

SOC Support Ladder Company Training

by Lieutenants Joseph M. Jardin and William F. Ryan

A modified Special Operations Command (SOC) Support Ladder Company program improves the Department's ability to respond to a variety of emergencies, including weapons of mass destruction, such as chemical, nuclear or bio-terrorism incidents. After completing the 40-hour technical rescue and 40-hour hazardous-materials operations training, 21 Ladder Companies will be prepared to intervene with greater effectiveness in a wider array of emergency situations. (See "FDNY's Preparedness--Second to None," by Commissioner Nicholas Scoppetta, in the 1st/2003 issue of *WNYF*.)

In an effort to meet the functional needs of the Fire Department's strategic plan for SOC Support Ladder Companies, the Technical Rescue School and Hazardous Materials Operations have developed and delivered appropriately tailored courses. In addition to the 80 hours of training, these Companies receive the necessary equipment to operate safely and effectively. Each Company has been issued a second piece of apparatus to store and transport the additional equipment.

Technical Rescue Training

The 40 hours of enhanced rescue training target three fundamental areas:

1. Confined space rescue operations
2. Trench and excavation awareness and safety
3. Structural collapse awareness and void search operations.

All training is conducted according to the requirements of NFPA 1670, Operations and Training for Technical Rescue, and OSHA's CFR 1910-146 and CFR 1926, based on the desired response level for each discipline. The course emphasizes hands-on applications of the principles and theories delivered in the classroom. Student members spend more than half of the course developing requisite practical skills and conducting simulated exercises.

In addition to learning about SOC Support Ladder skills and equipment, members are introduced to Rescue and Squad Company procedures and equipment. An increased awareness of SOC operations will facilitate inter-Company operations and enhance the capabilities of SOC Support Ladder Company mem-

bers when detailed as the fifth Firefighter to SOC Companies.

Confined space emergencies

Historically, confined space emergencies have been among the most hazardous of operations faced by rescuers. Statistically, 60 percent of those killed and injured in these situations have been would-be rescuers. Potential dangers are reflected in two primary categories--atmospheric and physical hazards.

Confined spaces pose three kinds of atmospheric hazards: asphyxiant, toxic and explosive. Oxygen deficiency (asphyxiant) accounts for the greatest number of confined space deaths (50 percent). Natural decay--including rusting steel--is an example of a cause that promotes a decreased oxygen level within an enclosed space. Toxic and flammable atmospheres--although less prevalent--are potentially just as deadly. These atmospheric hazards share a common characteristic--the inability to be detected without special equipment.

Engulfment is one of several physical hazards encountered in the confined space environment. Stored solids, such as fine powders, sugar and cement/concrete, create prospective hazards. Electricity, operating machinery, flowing liquids, tapered walls/enclosures and slip/fall potential are additional examples of physical hazards.

Confined space rescue training

Members review procedures contained in *Training Bulletin*, "Confined Space Rescue." The need to abide by the entry guidelines outlined in the *Training Bulletin* is emphasized. Only those entries where the rescuer will be within the line of site of the outside and the exit (non-complex entries according to NFPA 1670) are permitted. Additionally, CFR 1910-146 requires confined space entrants to be equipped with a full-body harness, along with safety line, in case emergency retrieval is required. Each member is cautioned that failure to abide by the requirements of CFR 1910-146 constitutes a violation of federal law.

Some of the numerous topics addressed in the confined space lecture and practical sessions include: • Hazards • Confined space and permit required confined space definitions • Lock-out/tag-out procedures • Ventilation procedures • Personal protective equipment • Rope management and knot skills • Atmospheric monitoring • Patient packaging • Lowering systems/procedures • Retrieval systems/procedures and • Mechanical advantage systems.

Following the lecture and practical skill sessions, each student then participates in three separate confined space evolutions. These three scenarios permit the students to reinforce all required skills. Two vertical entry scenarios are conducted. The first requires use of an aerial ladder as a high-point anchor and the other employs a tower ladder as a high-point anchor. The third scenario involves a horizontal entry. Each student has ample opportunity to practice entry procedures.

Structural collapse

Experience has demonstrated that structural collapse operations are both extremely demanding and potentially hazardous to operating forces. In addition to the ever-present possibility of sec-



Void Search: Using standard tools carried on Ladder Company apparatus, members practice conducting simulated void entry and search operations.

ondary collapse, rescuers face a variety of hazards. Live electricity, natural gas leaks, drowning, impalement injury due to protruding re-bar, glass, nails or other building materials and slip and fall hazards are a few of the potential dangers faced by rescuers during collapse operations.

Structural collapse awareness and void search training

FDNY response and Support Ladder Company roles are emphasized during the lecture. Building construction, collapse cause, collapse types and general hazards are discussed. AUC 291, Collapse Operations, including the Collapse Rescue Plan, is reviewed. Following the lecture, students conduct practical void-searching operations. Size-up, void entry, tool selection, tool operation in confined environments and victim packaging/removal skills are reinforced as part of the rigorous practical training session.

Trench collapse

Hazards inherent in trench collapse situations pose unique challenges to responding personnel. Such hazards include:

- Secondary collapse
- Exposure to utilities:
 1. Electrical services
 2. Gas, fuel oil, etc.
 3. Water
 4. Steam
- Hazardous materials
- Confined space nature of trench environment
- Physical hazards, such as impalement, slips and falls, punctures, etc.

Trench rescue awareness training

This training segment focuses on acquainting students with hazards inherent in trench emergencies. Trench collapse types, soil type, hazard recognition, first responder roles and trench rescue operations are covered during the lecture. Hazard recognition and initial operations are the concepts emphasized. After the lecture, students examine an actual trench.

In addition to reinforcing the lessons learned in the classroom concerning Support Ladder operations, students then review SOC Company trench skills. Members learn to place trench panels and pneumatic struts, which are carried by Rescue Companies.

Hazardous-Materials Training

Hazardous-Materials Training, conducted by Hazardous-Materials Operations, consists of 40 hours of Haz-Mat Technician training and concentrates on "Mission-Specific Functions." However, this training excludes elements such as chemistry and abatement or mitigation procedures, which are included in the 80-hour Technician course taken by all SOC members. After completing the 40-hour haz-mat program, members then are eligible to work in the Hammer Team (as a Level I Technician), while partnered with a Level II Technician (80 hours).

The mission of the SOC Support Ladder Companies is to identify and recognize that a haz-mat situation is present and perform necessary lifesaving operations. This includes performing safe and efficient decontamination operations at the local level and large-scale catastrophic events.

Support Ladder Companies enhance the haz-mat response capabilities of the first-arriving units at specific incidents and augment special unit operations at large-scale events, such as collapses and weapons of mass destruction incidents. On arrival, SOC units will perform more complex procedures such as mitigation and secondary searches and ensure that all proper documentation and notifications are made. If a catastrophic event does occur, the Department can respond with more people with more



Level A: SOC Support Ladder Company members get an appreciation for Level "A" suit operations.

specific training. Additionally, FDNY can better respond to multiple incidents simultaneously.

The following skills and information are delivered to students during the 40-hour haz-mat course:

Detection/recognition/identification

At potential haz-mat incidents, the SOC Support Ladder Companies will conduct detection procedures with various metering resources, including: Rad-Alert 50 radiation detectors, APD 2000 chemical agent detectors, five-star multi-meters and PH paper. Using MSDS sheets, the DOT Guidebook and shipping papers, they also increase their ability to identify products. With the information gathered, units will be able to recognize the presence of a hazard and select the appropriate level of protection.

Chemical Protective Clothing (CPC)

In addition to understanding the CPC selection process, students practice donning and operating in the following kinds of CPC:

Level A Protection

- SCBA
- Totally encapsulating
- Two to three sets of gloves, boots
- Hard hats
- Handie-talkie

Level B Protection

- Splash protection
- SCBA
- Chemical-resistant gloves and boots
- Handie-talkie
- Hard hat

Level C Protection

- Air-purifying respirator
- Hooded coverall splash suit
- Gloves and boots
- Hard hat
- Handie-talkie

(See "Hazardous Materials Chemical Protective Clothing," by Firefighter Jeff Borkowski, in the 1st/99 issue of WNYF.)

Rescue operations

While in protective suits, members learn the most efficient ways to perform emergency victim-removal procedures in a toxic and sometimes deadly environment. The length of time that members participate in the rescue depends on the severity and physical stress of the conditions in which they are operating. When operating in fully encapsulated gear, the body does not cool down in the



Upon completing the 80 hours of initial training, the following units will be designated as SOC Support Ladder Companies:

Bronx
L-27, L-42, L-46, L-47, L-50

Brooklyn
L-131, L-132, L-146, L-169, L-175

Manhattan
L-1, L-7, L-14, L-25

Queens
L-117, L-121, L-126, L-136, L-152

Staten Island
L-77, L-79

SOC Support Ladder Company members perform simulated confined space entry operations in accordance with the FDNY Training Bulletin, Confined Space Entry.

same manner to which a member may be accustomed. Dehydration is a constant concern, as well as incident stresses, fit-

ness level, age, length of operation and frequent relief. Normal operations are limited to a single, one-hour cylinder; then to a period of rest.

Decontamination

The students review and practice civilian and Firefighter decontamination procedures. Included is the removal of contaminated equipment and clothing and proper labeling of such items, as well as packing for removal from the scene for safe disposal.

Conclusion

The combination of training provided by the Rescue School and Hazardous-Materials Operations meets the Department's overall objective of the SOC Support Ladder Company program. The dedicated and motivated group of instructors has delivered quality classroom lectures and challenging, hands-on scenarios. To date, the members have been very receptive to the instruction.

The key to the long-term success of this program is on-going, intra-Company training. The skills considered necessary to conduct any and all of these special operations require constant review and repetition. Therefore, it is imperative that Company Officers schedule and conduct drills with these operations in mind.

About the Authors...

Lieutenant Joseph M. Jardin, a 16-year veteran of the FDNY, is assigned to the Rescue School. Prior to this assignment, he was a Firefighter in Rescue 2. He is a registered professional engineer and holds a BS degree in Fire Protection Engineering from the University of Maryland. This is his first contribution to WNYF.



Lieutenant William F. Ryan, a 12-year veteran of the FDNY, is assigned to the Rescue School. Prior assignments include Ladder 157 and Rescue 4 and 3. This is his first contribution to WNYF.



In addition to the Protective Clothing, these Special Operations Support Ladder Companies will carry the following equipment on their Support units:

Patient Removal/Transport/Treatment Equipment

- 4-to-1 mechanical advantage system (200 feet of 1/2-inch rope) with remotely triggered brake (1)
- Retrieval line--200 feet of 1/2-inch rope with guard (1)
- Carabiners, locking steel (6), extra large (1)
- Rescuescender rope grab (1)
- Adjustable anchor straps (2)
- Stokes stretcher and bridle
- Sked stretchers (2)
- Diaper harness for victims (1)
- Trauma bag (1)
- Oxygen bag (1)
- Body bag (1)
- Disposable body bags (6)
- Triage tags, black only (12)

Forcible Entry/Firefighting Equipment

- Hydra Ram FE tool (1)
- Halligan tools (2)
- Flathead ax (1)
- Bolt cutters, 36 inches
- Transit Authority subway key (1)
- Six-foot Halligan hook (1)

- Water extinguisher (1)
- ABC dry chemical extinguisher (1)
- Search rope (1)
- Utility ropes, 50 feet (3)
- Square-point shovel (1)

Detection Equipment

- Binoculars
- MSA 5 Star, five-gas detection meter (1)
- Photo ionization detector (1)
- Ludlum radiation detection kit (1)
- Radiation dosimeter pagers (10)
- Radalert 50 radiation detector (1) (carried on main apparatus)
- APD-2000 chemical agent monitor (1)
- Raytheon thermal imaging camera (1)

Decontamination Supplies

- Plastic buckets (2)
- Brushes (2)
- Decon solutions (case of bleach and five gallons of liquid soap)
- Garden hose, 3/4 inch by 50 feet (2)
- Spray nozzles (2)

- 2 1/2-inch hydrant adapters (2)
- Sprayer, wand (2)
- Recovery drum sets (4)
- Speedi Dry, bags (10)

Emergency Light and Power Equipment

- 1600-watt generator (1)
- Firepower electric reel (1)
- Firepower junction box (1)
- Firepower 3 adapter (4)
- Circle D 500-watt quartz lights (2)
- Cyalume light sticks (1)
- Power Plus hand lights and 110-volt chargers (2)
- Five-gallon gas can for generator (1)

Miscellaneous Equipment

- Map (1)
- Rubber wheel chocks (1 set)
- Snow chains and spreader sets (1)
- Case of road flares (1)
- Traffic cones 28 inches (2)
- Yellow fire line tape 300-foot rolls (3)
- Red haz-mat tape 300-foot rolls (3)
- Duct tape 2 inches by 180 feet (6)