



OPERATION AND MAINTENANCE INSTRUCTIONS

SEMS[®] II

**SCOTT ELECTRONIC MANAGEMENT SYSTEM
PERSONAL DISTRESS ALARM AND BASE STATION
USER ACCOUNTABILITY SYSTEM, PERSONAL DISTRESS ALARM,
AND SCOTT PAK-TRACKER LOCATOR SYSTEM
FOR THE SCOTT SELF-CONTAINED BREATHING APPARATUS**



SEMS[®] II CONSOLE



**SEMS II BASE STATION PCMCIA CARD
(SHOWN WITH REQUIRED LAPTOP COMPUTER,
NOT INCLUDED)**

WARNING

THE SCOTT SEMS II USER ACCOUNTABILITY SYSTEM IS INTENDED FOR USE WITH SCOTT SELF-CONTAINED BREATHING APPARATUS (SCBA) WHICH MAY SUPPORT HUMAN LIFE IN HAZARDOUS ATMOSPHERES. FAILURE TO CAREFULLY READ AND UNDERSTAND THE FOLLOWING INSTRUCTIONS MAY RESULT IN SERIOUS INJURY OR DEATH TO THE SCBA USER.

USE OF A RESPIRATOR INTEGRATED WITH THE SEMS II USER ACCOUNTABILITY SYSTEM WILL REQUIRE MODIFICATION OF THE RESPIRATOR "REGULAR OPERATIONAL INSPECTION PROCEDURES" AND WILL REQUIRE TRAINING OF THE RESPIRATOR USER IN THE USE OF SUCH RESPIRATORS.

THE FOLLOWING INSTRUCTIONS SUPPLEMENT BUT DO NOT REPLACE THE OPERATING AND MAINTENANCE INSTRUCTIONS SUPPLIED WITH EACH RESPIRATOR.

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SYSTEM DESCRIPTION

SEMS II ACCOUNTABILITY SYSTEM

The SCOTT Electronic Management System (SEMS II) is an accountability system that provides three methods of communication between respirator users in a hazardous area and an incident commander or other designated person outside of the hazardous area. The SCOTT SEMS II Personal Distress Alarm (PDA) is an optional accessory which is intended to be integrated only with a compatible SCOTT self-contained breathing apparatus (SCBA) such as the AIR-PAK® SCBA. The installation of the SCOTT SEMS II PDA distress alarm is approved by the National Institute of Occupational Safety and Health (NIOSH) on specific models of SCOTT SCBA.

The complete system provides three main functions:

- The SEMS II Personal Alert Safety System (PASS) on the SCBA to sound a loud alarm when the user is motionless for a short period of time;
- The SEMS II Accountability System with computer Base Station monitoring of the assignment and status of up to 99 individual users, including air supply levels, PASS activation, and evacuation calls;
- The PAK-TRACKER Locator System to locate the transmitted signal from a SEMS II PDA Portable Unit where the PASS has been activated.

The complete SEMS II Accountability System equipment consists of:

- Individual SEMS II PDA Portable Units with Control Console attached to the SCOTT self-contained breathing apparatus;
- A SEMS II Personal Distress Receiver (PDR) Base Station (the Base Station PCMCIA Card and the SCOTT SEMS II Accountability System Software installed in a Personal Computer);
- Programmable ID Tags and programming equipment;
- A PAK-TRACKER Hand Held Receiver for search and rescue.

The PDA Portable Units can transmit and receive specific information between the respirator users and the Base Station operator. The specific information consists of user identification and status as well as alerts for evacuation. Complete training in the use of the SEMS II equipment is required before actual use in a hazardous environment.

When logged on, all the SEMS II PDA Portable Units communicate to the Base Station both directly and through other logged on units forming a communications "mesh" to the Base Station. This extends the range for the units furthest away from the Base Station.

No personal alert safety system, respirator, or combination of personal alert safety system and respirator, by themselves, can provide complete protection in dangerous situations. However, using an alarm and a respirator in accordance with the requirements of an organized respiratory protection program is one of the many safety precautions which should be taken to avoid personal injury or death.

These instructions explain the operation and use of the main functions of the SCOTT SEMS II Accountability System. Follow the REGULAR OPERATIONAL INSPECTION procedure as described. If any function fails to operate as described, do not use the equipment. Remove the unit from service and tag for repair by authorized personnel.

WARNING

DO NOT OPERATE THIS EQUIPMENT WHILE UNDER THE INFLUENCE OF DRUGS, ALCOHOL, OR ANY MEDICATIONS OR SUBSTANCES WHICH MAY AFFECT VISION, DEXTERITY, OR JUDGMENT. USERS OF THIS EQUIPMENT MUST BE IN GOOD PHYSICAL AND MENTAL HEALTH IN ORDER TO OPERATE SAFELY. DO NOT USE THIS EQUIPMENT WHEN FATIGUE PREVENTS SAFE OPERATION. STAY ALERT WHEN OPERATING THIS EQUIPMENT. INATTENTION OR CARELESSNESS WHILE OPERATING THIS EQUIPMENT MAY RESULT IN SERIOUS INJURY OR DEATH.

WARNING

USERS OF RESPIRATORS EQUIPPED WITH THE SEMS II DISTRESS ALARM MUST BE AWARE OF THE PROPER OPERATION OF THE DISTRESS ALARM. IF THE GREEN LIGHT IS NOT FLASHING NORMALLY, OR IF THE UNIT EXHIBITS ANY OTHER SIGNS OF A MALFUNCTION WITHOUT THE USER TAKING PROPER CORRECTIVE ACTION, IT MAY LEAD TO CIRCUMSTANCES THAT RESULT IN SERIOUS INJURY OR DEATH.

WARNING

NO PERSONAL ALERT SAFETY SYSTEM, RESPIRATOR OR COMBINATION OF PERSONAL ALERT SAFETY SYSTEM AND RESPIRATOR, BY THEMSELVES, CAN PROVIDE COMPLETE PROTECTION IN DANGEROUS SITUATIONS. FAILURE TO FOLLOW THE INSTRUCTIONS IN THIS MANUAL AND THE REQUIREMENTS OF AN ORGANIZED RESPIRATORY PROTECTION PROGRAM MAY LEAD TO SITUATIONS WHICH COULD RESULT IN SERIOUS INJURY OR DEATH.

WARNING

FOLLOW REGULAR OPERATIONAL INSPECTION PROCEDURE EXACTLY. IF THE SEMS II DISTRESS ALARM DOES NOT ACTUATE, OR IF ANY OTHER FEATURE DOES NOT OPERATE AS DESCRIBED OR IF ANY OTHER OPERATIONAL MALFUNCTION IS NOTED, DO NOT USE THE RESPIRATOR.

¹ Kevlar is a registered trademark of E. I. Du Pont de Nemours, Inc.

SEMS II PDA CONTROL CONSOLE

The SEMS II PDA Control Console is integrated into the SCOTT SCBA as a part of the remote air pressure gauge assembly which hangs over the right shoulder of the respirator user. The Control Console also operates the PERSONAL ALERT SAFETY SYSTEM (PASS) distress alarm intended to assist in locating a respirator user who is incapacitated or in need of assistance. The PASS distress alarm in this model reaches FULLALARM in a total of 30 (thirty) seconds. The Control Console has a set of status lights, a dial air pressure gauge, and three control buttons which can easily be pressed with gloved hands. Power is supplied by batteries in the SEMS II PDA distress alarm battery compartment on the SCBA backframe.



FIGURE 1
SEMS II CONTROL CONSOLE

SEMS II PDR BASE STATION

The SEMS II PDR Base Station consists of a SEMS II Accountability System Base Station PCMCIA Card installed in a Windows® based Personal Computer, preferably a laptop (not included). SCOTT recommends use of a laptop computer designed for rugged use.

With the SEMS II Accountability Software running on the PC, the incident commander has current information about status of the respirator users who are logged onto the Base Station, including information about air supply levels and PASS activation. Simple dedicated functions in the software control the transmission and receipt of signals with the respirator users. The same computer can be used for programming the ID Tags used with the SEMS II PDA distress alarm.

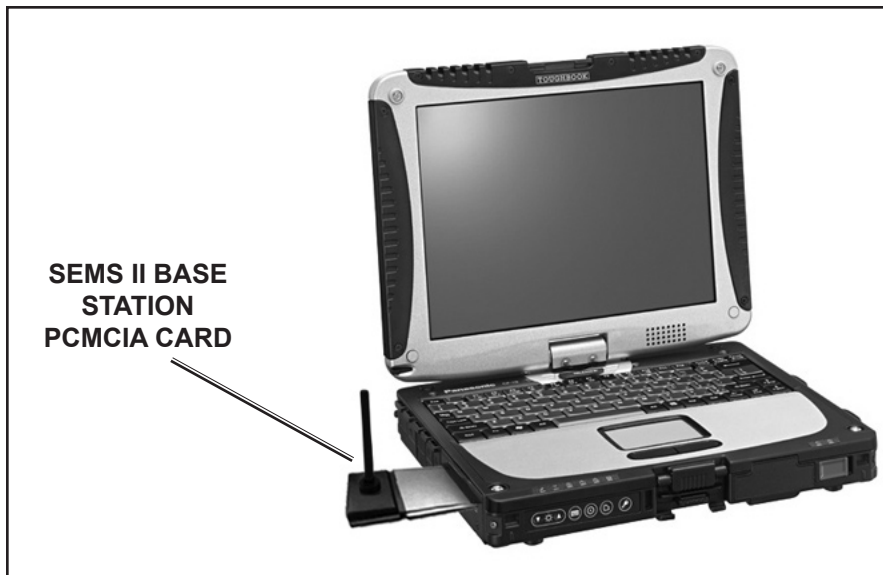


FIGURE 2
SEMS II BASE STATION PCMCIA CARD INSTALLED IN
A PANASONIC¹ TOUGHBOOK² LAPTOP PERSONAL COMPUTER

SYSTEM DESCRIPTION
CONTINUED ON NEXT PAGE...

¹ PANASONIC® is a registered trademark of PANASONIC CORPORATION CORPORATION JAPAN, OSAKA, JAPAN.

² Toughbook® is a registered trademark of PANASONIC CORPORATION OF NORTH AMERICA, SECAUCUS NEW JERSEY.

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SYSTEM DESCRIPTION CONTINUED...

When a respirator user opens the cylinder valve and begins use of a SCOTT SCBA equipped with the SEMS II PDA, the Portable Unit will automatically begin to operate. If the SEMS II PDR Base Station is present at time of entry, the SEMS II PDA must log-in with the Base Station before entry into the hazardous area. The Base Station will then continue to monitor the SEMS II PDA Portable Unit while it is in range until the respirator user terminates use of the SCBA.



FIGURE 3
EXAMPLE OF BASE STATION SCREEN DISPLAY

Programming of the ID Tags and Portable Units allows the organization to customize the identification of the SEMS II Portable Units. See SEMS II Programming Guide, SCOTT P/N 595177-01 for complete details of programming the SEMS II equipment.



ID
ID ICON

FIGURE 4
SEMS II RFID TAG WRITER, SCOTT P/N 200773-01.

Multiple organizations with SEMS II Accountability System equipment can operate at a single event scene since each Base Station operator can select and monitor which users log in on their Base Station. If another installation of SEMS II equipment is used in the same area, the operation of each group can remain discreet and separate between Portable Units and Base Stations.

The SCOTT SEMS II PDA distress alarm Portable Unit, when added to a SCOTT SCBA respirator, as shown in FIGURE 1, consists of a Sensor Module with battery compartment mounted to the bottom of the respirator backframe, a pressure gauge with transducer, and a Control Console mounted on the wearer's right shoulder strap at the pressure gauge location. The SEMS II PDA Portable Unit requires six (6) AA batteries to operate in the Sensor Module on the backframe.

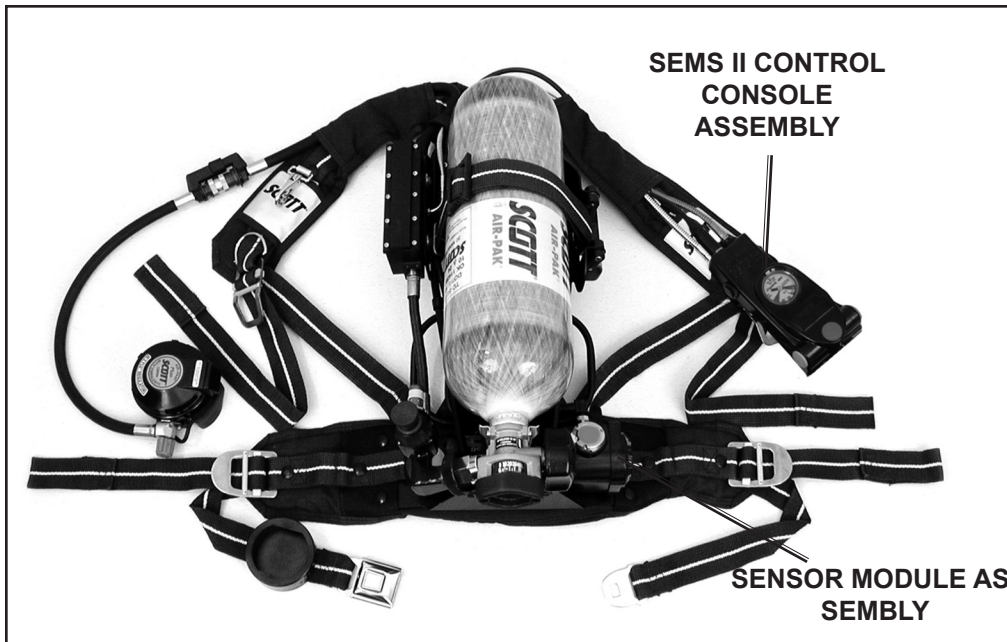


FIGURE 5
AIR-PAK SCBA WITH SEMS II DISTRESS ALARM ASSEMBLY

Installation of the SCOTT SEMS II PDA distress alarm requires some disassembly of the respirator and should only be performed by an authorized service center. Contact SCOTT HEALTH AND SAFETY, Monroe, NC at 1-800-247-7257 for details.

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PAK-TRACKER LOCATOR SYSTEM

The SCOTT PAK-TRACKER Locator System is a two part electronic system consisting of a PAK-TRACKER Transmitter integrated into the SCOTT SEMS II distress alarm, and a PAK-TRACKER Hand Held Receiver, which is a directional receiver used to locate the signal coming from the PAK-TRACKER Transmitter. The PAK-TRACKER locator system transmitter is activated with the PASS alarm. The transmitter emits a radio signal with a unique ID number that can be tracked using the SCOTT PAK-TRACKER Hand Held Receiver unit.



FIGURE 6
PAK-TRACKER
HAND HELD RECEIVER

The PAK-TRACKER Hand Held Receiver is then used as a directional receiver to assist in leading the rescue team to the activated transmitter. By pointing the PAK-TRACKER Hand Held Receiver in the direction of the strongest relative signal, the rescue crew can follow the signal toward the respirator user who is incapacitated or in need of assistance.

Use of this equipment must be part of a complete personnel accountability system that includes procedures for monitoring the deployment and condition of all users. Do not rely on the PAK-TRACKER Locator System as the only technique for locating missing personnel. Failure to use this equipment properly may actually increase the time needed to locate and rescue personnel. TRAINING AND PRACTICE IN REALISTIC EMERGENCY SIMULATIONS IS REQUIRED BEFORE USE OF THIS EQUIPMENT. The users must become thoroughly familiar with the operation and the limitations of the locator system before entering a potentially hazardous or life threatening situation.

The PAK-TRACKER Locator System User Instructions, SCOTT part number 595102-01, contain essential information on the use of the locator system and must be used as the basis of training for use of the whole system including use with a SEMS II distress alarm equipped with the PAK-TRACKER Transmitter. The PAK-TRACKER Locator System User Instructions include an overview of the system operation, limitations of the system, as well as any user level maintenance for the PAK-TRACKER Locator System equipment. Copies of the PAK-TRACKER Locator System User Instructions are available from your SCOTT distributor or from SCOTT Health and Safety.

WARNING

READ AND UNDERSTAND THIS ENTIRE MANUAL AND THE PAK-TRACKER LOCATOR SYSTEM MANUAL, P/N 595102-01. TRAINING IS REQUIRED BEFORE USE OF THIS EQUIPMENT IN A HAZARDOUS SITUATION. THE TRAINING MUST INCLUDE AN UNDERSTANDING OF THE LIMITATIONS OF THE EQUIPMENT AND HOW TO INTERPRET LOCATING INFORMATION, ALONG WITH EXTENSIVE PRACTICE WITH THE SYSTEM IN A VARIETY OF ENVIRONMENTS. USE OF THIS EQUIPMENT MUST A PART OF A COMPLETE PERSONNEL ACCOUNTABILITY SYSTEM. ALWAYS UPDATE TRAINING WITH EACH NEW PIECE OF EQUIPMENT. USE OF A PAK-TRACKER LOCATOR SYSTEM WITHOUT PROPER TRAINING MAY PLACE THE USERS AT HIGHER RISK IN DANGEROUS SITUATIONS WHICH COULD RESULT IN SERIOUS INJURY OR DEATH.

DATA LOGGING FEATURE

Respirators equipped with a SCOTT SEMS II distress alarm integrated PASS device are compliant to NFPA 1982, 2007 Edition. The PASS device includes on-board electronics which maintain a running log of event data including start-up, shut-down, and PASS activation. The SCOTT DATA LOGGER Computer Interface is required to access the information. Instructions for downloading the data log are SCOTT P/N 595123-01 and are included with the computer interface.

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OPERATION AND USE OF THE SEMS II DISTRESS ALARM (PASS)

ACTIVATION

Prepare the respirator for use according to the user instructions provided with the respirator.

Install the batteries in the SEMS II Sensor Module according to the BATTERY INSTALLATION section of this instruction.

With proper batteries and a charged air cylinder installed, the SEMS II distress alarm device is automatically activated when the respirator is pressurized by opening the cylinder valve of the respirator.

To indicate activation, the sensor module will sound 3 quick audible chirps and the green light located on the control console will flash approximately once a second. See FIGURE 4. The SEMS II distress alarm is now in the automatic mode.

In the automatic mode, the SCOTT SEMS II distress alarm constantly monitors motion of the respirator backframe. The sensor module is located on the respirator backframe beneath the air cylinder and contains the motion sensor and the audible alarm. If the sensor module does not sense motion of the respirator for twenty (20) seconds, the SEMS II distress alarm will signal a pre-alarm condition. If there is still no motion of the respirator for the next twelve (12) seconds the full alarm will sound.

The SCOTT SEMS II distress alarm will remain activated in the automatic mode until turned OFF according to these instructions.

WARNING

THE INFORMATION BELOW IS MEANT TO SUPPLEMENT, NOT REPLACE, THE TRAINING, SUPERVISION, MAINTENANCE, AND OTHER ELEMENTS OF YOUR ORGANIZED RESPIRATORY PROTECTION PROGRAM. SEE WARNING ON FIRST PAGE OF THIS DOCUMENT. FAILURE TO COMPLY WITH THESE INSTRUCTIONS MAY RESULT IN SERIOUS INJURY OR DEATH.

WARNING

USERS OF RESPIRATORS EQUIPPED WITH THE SEMS II DISTRESS ALARM MUST BE AWARE OF THE PROPER OPERATION OF THE DISTRESS ALARM. FAILURE TO RECOGNIZE A MALFUNCTION OF THE SEMS II DISTRESS ALARM AND TAKE PROPER CORRECTIVE ACTION MAY RESULT IN SERIOUS INJURY OR DEATH.

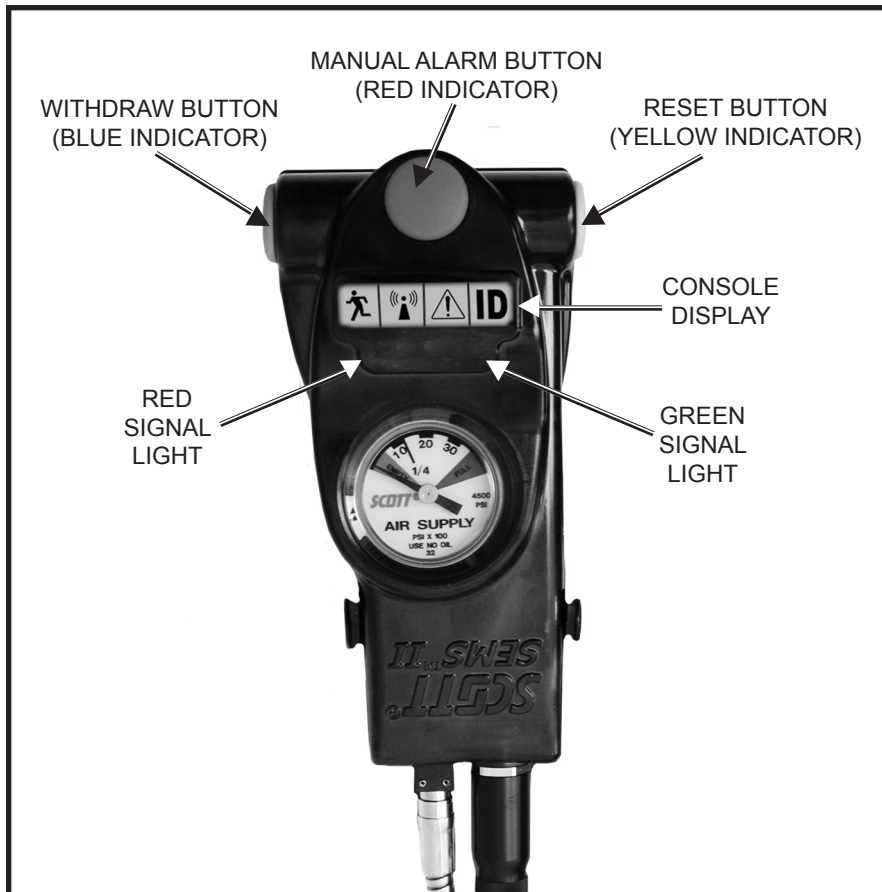


FIGURE 8
THE CONTROL CONSOLE
**(PRESSURE GAUGE DEPENDS ON SYSTEM PRESSURE-
GAUGE IN ILLUSTRATION IS 4500 PSIG)**

PRE ALARM:

If the respirator remains motionless for more than twenty (20) seconds, the SEMS II distress alarm will automatically sound a pre-alarm

When the pre-alarm occurs, the green flashing light on the control console is replaced by a bright red light which flashes approximately once a second and is accompanied by an ascending/descending audible tone which increases in volume during the pre-alarm cycle.

If the respirator user is not incapacitated or not in need of assistance, move the respirator to reset the pre-alarm. When reset, the flashing red light will be replaced by the flashing green and the ascending/descending tone will stop.

Remember that the motion sensor is in the sensor module on the respirator backframe beneath the air cylinder. Actual movement of the respirator backframe is required to reset the pre-alarm. Shaking the control console will not reset the SEMS II distress alarm .

To manually reset the pre-alarm, press and hold the reset button on the side of the control console until three (3) quick audible chirps are heard and the red flashing light on the control console is replaced by the green flashing light.

FULL ALARM:

If the respirator remains motionless through the twelve (12) second pre-alarm cycle, the SEMS II distress alarm will go into full alarm. This may indicate that the user is incapacitated or in need of assistance and can not move.

Full alarm is indicated by a loud, almost continuous 3 tone chirp from the sensor module accompanied by the flashing red signal light on the control console. The unit will also send a notification of PASS activation to the SEMS II Base Station that will appear on the computer display. In addition, the Pak-Tracker Locator transmitter in the unit will begin transmitting the unique ID number that can be received by the Pak-Tracker Hand Held Unit.

To reset the full alarm condition, press the reset button **twice**. See FIGURE 4.

After the full alarm has been silenced by pressing the reset button twice, the SEMS II distress alarm will remain activated in the automatic mode with the green light flashing once per second. As long as the respirator is pressurized, there must be movement of the respirator at least every twenty (20) seconds or the distress alarm will again go into pre-alarm followed by full alarm as described above.

MANUAL ALARM:

If the respirator user requires immediate assistance, pressing the manual alarm button located on the front of the control console will immediately sound the full alarm. See FIGURE 4. The manual alarm may be activated at any time, even when the respirator is not pressurized.

If the manual alarm is activated when the respirator is not pressurized, press the reset button **twice** to silence the alarm. The SEMS II distress alarm will remain on in automatic mode. To turn the unit off, press the reset **twice** again while the unit is not in alarm mode.

Remember, the loud audible alarm and flashing red light can be turned on at any time by pressing the manual alarm button on the control console.

WARNING

USERS OF RESPIRATORS EQUIPPED WITH THE SEMS II DISTRESS ALARM MUST BE AWARE OF THE PROPER OPERATION OF THE DISTRESS ALARM. FAILURE TO RECOGNIZE A MALFUNCTION OF THE SEMS II DISTRESS ALARM AND TAKE PROPER CORRECTIVE ACTION MAY RESULT IN SERIOUS INJURY OR DEATH.

**OPERATION OF THE SEMS II DISTRESS ALARM
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OPERATION AND USE OF THE SEMS II DISTRESS ALARM CONTINUED...

TO TURN OFF THE SEMS II DISTRESS ALARM

When use of the respirator with the SEMS II distress alarm is no longer required, close the cylinder valve on the respirator and vent the residual air from the respirator system by opening the regulator purge valve. After all the air flow stops, close the regulator purge valve and press the reset button twice to turn off the SEMS II distress alarm. 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 PASS DEVICE distress alarm will be inactive. If there is no pressure in the system when the RESET button is pressed twice, there will be no fifteen second beep sequence. When the unit sounds a quick two tone chirp, the SEMS II distress alarm is inactive. If there is any air pressure left in the system, the PASS DEVICE distress alarm will return to the active mode.

If the respirator cylinder valve is open and/or pressure remains in the respirator, the SEMS II distress alarm can not be turned off. Pressing the reset button when the respirator is pressurized will only reset an alarm condition and return the SEMS II distress alarm to automatic mode.

If the respirator cylinder is turned off and depressurized without pressing the reset button twice, the SEMS II distress alarm will continue to monitor motion in automatic mode. This means that the SEMS II distress alarm may be used to monitor motion after the respirator is turned off and depressurized. Resetting the full alarm after the respirator has been depressurized will not turn off the SEMS II distress alarm. Press the reset switch twice with no alarm condition to turn off the SEMS II distress alarm (there will be no fifteen (15) second beep sequence and two tone chirp will be heard).

LOW BATTERY

In a low battery condition, the SEMS II distress alarm will produce a single audible chirp from the sensor module once every two (2) seconds and the green light on the control module will not flash.

While in low battery condition, the SEMS II distress alarm will continue to operate for a period of time greater than the longest duration cylinder available for the respirator. However, the batteries must be replaced before the respirator is used again. See the BATTERY REPLACEMENT section of these instructions.

If batteries are completely discharged or have not been installed, there will be no light or sound and the unit will not operate.

BATTERY TEST

When the SEMS II PDA distress alarm is in the off condition (cylinder valve closed with no flashing lights, the batteries in the entire system can be checked by depressing and holding the RESET button on the console.

- A GREEN LED will illuminate on the Control Console, if there is sufficient battery power remaining,
- A RED LED indicates that the batteries are **low** and must be replaced before the respirator is to be used again.

If a **low** battery message occurs, ALL batteries must be changed before the respirator is used again. See the BATTERY REPLACEMENT section of this instruction for details.

WARNING

DO NOT USE A RESPIRATOR IN A LOW BATTERY CONDITION. FAILURE TO REPLACE THE BATTERIES AND/OR CONTINUING WITH MULTIPLE USES OF THE RESPIRATOR AFTER THE LOW BATTERY CONDITION HAS BEEN INDICATED BY THE SEMS II DISTRESS ALARM MAY RESULT IN FAILURE OF THE SEMS II DISTRESS ALARM DURING USE AND POSSIBLE INJURY OR DEATH OF THE USER.

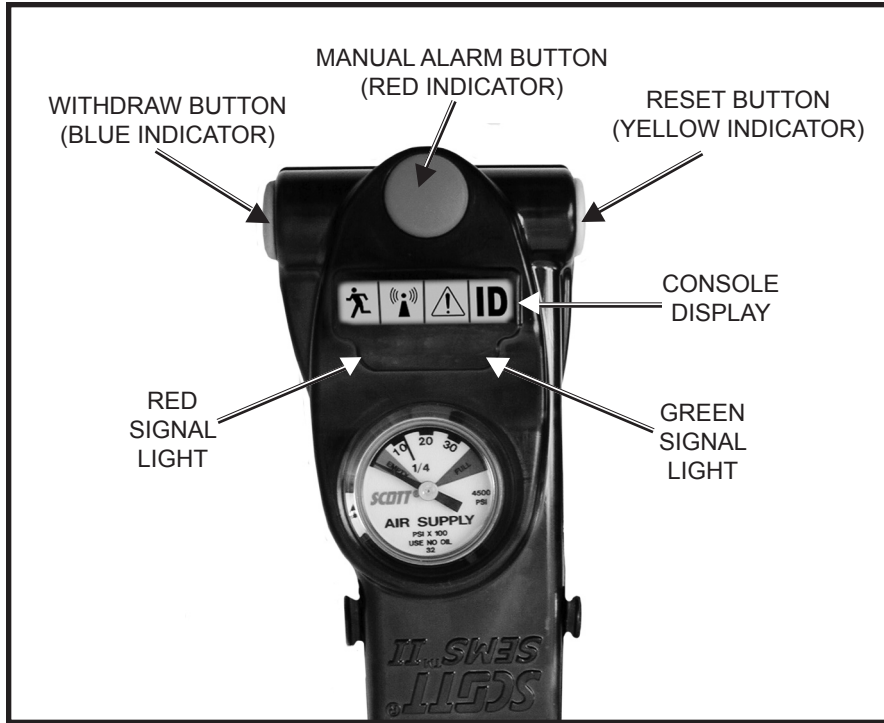
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OPERATION AND USE OF THE SEMS II ACCOUNTABILITY SYSTEM

CONSOLE BUTTONS

There are three (3) buttons on the Control Console. They are as follows:

MANUAL ALARM	Red	To activate the PASS alarm manually
WITHDRAW	Blue	To signal or acknowledge a withdraw action
RESET	Yellow	Used for various functions.



**FIGURE 9
THE CONTROL CONSOLE**

CONSOLE DISPLAY

The Console Display has four (4) ICON Symbol segments that light in response to specific conditions. The four are:

EVAC

The EVAC symbol (Running Man) lights when either the Base Station sends a call to the user(s) to EVACUATE (flashed RED), or the user presses the WITHDRAW Button on the Control Console (flashes YELLOW).



RANGE

The RANGE symbol lights when the user is out of range of the Base Station. The Base Station displays a similar message.



PASS ALARM

The PASS ALARM symbol lights when the user's PASS is activated. The Base Station displays a similar message.



ID

The ID symbol lights to indicate that the input from the user's Accountability Tag has been accepted and the unit is now programmed with that user's identification.



USER ACCOUNTABILITY FUNCTIONS

From the User's standpoint, the primary accountability functions of the SEMS II equipment are **Personal Alert Safety System (PASS) Distress Alarm**, the **EVACUATION Signal**, and the **WITHDRAW Signal**.

1. When the **PASS Distress Alarm** is activated to full alarm, the SEMS II PDA Portable Unit will send a signal to the Base Station. Activation of the full alarm can be either by manual activation of the user pressing the RED Manual Alarm Button, or by automatic activation from lack of user movement. The PASS symbol will flash RED quickly. When the Base Station operator acknowledges the message, the PASS symbol will flash RED slowly.
2. The **EVACUATION Signal** is sent from the Base Station to the SEMS II PDA Portable Unit. It can be handled one of two ways:
 - a) **All-Call Signal**: The Base Station will send a signal to all SEMS II PDA Portable Units logged on to it. When received, the Control Console will sound an audible signal and the "EVAC" symbol will flash RED quickly. Every respirator user must acknowledge this signal by pressing *twice* the yellow RESET button on the Control Console. After the Base Station acknowledges, the "EVAC" symbol will remain flashing slowly until user leaves hazardous area and shuts down the respirator.
 - b) **Selective Evacuation Alarm**: The Base Station will send a signal to only selected units logged on to it. When received, the Control Console will sound an audible signal and the "EVAC" symbol will flash RED quickly. The selected respirator user must acknowledge this signal by pressing *twice* the yellow RESET button on the Control Console. After the Base Station acknowledges, the "EVAC" symbol will remain flashing slowly until user leaves hazardous area and shuts down the respirator.
3. The user selects the **WITHDRAW** Signal to inform the Base Station that the user is withdrawing from the hazardous atmosphere. The user presses and holds the blue "WITHDRAW" button on the Control Console for at least two seconds. The "EVAC" icon on the console will flash YELLOW quickly and the WITHDRAW message appears on the Base Station. After the Base Station acknowledges, the "EVAC" symbol will remain flashing slowly until user leaves hazardous area and shuts down the respirator.
4. The **RANGE** symbol lights as follows:
 - YELLOW flashing slowly-
The PDA Unit is ON but the base station has not accepted it.
 - GREEN flashing once every 10 seconds-
The PDA Unit is logged onto base station and has been accepted.
The PDA Unit must be able to communicate with the Base Station at least once a minute to remain IN RANGE.
 - YELLOW flashing fast-
The PDA Unit is OUT OF RANGE of the base station.
5. **End-of-Service** Indicators
In addition to the other end-of-service indicators on the respirator, the air supply cylinder levels are monitored by the SEMS II PDA Unit and transmitted to the Base Station. When the cylinder reaches one quarter of full pressure, the Console sounds a "LOW AIR" warning with an audible alarm as well as transmitting a "LOW AIR" warning to the Base Station. The "LOW AIR" alarm will continue to operate until the respirator is shut down.

**OPERATION AND USE OF THE SEMS II ACCOUNTABILITY SYSTEM
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OPERATION AND USE OF THE SEMS II ACCOUNTABILITY SYSTEM CONTINUED...

BASE STATION PREPARATION

Operation of the SEMS II Accountability System Base Station requires installation of the SEMS II MESH GATEWAY KIT, SCOTT P/N 200772-01, which includes the Graphic User Interface (GUI) Software and the PCMCIA Communications Card.

COMPUTER REQUIREMENTS

The SCOTT SEMS II MESH GATEWAY software is PC based and requires a minimum of WINDOWS® 2000 or higher and a 486 or faster processor with approximately ten (10) megabytes of free disc space. The PCMCIA Communications Card requires a PC Card port on the computer.

NOTE

YOU MUST INSTALL THE SEMS II MESH GATEWAY SOFTWARE **FIRST** BEFORE INSTALLING THE PCMCIA CARD IN THE COMPUTER.

TO INSTALL SEMS II MESH GATEWAY SOFTWARE

1. Place the SCOTT SEMS II MESH GATEWAY software CD-ROM in the CD drive on your computer.
2. Select "SEMS II MESH GATEWAY" to install the Software. Follow the instructions on the screen. You may need to close all other applications to install this program.
3. When the installer creates a folder called "SEMS II MESH GATEWAY" for the files, select "Continue."
4. When the set up is completed successfully, select "OK." You will return to the Installer screen.
5. When finished installing, close the Installer.

NOTE

IF YOU HAVE ANY PROBLEMS INSTALLING THE SOFTWARE, DO NOT USE THE SYSTEM. CONTACT SCOTT FOR ASSISTANCE.

TO INSTALL SEMS II MESH GATEWAY PCMCIA CARD

After installing the SCOTT SEMS II MESH GATEWAY software on your computer, install the PCMCIA Communications Card as follows:

1. Hold the PCMCIA Communications Card as shown in FIGURE X with the antenna pointing UP.
2. Insert the PCMCIA Communications Card into the PC Card slot until it snaps in.
3. When your computer says new equipment installed, select OK.



**FIGURE 10
INSTALLATION OF THE SEMS II PCMCIA CARD**

BASE STATION OPERATION

The SEMS II PDR Base Station must be operated by a fully trained individual as part of a complete respiratory protection program. The Base Station Operator must have the ability to direct rescue operations as needed.

If using a battery powered portable computer, be sure the battery is fully charged before beginning use at an incident.

The Base Station must be located in a safe, non-hazardous and non-flammable area away from the hazardous atmosphere where the respirators are being used.

1. Start-up the personal computer in accordance with the computer's user instructions.
2. To open the SEMS II MESH GATEWAY Software, select the shortcut created on you Desktop or in the "SEMS II MESH GATEWAY" folder in "All Programs" in the Windows START menu.



FIGURE 11
BASE STATION
(ACTUAL APPEARANCE OF PERSONAL COMPUTER MAY VARY)

BASIC FUNCTIONS OF THE SOFTWARE

The Primary functions of the Base Station Software are as follows:

1. **ACCEPT/REJECT/ASSIGN** Users
2. **Monitor the Air Supply** of each User
3. **EVAC** Signal
 - a. EVAC ALL – Evacuate all logged in Users
 - b. EVAC IND – Selected User Evacuation
4. **WITHDRAW** Notification from User
5. **PASS** Activation
6. **Incident Record**

OPERATION AND USE OF THE SEMS II ACCOUNTABILITY SYSTEM
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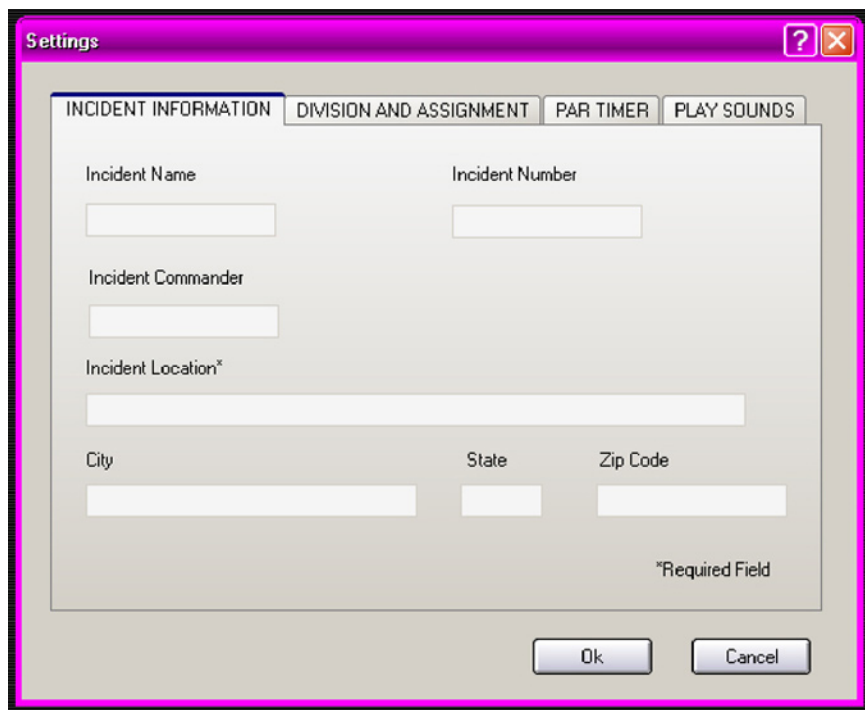
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OPERATION AND USE OF THE SEMS II ACCOUNTABILITY SYSTEM CONTINUED...

SEMS II ACCOUNTABILITY SOFTWARE DISPLAY SCREENS

1. SETTINGS

After the initial start-up screen, the first screen that comes up is the SETTINGS window where Incident Information is entered. Additional screens are provided for DIVISION and ASSIGNMENTS and PAR TIMER options.



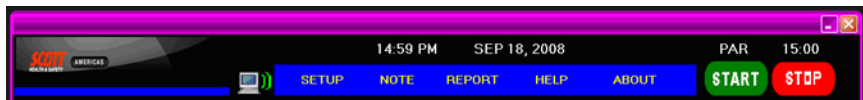
The screenshot shows a window titled "Settings" with a purple border. It has four tabs: "INCIDENT INFORMATION" (selected), "DIVISION AND ASSIGNMENT", "PAR TIMER", and "PLAY SOUNDS". The "INCIDENT INFORMATION" tab contains the following fields:

- Incident Name: [Text Box]
- Incident Number: [Text Box]
- Incident Commander: [Text Box]
- Incident Location*: [Text Box]
- City: [Text Box]
- State: [Text Box]
- Zip Code: [Text Box]

At the bottom right of the form area, there is a note: "*Required Field". At the bottom of the window, there are "Ok" and "Cancel" buttons.

- At a minimum, enter the "Incident Location" before proceeding
- In the DIVISIONS AND ASSIGNMENTS tab, name the active divisions and the projected assignments that will be used at the incident.
- In the PAR Timer tab, set the Personal Accountability Report duration according to your standard incident procedures.
- Select whether the alert sounds will be active on the personal computer.

2. TOOL BAR



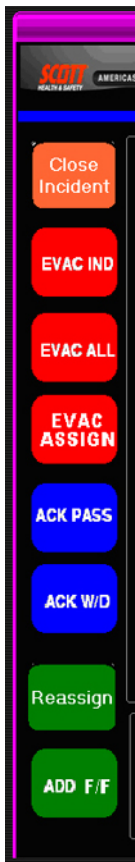
- SETUP** – The SETTINGS screens can be accessed at any time from the SETUP button on the toolbar.
- NOTES** – Notes regarding the Incident can be entered in the NOTES Screen. There is space for a maximum of XXXX words in the NOTES field.
- REPORT** – Use the REPORT button to prepare an Incident Report.
- ABOUT** – Provides software version Information.
- PAR TIMER** – START/STOP of the PAR TIMER

3. USERS DISPLAY



USER ID	TIME (min)	DIVISION	ASSIGNMENT	PASS	W/D	EVAC	RANGE	AIR PRESSURE
8375AnnCarver	14:02:35	Bravo	Roof					
67891FDNY	14:02:35	Bravo	Hose					
0812 Monroe	14:02:35	Bravo	Roof					

- a. **USER ID** – Shows the ID of the Users who have logged on and been accepted to the Incident
- b. **TIME** (minutes) – Shows the amount of time the individuals have been logged on
- c. **DIVISION** – Shows the Division of the User
- d. **ASSIGNMENT** – Shows the Assignment of the User
- e. **PASS** – Shows when the User's PASS has been activated.
- f. **W/D (WITHDRAW)** – Shows when the User has pressed the WITHDRAW button on their Console
- g. **EVAC** – Shows who has been given an EVAC signal
- h. **RANGE** – Indicates whether the individual User is still in Range
- i. **AIR PRESSURE** – Gives a graphic representation of the air pressure remaining in the User's air supply cylinder from GREEN for full to YELLOW for partial to RED for 1/4 cylinder or less.



4. SIDEBAR BUTTONS

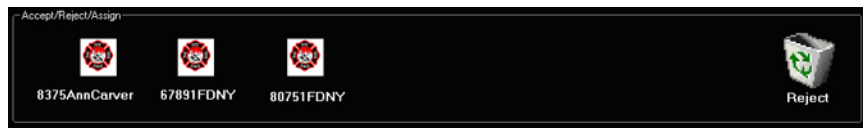
- a. **CLOSE INCIDENT** – Use the CLOSE INCIDENT button to close the Incident File and save all settings.
- b. **EVAC IND** – Use the EVAC IND button to select certain individuals for evacuation.
- c. **EVAC ALL** – Use the EVAC ALL button to evacuate all active personnel.
- d. **ACK PASS** – Use the ACK PASS button to acknowledge a PASS signal.
- e. **ACK W/D** – Use the ACK W/D to acknowledge a WITHDRAW signal.
- f. **Reassign** – Use the Reassign button to change the selected individual current assignment.
- g. **ADD F/F** – Use the ADD F/F button to accept the selected firefighter.

**OPERATION AND USE OF THE SEMS II ACCOUNTABILITY SYSTEM
CONTINUED ON NEXT PAGE...**

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OPERATION AND USE OF THE SEMS II ACCOUNTABILITY SYSTEM CONTINUED...

5. **ACCEPT/REJECT/ASSIGN** – As Respirator users activate their systems, their individual SEMS II ID's will appear as icons in the ACCEPT/REJECT/ASSIGN.



In accordance with your incident management procedures, the Base Station Operator must choose to:

- Accept the user as part of the accountability group for this Base Station. Select the user's icon and select the ADD F/F button on the side bar.
- Reject the user as belonging to another accountability group for another Base Station. Click and drag the user's icon to the Trash container.
- Assign the user to a particular assignment at the incident. Click the user's icon and select the Reassign button on the side bar.



FIGURE 12
COMPLETE DISPLAY SCREEN

BASE STATION OPERATOR RESPONSIBILITIES

1. RANGE

- a. When a logged-in user goes out of range, the RANGE symbol will appear in the line entry for the user.
- b. After X amount of time out of range, the RANGE symbol will begin to flash indicating a possible problem. The Base Station operator must respond to the user's out of RANGE signal in accordance with the organization's incident management program.

2. AIR SUPPLY MONITORING

- a. When the air supply cylinder reaches one-quarter of full pressure, the end-of-service-time indicators (EOSTI) will activate on the SCBA. Within ten seconds, a "LOW AIR" signal will be sent to the Base Station.
- b. The Base Station operator must respond to the user's low air signal in accordance with the organization's incident management program. This may include issuing an EVAC signal to the individual with the low air signal.

3. EVACUATION

- a. To send an evacuation message to all logged-in respirator users, the Base Station operator selects the "EVAC ALL" button on the Base Station. The EVAC message will be sent to all accepted logged-in respirator users.
- b. To send an evacuation message to only selected respirator users, the Base Station operator uses the cursor to select and highlight the users to evacuate from the list of logged-in respirator users, and then presses the "EVAC IND" button.
- c. To send an evacuation message to respirator users on a particular Assignment, the Base Station operator uses the cursor to select and highlight the users to evacuate by Assignment from the list of logged-in respirator users, and then presses the "EVAC ASSIGN" button.
- d. As each respirator user receives an "EVAC" message, they must press the RESET button on the Control Console to acknowledge the message.
- e. The Base Station listing of logged-in users will change color as each respirator user responds to the EVAC message.

4. WITHDRAW

- a. The respirator user may elect to leave the incident by pressing and holding the BLUE Withdraw button on the Control Console. A YELLOW EVAC symbol will appear in the line entry for the user.
- b. After the Base Station acknowledges the WITHDRAW message, the EVAC symbol will turn GREEN and remain until user leaves the hazardous area and shuts down the respirator.

OTHER DISPLAY SCREEN FUNCTIONS

1. PAR Timer – Personnel Accountability Report Timer

- a. The PAR Timer can be set to a specific interval to remind the Base Station Operator ask for a "PAR" from all involved personnel.
- b. To restart the PAR Timer, click on the PAR Timer icon and select "Restart."
- c. To adjust the time duration of the PAR Timer, select the PAR Timer icon and select "Change Settings."

2. NOTE – Note screen

- a. To write a note that will be part of the incident log, select the Note icon.
- b. Maximum of XXX characters (letters or numbers) per note.

**OPERATION AND USE OF THE SEMS II ACCOUNTABILITY SYSTEM
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OPERATION AND USE OF THE SEMS II ACCOUNTABILITY SYSTEM CONTINUED...

USE OF THE SEMS II PDA PORTABLE UNIT

Users of SCOTT respirators equipped with the SEMS II PDA Portable Unit must be fully trained in the operation of the equipment as part of a complete respiratory protection program before entering a hazardous environment.

1. Start-up

- a. Use of the SEMS II PDA Portable Unit begins when the user opens the cylinder valve on the respirator to start respirator usage. The unit will sound three chirps to indicate activation.
- b. After a brief start-up sequence, the GREEN SIGNAL Light on the Control Console will light. An alert tone, a “BE-doop” to indicate the system activity, is used for several functions. Whenever the alert tone occurs, the user should look at the Portable Unit display for information.

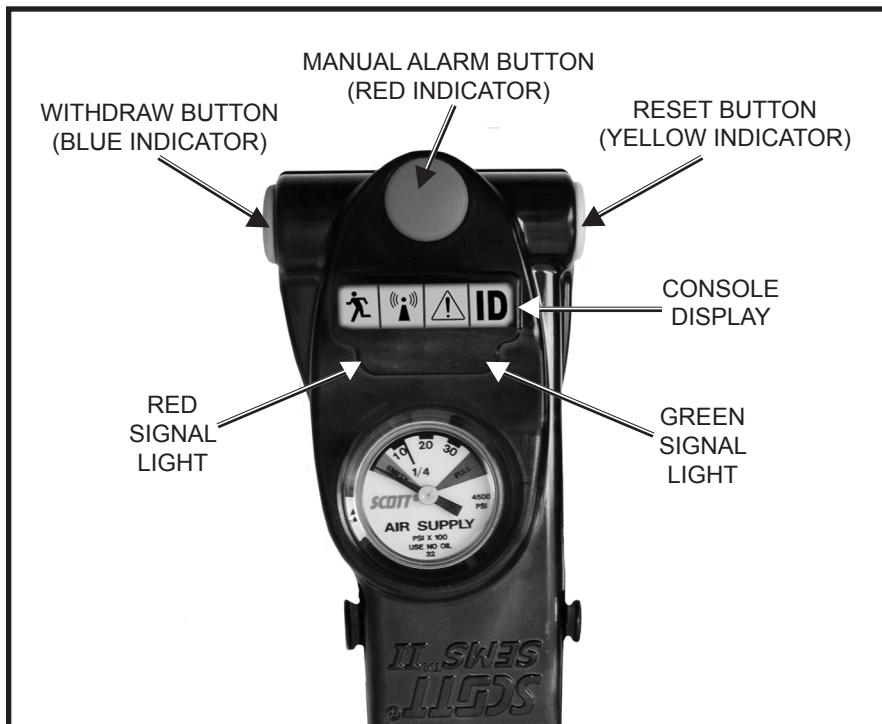


FIGURE 13

THE CONTROL CONSOLE

2. Initialization and RANGE

- a. After the start-up sequence, the SEMS II PDA Portable Unit will send an Initialization signal to the Base Station to log in. The Base Station will respond by ACCEPTING the identity assigned to that Portable Unit.
- b. If the respirator user moves too far from the Base Station after logging-in, the RANGE icon on the Control Console will flash indicating out of range until the user moves back into the Base Station field of operation (up to one-half mile line-of-sight).
- c. If the Portable Unit is too far away from the Base Station at start-up, or if the Base Station is not powered up, the RANGE icon on the Control Console display will light immediately from start-up and not be logged into the Base Station. The SEMS II PDA Portable Unit will continue trying to log-in to a Base Station until one comes into range or is powered up.
- d. Except for those functions which involve communication with the Base Station, all other functions of the Control Console and SEMS II PDA distress alarm are still operational when the Portable Unit is either out of range or not logged into a Base Station.



3. PASS DISTRESS ALARM

- a. If the user is in distress or becomes immobile, the SEMS II PDA PASS distress alarm will operate in conjunction with the Portable Unit. If the distress alarm is activated, either by the user pressing and holding the Red MANUAL ALARM button for at least two seconds, or from the user being immobile for the required time duration, the Portable Unit will send a distress signal to the Base Station. The distress alarm will override all other messages and actions of the Portable Unit. The PASS icon will flash RED quickly.
- b. When the Base Station acknowledges the user's distress signal by selecting the "ACK PASS" button on the Base Station, the PASS icon on the Control Console will flash slowly while continuing to sound the distress alarm on the respirator. The distress alarm will continue until the user shuts down the respirator.



PASS ICON

4. EVACUATION

- a. If the respirator users are required to leave the hazardous area, the Base Station operator can send an evacuation message to the Portable Units of logged-in respirator users. This message can be sent either to all logged-in users or to selected logged-in users as chosen from the list on the Base Station.
- b. The Portable Unit will emit the alert sound and the EVAC icon will begin flashing on the Control Console.
- c. When an EVAC icon begins flashing on the Control Console, the respirator user must press twice the Yellow RESET button on the Control Console to respond to the evacuation message. The EVAC icon will continue to flash at a slower rate until the user leaves the hazardous area and shuts down the respirator.



**EVAC/WITHDRAW
ICON**

5. WITHDRAW

- a. The respirator user may choose to leave the hazardous area. Pressing and holding the Blue **WITHDRAW** button for at least two seconds will send that message to the Base Station. The "EVAC" icon on the Control Console will flash YELLOW quickly as the WITHDRAW message appears on the Base Station.
- b. When the Base Station receives a user WITHDRAW message, the Base Station Operator selects the ACK W/D button on the side bar.
- c. After the Base Station acknowledges, the "EVAC" symbol on the Control Console will remain flashing slowly until user leaves hazardous area and shuts down the respirator.



**EVAC/WITHDRAW
ICON**

6. Air Supply Cylinder Pressure

- a. When the cylinder reaches one quarter of full pressure, the SEMS II PDA sounds a LOW AIR warning with an audible alarm as well as transmitting a LOW AIR alert to the Base Station.
- b. The LOW AIR alarm will continue to operate until the respirator is shut down. This LOW AIR alarm is in addition to the other end-of-service indicators on the respirator.

7. Shutdown

- a. After leaving the hazardous area and confirming that respirator use is no longer required, doff the respirator according to the user instructions provided with the respirator.
- b. Close the cylinder valve.
- c. Press the Yellow RESET button twice.
- d. The Control Console will sound the alert tone. The SEMS II PDA Portable Unit is now off.

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OPERATION AND USE OF THE SCOTT PAK-TRACKER LOCATOR SYSTEM

USE AS PART OF AN ACCOUNTABILITY SYSTEM

TRAINING REQUIRED BEFORE USE. Refer to the PAK-TRACKER Locator System User Instructions, SCOTT P/N 595102-01 for complete details on the use of the PAK-TRACKER Locator System. Use of this equipment must be part of a complete personnel accountability system that includes procedures for monitoring the deployment and condition of all users. Do not rely on the PAK-TRACKER Locator System as the only technique for locating missing personnel. A Rapid Intervention or Rescue team using the Hand Held Receiver must have a minimum of two (2) people. For their own safety, the team members must pay attention to their surroundings at all times while using the PAK-TRACKER Locator System.

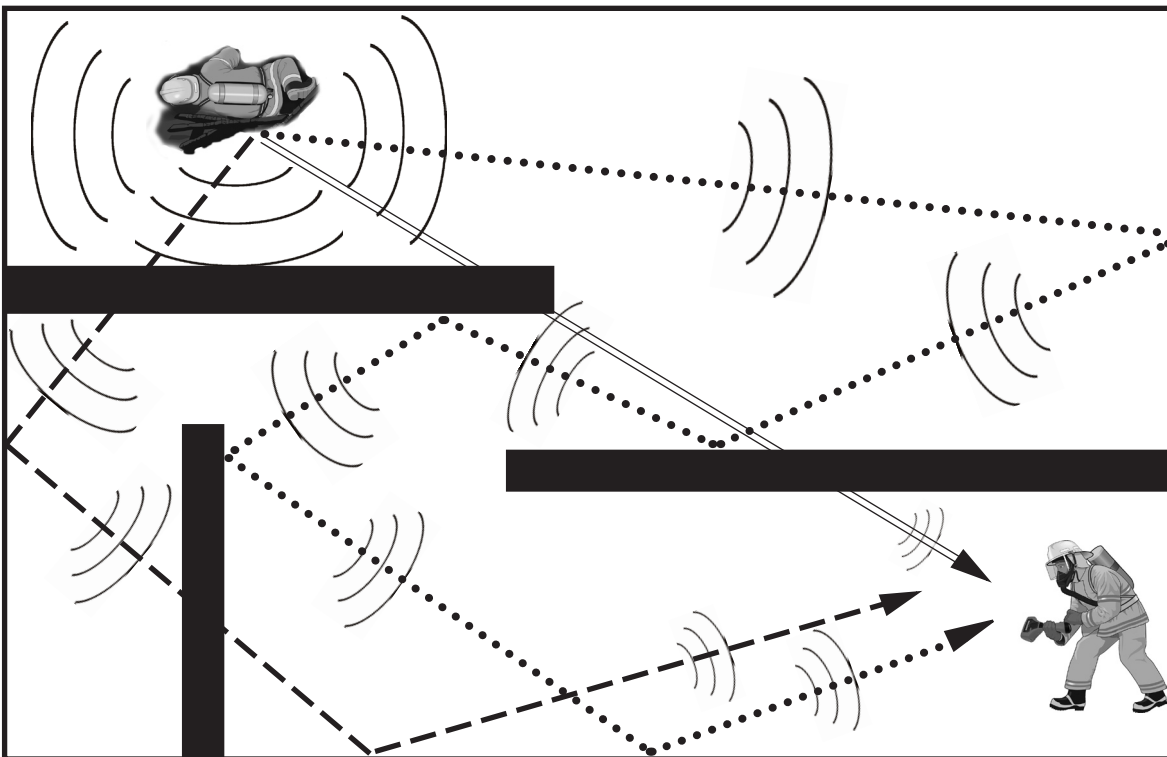
The accountability system must include procedures for alerting the incident commander and rescue teams when actuated transmitters or the missing personnel have been found or when they have moved from their previous location. It is the responsibility of the personnel accountability system to allow for such contingencies without exposing individuals and teams to unnecessary dangers.

PRINCIPLES OF OPERATION OF THE PAK-TRACKER LOCATOR SYSTEM

The SCOTT PAK-TRACKER locator system is an electronic system consisting of a Hand Held Receiver and a Transmitter built into the SEMS II Sensor Module on the SCBA backframe. The Transmitter is activated when the PASS is in Full Alarm. When a Transmitter is activated, it sends out a radio signal in all directions that is received by the Hand Held Receiver. Understanding how the radio signal from a Transmitter behaves and how the Hand Held Receiver receives and displays the strength of that signal are critical to understanding the operation of the SCOTT PAK-TRACKER locator system.

WARNING

READ AND UNDERSTAND THIS ENTIRE MANUAL AND THE PAK-TRACKER LOCATOR SYSTEM MANUAL, P/N 595102-01. TRAINING IS REQUIRED BEFORE USE OF THIS EQUIPMENT IN A HAZARDOUS SITUATION. THE TRAINING MUST INCLUDE AN UNDERSTANDING OF THE LIMITATIONS OF THE EQUIPMENT AND HOW TO INTERPRET LOCATING INFORMATION, ALONG WITH EXTENSIVE PRACTICE WITH THE SYSTEM IN A VARIETY OF ENVIRONMENTS. USE OF THIS EQUIPMENT MUST A PART OF A COMPLETE PERSONNEL ACCOUNTABILITY SYSTEM. ALWAYS UPDATE TRAINING WITH EACH NEW PIECE OF EQUIPMENT. USE OF A PAK-TRACKER LOCATOR SYSTEM WITHOUT PROPER TRAINING MAY PLACE THE USERS AT HIGHER RISK IN DANGEROUS SITUATIONS WHICH COULD RESULT IN SERIOUS INJURY OR DEATH.



**FIGURE 14
MULTIPLE SIGNAL PATHS ARE POSSIBLE**

Successful operation of the PAK-TRACKER Locator system depends heavily on the interpretation of the relative signal strength information displayed on the Hand Held Receiver along with all other available information about the possible location of the activated transmitter.

The Hand Held Receiver is very sensitive in responding to small differences in signal strength. The relative strength of the Transmitter signal detected by the Hand Held Receiver will vary depending on:

1. The distance from the Transmitter to the Hand Held Receiver,
2. The path the Transmitter signal has taken to get to the Hand Held Receiver,
3. The materials between the Transmitter and the Hand Held Receiver which may have affected the signal from the Transmitter.

The user of the Hand Held Receiver must interpret the readings on the Hand Held Receiver display along with other information, such as:

- Training and knowledge in systematic search and rescue techniques,
- their sense of sight (watch where you are going),
- their sense of sound (listen for an activated PASS device),
- the deployment of the missing personnel,
- knowledge of the building layout and building materials,

Do not rely solely on the readings from the Hand Held Receiver to locate the activated Transmitter.

Refer to the PAK-TRACKER Locator System User Instructions, SCOTT P/N 595102-01 for complete details on the use of the PAK-TRACKER Locator System.

WARNING

CONTINUED TRAINING AND PRACTICE IN A VARIETY OF SITUATIONS IS ESSENTIAL TO DEVELOPING THE SKILLS TO PROPERLY INTERPRET THE INFORMATION PROVIDED BY THE PAK-TRACKER LOCATOR SYSTEM. USE OF THIS EQUIPMENT WITHOUT TRAINING AND PRACTICE MAY JEOPARDIZE ALL PERSONNEL INVOLVED WHICH COULD LEAD TO SERIOUS INJURY OR DEATH.

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REGULAR OPERATIONAL INSPECTION OF THE SEMS II DISTRESS ALARM, THE SEMS II ACCOUNTABILITY SYSTEM, AND THE PAK-TRACKER LOCATOR SYSTEM

Inspect and test the SCOTT SEMS II distress alarm, SEMS II Accountability System, and the PAK-TRACKER Locator System along with the inspection and test of the SCOTT SCBA respirator before each use. Refer to the PAK-TRACKER User Instructions, SCOTT P/N 595102-01, provided with the SCOTT PAK-TRACKER Hand Held Receiver for complete details. Include the following inspection procedures with the REGULAR OPERATIONAL INSPECTION procedures defined in your respirator instructions. If any malfunction of the respirator, the PAK-TRACKER Locator System, or the SEMS II distress alarm or Accountability System 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 DBA 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 EXPOSURE TO A FULL ALARM CONDITION IS ANTICIPATED.

To test the PAK-TRACKER locator transmitter, you must have an operating SCOTT PAK-TRACKER Hand Held Receiver.

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. Inspect the SCOTT PAK-TRACKER Hand Held Receiver for any cracks or signs of damage. If any damage is found, remove the unit from service and tag for repair by qualified personnel.
3. Turn on the SCOTT PAK-TRACKER Hand Held Receiver according to the operating instructions provided with the unit. Position the Hand Held Receiver near by.
4. Turn on the computer with the SCOTT SEMS II MESH GATEWAY Software with the PCMCIA Communications Card installed, according to this instructions. Position the computer near by.
5. With the cylinder valve closed, press the manual alarm button, located on the front of the distress alarm control console.
 - a) The manual alarm shall sound a loud almost continuous 3 tone chirp accompanied by flashing of the red signal light on the control console.
 - b) The PAK-TRACKER Hand Held Receiver will sound an alarm and display the Identification Number of the SEMS II distress alarm as programmed by the user's ID Tag. Use the SCROLL button on the Hand Held Receiver to highlight the active ID number and press the ENTER button on the Hand Held Receiver to select the displayed ID number. Point the unit directly at and in close proximity to the respirator. The signal strength displayed will be at its highest value.
 - c) Verify that the SEMS II functions are all operating properly and that PASS and EVAC alarms and acknowledgements operate according to these instructions.

WARNING

FOLLOW REGULAR OPERATIONAL INSPECTION PROCEDURE EXACTLY. IF THE SEMS II DISTRESS ALARM DOES NOT ACTUATE, OR IF ANY OTHER FEATURE DOES NOT OPERATE AS DESCRIBED OR IF ANY OTHER OPERATIONAL MALFUNCTION IS NOTED, DO NOT USE THE RESPIRATOR.

WARNING

THE PROPER OPERATION OF THE LOCATOR SYSTEM CANNOT BE CHECKED WITHOUT CHECKING ALL COMPONENTS OF THE SYSTEM TOGETHER. THE REGULAR OPERATIONAL INSPECTION MUST INCLUDE THE HAND HELD RECEIVER AND THE BASE STATION WORKING WITH EACH OTHER TO CONFIRM PROPER OPERATION. FAILURE TO PROPERLY INSPECT THE COMPLETE SYSTEM MAY RESULT IN FAILURE OF ONE COMPONENT WHICH COULD LEAD TO SERIOUS INJURY OR DEATH.

CAUTION

THE PERFORMANCE PROPERTIES OF THE SEMS II DISTRESS ALARM CANNOT BE PROPERLY TESTED IN THE FIELD.

WARNING

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 DBA 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 EXPOSURE TO A FULL ALARM CONDITION IS ANTICIPATED.

6. 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**).
 - a) The unit will sound three chirps and the green light will flash.
 - b) The PAK-TRACKER Hand Held Receiver will reset to its non-alarm state.
7. Turn the SEMS II 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.
8. 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.
9. 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.
10. 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 SEMS II 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.

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.
 - a) The full alarm shall sound a loud almost continuous 3 tone chirp accompanied by flashing of the red signal light on the control console.
 - b) The PAK-TRACKER Hand Held Receiver will sound an alarm and display the Identification Number of the SEMS II distress alarm which appears on the label on the Sensor Module or the Control Console. Use the SCROLL button on the Hand Held Receiver to highlight the active ID number and press the ENTER button on the Hand Held Receiver to select the displayed ID number. Point the unit directly at and in close proximity to the respirator. The signal strength displayed will be at its highest value.

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.

**REGULAR OPERATIONAL INSPECTION
CONTINUED ON NEXT PAGE...**

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REGULAR OPERATIONAL INSPECTION CONTINUED...

4. 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**).
 - a) 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.
 - b) The PAK-TRACKER Hand Held Receiver will reset to its non-alarm state.
5. 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.

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 PASS DEVICE distress alarm will be inactive. If there is no pressure in the system when the RESET button is pressed twice, there will be no beep sequence. The distress alarm is now in the "OFF" condition. If there is air pressure in the system, the PASS DEVICE distress alarm will return to the active mode.

NOTE

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.

IF ANY OPERATIONAL PROBLEMS ARE FOUND DURING THE REGULAR OPERATIONAL INSPECTION, DO NOT USE THE RESPIRATOR. REMOVE THE RESPIRATOR FROM SERVICE AND TAG FOR REPAIR BY AUTHORIZED PERSONNEL.

WARNING

FOLLOW REGULAR OPERATIONAL INSPECTION PROCEDURE EXACTLY. IF THE SEMS II DISTRESS ALARM DOES NOT ACTUATE, OR IF ANY OTHER FEATURE DOES NOT OPERATE AS DESCRIBED OR IF ANY OTHER OPERATIONAL MALFUNCTION IS NOTED, DO NOT USE THE RESPIRATOR.

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 Low air (1/4 cylinder).....	Flash ORANGE (alternately)
Low Battery while ON.....	Flash ORANGE once a second
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.

SENSOR MODULE LIGHTS ON THE NXG7 SCBA

In addition, when performing the REGULAR OPERATIONAL INSPECTION on NxG7 respirators equipped with a SEMS II distress alarm, verify that the Sensor Module lights also operate as described below:

ACTION...	SENSOR MODULE LIGHTS WILL...
Install Cylinder.....	Flash BLUE
Remove Cylinder.....	Flash RED

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EVENT LOG

Software within the Base Station maintains a data record or EVENT LOG of each communication to or from the Base Station from the time it is powered for use until it is powered down. To access and use the EVENT LOG, proceed as follows:

BASE UNIT INTERFACE SETUP

Plug the Base Unit Interface Cable into a COM port as instructed in the COMPUTER SETUP section the SEMS II Programming Instructions SCOTT P/N 89506-01.

1. Plug the other end of the Base Unit Interface Cable into the connector on the side of the Base Unit.
2. Run the SEMS II Fire Department Software and select the tab labeled "EVENT LOG." See FIGURE 5.

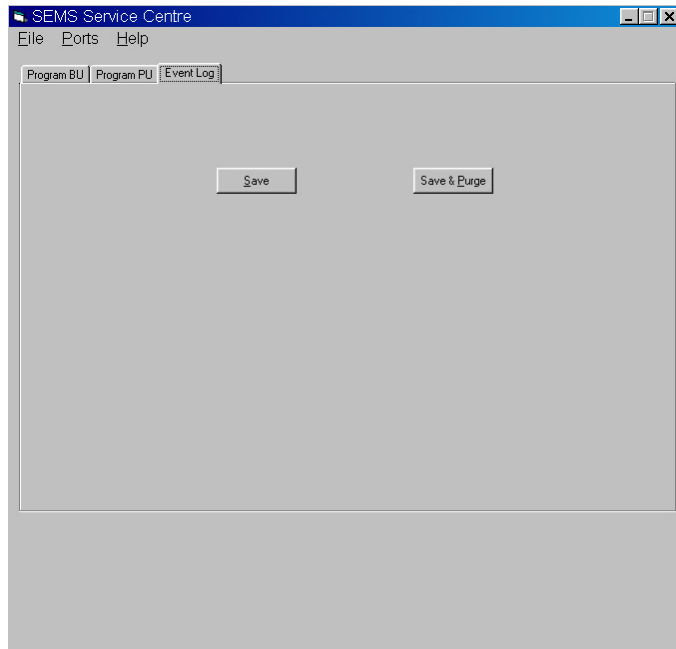


FIGURE 15
EVENT LOG SCREEN

3. On the Base Unit, press and hold the EVAC button while turning on the unit by pressing the POWER ON/OFF button. Continue holding the EVAC button until the screen displays, "COMMAND MODE: CS =0X2A58". (NOTE: CS number may vary depending on version of Base Unit.)
4. Choose either "SAVE" or "SAVE & PURGE" to save the information in the EVENT LOG. The data will be saved as a text (.txt) file to a folder called "Event Logs" in the same folder where the SEMS II Fire Department Software resides on your computer [e.g.:(drive)\Program Files\SEMS II Service Center\Event Logs(folder)].
 - a) "SAVE" will save the EVENT LOG file to the Event Logs folder but leaves the EVENT LOG information on the Base Unit.
 - b) "SAVE & PURGE" will save the EVENT LOG file to the Event Logs folder and then erase the EVENT LOG information from the Base Unit.
5. The EVENT LOG file is a text (.txt) which may be viewed in either Microsoft Excel or Microsoft Word. The data is in columns separated (delimited) by commas. It may require some manipulation of the columns to facilitate

reading as shown in FIGURE 6. The columns contain information as follows:

- Column 1 Event number Identification
- Column 2 Date of Event
- Column 3 Time of Event
- Column 4 Fire Company (blank if the PDA and the Base Unit have the same name.)
- Column 5 Truck Number
- Column 6 Seat Number or Position
- Column 7 Event (LOGON, PASS, ACK, etc.)
- Column 8 Cylinder Pressure at time of Event
- Column 9 Total time the AIR-PAK respirator had been on at time of Event

Columns 4, 5, and 6 identify a particular AIR-PAK respirator equipped with the SEMS II PDA that has logged on to the Base Unit in the course of the incident. The events include LOGON, PASS activation, Withdrawal, Acknowledgment (ACK) of messages, etc.

ID	Date	Time	Brigade	Truck	Posn	State	Press	El. Time
1	06/02/03	14:22:32	SCOTT	ONE	5	OK	0	1
2	06/02/03	14:22:32	SCOTT	TWO	4	Logon Ack	0	0
3	06/02/03	14:22:36	MULT	LOGNG	1	Logon Ack	0	7
4	06/02/03	14:22:38	MULT	LOGNG	2	Logon Ack	0	7
5	06/02/03	14:22:40	SCOTT	ONE	3	OK	0	1
6	06/02/03	14:22:42	MULT	LOGNG	2	OK	0	7
7	06/02/03	14:22:44	MULT	LOGNG	3	Logon Ack	0	7
8	06/02/03	14:22:48	MULT	LOGNG	3	OK	0	7
9	06/02/03	14:22:48	MULT	LOGNG	4	Logon Ack	0	7
10	06/02/03	14:22:48	MULT	LOGNG	4	OK	0	7
11	06/02/03	14:22:50	SCOTT	TWO	4	OK	0	1
12	06/02/03	14:22:52	MULT	LOGNG	5	Logon Ack	0	7
13	06/02/03	14:22:54	MULT	LOGNG	6	Logon Ack	0	7
14	06/02/03	14:22:58	MULT	LOGNG	7	Logon Ack	0	7
15	06/02/03	14:23:00	SCOTT	TWO	3	OK	0	1
16	06/02/03	14:23:02	MULT	LOGNG	7	OK	0	7
17	06/02/03	14:23:04	MULT	LOGNG	8	Logon Ack	0	8
18	06/02/03	14:23:04	SCOTT	ONE	2	OK	0	2
19	06/02/03	14:23:04	MULT	LOGNG	8	OK	0	8
20	06/02/03	14:23:12	MULT	LOGNG	9	Logon Ack	0	8
21	06/02/03	14:23:40	SCOTT	ONE	4	OK	0	2
22	06/02/03	14:23:42	SCOTT	TWO	1	OK	0	1
23	06/02/03	14:23:42	SCOTT	TWO	2	OK	0	1
24	06/02/03	14:33:52	SCOTT	TWO	4	Pass Unack	0	12
25	06/02/03	14:34:00	SCOTT	ONE	5	Pass Unack	0	13
26	06/02/03	14:34:02	SCOTT	ONE	4	Pass Unack	0	13
27	06/02/03	14:34:04	SCOTT	ONE	2	Pass Unack	0	13
28	06/02/03	14:34:04	SCOTT	TWO	3	Pass Unack	0	12
29	06/02/03	14:34:04	SCOTT	TWO	2	Pass Unack	0	12
30	06/02/03	14:34:08	SCOTT	ONE	3	Pass Unack	0	13
31	06/02/03	14:34:16	SCOTT	ONE	1	Pass Unack	0	13
32	06/02/03	14:34:18	SCOTT	TWO	1	Pass Unack	0	12
33	06/02/03	14:34:28	SCOTT	TWO	4	Pass Ack	0	12
34	06/02/03	14:34:30	SCOTT	TWO	3	Pass Ack	0	12
35	06/02/03	14:34:32	SCOTT	TWO	2	Pass Ack	0	12
36	06/02/03	14:34:34	SCOTT	TWO	1	Pass Ack	0	12
37	06/02/03	14:34:34	SCOTT	ONE	5	Pass Ack	0	13
38	06/02/03	14:34:36	SCOTT	ONE	4	Pass Ack	0	13
39	06/02/03	14:34:38	SCOTT	ONE	3	Pass Ack	0	13
40	06/02/03	14:34:40	SCOTT	ONE	3	FF Down	0	13
41	06/02/03	14:34:40	SCOTT	ONE	4	FF Down	0	13
42	06/02/03	14:34:40	SCOTT	ONE	2	Pass Ack	0	13
43	06/02/03	14:34:40	SCOTT	TWO	1	FF Down	0	12
44	06/02/03	14:34:40	SCOTT	TWO	2	FF Down	0	12
45	06/02/03	14:34:40	SCOTT	TWO	3	FF Down	0	12
46	06/02/03	14:34:42	SCOTT	ONE	1	Pass Ack	0	13
47	06/02/03	14:34:42	SCOTT	ONE	2	FF Down	0	13
48	06/02/03	14:34:48	SCOTT	TWO	4	FF Down	0	12
49	06/02/03	14:35:30	SCOTT	ONE	1	FF Down	0	14
50	06/02/03	14:35:30	SCOTT	ONE	5	FF Down	0	14

**FIGURE 16
SAMPLE EVENT LOG**

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BATTERY REPLACEMENT

Respirators equipped with the PAK-ALERT with the integrated PAK-TRACKER Locator System 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. Replace batteries as follows:

1. Close respirator cylinder valve, open regulator purge valve letting out all the trapped air, close regulator purge valve, press the reset button twice. 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 PASS DEVICE distress alarm will be inactive. If there is no pressure in the system when the RESET button is pressed twice, there will be no beep sequence. If there is air pressure in the system, the PASS DEVICE distress alarm will return to the active mode.

NOTE

ALWAYS BE SURE THAT CYLINDER VALVE IS OFF AND THE PASS DEVICE IS COMPLETELY INACTIVE BEFORE CHANGING BATTERIES. NEVER REMOVE OR REPLACE BATTERIES WITH SYSTEM PRESSURIZED OR DAMAGE MAY OCCUR TO ELECTRONIC COMPONENTS.

2. When replacing batteries on respirators, remove the cylinder and place the respirator in a clean, non-hazardous area.
3. Use a Phillips driver to remove the Battery Housing Cover as shown in FIGURE 17. Carefully remove the cover and set aside.



FIGURE 17

4. Remove used batteries from battery compartment by sliding them out of the battery compartment.
5. Install six (6) fresh new “AA” batteries of the same type. **Always replace all batteries at the same time.**

The battery holder is marked with the style and orientation of the batteries required. See FIGURE 7.

Use six (6) each of one of the following 1.5 volt AA batteries:

- Duracell² Alkaline MN1500
- Duracell Alkaline MX1500
- Duracell Alkaline PC1500
- Eveready Energizer³ Alkaline EN91
- Eveready Energizer Alkaline E91.

Do not mix batteries. Verify correct orientation of batteries as shown on label inside the battery holder.

WARNING

THE SEMS II DISTRESS ALARM IS INTENDED TO ASSIST IN LOCATING A PERSON WHO MAY BE IN A LIFE THREATENING SITUATION. FAILURE TO FOLLOW THE INSTRUCTIONS FOR OPENING, CHANGING THE BATTERIES AND RE-CLOSING THE BATTERY COMPARTMENT MAY RESULT IN DAMAGE WHICH COULD CAUSE FAILURE OF THE PASS DURING A LIFE THREATENING EMERGENCY OR COULD CAUSE A FIRE OR EXPLOSION IN A FLAMMABLE OR EXPLOSIVE ATMOSPHERE POSSIBLY RESULTING IN INJURY OR DEATH.

WARNING

BATTERIES MUST ONLY BE CHANGED IN AN AREA KNOWN TO BE NONFLAMMABLE. CHANGING THE BATTERIES IN A FLAMMABLE ATMOSPHERE MAY CAUSE AN IGNITION WHICH COULD RESULT IN SERIOUS INJURY OR DEATH.

CAUTION

RESPIRATOR SYSTEM MUST NOT BE PRESSURIZED WHEN BATTERIES ARE INSTALLED. DAMAGE TO THE ELECTRONIC COMPONENTS MAY RESULT IF BATTERIES ARE INSTALLED WITH SYSTEM PRESSURIZED.

WARNING

TO REDUCE THE RISK OF EXPLOSION USE BATTERIES ONLY FROM THE LIST PROVIDED, DO NOT MIX OLD BATTERIES WITH UNUSED BATTERIES, AND DO NOT MIX BATTERIES FROM DIFFERENT MANUFACTURERS. UNAUTHORIZED SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY AND CAUSE AN EXPLOSION WHICH COULD LEAD TO SERIOUS INJURY OR DEATH.

² Duracell is a registered trademark of The Gillette Company, Boston, MA.

³ Energizer is a registered trademark of Eveready Battery Company, Inc., St Louis, MO.

- The battery cover must be installed so that it is water tight after replacement. Clean the sealing rib around battery compartment and sealing face of the cover, shown in FIGURE 18, by wiping with a clean damp cloth to remove any dirt or foreign matter which might prevent a proper seal. Check cover gasket for tears or cuts. If damage is found, remove respirator from service and tag for repair by authorized personnel.



FIGURE 18

- Install battery cover and tighten the cover screw until snug. AFTER REPLACEMENT OF BATTERIES, PERFORM A REGULAR OPERATIONAL INSPECTION BEFORE RETURNING RESPIRATOR TO SERVICE.

CHECK YOUR WORK!
BEFORE ASSEMBLY OF BATTERY COVER, CHECK TO SEE BOTH BATTERIES ARE FRESH, NEW BATTERIES OF THE TYPE INDICATED ABOVE AND THAT THEY HAVE BEEN INSTALLED PROPERLY.

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CLEANING, MAINTENANCE AND STORAGE

Cleaning, maintenance and storage of a respirator with a SEMS II distress alarm shall be done as part of the normal respirator CLEANING AND STORAGE and REGULAR OPERATIONAL INSPECTION as described in the OPERATING AND MAINTENANCE INSTRUCTIONS supplied with each SCOTT respirator.

Refer to the PAK-TRACKER User Instructions, SCOTT P/N 595102-01, provided with the SCOTT PAK-TRACKER Hand Held Receiver for complete details of cleaning and storage of the Hand Held Receiver.

Store the respirator and attached distress alarm in accordance with the OPERATION AND MAINTENANCE INSTRUCTIONS provided with the respirator. Do not store respirators equipped with distress alarms in the proximity of radio antennas or radio transmitter base units. Respirators equipped with SEMS II distress alarms must be stored or transported at least two (2) feet away from radio antennas on fire equipment. Refer to the DETECTING AND AVOIDING RADIO FREQUENCY INTERFERENCE section of this instruction for details.

Clean the exterior of the SEMS II 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, shown in FIGURE 2, 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 SEMS II distress alarm.

If during use, the respirator and/or SEMS II 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.

Except for the replacement of batteries, no attempt shall be made to do maintenance or to make adjustments or repairs beyond the scope of this instruction manual without proper training.

MARKING AND PAINTING

Do not mark, etch, paint, or drill any of the SEMS II ACCOUNTABILITY SYSTEM components or housings in any way.

REPLACEMENT PARTS AND SERVICE

The SEMS II distress alarm is covered by a one year warranty.

Consult your Authorized SCOTT Representative, Distributor or Service Center as to the availability of Service and Parts for the SEMS II distress alarm. Replacement Batteries of the type designated are commercially available over the counter, from your SCOTT Distributor, and from most Industrial Battery Distributors.

Except for the replacement of batteries, no attempt shall be made to do maintenance or to make adjustments or repairs beyond the scope of this instruction manual without proper training.

RETIREMENT CRITERIA AND CONSIDERATION

Retirement criteria and consideration shall be determined by SCOTT trained and Certified Overhaul Technicians.

WARNING

READ AND UNDERSTAND THE COMPLETE INSTRUCTION MANUAL BEFORE USING A RESPIRATOR WITH A SEMS II DISTRESS ALARM INSTALLED.

QUICK REFERENCE GUIDE TO USE:

WHEN YOU WANT TO:	YOU DO:	THE SEMS II DISTRESS ALARM DOES:
Turn it on.	Open cylinder valve (cylinder <u>must</u> 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 SEMS II distress alarm is on or off).	Goes into full alarm, loud 3 tone chirps from sensor module and bright <u>red</u> flashing light from control console.

WHEN THE PAK-ALERT DISTRESS ALARM IS:	IT INDICATES THAT:
Quiet. No lights or sound	The SEMS II distress alarm is off or the batteries are used up or removed.
Flashing the green light	The SEMS II 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, SEMS II 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 SEMS II distress alarm again (it will work in low battery condition long enough to let you finish the cylinder of air you are on).

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DETECTING AND AVOIDING

RADIO FREQUENCY INTERFERENCE

When any electronic device is adversely affected by radio waves, Radio Frequency Interference (RFI) is said to have occurred. All electronic devices like the SEMS II distress alarm may be subject to the effects of RFI. Radio transmissions from the antennas of radios including those used by fire fighters, police and other public safety related personnel may produce RFI in the SEMS II distress alarm. RFI may occur while the radio is transmitting if the respirator equipped with the SEMS II distress alarm is in close proximity to a base station or high-powered vehicle mounted radio, or if the antenna of a personal portable hand held radio is touching or within six (6) inches of the Control Console or Sensor Module of the SEMS II distress alarm. See FIGURE 5.

Be aware of the symptoms of RFI. A SEMS II distress alarm affected by RFI may temporarily give false indications such as the sudden sounding of the loud continuous three-tone chirp of the full alarm. In some instances the lights on the control console may flash without sounding the alarm. In rare circumstances, an alarm which was sounding may stop.

If the PAK-ALERT exhibits any of the symptoms of RFI, identify the source of the RFI and do the following:

- If the symptoms of RFI occur when standing near a base station transmitting antenna or a truck mounted radio antenna, move away from the antenna until the symptoms stop.
- If the symptoms of RFI occur while transmitting on a hand-held radio, move the radio away from the PAK-ALERT .

CHECK THE CONTROL CONSOLE AND BE CERTAIN THE GREEN LIGHT IS FLASHING NORMALLY WHEN THE INTERFERENCE STOPS, REGARDLESS OF THE SOURCE.

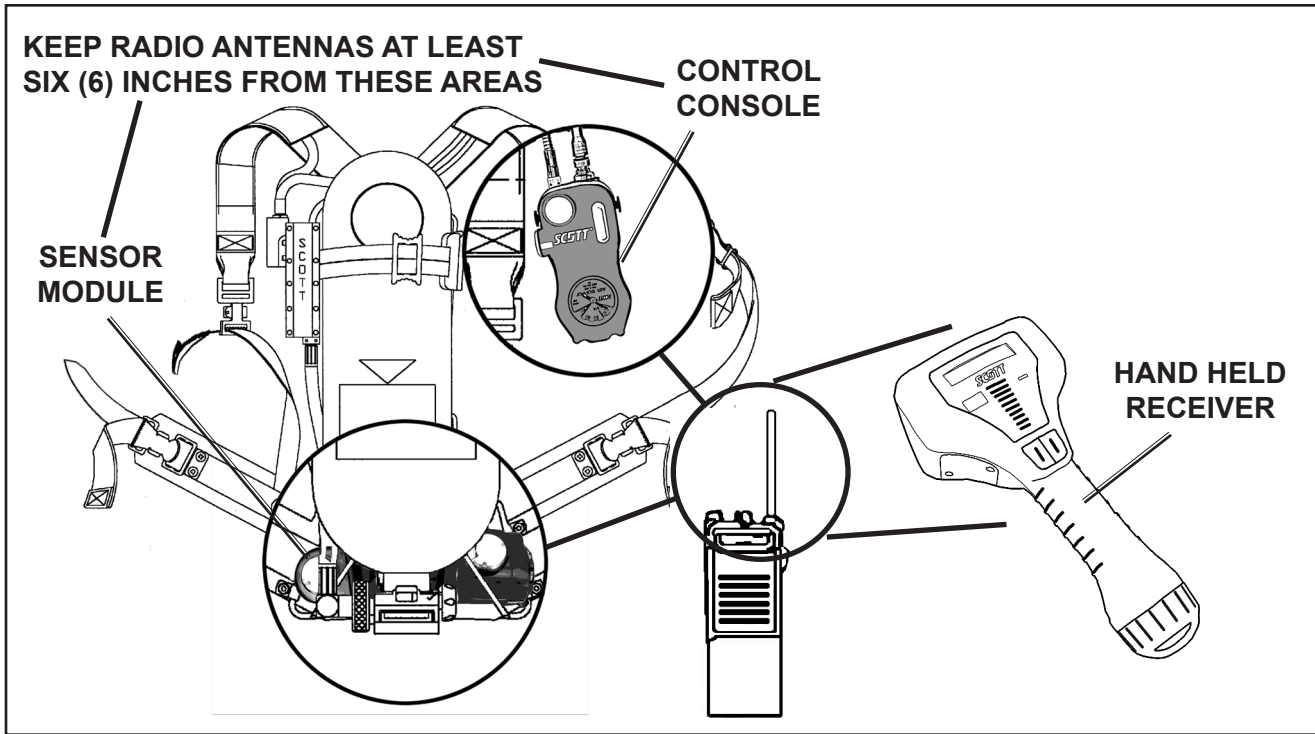
In normal usage with the air cylinder open, the SEMS II distress alarm will typically resume normal operation after experiencing RFI.

WARNING

KEEP THE ANTENNAS OF HAND-HELD RADIOS AT LEAST SIX (6) INCHES AWAY FROM THE CONTROL CONSOLE AND THE SENSOR MODULE OF THE SEMS II DISTRESS ALARM WHEN TRANSMITTING. CLOSE PROXIMITY OF RADIO EQUIPMENT TO THE SEMS II DISTRESS ALARM DURING RADIO TRANSMISSION MAY CAUSE THE UNIT TO MALFUNCTION. FAILURE TO RECOGNIZE A MALFUNCTION OF THE SEMS II DISTRESS ALARM AND TAKE THE PROPER CORRECTIVE ACTION MAY RESULT A NON-WORKING DISTRESS ALARM WHICH WILL NOT SOUND IF THE USER STOPS MOVING AND LEAD TO SERIOUS INJURY OR DEATH.

WARNING

BE AWARE OF THE POTENTIAL EFFECT OF RADIO TRANSMISSIONS FROM BASE STATION OR TRUCK MOUNT RADIOS WHEN USING A RESPIRATOR WITH THE SEMS II DISTRESS ALARM. CLOSE PROXIMITY OF RADIO EQUIPMENT TO THE SEMS II DISTRESS ALARM DURING RADIO TRANSMISSION MAY CAUSE THE UNIT TO MALFUNCTION. FAILURE TO RECOGNIZE A MALFUNCTION OF THE SEMS II DISTRESS ALARM AND TAKE THE PROPER CORRECTIVE ACTION MAY RESULT A NONWORKING DISTRESS ALARM WHICH WILL NOT SOUND IF THE USER STOPS MOVING AND LEAD TO SERIOUS INJURY OR DEATH.



**FIGURE 5
RFI WARNING AREAS**

If the SEMS II distress alarm is affected by RFI when the respirator air supply is turned off or the cylinder is empty, the distress alarm could be turned off during use. If this occurs, depress the RED Manual Alarm Button to activate the alarm.

IF THE SYMPTOMS OF RFI OCCUR, THE RESPIRATOR USER MUST CHECK THE SEMS II DISTRESS ALARM TO VERIFY THAT IT IS FUNCTIONING PROPERLY. IF THE GREEN LIGHT ON THE CONTROL CONSOLE DOES NOT RESUME FLASHING IN THE NORMAL MANNER AFTER EXPERIENCING THE SYMPTOMS OF RFI, OR IF THE UNIT CONTINUES TO MALFUNCTION IN ANY OTHER WAY, PROCEED TO A SAFE AREA, REMOVE THE RESPIRATOR FROM SERVICE AND TAG FOR REPAIR BY AUTHORIZED PERSONNEL.

Minimize or eliminate the effects of RFI by protecting the PAK-ALERT with the following steps:

- Maintain a safe distance from a base station transmitting antenna or a truck mounted radio antenna.
- Keep the antennas of hand held radios at least six (6) inches away from the CONTROL CONSOLE or the SENSOR MODULE. See FIGURE 5.

RFI AND THE PAK-TRACKER HAND HELD RECEIVER

If the Hand Held Receiver experiences RFI, it may be necessary to remove the Hand Held Receiver from service. In a known safe, non-hazardous area, remove and reinstall the batteries to reset the unit (see the BATTERY REPLACEMENT section of the PAK-TRACKER Locator System User Instructions, SCOTT P/N 595102-01). Then inspect and return the Hand Held Receiver to service.

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SAFETY LISTINGS

FCC NOTICE

This equipment has been tested and found to comply with the requirements of United States Federal Communications Commission, Code of Federal Regulations, FCC title 47, part 90 Section 20, limitation (27) and requirement Part 90.238 over frequency range 453.0375 to 465.6375 MHz, as well as FCC Section 1.1310 for Occupational/Controlled Exposure limits.

If the SEMS II Base Station or Portable Unit has been damaged, DO NOT use this equipment. Maintenance or repair of this equipment must only be performed by an authorized SCOTT service center. Unauthorized service may void the manufacturers warranty and may cause damage to the equipment. Use only Scott authorized accessories, cables, and power connectors. Consult the operating and service manuals for instructions on battery replacement, battery maintenance, and use of accessory cables.

FCC COMPLIANCE

FCC Compliance Statement (Part 15.19)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received,
Including interference that may cause undesired operation.

FCC Warning (Part 15.21)

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This portable transmitter with its antenna complies with FCC's RF exposure limits for general population / uncontrolled exposure.

The Pak-Tracker Locator Integrated Transmitter has been assigned FCC ID # T5E200451.

The SEMS II Control Console Transmitter has been assigned FCC ID # T5E200729.

RADIO FREQUENCY INTERFERENCE (RFI)

When any electronic device is adversely affected by radio waves, Radio Frequency Interference (RFI) is said to have occurred. All electronic devices like the SEMS II distress alarm may be subject to the effects of RFI, most of which are temporary in nature. Users of the SCOTT SCBA with the integrated SEMS II distress alarm must be familiar with the normal operation of the distress alarm and must also be familiar with how to identify and avoid the effects of RFI (see DETECTING AND AVOIDING RADIO FREQUENCY INTERFERENCE on page 6). If RFI occurs to the SEMS II distress alarm, it may be caused by transmissions from hand-held or personal radios where the radio antenna is touching or very close to (less than 6 inches from) components of the SEMS II distress alarm. It may also be caused by transmissions from base stations or high-powered vehicle mounted radios or any other powerful source of electromagnetic radiation.

WARNING

RADIO FREQUENCY INTERFERENCE (RFI) MAY CAUSE A MALFUNCTION OF THE SEMS II PDA DISTRESS ALARM. USERS OF RESPIRATORS EQUIPPED WITH THE SEMS II PDA DISTRESS ALARM MUST BE AWARE OF THE PROPER OPERATION OF THE DISTRESS ALARM. FAILURE TO RECOGNIZE A MALFUNCTION OF THE EQUIPMENT AND TAKE PROPER CORRECTIVE ACTION MAY RESULT FAILURE OF THE SEMS II PDA DISTRESS ALARM AND LEAD TO SERIOUS INJURY OR DEATH.

CLASS B DIGITAL DEVICE

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

INDUSTRY CANADA COMPLIANCE

Industry Canada Statement

The term "IC" before the certification / registration number only signifies that the Industry Canada technical specifications were met.

Section 14 of RSS-210

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population. Consult Safety Code 6, obtainable from Health Canada's web site: www.hc-sc.gc.ca/rpb.

Operation is subject to the following two conditions:

- 1) this device may not cause interference, and
- 2) this device must accept any interference, including interference that may cause undesired operation of the device.

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SAFETY LISTINGS Continued...

INTRINSICALLY SAFE LISTING

The SEMS II distress alarm with Integrated Locator transmitter, Model Number 200451-SERIES, when installed on a SCOTT respirator, is listed as intrinsically safe per ANSI/UL Std. UL-913 in Class I, Division 1 Groups C and D hazardous locations by SGS U. S. TESTING COMPANY, Inc. Only when powered by the batteries listed in this instruction or indicated on the label on the sensor module.

To maintain Intrinsic Safety Listing, inspect the respirator with SEMS II distress alarm regularly per the Regular Operational Inspection procedures in this instruction. Substitution of Components May Impair Intrinsic Safety. To reduce the risk of ignition of a flammable atmosphere, batteries must only be changed in an area known to be nonflammable. To reduce the risk of explosion, use only the approved batteries, do not mix old batteries with unused batteries, or mix batteries from different manufacturers.

HAND HELD RECEIVER

NON-INCENDIVE LISTING

The SCOTT PAK-TRACKER LOCATOR SYSTEM Hand Held Receiver P/N 200397-02 is listed by SGS U. S. TESTING COMPANY, Inc. as Non-Incendive per ANSI/UL Std. UL-1604 for use in Class I Division 2 Groups A, B, C, and D hazardous locations. Temperature Code T4 (-25° C to 85° C). To maintain the Non-Incendive Listing, the equipment must be inspected regularly per the following Regular Operational Inspection procedures. Do not tamper with or substitute components in any manner. Use only SCOTT Battery Pack P/N 200402-02. Open the battery compartment only in an area known to be free of flammable or explosive hazards.

WARNING – Substitution of Components May Impair the Non-Incendive Listing. To reduce the risk of ignition of a flammable atmosphere, battery must only be changed in an area known to be nonflammable. Do not substitute any other battery or power source.

WARNING

IF THE SEMS II DISTRESS ALARM IS USED IN AN AREA OF EXPLOSIVE OR FLAMMABLE HAZARDS, FAILURE TO REGULARLY INSPECT AS INSTRUCTED, FAILURE TO CORRECT DAMAGE BEFORE USE, OR THE INSTALLATION OF INCORRECT BATTERIES MAY LEAD TO A FIRE OR EXPLOSION WHICH MAY RESULT IN PERSONAL INJURY OR DEATH.

WARNING

FAILURE TO REGULARLY INSPECT THE HAND HELD RECEIVER AS DESCRIBED IN THIS INSTRUCTION OR FAILURE TO CORRECT ANY DAMAGE FOUND, MAY IMPAIR THE SAFETY OF THE EQUIPMENT. THE INSTALLATION OF INCORRECT BATTERY OR SUBSTITUTION OF ANY OTHER COMPONENTS MAY IMPAIR THE SAFETY OF THE EQUIPMENT. IF THE EQUIPMENT IS USED IN AN EXPLOSIVE OR FLAMMABLE ATMOSPHERE, IMPAIRING THE SAFETY OF THE UNIT MAY LEAD TO A FIRE OR AN EXPLOSION WHICH COULD RESULT IN SERIOUS INJURY OR DEATH.

WARNING

REPLACE BATTERY PACK ONLY WITH SCOTT BATTERY PACK, PART NO. 200402-02. DO NOT REMOVE, RE-CHARGE, OR REPLACE BATTERY PACK WHILE THE DEVICE IS IN A HAZARDOUS LOCATION. REMOVING, RE-CHARGING, OR REPLACING THE BATTERY PACK WHILE THE DEVICE IS IN A HAZARDOUS LOCATION MAY LEAD TO A FIRE OR AN EXPLOSION WHICH COULD RESULT IN SERIOUS INJURY OR DEATH.

**SEMS II DISTRESS ALARM
PERFORMANCE SPECIFICATIONS**

Sound Levels:

- Pre-Alarm..... 70 to 105 dBA incrementally at left ear
- Full-Alarm..... 95 to 100 dBA @ 9.9 Ft. (3m)
- Frequency Range 1.5 KHz to 4 KHz

Battery Life (fresh batteries)

Alkaline Batteries:

- Automatic (green flashing light, no sound).....Approx. 1000 hours
- Full Alarm (red flashing light, 95 dBA sound)..... .Approx. 8 hours

Compliance

The SCOTT SEMS II distress alarm is a NIOSH approved accessory for use on only the following SCOTT SCBA respirators:

(NIOSH approval numbers have been included for identification):

SCOTT 2.2 AIR-PAK (30 min.)	TC-13F-80
SCOTT 3.0 AIR-PAK (30 min.)	TC-13F-366
SCOTT 4.5 AIR-PAK (30 min.)	TC-13F-76
SCOTT 4.5 AIR-PAK (45 min.)	TC-13F-212
SCOTT 4.5 AIR-PAK (60 min.)	TC-13F-96

NOTE

DO NOT USE A FIBERGLASS WRAPPED ONE HOUR CYLINDER ON A MODEL 4.5 AIR PAK EQUIPPED WITH A SEMS II DISTRESS ALARM AS THE WEIGHT WILL EXCEED THE 35 LBS APPROVAL LIMIT FOR SCBA'S ESTABLISHED BY NIOSH.

PERSONAL COMPUTER

The personal computer Base Station environmental operating parameters are totally dependant on the limitations of the personal computer used with the SCOTT SEMS II Accountability System PCMCIA card. Do not use the personal computer Base Station in environments for which it is not designed. Handle the personal computer according to the instructions provided with the personal computer.

QUESTIONS OR CONCERNS

If you have any questions or concerns regarding use of this equipment, contact your authorized SCOTT distributor, or contact SCOTT at 1-800-247-7257 (or 704-291-8300 outside the continental United States) or visit our web site at www.scotthealthsafety.com.

Report any operational malfunctions of the PASS function of this device to the certification agency Safety Equipment Institute (SEI), 1307 Dolley Madison Blvd. Suite 3A, McLean, VA 22101, (703) 442-5732, FAX (703) 442-5756.

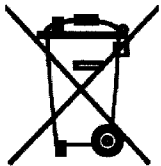
EXPORT AND IMPORT

The SCOTT SEMS II Accountability System and portions thereof are registered under United States export regulations and under the import regulations of most countries. If you have any questions or concerns regarding these regulations, contact SCOTT at 1-800-247-7257 (or 704-291-8300 outside the continental United States).

QUESTIONS OR CONCERNS

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**NOTICE:
THESE USER INSTRUCTIONS
ARE TO BE REMOVED ONLY
BY THE END USER.**



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