thoroughly before storage.

DO NOT store the facepiece with the regulator/adaptor attached.

Store the facepiece with nothing on top of it that could cause deformation or distortion of the facepiece lens, seals, or other parts.

DO NOT use abrasive cleaners.

DO NOT use bleach stronger than a 3% solution in water.

DO NOT use cleaners which contain quaternary ammonium compounds.

DO NOT use solvents such as acetone, paint and lacquer thinner, benzene, or dry cleaning fluid.

DO NOT polish with paper towels as most paper contains abrasives.

DO NOT autoclave or wash in an automatic washer.

DO NOT use a vapor degreaser/polisher.

CAUTION - The lens in this facepiece assembly is molded of polycarbonate plastic and hard-coated to resist abrasion, but care in handling and cleaning is still required. The lens can be damaged by abrasive or harsh cleaners and softened by some solvents. While many household cleaners, disinfectants, and plastic cleaners are acceptable, first test the cleaner on the edge of a lens outside the viewing area. If the cleaner causes any scratches or any change in the appearance of the lens, do not use the cleaner as it may cause irreparable damage to the facepiece.



ANN ARBOR FIRE DEPARTMENT

Standard Operating Procedures – 2.01 Respiratory Protection



APPENDIX B – REGULAR OPERATIONAL INSPECTION FOR SCOTT AIR-PAK X3 SCBA

Inspection of a PAK-ALERT Distress Alarm

Inspect and test the Scott PAK-ALERT distress alarm along with the inspection and test of the Scott SCBA respirator before each use. If any malfunction of the respirator or the PAK-ALERT distress alarm is noted during the inspection, remove the respirator from service and tag for repair by authorized personnel.

NOTE - In several of the inspection procedures described a full alarm will be observed. The full alarm condition includes an audible tone that can exceed 95 dB at 3 meters (9.9 ft.). To prevent possible hearing damage during test, immediately reset the alarm on verification that it is functioning properly. Wear hearing protection if prolonged or repeated exposure to a full alarm condition is anticipated.

NOTE - If this inspection is done in direct sunlight it may be helpful to shade the lens on the control console with your hand to be sure the lights are flashing as described.

1. While performing the visual inspection of the respirator, visually inspect all distress alarm enclosures, lenses, and wire conduits for cracks, wear or other damage. If any damage is found, remove the respirator from service and tag for repair by qualified personnel.
2. With the cylinder valve closed, press the manual alarm button, located on the front of the distress alarm control console. The manual alarm shall sound a loud almost continuous 3 tone chirp accompanied by flashing of the red signal light on the control console.
3. Reset the manual alarm by pressing **twice** on the reset button located on the side of the control console (**fully depress reset button, release and press again**). The unit will sound three chirps and the green light will flash.
4. Turn the PAK-ALERT distress alarm OFF by pressing the reset button **twice** again. The unit will sound a two tone chirp and the green light will go out.
5. Open the cylinder valve to pressurize the respirator system. The distress alarm shall sound 3 quick chirps and the light on the control console shall begin flashing green about once a second. The 3 chirps will sound approximately the same time the VIBRALERT in the mask mounted regulator actuates briefly. Make sure the air flow is stopped by pressing the air saver/donning switch.
6. To check the pre-alarm, leave respirator motionless for twenty (20) seconds. The green flashing light shall be replaced by a red flashing light. An ascending/descending tone will sound increasing in volume. Leave the respirator motionless.
7. After the pre-alarm condition occurs, check the pre-alarm reset. Within twelve (12) seconds of the pre-alarm, move the respirator to activate the motion sensor. The PAK-ALERT distress alarm shall reset to the automatic mode. The red flashing light shall be replaced by a green flashing light and the ascending/descending tone shall stop.
Continue with regular operational inspection of respirator as directed by respirator instructions or your approved respiratory protection plan procedure. During the inspection the respirator must be moved or turned every thirty (30) seconds or less to prevent the sounding of the full alarm.



ANN ARBOR FIRE DEPARTMENT

Standard Operating Procedures – 2.01 Respiratory Protection



After completion of all respirator checks and before turning off the cylinder valve:

1. Check the manual reset of the pre-alarm. Leave the respirator motionless until pre-alarm condition occurs. Within twelve (12) seconds press and **hold** the reset button. Three (3) chirps shall sound, then release button. The distress alarm shall reset to the automatic mode and the flashing red light will be replaced by a flashing green light.
2. To check the full alarm, leave the respirator motionless until the pre-alarm condition occurs. Do not reset. The full alarm shall sound a loud almost continuous 3 tone chirp accompanied by flashing of the red signal light on the control console.
3. Reset the full alarm by pressing **twice** on the reset button located on the side of the control console (**fully depress reset button, release and press again**). The loud alarm shall stop. The unit will sound three chirps and the green light will flash. The unit shall reset to the automatic mode.
4. Finish all respirator checks involving air flow and turn off the cylinder valve. Use the purge valve to release all residual air pressure in the system.

WARNING - If the low battery indication (one steady chirp every two (2) seconds with no flashing lights) occurs at any time during regular operational inspection, do not use the respirator. Change the batteries in the sensor module immediately and repeat the regular operational test or take the respirator out of service until the batteries are changed and the regular operational test is successfully performed. Failure to replace the batteries and/or continuing with multiple uses of the respirator after the low battery condition has been indicated by the Pak-Alert distress alarm may result in failure of the Pak-Alert distress alarm during use and possible injury or death of the user.

With the cylinder valve OFF:

1. Check the continuing operation of the distress alarm. The distress alarm shall remain active with green light flashing. Do not move respirator, pre-alarm shall occur with twenty (20) seconds. Move respirator slightly, pre-alarm shall reset, green light shall start flashing again.
2. To turn the distress alarm off, press the reset button twice (press, release and press again). If there is air pressure left in the system, the green flashing light will continue to flash while a fifteen second beep sequence is heard from the Sensor Module as the residual air bleeds from the system. As soon as the air has completely bled from system, the unit will sound a quick two tone chirp and the PAK-ALERT distress alarm will be inactive. If there is no air pressure in the system when the RESET button is pressed twice, there will be no beep sequence, only the quick two tone chirp. The distress alarm is now in the "OFF" condition. If there is any air pressure left in the system, the PAK-ALERT distress alarm will return to the active mode.



ANN ARBOR FIRE DEPARTMENT

Standard Operating Procedures – 2.01 Respiratory Protection



Operation of Sensor Module Lights

When performing the regular operational inspection verify that the Sensor Module lights are operating as described below:

ACTION...	SENSOR MODULE LIGHTS WILL...
Start up PASS (Open Cylinder).....	Bright Light then Flash GREEN
Normal Operation.....	Flash GREEN
Respirator Air between 1/2 and 1/3 cylinder.....	Flash ORANGE (two quick flashes) every one (1) second
Respirator Low air (1/3 cylinder).....	Flash ORANGE (alternately)
Low Battery while ON.....	Flash ORANGE once every two (2) seconds
Shut down	Lights OFF
Press RESET w/unit OFF (BATTERY TEST)..	Bright Light then: Flash GREEN if Good/Flash RED if Low
Press MANUAL ALARM with unit OFF	Flash GREEN then Full Alarm Flash RED
Press RESET from manual alarm	Returns to Flash GREEN
PASS Pre-Alarm	Flash RED (alternately)
PASS Full alarm.....	Flash RED (simultaneously)

NOTE - The orange light is a combination of the red, green, and white lights that appears orange from a distance. At close range the individual lights may be visible.



ANN ARBOR FIRE DEPARTMENT

Standard Operating Procedures – 2.01 Respiratory Protection



Quick Reference Guide To Use

WHEN YOU WANT TO:	YOU DO:	THE PAK-ALERT DISTRESS DOES:
Turn it on.	Open cylinder valve (cylinder must have air in it).	3 quick audible chirps, green flashing light on control console.
Re-set pre-alarm	Move so that the respirator moves.	Red flashing light changes to green, ascending/descending tone stops.
Re-set full alarm	Press re-set button on control console twice (push, release, push again).	Loud 3 tone chirp stops, 3 quick chirps, then red flashing light changes to green flashing light.
Turn it off (finished with use)	Close respirator cylinder valve, open regulator purge valve letting out all the trapped air, close regulator purge valve, press re-set button twice.	The flashing light goes out and a fifteen (15) second beep sequence occurs as the residual air bleeds off. Unit will sound a two tone chirp at turn off.
Turn on the manual alarm.	Press alarm button on control console (works whether the PAK-ALERT distress alarm is on or off). DRAFT	Goes into full alarm, loud 3 tone chirps from Sensor Module and bright red flashing light from control console.

WHEN THE PAK-ALERT DISTRESS ALARM IS:	IT INDICATES THAT:
Quiet. No lights or sound	The PAK-ALERT distress alarm is off or the batteries are used up or removed.
Flashing the green light	The PAK-ALERT distress alarm is on, in automatic mode, and monitoring your motion.
Flashing the red light and sounding an ascending / descending tone.	You have not moved in the last twenty (20) seconds, PAK-ALERT distress alarm will go into full alarm in twelve (12) seconds or less if you do not move.
Flashing the red light and sounding a loud continuous 3 tone chirp	Full alarm: You have not moved in the last thirty (30) seconds or more or you pushed the manual alarm button.
Chirping once every two (2) seconds with no light flashing	The batteries are low. You must put in new batteries before using the PAK-ALERT distress alarm again (it will work in low battery condition long enough to let you finish the cylinder of air you are on).



ANN ARBOR FIRE DEPARTMENT

Standard Operating Procedures – 2.01 Respiratory Protection



Battery Replacement

Scott respirators equipped with the PAK-ALERT distress alarm require six (6) “AA” cell batteries for operation. The six (6) batteries power the Heads-Up Display, the PASS device, and the PAK-TRACKER Transmitter. The batteries should be replaced only by a trained maintenance technician in a clean area known to be nonflammable.

Cleaning, Maintenance and Storage

Cleaning, maintenance and storage of a respirator equipped PAK-ALERT distress alarm shall be done as part of the normal respirator cleaning and storage and regular operational inspection.

Clean the exterior of the PAK-ALERT distress alarm while cleaning the exterior of the respirator by wiping with a damp sponge and thoroughly wiping dry. The Signal Light lens on the front of the control console should be cleaned after every use to insure maximum light intensity at all times. Do not use solvents for cleaning or attempt to paint or apply decals to the exterior surfaces of the PAK-ALERT distress alarm. If during use, the respirator and/or PAK-ALERT distress alarm is suspected of being contaminated by a hazardous substance, the contaminant must be identified and properly removed or the contaminated component(s) must be replaced before next use. Dispose of the contaminant or the contaminated component(s) in accordance with applicable regulatory requirements.