

OVERHAULING TECHNIQUES THAT SAVE ENERGY

BY MICHAEL N. CIAMPO

OVERHAULING, SOMETIMES REFERRED TO AS “OPENING UP,” is an essential part of firefighting operations. It normally takes place after the bulk of the fire has been extinguished and the search for fire extension has begun. It’s an essential element of the job because returning to the building for a rekindle isn’t part of our overall game plan.

Unfortunately, overhauling is often a tough, dirty, and tiresome affair that pushes firefighters to their limits after the initial fire attack is completed. During overhaul operations, brute strength has to kick in. Many times, this causes firefighters to overexert themselves sooner and reduces their stamina levels for other jobs that may have to be accomplished. Thus it is understandable that statistics indicate a majority of injuries occur during overhauling.

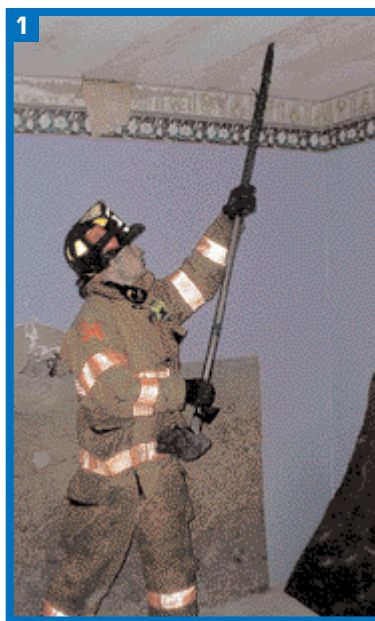
Therefore, it is important to learn techniques that make overhauling less punishing on firefighters—to help firefighters maintain their energy levels and work with more efficiency and precision. Not only will these techniques help you “open up” concealed spaces more rapidly, but they will also help reduce the fire’s overall extension and firefighting injuries.

BUTT END OF HOOK TECHNIQUE

Have you ever thrown a hook up into a ceiling, only to have it ricochet back at you? Realizing that you may not have put enough muscle behind it, you try a more forceful second attempt. After the second attempt has failed, you realize that the hook’s head may be hitting a ceiling joist. Now, slightly embarrassed in front of the other firefighters, you move over a few inches and launch the hook upward in a third attempt. As the hook makes contact with the ceiling, you hear a loud thump; your muscles and bones tingle from the impact—and all you have to show for it is a small divot in the ceiling! Meanwhile, above the enclosed ceiling space, the fire is still extending between the joist bays undetected.

What are your options at this particular moment? Should you continue to let muscle and brawn prevail? At the same time you are expending a lot of energy opening up this ceiling, there may be many more rooms that

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(1) A firefighter uses the butt end of the hook to penetrate the ceiling. (Photo by author; other photos by Scott Fisher.)

need the same treatment. So try to conserve some energy by performing a simple tactic of opening up with a hook.

Fire department hooks come in a wide variety of shapes and sizes for a multitude of uses. Their head assemblies can measure up to six to 10 inches in length, depending on the model or manufacturer. Trying to penetrate a plaster ceiling covered over with a new layer of dry-

wall may be difficult with a hook. Even in today’s newer construction, two layers of drywall can be difficult to penetrate. Plus, using a hook with a large head assembly increases the odds of striking a ceiling joist during the initial entry attempts.

Try this simple technique to open up ceilings that are difficult to penetrate: Instead of forcefully trying to penetrate the ceiling with the hook’s head, spin the handle around and use the butt end of the hook. Grasp the hook around the shaft with both hands, much like using a pool cue. Now, slide it through your upper hand with force, and penetrate the ceiling to create an initial entry hole (photo 1). Once you make the initial hole, you have a few options. You can punch another hole right next to or within a few inches of the original hole so that you can insert or force the hook’s head into the ceiling at this point. (Prior to spinning the hook around, always glance around you to make sure you don’t strike another firefighter or an object as you perform the “baton twirl.”) Or, some firefighters prefer to make only one entry hole and then force the hook’s head through it to begin pulling the ceiling. (Remember to point the free end of the hook away from you.) The key is to size up the ceiling once you have made the initial hole. A thicker ceiling may require more than one hole; a thin ceiling may require only one for an entry point.

Using the butt end of the hook normally penetrates the ceiling more easily and faster than using the hook’s head in certain situations.



(2) Working at about waist level, firefighters have a tendency to choke up on the tool's handle.

Because of its smaller size, it is also less likely to strike a ceiling joist. It can also help speed up the process of making inspection holes in the bays of ceiling joists when trying to determine fire extension. The butt-end technique has worked well when used on the following types of ceilings: plaster and lath, plaster and lath covered with drywall, double layered drywall, acoustic ceiling tiles, and tin ceilings.

You can also use this technique with various types of hooks with butt ends, gas shutoff ends, or chisel ends. Hooks made with handles of wood, metal, fiberglass, and aluminum have also held up well during this technique. Overall, it is a quick and simple way to reduce a firefighter's fatigue level and make lighter work of a tough job while decreasing the risks of an injury.

OPENING UP BELOW WAIST LEVEL

At many fires, it is necessary to open up the walls to check for fire extension and wash down the wall bays or wall studs. Operating with a hook above waist level is normally easier than operating below waist level (photo 2). Because of the hook's length and the horizontal position it has to be placed in to pull open the lower half of walls, you can see that problems may arise. The furniture in the room and the firefighters operating in the area are just two of the obstacles you may encounter.

Normally, firefighters choke up on the handle of the hook to gain better control over the tool and its pulling motion when operating below waist level. Unfortunately, this leaves a large portion of the hook's handle behind the operator. This portion of the tool is often forgotten about as the firefighter concentrates on the work in front of him. Striking an object with the "leftover" end of the hook may damage property or injure the firefighter using the tool or an unsuspecting firefighter nearby. In addition, you are bent over in an awkward position, with the SCBA riding up your back, making opening up walls below waist level sometimes difficult.

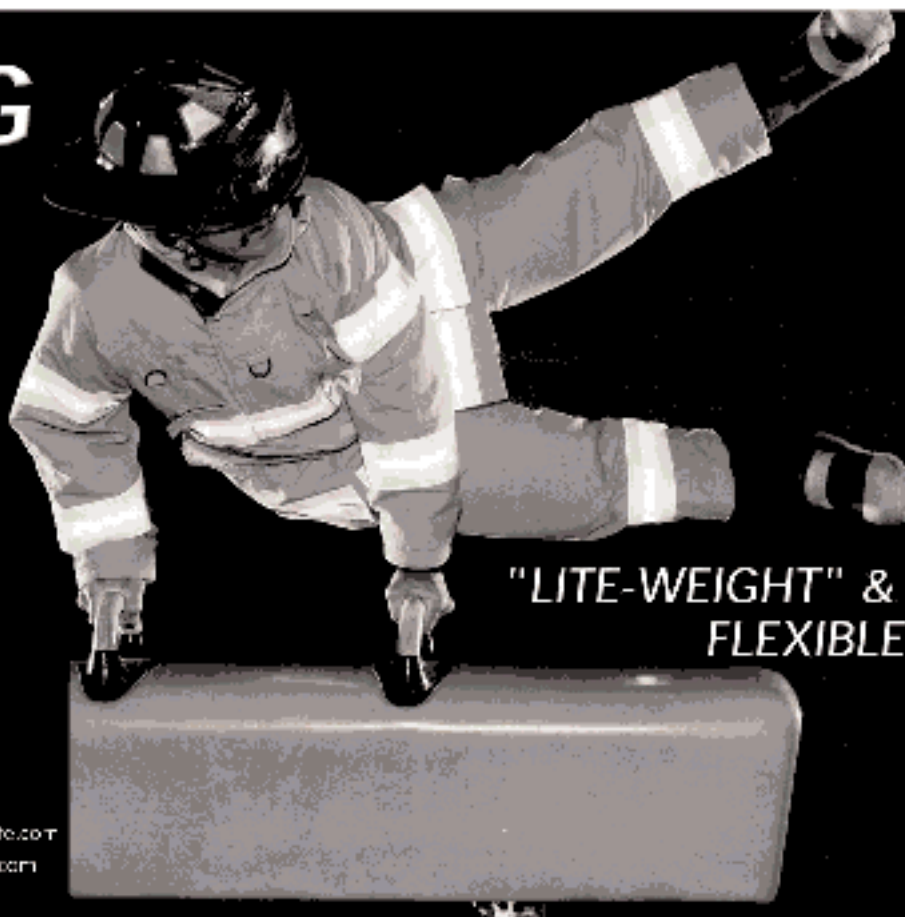
When it is necessary to open up from about waist level and below, try this simple technique using a hook or a hand tool. First, punch a hole in the wall at a desired location at about waist level. (Some firefighters sound the wall first so as not to hit a wall stud.) Next, slide the handle of the tool into the entry hole and down toward the wall's sill plate (photo 3). Sliding the tool down with moderate force may enable it to bite into the sill plate and act like a good fulcrum. Now, pull or force downward toward the floor the

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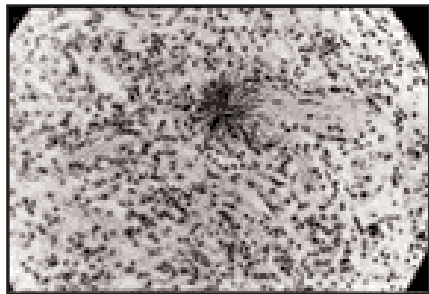


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Showcase

Overhauling Techniques That Save Energy

remainder of the tool outside the wall, which normally tears open the wall (photo 4).

There are some variations to this technique and operational steps to follow for a successful operation. If you use the technique with a

shorter sized hand tool, you may have to make the entry hole lower in the wall so that the tool reaches the wall's sill plate. Although it is not necessary to hit the sill plate, the tool must have a substantial back wall to wedge up against as it is pulled downward, breaking



(3) The firefighter slides the hook's handle down into an entry hole. (4) As he pulls the hook's handle toward the floor, he opens up the wall. (5) Be prepared for the drywall to break up into small or large pieces when using this technique to open up walls.

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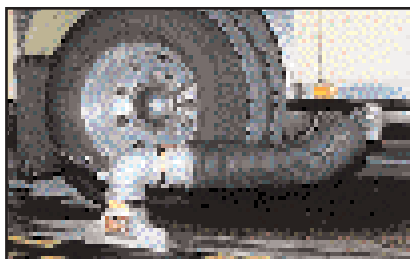
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open the wall. If there is no back wall or "stop" for the tool to wedge up against, the technique may not work.

As discussed earlier, the butt end of the hook may go through the wall more easily because of its size, but the operator can also use the hook's head to make the entry hole and slide it down into the wall. Use caution on the outside walls of some structures when using this technique. In balloon construction, if the tool is inadvertently dropped, it may fall undetected and possibly become lost or strike a firefighter along the way.

This method works very well on lath and plaster. In some in-



(6) Typical light-weight metal wall studs and insulation used in today's construction.

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stances, when the tool and access hole are next to a stud, you may open up more than one wall bay when you pull. If the tool is in the middle of a bay, the lath often snaps and breaks and sometimes may expose only one bay.

On drywall, this technique has mixed results. Often, the drywall will break up in large sections and pull away from the wall studs, possibly hinged on one side. Other times, it will break up into different sized pieces and fall to the ground (photo 5). Or, it may just tear a line right through the material, not exposing the wall bay. In this case, you may need to make another access hole along the opposite wall stud and then repeat the step to dislodge the drywall.

You will encounter different types of wall coverings when opening up using this technique—for example, paneling, wainscoting, vinyl siding, and Masonite®. Exercise caution: All of these materials will snap and splinter apart as they are torn from the wall, and they may have sharp edges. Also, as the lower half of the wall is removed, the base-board can snap and break or pry away from its fasteners. Always be prepared for the unexpected when overhauling: Nails, glue, and screws have attached these items in various places to the wall studs. Where they'll end up during overhauling is sometimes anyone's guess.

Using this method can decrease the time it takes to open up the walls below waist level. It will also help reduce firefighters' fatigue level and allow them to have good body posture—not be bent forward attempting to open up a low wall area. Also, operating with the tool in front of them keeps their eyes focused on the work without having to worry about striking something behind them.

THE NEW METAL STUDS: PULL OR PUNCH?

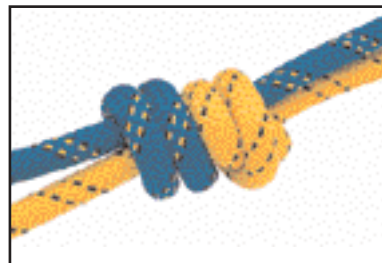
In today's construction, firefighters are encountering lightweight metal wall studs (photo 6). These wall studs are being used in all sorts of applications, from residential to

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commercial construction and even in renovation projects. When fires occur in these structures, the extension possibility may be lessened because the studs are noncombustible. The fact that they may fail and collapse is a whole other story, though. Despite the fact that they seldom burn, it is still imperative that we "open up" where it is necessary. In many instances, the insulation behind the studs may be burning or smoldering and may need to be extinguished. Plus, fire could still be traveling in a hidden void behind these spaces. Don't assume that just because lightweight metal components are used the construction is fire resistive.

Opening up these walls is sometimes very difficult and may demand more physical energy and strength. One reason is because the wallboard is attached to the studs with screws. This can make removal more difficult because the screw's threads hold it more securely into the wall studs than nails. And as these walls are pulled open, because of its molded "U" shape, the metal stud can twist, bend, or flex as the wallboard is being pulled off. This "play" in the studs can often be a nuisance for firefighters.

We have always been taught to pull open walls to expose what may lie behind them. When we pull these walls open during over-

haul, the wallboard may break into small pieces or the tool may tear through the board, making a "severed line" (because of the strength of the screw and how securely it holds the wallboard to the stud). So, in some instances we'll be less likely to expose large areas in a short time when pulling wallboard off metal studs.

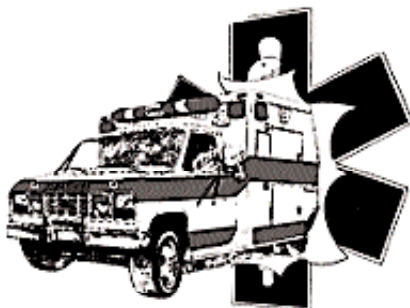
To combat this situation, you can use the "punch" technique of opening up when faced with metal studs. Using the head of a hook or the sharp or blunt side of a hand tool, punch a "cut line" along the inside of the stud and through the material. Short strokes with moderate force should cut through the wallboard easily and help conserve stamina and energy levels. Also, the perforations or cuts making up this line don't have to touch one another; they can be made in close proximity to each other.

Next, you have two options: You can skip a stud or go over to the inside of the next one and make another perforation line downward, parallel to the first line. Then connect the tops of the two parallel "cut lines" by punching across the wallboard. As you complete this last line, insert the head of the tool into it and pull downward. The whole cut section of wallboard should release in one large chunk. It is not necessary to connect the bottom of the "cut lines"; as you pull the drywall downward, the material will snap or break and create its own separation. Only a small amount of material may remain on the metal studs—the screws and possibly little pieces of drywall and insulation. A hoseline can easily wet this material down during hydraulic overhaul.

When you skip a stud using this technique, you may need some additional force to pull the wallboard from the studs because of the screws holding it in place. Also, you may get varying results as you pull the wallboard from the studs; it may either break up in pieces or come off in sections. Normally, doing one bay at a time with the punch method will help you achieve your goal easier than fighting the

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material by using the pulling method of opening up. Always use caution when using this technique: The larger section of material removed may have some weight behind it; position yourself out of the way when it is released.

Punching through the material and creating a cut section to be removed can enhance the speed of opening up. Using specific type of hooks with "cutting edges" on their head assemblies will also enable you to make the cut sections more quickly. This method has worked rather well when dealing with metal wall studs. Some firefighters have suggested using it when faced with metal "C" joists.

Use caution when removing any type of ceiling above you; drywall is famous for hinging and collapsing in large pieces and can injure you. Remember to size up the job prior to and during overhaul.

OTHER CONSIDERATIONS

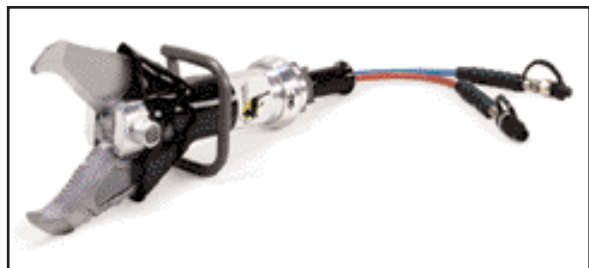
- When drywall is saturated, it is very heavy and may collapse in large sections. At all other times, be prepared for it to hinge and fall in large sections, especially when you are working with it overhead. Also, if drywall is glued over existing lath and plaster, be prepared for it to collapse in large sections after a fire. Use the protection of

a doorway, if possible.

- Always try to size up the joist run. Don't pull against the joists. The hook's head will get caught on them. Try to pull in line with the joists to assist in opening up.
- Pulling with short strokes and next to the joist can open up more than one bay and conserve energy and stamina levels.
- Use caution when operating under suspended ceilings. They have been known to completely collapse when opened up.
- Remove any dangling lath prior to hydraulic overhaul or leaving the scene of a fire to prevent any injuries.
- When using a "D" handle hook to make an entry hole, grasp it around the shaft. If you hold it on the "D" ring, it may cause a severe wrist injury as you force the hook into the ceiling.
- Always have the electrical service shut down to the area you are overhauling or opening up to avoid electrical shock.

...

Overhauling is not one of the more glamorous jobs of firefighting, but it is an essential element of the overall firefight. Performing these techniques can help make the process easier. Although you may not need them at every fire, practice them so you have them as options. ■



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TRUCK COMPANY RIDING POSITIONS

BY SCOTT LYONS

THE FIREGROUND IS COMMONLY DESCRIBED AS “organized chaos.” What appears to be a series of disjointed efforts is actually a display of harmony as members dismount the apparatus with a sense of purpose, sizing up the building, grabbing equipment, and heading off to tackle the tasks at hand. Although under the supervision of a line or chief officer, the members typically understand what is expected of them and how to accomplish it with little more than an order, such as “Stretch a line to the top floor” or “Ventilate the roof.” However, there are times when the members’ actions are not as automatic, even when given such direction. That is the time the company’s operation can truly become disjointed.

Contributing factors may include lack of experience or training, working in a company other than your own, using an unfamiliar apparatus, being out of your first-due area; the list goes on and on. In this instance, the apparatus looks more like a circus clown car as members pile out disheveled, struggling with SCBA, circling the rig looking for tools, bumping into each other, and desperately unprepared to go to work. It is at these operations, and at the worst possible time, that you most likely will hear a member asking his senior member, officer, or chief, “What should I do?”

To minimize confusion at such a critical time, many departments, career and volunteer, have adopted the practice of preassigning duties and tools and generating what is commonly known as a “riding position.” In this method of operation, each member has a primary area of responsibility, having been given that duty at the beginning of a tour or merely by chance because of sitting in a certain seat on the apparatus, as in some call/volunteer companies.

For many readers, this mode of operation may be quite alien, as some officers and chiefs choose to prioritize and delegate duties after

sizing up the incident. What may be even more foreign in these times of reduced staffing in career and volunteer departments is the concept of having six members on one truck to complete the tasks. Having said this, a department or company that elects to use riding positions must realize that sometimes, because of staffing variables, the duties of six firefighters may fall on a crew of three or even two. At these times, many of the riding position guidelines, objectives, and tool assignments change to fit the needs of the members who must now perform multiple tasks. When in such a situation, you may need to set priorities such as conducting primary searches or placing ladders to upper floors way in advance of getting to the roof for vertical ventilation.

THE POSITIONS

As the fire service varies from town to town, so may the names for each position. For the sake of uniformity, we will use the following position names: officer, ladder company chauffeur (LCC), can, irons, outside vent, and roof. The tools used in the fire service do not vary significantly. Let’s first equip members with the basics needed for their area of responsibility. These are suggestions for basic operations; truck members should know all of the tools at their disposal because differing occupancies and fire situations may demand seldom-used or specialty tools. Assume that

each member is already outfitted with full turnout gear, an SCBA with a PASS device, a flashlight, and a radio for fireground communications.

- **Officer** (senior firefighter, sergeant, lieutenant, captain). Small hand tool and thermal imaging camera. May also consider taking search rope for larger occupancies.

- **LCC** (driver, operator, technician, engineer). The chauffeur’s most important tool is the apparatus itself. The chauffeur must be ready to use the aerial ladder or bucket at a moment’s notice, whether it is to deliver members to the upper floors or the roof, rescue trapped occupants from windows, or even use the ladder to vent windows. If the aerial is not needed, the chauffeur is more than likely an experienced member who can recognize what needs to be done and choose the right tools for the task he commits to accomplishing.

- **Can** (extinguisher, inside hook). A 2½-gallon water extinguisher and a six-foot hook. In certain circumstances, such as smoke in the basement, the Can may elect to take a 2½-gallon foam extinguisher to combat fires in or around oil-burning heating units.



(1) This truck company has two water extinguishers, one with plain water and one with AFFF foam/water, and a set of forcible entry tools right next to the crew cab so the tools can be grabbed quickly. (Photos by author.)

■ **SCOTT LYONS** is a firefighter assigned to Ladder Company 79 of the Fire Department of New York. He previously served as a member of the City of Reading (PA) Department of Fire and Rescue Services. He has a B.S. in fire science and is working on an M.S. in public safety administration.



CAD Programs' COMPUTER AIDED DISPATCHING SOFTWARE is another state-of-the-art product produced by Arrakis Publishing. Arrakis Publishing has been producing software for emergency service departments since 1981. We have extensive experience with thousands of installations of our department management modules and a wide variety of dispatching sites throughout the U.S. The Computer-Aided Dispatch System features multiple agency dispatching, wide area networking, client/server systems powered by Microsoft SQL server, 911 interface, graphic library, mapping and pictures, and 23 years of experience. The software performs as a fully featured, multiple fire, police, and EMS system. The CAD system is fully integrated with incident reporting systems implemented in the field. (800) 260-1650.

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The **Bullard T3 SERIES POWERHOUSE™ CHARGING STATION** is a must-have accessory for the new palm-size Bullard T3 Series thermal imaging cameras (TIC). Battery charging system can be attached directly to any apparatus or command vehicle or even set up in a fixed location at the fire station. Requires no connector cords, locks quickly into the charging station, and releases with the touch of a button. Place an extra battery into the second charging dock so there's always two fully charged batteries ready. LED lights indicate green when the rechargeable batteries are fully charged. The unit uses either 12- or 24-volt DC power, with optional AC power kit. (877) BULLARD.

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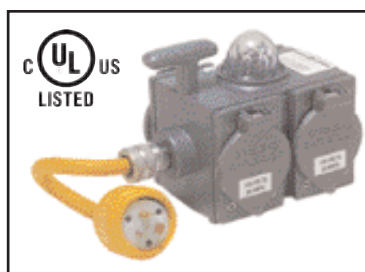


Fire Facilities, Inc. manufactures and markets a full line of **STEEL FIRE TRAINING TOWERS**, made in several standard pre-engineered sizes and styles, from residential and mobile to high-rise structures. Any tower can be customized to meet specific department needs. Fire Facilities towers provide an environment for safe, hands-on fire-fighting experiences under controlled conditions. Nothing prepares firefighters for action better! (800) 929-3726.

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E-ONE's HP95 MID-MOUNT PLATFORM has a four-section aerial device (instead of five-section) for more rigidity when climbing the ladder and a platform with a four-person rating of 1,000 pounds that allows for 305 pounds of equipment. Features automatic leveling system and the 57-cubic-foot SideStacker™ hosebed that can be reloaded without raising the ladder. Designed with our E-Logic™ multiplexing electrical system that allows for fewer components and connections through the vehicle, reducing potential problems. (352) 237-1122.

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Pierce Manufacturing Inc. has unveiled the new **ARROW XT™ CUSTOM FIRE CHASSIS** designed to meet the specialized needs of high-run suburban and metropolitan departments. The Arrow XT is available for pumper, rescue, ladder and platform configurations. From its massive 13½-inch carbon steel frame rails to its 500-horsepower Detroit Diesel engine and super-sized 1,404-square-inch radiator, the Arrow XT is equipped to tackle the most demanding municipal environments with outstanding reliability. Comes standard with TAK-4™ independent front suspension, which delivers greater maneuverability, shorter stopping distances, and SUV-like ride quality. Cab is equipped with heavy-duty door hinges, a one-piece seamless welded roof, and a full 45° cab tilt for easy access. The interior features expansive gear stowage space, VDO Vision Series gauges, easy-to-read Gravoply panels, and ergonomically designed overhead switches. (920) 832-3231.

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Introducing the safest way to store and transport SCBA bottles in your fire station, the **GEARMASTERS PORTABLE AIR BOTTLE TRUCK** from **P & R Products Company**. It features Fire-Kote™ electrostatic epoxy finish; heavy-duty, push/pull steering handle; and standard backguards on all shelf levels. Additionally, it has rugged industrial swivel casters with two locking foot brakes and static-free polymer/ABS bottle bed liners. It easily stores up to 16 air cylinders and has dimensions of 24 × 36 × 41 inches. (800) 852-6088. Web site: www.gearmasters.com.

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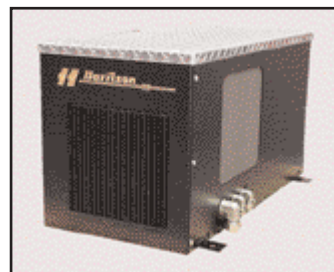


The **AIR RESPONDER 100 TRAILER-MOUNTED CASCADE SYSTEM** from **Air Systems** provides breathing air critical to the support of emergency response personnel. Mobile SCBA refill capability extends the duration of work while minimizing downtime. The unique compact design permits use in the most hostile environments while providing versatility in storage options including four-, six-, and eight-cylinder storage configurations. Available with diesel or gasoline refill compressor. (800) 866-8100. Web site: www.airsystems.cc.

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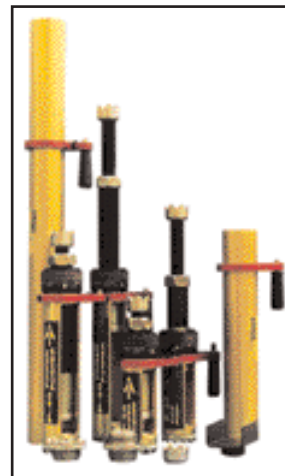
The **Harrison Hydra-Gen STEALTH POWER UNIT (MCR-16R/5C)** is designed to meet the tough demands of the firefighting industry. From the ability to step atop the unit on the NFPA tread plate cap to the construction of tray assembly (tank, cooler, motor generator, all accessible from the top). Better airflow characteristics with minimized clearance requirements allow easy mounting in the dunnage area compartment. It's so quiet you don't even know it's there. (281) 807-4420. Web site: www.harrisonhydragen.com.

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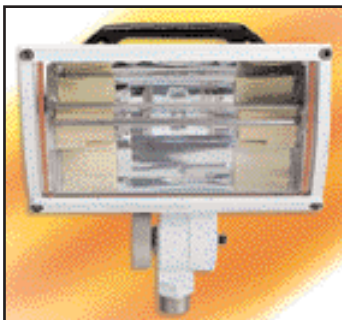


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Introducing the super-efficient **OPTIMUM LAMP HEAD** from **Fire Research Corp. (FRC)** for scene lighting. The unique design of the Optimum's highly polished reflector, twin-beam focusing mirrors, and overall "head down" shape provides more light in the same patented light pattern as our classic Focus series lamp heads. Produces a uniform beam that lights up an area 100° vertically by 150° horizontally, providing unvarying ground and scene illumination with minimal wasted light in the sky. Unique curved glass front lens dissipates heat and optimizes light emission. Available in all configurations including telescoping, nontelelescoping, tripod, flush mount, and a new cab brow mount. The Optimum lamp head is available with quartz halogen, halogen infrared (HIR), or high intensity discharge (HID) bulbs ranging from 70 to 1,500 watts. Web site: www.fire-research.com. (631) 724-8888.



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The new **Crimson STAR SERIES** lights the way with practical innovation designed to stretch budgets and help people do their jobs better. It begins with the industry's most durable frame, the exclusive Tri-Max™ body structure and the agile Vibra-Torq™ mounting system. Combine this with more usable compartment space, a newly designed tank, a lower center of gravity, ergonomically correct control panel, and maximum serviceability, and you have a glimpse of the industry's brightest star. (605) 582-2300.

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Class 1 introduces the **COMMAND MASTER™ PUMP PANEL**. All of the critical panel controls can be operated and monitored from one location. Handles the pressure governor control; the master pressure gauges; all engine information and diagnostics; all pump information and diagnostics; water, foam, and engine fluid levels; foam and CAFS control; and other hydraulic or electronic systems. Has full SPS panel functionality and Es-Key® multiplex control and is weather resistant. New Smart Programmable Switch (SPS) panels round out this new product's state-of-the-art technology. (352) 629-5020.

Circle No. 440 on Reader Service Card

- **Irons** (forcible entry, barman). Flathead ax or maul, halligan, and hydraulic ram/hydraulic entry tool. May also include the use of saws, bolt cutters, the duckbill lock breaker, and any other tool that will assist the company in gaining access to the building.

- **Outside vent** (OV, outside hook). Six-foot hook and halligan. May have to use portable ladders to enter upper floors. Like the irons firefighter, the OV may have to consider using heavier tools like the maul and saws to effect ventilation and establish possible escape routes through pathways that are heavily secured with window or roll-down gates, security or child safety bars, or even block or brick.

- **Roof.** Six-foot hook, halligan, saw, and possibly an ax. May also need to use not only portable ladders but also an aerial ladder or a bucket.

THE TEAMS

In the six-person truck company, the personnel are divided into two teams: inside and outside.


Inside Team

The inside team consists of the officer, Can, and Irons. As the name denotes, the members of the first team are responsible for the interior functions at a structural fire. These tasks include the following:

- Gaining access to the building.
- Locating the seat of the fire.
- Communicating to the engine company the location of the fire and other information, such as the location of standpipe or stairs, to assist in stretching the first line.
- Confining or impeding the fire's spreading

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(2) The roof firefighter carries his tools to the roof in an old Army duffle bag, which is easy to sling over the shoulder (a tip from a volunteer company). (3) At this fire, the outside vent firefighter has positioned a portable ladder to the fire escape and is awaiting assistance before conducting a search of the upper floors, which contain apartments. Note the aerial is being raised to the upper-floor windows, where it can be placed against the window and dropped slightly, breaking the glass, to effect ventilation.





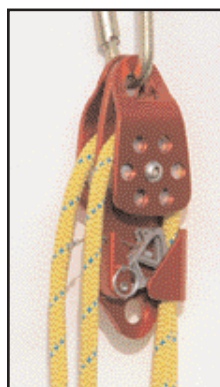
Amkus Rescue Systems introduces **THE ULTIMATE PTO-DRIVEN HYDRAULIC RESCUE SYSTEM**. The Ultimate features an innovative PTO design that allows for multiple simultaneous system operation including Amkus tools, hydraulic generators, winches, ventilation fans, water pumps, chain saws, and concrete breakers. Hydraulic rescue tools perform at maximum power up to 300 feet from the apparatus with superior load and no-load speed. Exclusive pendant control system allows for at-the-scene control, increasing operator safety and saving valuable time. The modular design makes use of dead space under the apparatus chassis and frame to free up compartment space for more tools. (630) 515-1800. Web site: www.amkus.com.

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Seagrave Fire Apparatus recently introduced the **COMMANDER II**, an enhanced replacement of its popular Commander model. Features a roomier, extended cab area; larger windows for more visibility; larger doors and longer step-in surfaces; and an enhanced heating/ventilation system. The Commander II chassis offers a new engine package to accommodate the Detroit Diesel Series 60 EGR engine. Its stiffer frame, redesigned springs, and axle stops also enhance ride smoothness and lengthen spring life. Seagrave dealers are now taking orders for the new Commander II model. (715) 823-2141.

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The **EXTRACTOR CSR HAULER DOUBLE PULLEY** from **Rescue Technology** features an integral safety cam to secure the progress of hauling systems. The first in a series of Rescue Technology pulleys that meet the requirements of rope rescue technicians, the Extractor™ is designed for ½-inch life safety rope and accommodates ropes between ¾ and 1 ¼ inches. Special safety cam design is rope-friendly and can be locked out of the way when a standard double pulley is needed. Has 1,100-pound safe working load limit. A single sheave version is also available. (800)

334-3368, (770) 832-9694. Web site: www.rescuetechn1.com.

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The new **STINGER2.0® MONITOR** from **Elkhart Brass** is the lightest, most firefighter friendly device on the market. It combines features, function, and versatility for superior performance at every fire. Flows up to 1,250 gpm and has the industry's lowest friction loss with the best stream quality available. Stinger 2.0 can be used as a deck gun or quickly converted for use as a portable monitor. Web site: www.elkhartbrass.com. (800) 346-0250.

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Here, **Zumro's SWIFT WATER RESCUE BOAT** is put through its paces in Texas. The high freeboard, stacked-tube design uses six parallel airtight chambers to prevent any surprises. The tunnel-hull feature ensures excellent stability and performance when you need it! Zumro rescue boats are setting a new standard for the industry today! (800) 932-6003. Web site: www.zumro.com.

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by closing doors or using the water extinguisher, or both.

- A primary search for occupants.
- Forcing entry to the fire area while maintaining control of the door until the engine is in place and ready to go with a charged line.
- Horizontal ventilation provided that venting would not contribute to fire spread.
- Overhaul and checks for extension.

Outside Team

The outside team consists of the OV, Roof, and chauffeur and is equally busy completing tasks that are just as important. The duties of the outside team include the following:

- Setup of the aerial device by the chauffeur. Depending on operating procedures, this may require the assistance of the OV or Roof, who monitors the opposing side of the apparatus for obstructions or difficulties as the jacks or stabilizers are set and pinned.
- A survey of the sides, and especially the rear, for fire conditions and life safety concerns.
- Laddering of the building.
- Rescue of occupants showing at windows.
- Horizontal ventilation from the ground, portable ladders, fire escapes, or the aerial device. Permission for horizontal venting should be obtained from the ladder company officer beforehand, to ensure the charged line is in place and ready to go or in operation. This is generally the OV's area of responsibility and should be done opposing the handline.
- Vent-enter-search (VES). Along with the ventilation comes entering and searching exposed and threatened areas for life hazards.

• Vertical ventilation of the roof. The methods for roof operation can vary as greatly as buildings and construction. Let's use as an example the flat roof of a multiple dwelling/apartment building. When assigned to the roof at such a building, the roof firefighter's duties include ventilation of skylights, scuttles, and bulkhead doors; a search of the area just inside the bulkhead (with a hook or tool) for occupants who may have become trapped while trying to flee; and an examination of the building's sides and rear for life hazards, fire conditions, shaftways, jumpers, or extension to neighboring properties. The roof firefighter has a view of the building the incident commander (IC) may not have; relaying information on the conditions found is critical.

• Operation and staffing of the bucket or platform, should it be needed for rescues or master stream operation.

These are very broad descriptions of what each team needs to accomplish at the fire scene. It must be reaffirmed that fire conditions, occupancy, building construction, staffing, operating procedures, experience, equipment, and a host of other variables affect how a truck company operates.

However, departments that use riding positions can gain some measure of control and level of responsibility from their members because duties are better defined and the question, "What should I do?" is avoided. The riding position may also reduce the freelancing factor, as members can be held accountable for preassigned tasks and areas of operation. The riding position ensures that several of the tasks with which the truck is charged will be accomplished because not all of the members will pile off the apparatus and rush into the building while valuable and life-saving tasks on the exterior go unattended.

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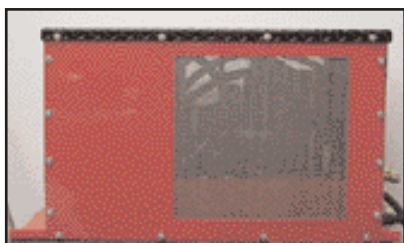
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Hale Products, Inc. introduces the **STAINLESS MAX REAR MOUNT PUMP (SMR)**, the first all-stainless-steel pump package available to the fire industry. The pump's body, manifolds, head, and impellers are entirely constructed of 300 series stainless steel for superior strength and corrosion resistance. Comes with a suction manifold designed to accommo-

date up to two six-inch suctions, a three- or four-inch tank-to-pump, an auxiliary suction line, a Class 1 stainless-steel suction dump valve, and a total pressure master return port. Discharge handles up to 14 ports ranging in size up to four inches. Meets or exceeds a 1,500-gpm NFPA (6,000 lpm NFPA) rating and can exceed 2,500 gpm from a sufficient positive-pressure water source and an appropriate engine. (610) 825-6300.

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THE BUILDINGS

Some departments do a great deal of structural firefighting in private dwellings, some in commercial/taxpayers, and others in multiple-dwellings/apartment buildings. Each type of building presents different concerns about access, life safety, ventilation, and laddering. The "typical" room-and-contents fire in a dwelling may not require the immediate use of the aerial ladder, as would the same fire on the top floor of a multiple dwelling.

For these circumstances, there are suggested areas of responsibility for each of the teams, depending on the type of building encountered. Remember that thousands of variables can come into play at each fire and they are suggested guidelines that may be altered or overridden by the company or chief officer according to the circumstances. These assignments are for the first-due truck; additional members mentioned may be from second-due trucks or additional engine, rescue, or squad companies.

- **Private dwelling**

—Inside team to fire area to conduct search for occupants and seat of fire.

—Outside team (Roof and OV) conduct survey of sides and rear and place first ladder to effect rescues or to VES the most severely exposed areas.

—Chauffeur places additional ladder and teams up with another member to also VES exposed areas. The chauffeur may have to remain outside to set up the apparatus if the IC deems it necessary to access upper floors or the roof. These guidelines are relevant

to the majority of dwelling fires on the first or second floors, but there are also times when roof ventilation should become a top priority. Instances such as a fire in the attic, which may also be used as an apartment or a bedroom, may require the use of the aerial right from the start to facilitate not only the searches but also occupants' survivability. Venting will also prove to be quite beneficial for the engine company members, since this type of fire can be quite punishing without it.

- **Commercial/taxpayer**

—Inside team forces entry, if needed, and conducts search of occupancy for life and fire. (Do not forget the use of a search rope in these occupancies.)

—OV teams with second-due OV or other member to access the rear of the property, gain access to the occupancy, and effect a search if possible.

—Roof firefighter to access the roof off portable ladders or the aeri-



(4) Private dwelling fire. This tower ladder is being used to overhaul the front of this private dwelling after the initial knock-down. The chauffeur, outside vent, and roof firefighters of this first-due truck initially laddered the building and conducted searches, as the life hazard dictates an immediate interior operation. Later in the operation, the aerial or tower ladder can be used for exterior overhaul.

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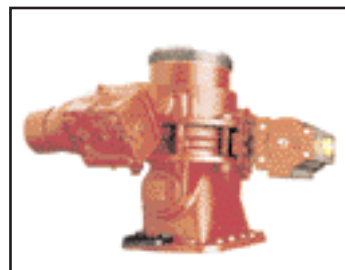
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al to effect ventilation and survey the roof. Chauffeur duties may vary according to conditions and may include setting up the truck, placing additional portable ladders, or even forcing entry to exposures.

- **Multiple dwellings/apartments**

—Inside team to interior for search. OV and chauffeur team up to ladder building or position aerial.

—OV may also team up with other OV or member to VES from fire escape or remote area off portable ladder if aerial device is being used for roof access. In the case of a top-floor fire, the OV teams, with the roof, perform vertical ventilation.

—Roof firefighter to roof for ventilation and survey. The roof may be accessed from adjoining buildings, an aerial device, or a fire escape. The roof firefighter should NEVER use an interior stair to access the roof unless it is far removed from the fire, such as in a separate wing of the building. Taking the stairs within the fire area could prove quite dangerous; the member may be subject to all of the products of combustion should the door to the fire floor be opened while the firefighters are ascending. And, if they were to make it to the roof level, it is possible that the bulkhead door may be heavily secured, which could in the worst-case scenario trap them in what may become a chimney or, at the least, delay the ventilation and surveying of the roof. Likewise, the roof firefighter should never descend into the fire area by the stairs or a scuttle hole. Once again, the stairs and the scuttle hole are vertical voids and chimneys of sorts sought out by heat and smoke. The scuttle presents its own set of problems. It is a narrow shaftway in which a member could easily become lodged. It may be used as a storage area at the bottom of the shaft, creating a latent hazard. It may be locked from the outside at the bottom. The

ladder may be in disrepair and may pull out of the wall when weight is applied, and it may also pass through an open cockloft, which, as we know, may facilitate fire and smoke spread far from the original fire area.

—Chauffeur assists with laddering, setup, and staffing of the aerial.

Just as is the case in defining the tasks of individual teams, these also are very broad guidelines and will vary according to building and fire conditions. Take, for example, truck operations at a commercial/taxpayer fire. If the property in question is well involved on arrival, the truck officer may opt to direct the inside team to gain entry to exposure properties while the outside team prepares the apparatus for a master stream operation using the tower ladder bucket or ladder pipe.

Another scenario could include a fire in the cellar of such an occupancy at which the inside team (aside from forcing entry and searching) may also be needed to ventilate the area by removing display windows or cutting the floor, which will also facilitate the use of cellar pipes, distributors, bent pipes, or even high-expansion foam. Remember that although you have a position and an objective to meet, there will be times when teams' and officers' flexibility and heads-up thinking could make or break the operation.

ODDS AND ENDS

In addition to the above, you may have to address additional issues such as the following.

- **Planned seating positions.** Consider your apparatus' current seating arrangement. If you already subscribe to the riding position theory, are your inside and outside team members sitting next to or across from each other? Seating the teams together gives them an opportunity to mentally size up

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Truck Company Riding Positions



(5) This volunteer aerial apparatus has assigned seating; members are given a position and specific tools for which they are individually responsible.



(6) A sign on the seat denotes the tool assignment. (7) Laminated cards with short descriptions of the objectives to be met (according to type of occupancy) have been affixed to the ceiling above the seats occupied by the roof and outside vent firefighters.



the occupancy while responding, discuss additional tool needs, consider difficulties in reaching objectives, and plan their actions on arrival.

- Posting in the apparatus tool assignments and job responsibilities. If you have riding assignments based on the seat in which a member sits, consider posting the basic tool assignment within plain sight so that the members know what to grab as they get off the rig.

In addition, generate and post a brief description of that person's duties at occupancies such as private, commercial, and multiple-family dwellings. This is especially important in volunteer companies, where riding positions may change for each call and the duties may be redesignated by who is first or last on the apparatus. In this case, the officer must ensure that accountability is documented by position using the companies' own system, which may use numbered tags, name plates, or a roll written by the officer.

Should an emergency such as a missing member occur, the position may dictate where a search for that member should commence. In addition, the officer may have to change the positions of the members, as experience and ability may take precedence over who is sitting in which seat.

- Making tools accessible. Consider mounting some of the most commonly used/assigned tools within the crew space so the tools are in the hands of the members as they exit. If tools cannot be carried in this space because of safety considerations, have the tools mounted on the apparatus or stored where they are easy to access.

- Fitting the position to the member. Typically, the most junior members are assigned to the inside team so the officer or senior firefighter can supervise them closely. An officer or the members themselves may have to consider the mental and physical demands of each position before a position is assigned or undertaken. Experience and ability serve as the guides here, as positions such as the roof and OV demand that the member be familiar with how to judge changing conditions, recognize alternate ways to reach objectives, and know where and when to vent.

The officer must also take into account that these same positions may require one person to lift and place ground ladders and haul a great deal of equipment to the roof. Some thought may have to be given to a member's ability in each category before assigning the position.

- Critiquing, preplanning, drilling. Talk about each fire you go to, and ask, especially of the senior members, what position each person had, what they did, and their difficulties and successes. If possible, take other members back to the building to further illustrate what took place. In addition, take that extra minute during each run, including medical responses, to look around at varying occupancies and discuss what each member would do for each position. Talk about access, life hazards, difficulties in laddering, apparatus placement, and getting to the roof. Even the shortest drill on positions will help to build members' information banks for future similar responses.

TRAINING IS ESSENTIAL

When using riding positions, training is essential. The system cannot be implemented with one night's training or after a short drill. Your response area, seating arrangement, tool positions, and radio communications all have to be scrutinized well before the plan is implemented. All the members must be aware of each position's responsibilities and associated tools. Furthermore, the organization should generate a standard operating procedure (SOP) members can refer to for refreshing their knowledge of the concept or as a reference. Also, inform your neighboring and mutual-aid companies about the new system. Give them a copy of the SOP, or invite them for training on the new system before start-up. New radio messages such as "Ladder One Can to Ladder One Irons" may sound quite foreign to others not familiar with the system. Neighboring companies must also understand that in this system each member has objectives to meet, which may be of significance when the officer of a neighboring department sees another task as a priority and must assign it to a position-assigned member.

Teamwork is key in every fireground situation, but it becomes even more critical when riding positions are used. Within this system, each member, whether inside or outside, plays a critical role. Granted, the majority of firefighters would like to have the can or the irons or be that officer close to the fire forcing entry and searching. However, the Roof, OV, and chauffeur perform duties that help the members find the seat of the fire with ease by providing ventilation, laddering, and reconnaissance, which are equally important life-saving activities.

Whatever the assignment, it should be carried out with the utmost determination and discipline. Neglecting or radically deviating from your assigned duties and objectives places the team at great risk and jeopardizes the operation. ■

NEW TECHNIQUE FOR FOOTING A LADDER

BY MICHAEL N. CIAMPO

FOOTING A PORTABLE/GROUND LADDER AT A FIRE isn't one of the most glamorous or prestigious jobs on the fireground. It is one of those essential items we all learned in our initial training on portable ladders. Unfortunately, because of short-staffed firegrounds or more important duties that must be accomplished, footing a ladder is often overlooked. When someone does foot the ladder, he might be using an antiquated technique that does not yield the best results.

Do your members foot the ladder by standing under the ladder, with their backs to the fire building, leaning backward to prevent the butt of the ladder from kicking out? If so, then consider the following scenario.

One afternoon following a thunder and lightning storm that has rolled through your fire district, a response comes in for a dwelling struck by lightning. On arrival, you see light smoke showing from the attic eaves of a two-story, peaked-roof dwelling. Two firefighters are assigned to the interior to begin an investigation while two other firefighters raise a portable ladder to examine the roof's burnt mark and disheveled shingles and for possible roof operations. As one member climbs the ladder, the "footer" is braced in his position with his back to the building. He tries to look upward, but the back of his helmet's brim is hitting his air tank. As he tries to reposition his body, his helmet is still striking his air tank and cutting off his visibility. As the other firefighter begins to lay his tools on the roof and make his way from the ladder to the roof, fire begins to roll from the eaves and the smoke conditions change rapidly. Suddenly, things have gone from okay to worse, and the firefighter on the roof may

have had his means of egress cut off by the advancing fire. All this time, the "footer" is oblivious to the events happening above him.

Maybe this seems farfetched, but it could happen. If it hasn't happened to you, maybe you've been the one footing the ladder from "underneath" when a member has dropped a tool while climbing. As it falls, if you're lucky enough to see it coming, you have a 50 percent chance of moving in the right direction to avoid being hit. Perhaps while footing from "underneath," another firefighter starts "taking the glass" above you. All of a sudden you perform the "turtle maneuver"—that's when you shrug the shoulders up toward the neck, tilt your head down, and close your eyes to protect yourself and hope that the falling glass shards miss. Meanwhile, chills go down your spine and you wonder if you've been hit and injured. Hopefully, you're not under the ladder just staring forward and watching the incoming units perform their tactics and forgetting what you're really there for. In case you for-



(1) At this structure fire, the firefighter footing the ladder has limited visibility of the fire conditions and tactical operations occurring above him, which affects his ability to continually size up the fire. (Photo by Adam Alberti.) (2) Footing the ladder from the rear reduces a firefighter's overall view of the fire building and its conditions. (Photo by Lisa LoRusso.)



■ **MICHAEL N. CIAMPO** is a lieutenant and an 18-year veteran of the fire service and has spent the past 13 years in the Fire Department of New York, where he is currently assigned to Tower Ladder 45 in Washington Heights. Prior to joining FDNY, he served five years with the Washington D.C. Fire Department. He has a B.A. degree from John Jay College of Criminal Justice. He is a certified New York State fire instructor and has been the lead instructor for the FDIC and FDIC West H.O.T. laddering class. He is also an editorial advisory board member of *Fire Engineering*.



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(3) Footing the ladder from the front will increase overall safety on the fire-ground. Both firefighters will be able to constantly monitor fire conditions in the building. (Photo by Lisa LoRusso.) (4) The firefighter footing the ladder also has a full view of the member climbing the ladder. If the member slips or needs to be supported during a rescue, the footing firefighter can react quickly and come to his aid. (Photo by Lisa LoRusso.)

got, the fire building is behind you, and your work should be in front of you.

Let's be realistic. Although many of the books still teach this technique, its longevity is questionable. There are a few times when it can be of assistance, such as when a firefighter has to use his shoulder under a rung to hold one side of the ladder level in an emergency situation. But other than that, we need to change our mindset when we are footing ladders. Although learning both techniques is always advisable, we need to work in ways that benefit us and make our job safer.

NEW TECHNIQUE HAS BENEFITS

Footing a ladder while facing the building or "from the front" is a more practical approach and technique to use on today's fire-ground. We all seem to be understaffed during the first few crucial moments on the fireground. Leaving a firefighter under a ladder can sometimes be a waste of precious personnel, but bringing him around to the front will yield other operational and safety benefits.

First, as an added safety measure, two sets of eyes will be focused on the fire building, watching its changing conditions. This is especially true if a firefighter was performing a leg-lock maneuver working off one side of the ladder and conditions change toward his backside. With the firefighter footing the ladder from the front, he can constantly scan the fire building, always performing a size-up of the conditions present and reporting this to the member working on the ladder. Remember, staring at your foot as it butts the ladder or at your hands bracing the ladder's rails offers little benefit. Look up, and size up.

Of course, when a member is venting glass from above, it is necessary to watch the initial contact and the travel direction of glass shards. The firefighter must look down if small glass is coming in his direction but may have to reposition himself to avoid being struck with a larger section or pieces of glass to avoid a serious injury.

Another benefit to having the firefighter footing the ladder from the front would be if a member climbing a ladder were to slip or lose his balance while climbing. The firefighter footing the ladder is in an appropriate position to spring into action. He may be able to quickly climb up a few rungs and reach upward with one arm to offer the firefighter support or a moment to regain his balance. Being positioned behind the ladder may make it too time-consuming to be of any help.

In a rescue scenario, having the footing firefighter in the front allows quick access up the ladder to assist in victim removal. Plus, he can climb the ladder and support the descending firefighter and victim. In a situation dealing with multiple victims, the firefighter footing the ladder may have to have quick access up and down the ladder to remove victims to safety.

Another real asset in using this technique is that it takes the footing firefighter out of harm's way in the following ways:



- Reduces the chances of being struck by a tool that was dropped by a member climbing or descending the ladder.
- Reduces the chances of being struck with broken shards of glass as windows are being ventilated.
- Reduces the chances of being struck with a hook's handle as the member climbs or descends the ladder.
- Reduces the chances of being struck by any building components, building materials, or tools that may fall as a firefighter transfers from the ladder to the roof or into a window.

As in all fireground situations, we need to strive to perform the same duties with fewer personnel more safely and more innovatively. Footing the ladder from the front offers many advantages and should be your first choice of footing position. ■



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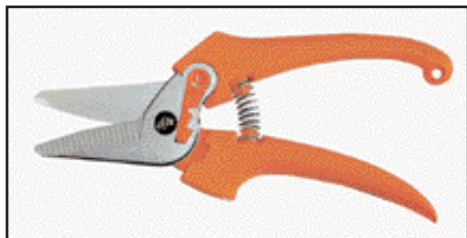
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Circle No. 473 on Reader Service Card

The **3200X TURNOUT SYSTEM** is Chieftain's top-of-the-line turnout system, consistently rated as "one of the most comfortable suits available." The 3200X comes standard with many exclusive Chieftain design features including removable Comfort Knee Pads, an Active Back® feature that allows for a full range of arm motion, and added upper back



and shoulder reinforcements. Available in a variety of outer shell materials, ranging from Nomex to PBI Matrix through Chieftain's off-the-shelf "Quick Ship" delivery program. The 3200X offers today's firefighter an innovation, durability, and affordability. Web site: www.chieftainsafety.com. (954) 805-0888.

Circle No. 474 on Reader Service Card



The new **KME PREDATOR** is truly a next-generation custom chassis. Instead of simply redesigning our current chassis, KME listened to fire service feedback and integrated features like standard HVAC for rehab and comfort, standard multiplexed electrical system, easy-visibility gauges, spacious interior, multiple raised roof options, easy access for maintenance, and superior visibility and turning radius. The KME Predator is the solution for your pumper, rescue, tanker, and aerial needs. (800) 235-3928.

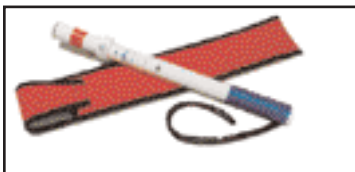
Circle No. 475 on Reader Service Card



Sigtronics VOICE-ACTIVATED INTERCOMS and **NOISE ATTENUATING HEADSETS** interface with all mobile and handheld radios, and cellular phones. For use in all types of emergency vehicles. Web site: www.sigtronics.com. (800) 367-0977.

Circle No. 476 on Reader Service Card

The **AC HOTSTICK** from **Hotstick USA, Inc.** is a safety device designed for professional rescuers; it provides warning of exposed high-voltage AC from a safe distance. The AC Hotstick will give early audible (beeping) and visual (flashing LED) warning of the presence of dangerous voltages without the need to contact the surface carrying the current. The closer the user comes to the source of the voltage, the more rapidly the unit beeps and flashes. (866) 245-5462.



Circle No. 477 on Reader Service Card



ZUMRO, Inc. answers the industry call with the easiest and quickest to deploy **DECON SYSTEM** on the market today. ZUMRO model 311-120 handles up to 120 walking casualties per hour. Preplumbed, pre-assembled ZUMRO shelters can be deployed in less than five minutes by one person, even in the harshest weather. ZUMRO shelters can be automatically deployed from custom storage carts, saving you time and manpower. (800) 932-6003. Web site: www.zumro.com.

Circle No. 478 on Reader Service Card



The **Zodiac Academy** is the nation's first on-the-water training opportunity for first responders! The Academy teaches the **FOUNDATIONS OF MARITIME READINESS**. These foundation skills are critical when responding to emergencies on the water. Courses include the following: Basic Boat Ops, Rescue/Tactical Ops Using RIBs, Instant Rescue Boat, Boat Maintenance, Kayaking, Pick-Up In Water, Boarding, Extreme Excursions, and Extreme Environment Ops. This is America's most exciting and necessary training opportunity, but class size is limited, so register early. Web site: www.zodiacacademy.com.

Circle No. 479 on Reader Service Card



Rae Systems' MULTIRAE PLUS is a compact one-to-five-gas monitor that combines a PID with O₂, LEL, and two toxic gas sensors. Its case allows quick and easy access to the battery and sensors simply by using a coin. With ATEX approval, it provides protection in homeland security, IH, and confined space entry. (877) 723-2878.

Circle No. 480 on Reader Service Card



Panasonic TOUGHBOOKS® offer wireless connectivity and mobile durability. They are rugged and ready for anything—just like you. Saving lives is a 24/7 job, and Panasonic Toughbooks are 24/7 mobile PCs—providing fire and EMS professionals with more uptime when time means everything. Our **TOUGHBOOK 29** is the industry's fastest fully rugged notebook PC. Plus, it's

wireless and powered with Intel® Centrino™ mobile technology for unwired freedom. (800) 662-3537, ext. 4. Web site: panasonic.com/toughbook/fire_ems.

Circle No. 481 on Reader Service Card

Honor your members with the newest sculpture from **Liberty Art Works, Inc.** The unique bronze **PLAYPIPE AWARD** is richly decorated and carries the same high level of detail and quality Liberty is known for. A horse-drawn steamer screams to a call on the front of the nozzle; the back proudly boasts a fire-fighter scramble. The Playpipe is 11.5 inches tall, is mounted on a four-inch solid walnut base, and includes an engraved brass plate. Each piece is carefully hand tooled and polished to meet the high standards your honored deserve. The Playpipe is available also in chrome. (888) 411-7744. Web site: www.libertyartworks.com.

Circle No. 482 on Reader Service Card



WHATEVER HAPPENED TO USING A HALLIGAN TOOL?

BY MITCH BROOKS

IT IS AMAZING THAT IN TODAY'S FIRE SERVICE SOME firefighters still think that forcing a door means to whale on it with a sledgehammer or Denver tool until, hopefully, it opens. Whatever happened to using a halligan tool for forcing doors? It is true that sometimes it is necessary to ram a door with a heavy tool, but other times it would be quicker and more professional to use the proper tools, along with the proper methods to gain entry.

USING THE HALLIGAN TO FORCE DOORS

Following is a review of the proper way to use a halligan tool to force inward- and outward-opening doors.

First and most important, see if the door is locked. Ideally, you should have a halligan tool and some sort of striking tool. The striking tool should be a Denver tool, a sledgehammer, or a flathead ax. I prefer a flathead ax for several reasons, one of which is that it marries together nicely with a halligan tool (photo 1).

Inward-Opening Doors

Tool placement is the next important factor.

- If the door swings inward, or away from you, position the fork of the halligan so that the beveled side of the fork is against the door and the tool is approximately at a 45° angle to the door (photo 2).
- The fork end of the tool should be as close to the lock as possible, either above the lock or, if working on your knees, below the lock.
- Drive the fork end past the doorstop.
- Start bringing the tool perpendicular to the door, stopping at intervals



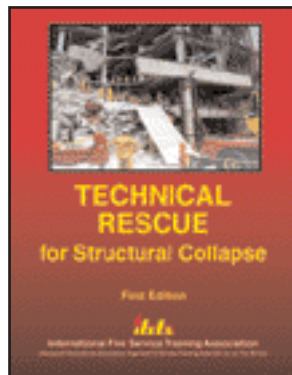
Photos by author.

■ **MITCH BROOKS** is a lieutenant for the Columbus (OH) Division of Fire and a 13-year veteran of the fire service. He is a state certified fire instructor, a paramedic, and a rescue technician and is currently completing an associate's degree in fire/EMS at Columbus State Community College.



The Omaha (NE) Fire Department recently took delivery of three innovative **Toyne STAINLESS-STEEL PUMPERS**. Mounted on HME 1871 chassis with a Cummins ISM 400-HP engine, the water delivery system is centered around a Waterous CMU 1,500-gpm pump. Equipped with an Eclipse CAFS foam system and Foam Pro 2002 A/B foam-proportioning systems. Toyne's bolted stainless-steel body was specified by the department for its corrosion resistance and ease of repair. The low-mounted body provides an all-around step height of 18 inches. (712) 673-2328. Web site: www.toyne.com.

Circle No. 483 on Reader Service Card



Structural collapse can occur in any jurisdiction, at any time, for a number of reasons. The fire department is usually the first to respond to these incidents. Therefore, rescue personnel must always be ready to locate and free victims from collapsed structures in the safest and most efficient way possible. The **IFSTA's FIRE SERVICE RESCUE**, first edition (2003), is designed to go beyond the basic rescue skills to cover those needed by the rescue technician at these types of incidents. (800) 654-4055.

Circle No. 486 on Reader Service Card



The newest addition to the VentMaster line of durable cutting tools for the fire service, the **Tempest KIS-360 CUTOFF SAW DEPTH GAUGE** is designed to enhance control of the saw during roof ventilation. It allows the operator to control the depth of the cut from 1/2-inch to up to 6 inches. Engineered to be installed on a variety of 12- and 14-inch cutoff saws, the **KIS-360 UPGRADE KIT** includes all hardware and templates for easy mounting. Upgrade Kits available for VentMaster 385K, Stihl TS460, Partner K 950, Efco 980 TTA-14, Partner K 650, Husqvarna 375K, and Partner K-12FD. (800) 346-2143.

Circle No. 487 on Reader Service Card



The **Red Sled RAPID EQUIPMENT DEPLOYMENT CART** doubles as a low-profile stretcher. One person can pull a variety of equipment, supplies, or victims over any terrain with the hands free to facilitate the search or overcome large obstacles. **RED SLED** is a multifunctional piece of equipment that reduces workload and fatigue, acting as a force multiplier requiring fewer personnel while increasing effectiveness. (954) 322-6997. Web site: <http://www.redsledinc.com>.

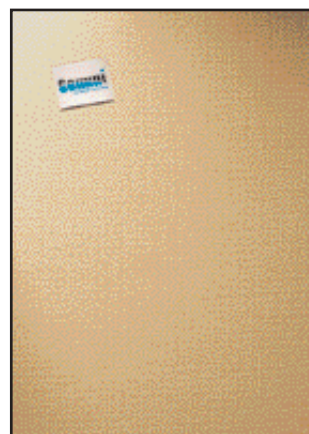
Circle No. 484 on Reader Service Card

TruckVault's MOBILE SECURE STORAGE SYSTEMS provide abundant locking storage and organization for all types of fire/rescue equipment and supplies. Multiple size drawers are ruggedly constructed and equipped with high-security locks. Stored equipment remains safely locked within the TruckVault when personnel are away from the vehicle or during transit through rough terrain. More than 200 models, including seven mobile incident command centers, are available for SUVs, pickups, vans, and sedans. Web site: www.truckvault.com. (800) 967-8107.



Circle No. 485 on Reader Service Card

When you need reinforcement, count on **GEMINI™**, from **Southern Mills, Inc.** Gemini is a revolutionary new fabric engineered to withstand the most severe heat with strength, durability, and flexibility enhanced by Kevlar® filaments. Gemini combines the superior thermal resistance of PBI/Kevlar® spun yarns with a network of Kevlar® filaments that give it the highest performance protection properties available. Gemini is reinforcement you can depend on! (800) 241-8630. Web site: www.southernmills.com.



Circle No. 488 on Reader Service Card

so that the tool can be struck to ultimately drive the fork about an inch past the jamb.

- Push the tool toward the door, allowing the door to pop open.

Always remember to maintain control of the door so that an inrush of oxygen doesn't occur. On metal doors in metal jambs set in masonry, the fork can be placed so that the bevel is against the jamb; this allows the fork to pass the stop more easily (photo 3). This method also has a crushing effect on metal doors, allowing for a larger space within which to place the halligan fork. But be careful: The tool might not have the purchase you are used to with the bevel against the door. If the tool should slip, turn the fork around so that the beveled side is against the door.

Another way to force an inward-opening door is to put the adz end of the tool between the jamb and door as close to the lock as possible (photo 4). This gives excellent leverage, is quick, and is safer for the person holding the halligan tool. Also, this is the preferred way to force inward-opening doors if vision is obscured by smoke and if you're working on your knees. (I often see this method fail because one simple adjustment is not made. If both the jamb and the door are metal, simply push down on the handle of the halligan tool before applying inward pressure. This simple trick allows the tool to keep its purchase, keeping the adz from popping out of the jamb. This is especially important when using chrome-plated halligan tools.)

Another trick you can use if you happen to be without a striking tool is to bury the point of the halligan tool into the jamb and use that as the



fulcrum. This allows the adz to put the force on the face of the door while maintaining its purchase in the jamb.

Outward-Opening Doors

Outward-swinging doors, or doors that swing toward you, are attacked differently than an inward-swinging door. Outward-swinging doors are most commonly found on commercial structures, because the law often requires that the doors swing in the direction of egress.

• Method 1—Using the fork end of the halligan tool.

Place the fork end between the jamb and the door, as close to the lock as possible, so that the bevel side of the fork rides along the jamb (photo 5). This allows maximum leverage on the door. Drive the tool with a

striking tool so that the fork tips are at least an inch past the inside of the door. Then all you need to do is pull the tool toward the jamb and pry open the door. Again, it is crucial that you maintain control of the door.

• Method 2—Using the adz of the halligan tool.

Place the adz of the halligan tool between the jamb and the door, as close to the lock as possible, with the tool handle parallel with the door (photo 6). Pull out on the handle. This works extremely well when faced with a narrow or dead-end hallway or a narrow stoop.

Train on forcible entry every chance you get. If structures are made available to you for training, take time to hold a forcible entry training session. If the locks are gone, nail the door shut between evolutions; some training is better than no training. ■



The **ISG K80 FIRECAM** is a lightweight, ultra-small thermal imager offering unparalleled durability and extended battery duration for budget-conscious departments. Despite its low cost, departments can build up and outfit their K80 Firecams to include many optional features found in much more expensive imagers. Visit the

ISG website today to view streaming video of the K80 and other ISG firefighting thermal imagers. See ISG at FDIC Booth 2343. Web site: www.isgfire.com. (877) SEE-FIRE.

Circle No. 489 on Reader Service Card

FSI offers the fully self-contained 19-foot **DAT15T MOBILE DECONTAMINATION SHOWER UNIT**. It's fully capable of providing hot water showers and electricity in emergency situations where permanent facilities are not available. The unit offers a two-line, two-person, pressure-regulated shower system with dirty entry and clean exit doors, clean and brown water holding tanks, detergent injection, on-demand hot water, generator, lights, and storage capabilities—using a unique patented panel design system. (440) 891-1523. Web site: www.fsinorth.com.

Circle No. 490 on Reader Service Card



This **METZ HI-TECH 105-FOOT AERIAL LADDER** is built on a single axle HME SLe. It has a 1,500-gpm pump, a 200-gallon tank, and a 216-inch wheelbase; is only 34 feet long; and

weighs 48,000 pounds. The ladder and rungs are automatically leveled on slopes up to 15% and it can be operated 360° regardless of whether the jacks are fully or partly extended. Setup time with firefighter at 105 feet is only a minute. (800) 509-5899.

Circle No. 491 on Reader Service Card

Havis-Shields now offers a **MAGNAFIRE 3000® H.I.D. (HIGH-INTENSITY DISCHARGE) 12-VOLT FLOODLIGHT** that makes it possible to light up your nighttime work scene directly from your 12 volt battery, eliminating the need for generators or inverters. The H.I.D. technology is nearly four times more efficient than quartz halogen fixtures. It offers more light per watt, allowing the use of lower wattage bulbs, and is available in pole mounts, portables and recessed mounting applications. (800) 524-9900. Web site: www.havis.com.

Circle No. 492 on Reader Service Card





Petrogen OXY-GASOLINE CUTTING TORCH SYSTEM uses fuel from any gasoline station. Fuel stays liquid from tank to tip. Safer than all other oxy-fuel torches. Cuts steel faster and is cheaper to operate. Cuts through layers and rusted steel. UL-listed; U.S. Navy-approved; U.S. Coast Guard-certificated; U.S. Dept. of Energy tested and recommended. Included in FEMA Equipment Cache 2003-04. (877) 888-6724. Web site: www.petrogen.com.

Circle No. 493 on Reader Service Card



Sparky the Fire Dog is the best-known mascot figure for fire prevention today. A trademark character of the National Fire Protection Association (NFPA), Sparky is at the center of the NFPA's *Risk Watch* and *Learn Not to Burn* programs, two of the most comprehensive safety programs in use in America. The **Robotronics ANIMATED SPARKY COSTUME** is an especially exciting tool for teaching fire and safety awareness because it is so interactive. Audiences will be delighted when Sparky's eyes wink and blink (a random blink feature is programmed into the costume), his mouth moves, and he speaks with preprogrammed fire safety messages

through an optional MP3 player or the wearer's voice through a WAVE (Wearer Amplified Voice Equipment) system included with each costume. (800) 762-6876. Web site: www.robotronics.com.

Circle No. 494 on Reader Service Card

Kidde Fire Fighting introduces a complete line of portable, rechargeable **FIRE EXTINGUISHERS** for Class A, B, C, D, and K fires. These versatile, heavy-duty, UL-listed fire extinguishers tackle a wide range of fire hazards found in most commercial, industrial, and domestic environments. Types of fire extinguishers offered include multipurpose (ABC) dry chemical, regular (BC) dry chemical, dry powder, carbon dioxide, water, wet chemical, AR-AFFF foam, and Halotron 1. (610) 363-1400. Web site www.kidde-fire.com.



Circle No. 495 on Reader Service Card

Even at less than 30 pounds, the **BC-250 BATTERY POWERED COMBI TOOL**, shown here in a real extrication, is the heaviest of the **Ogura®** self-contained hydraulic rescue tools. Powered by industrial standard Ni-MH batteries, the patented hydraulic pump delivers amazingly



high spreading and cutting power. The lightweight compact design makes these ideal one-person tools for quickly removing security bars, managing civil actions, first responders, remote extrication, RIT, and confined space rescue. (650) 572-9230. Web site: OguraRescueTools.com.

Circle No. 496 on Reader Service Card



Nearing its development stage, **LITTLE ED™** guarantees to offer the high performance found in all **Pelican™** flashlights. Just 7½ inches tall, this lightweight, right-angle flashlight effortlessly clips to a turnout coat or shirt pocket. The adjustable head makes it easy to maneuver the bright Xenon beam. Little Ed will be available in both an alkaline and a rechargeable version (charger on rechargeable version is wall mountable). (310) 326-4700 (in California); (800) 473-5422, outside California.

Circle No. 497 on Reader Service Card



In addition to full cleaning, decontamination, and repair capabilities, **National Safety Clean** offers a turnout gear cleaner and maintenance product line. These products are specially formulated for routine laundering of firefighting protective clothing. **STATION CARE 1500** is fully tested and meets current NFPA standards. It will not harm the fire retardant fibers. Included are liquid cleaner, rinse solution, water repellent and Hospital Grade Bio-Disinfectant. Stop at Booth 532 for details. (800) 253-2690. Web site: www.natsafe.com.

Circle No. 498 on Reader Service Card

APPARATUS DELIVERIES

BY JOHN M. MALECKY



● The **Hopatcong (NJ) Fire Department** placed in service two apparatus within a year. Defiance Engine 3 replaced a unit with a 50-foot telescopic waterway with this **AMERICAN LAFRANCE** quint. It provides a larger pump and a longer ladder needed for the high roofs in the area, explains Chief Joseph B. Sacco.

Features/Equipment (Quint):

- Eagle 134 chassis with 218-inch wheelbase and LoPro cab with six seats;
- **DETROIT** Series 60 500-hp diesel engine with **ALLISON** HD 4060P automatic transmission;
- **WATEROUS** CMU two-stage, 2,000-gpm pump with six-inch front intake, three crosslays (two 1½-inch, one 2½-inch), and 1½-inch front bumper line;
- **AMERICAN LAFRANCE** 500-gallon poly water tank;
- 75-foot aerial ladder with 500-pound tip load, four-inch waterway, **AKRON** Stream Master ladderpipe, and 16-foot outrigger spread;
- **ROBINSON** roll-up compartment doors; and
- light and power with **A.M.P.S.** 10-kw hydraulic generator, four **FRC** floodlights on body, two **HAVIS SHIELDS** floodlights on ladder tip, and one **HANNAY** electric cord reel.

Circle No. 499 on Reader Service Card

● Northwood Engine 2 designed its **RESCUE 1** special service unit for filling air cylinders, water and ice rescue (Lake Hopatcong is the largest in New Jersey), and confined space rescue, according to Chief Sacco.



Photos by author.

Features/Equipment (Special Service Unit):

- **INTERNATIONAL** 4400 chassis with 186-inch wheelbase and two seats;
- **INTERNATIONAL** 530E 330-hp diesel engine with **ALLISON** MD 3060P automatic transmission;

- crew module with four seats;
- **DOVER** roll-up compartment doors;
- **FIAMMA** awning at rear of body;
- Six-cylinder, 4,500-psi air cascade system with **SIERRA** booster;
- four **HANNAY** reels (two air and two electric cord); and
- light and power with **ONAN** 25-kw PTO generator, **WILL BURT** Night Scan, and six **WHELEN** and two **FRC** fixed scene lights on body.

Circle No. 500 on Reader Service Card

● The **Kremmling (CO) Fire Department** protects that town and three subdivisions. Many of the roads are dirt and there are few hydrants. Because of the town's high elevation, it has average annual snowfalls between 30 and 120 inches. Chief Tony Tower says the department's **PIERCE** pumper is designed to address these challenges and for efficiency with fewer personnel.



Photo by Dennis Carpentier.

Features/Equipment:

- Dash chassis with 192-inch wheelbase, four-wheel drive, and raised roof cab with six seats;
- **DETROIT** Series 60 470-hp diesel engine with **ALLISON** HD 4060P automatic transmission;
- **WATEROUS** CSU single-stage 1,500-gpm pump, two 1½-inch speedlays, two 1½-inch front bumper lines (one with four-foot piercing nozzle), one 1½-inch and one 2½-inch rear perconnect, and prepiped **TFT** Crossfire monitor with Extenda-Gun;
- **HYPRO** Foam Pro 1600 system piped to monitor, speedlays, and front bumper line;
- **UPF** 750-gallon water and 20-gallon Class A foam tanks;
- **DOVER** roll-up compartment doors;
- eight spare SCBA cylinders stored in wheel well sleeves and rear compartment;
- **PIERCE** hydraulic rack with ladders and 20 feet of hard suction hose and two rear compartments, both with 10 feet of hard suction and a pike pole;
- **HURST** rescue system with two hydraulic reels in rear compartment; and
- light and power with **ADVANCED** 20-kw hydraulic generator and eight **FRC** floodlights (four each on cab roof and body).

Circle No. 501 on Reader Service Card



The **Firetak ROD*WALL BERM** is designed to meet the secondary containment requirements of fire departments, industry, hospitals, etc. The heavy duty 32 oz. chemical resistant material is cold-rated not to crack to -30° . The sidewalls are held in place using stainless steel rods positioned approximately every 18 inches around the perimeter of the berm. The rods fold down for easy access by fork lifts or wheeled dollies. Sizes start at 3 feet \times 3 feet all the way up to fit a semi-truck—with sidewalls from six to 12 inches. Firetak specializes in custom manufacturing. Contact us to solve your secondary containment problems. (800) 475-5734, (204) 975-0334. Web site: www.firetak.com.

Circle No. 502 on Reader Service Card



Kidde Fire Trainers offers the **MOBILE FIRETRAINER® ML**. Practice NFPA 1001 skills, including fire suppression, below-grade fire attack, ventilation, search and rescue, and rapid intervention. The 48-foot training system features two computer-controlled interior fires with interchangeable mockups, a flashover-rollover effect, a pitched roof ventilation prop, and a basement stairway and is eligible for FIRE Act grant funding. (800) 288-3973. Web site: www.kiddefit.com

Circle No. 503 on Reader Service Card



Introducing **STX LEATHER FOOTWEAR** with innovative features such as Lock-Fit Ankle Support System™ and Pierce-Protect Arch Protection System™, engineered for enhanced comfort, protection, and durability. Tested and certified to NFPA standards, STX Protective Footwear™ helps to better protect you from thermal, liquid, puncture, and electrical hazards encountered on the fire-

ground. Available at select Securitex™, FireGear™ and Survivair™ distributors. Visit us at FDIC Booth 1100. (800) 563-0504.

Circle No. 504 on Reader Service Card

LiquidTrans, Inc. introduces the **LIQUIDTRANS** and **LIQUIDTRANS MINI** for total water solutions. Provide quick deployment and everything necessary to establish more than two miles of five-inch portable liquid supply line. Allows access to



water system up to 200 feet away without holding a vacuum or using hard suction hose. Hose recovery system quickly deploys hose at 45 mph and picks up large diameter hose (two miles in 1.5 hours or less) at around five mph. Applications include flood relief, emergency drinking water supplies, sanitary water requirements, firefighting, and even pumping other liquids such as fuel from overturned tankers or ships. (315) 451-2770. Web site: www.liquidtrans.com.

Circle No. 505 on Reader Service Card



Task Force Tips' new **METRO I SERIES FIXED GALLONAGE NOZZLE** offers 10 flow and pressure choices. Five calibrated flow discs let you select the flow and pressure needed. The Metro I features flush without shutting down, molded rubber bumper with "power fog" teeth, detent flow control, "Gasket Grabber" inlet screen, and patented TFT slide valve. Metro I models are available in tip-only or with stainless-steel slide valve, and optional colored pistol grip and handle covers. Web site: www.tft.com. (800) 348-2686.

Circle No. 506 on Reader Service Card

GlobalSecure Holdings, Ltd. introduces the **GlobalSecure PIONEER PRO NFPA1981-2002 SCBA**. New features include an updated six-channel heads up display, rapid intervention team emergency air connector, and available automatic adjustment Action Back packframe. GlobalSecure will continue to offer the Pioneer Baseline Firefighter and Pioneer Industrial SCBAs, and the Pioneer Scout and Explorer EBAs, as well as a full line of GlobalSecure Neoterik respirators. Web site: www.globalsecureholdings.com.

Circle No. 507 on Reader Service Card



APPARATUS DELIVERIES

● The **Otsego (MI) Fire Department** replaced its old rescue truck that had a 14-foot body with this **MARION BODY WORKS** unit with a 20-foot body. Assistant Chief Vince Pagano explains that, in addition to fires, the department responds to ice, cold/swiftwater, high-angle, confined space rescue, and extrication calls. Otsego needed a larger truck to accommodate the necessary equipment.



Features/Equipment:

- **HME** Penetrator chassis with 224-inch wheelbase and six-seat cab with 24-inch raised roof;
- **CUMMINS** ISM 360-hp diesel engine with **ALLISON** MD 3066P automatic transmission;
- 20-foot body with three-seats and **ROBINSON** rollup compartment doors;
- four-bottle 6,000-psi air cascade system with **EAGLE** Cadet Guard fill enclosure;
- **RAMSEY** six-ton, rear-mounted winch;
- **HURST** electric and hydraulic rescue tool systems, **PHOENIX** gasoline power unit, and eight **HANNAY** reels (four electric and four hydraulic); and
- light and power with **ONAN** 20-kw PTO generator, **WILL BURT** six-kw Night Scan, four **GFE** recessed floodlights, and four **WHELEN** 97 Series scene lights.

Circle No. 508 on Reader Service Card

● The **Pleasantville Volunteer Fire Company** in Hanover, Pennsylvania, designed its **SEAGRAVE** engine as a rescue pumper to replace a pumper and a rescue truck. Chief Ted Clouser explains that downsizing the fleet saved money on maintenance and upkeep.



Features/Equipment:

- Model TB chassis with 222-inch wheelbase and six-seat cab with medical cabinet;
- **DETROIT** Series 60 470-hp diesel engine and **ALLISON** HD 4060P automatic transmission;
- **WATEROUS** CSU single-stage, 1,500-gpm pump with five-inch front intake, 1½-inch front bumper line, four crosslays (three 1½-inch, one 2½-inch), rear 2½-inch discharge (with preconnected three-inch line and gated wye), and **ELKHART** Stinger 1,000-gpm monitor;
- **UPF** 1,000-gallon water tank with two 2½-inch direct fills (one each pump panel and rear);
- **ROBINSON** roll-up doors on rear compartment and medical cabinet;
- long tools in "coffin" compartments on top of body, bin storage for 120-pounds of absorbent, and seven spare SCBA cylinders stored in wheelwell sleeves;
- **LUKAS** rescue system four **HANNAY** reels (two hydraulic, one air, one electric cord); and
- light and power with **A.M.P.S.** 15-kw PTO generator and six **FRC** lights (two floodlights at rear of cab and two at rear of body and two scene lights on sides of body).

Circle No. 509 on Reader Service Card

● The **McComb (OH) Volunteer Fire Department** wanted to have more water available for an initial fire attack, according to Chief Don Courtright. The department's jurisdiction has numerous farms and large homes, and so this **NEW LEXINGTON** apparatus was designed as a tanker/pumper.



Features/Equipment:

- **INTERNATIONAL** 7400 6 × 4 chassis with 234-inch wheelbase and two-seat cab;
- **INTERNATIONAL** DT 530 330-hp diesel engine with **ALLISON** MD 3060 automatic transmission;
- **DARLEY** HM single-stage, 500-gpm PTO pumper with two 2½-inch crosslays and two 1½-inch dead loads;
- **CET** 450-gpm floating pump;
- **CFP** 3,000-gallon elliptical water tank with three 10-inch **NEWTON** dump valves (left, right, and rear) and two five-inch fill pipes reduced to 2½-inch on each side;
- **ZICO** tank rack with 3,000-gallon **FOL-DA-TANK**;
- four wheel well sleeves for spare SCBA cylinders; and
- six **WHELEN** fixed scene lights on sides and rear of tank.

Circle No. 510 on Reader Service Card

The versatile, custom-built **MEDICMASTER® AMBULANCE** from **American LaFrance** is fast becoming popular among emergency providers in North America. The Medicmaster is built to your exact specifications atop a proven Freightliner Business Class M2 chassis, which is offered in multiple cab configurations. Each Medicmaster ambulance features a solid-state diagnostic electrical system and central heating and air conditioning, all housed in an advanced-engineered aluminum body. The Medicmaster—the ultimate solution to an emergency provider's ambulance needs. Web site: www.americanlafrance.com. (888) ALF-TRCK.



Circle No. 511 on Reader Service Card



Safety Components introduces **PBI MATRIX**, the best PBI product ever. It's a matrix of 600 denier Kevlar cables integrated with the proven performance of PBI Gold Plus. This patented blend uniquely combines the ultimate in thermal protection, water repelling, and abrasion resistance qualities of PBI Gold Plus with the stronger-than-steel rip resistance of Kevlar. Engineered for maximum protection against heat and flames, superior water repellency, and increased resistance to tears and abrasions, PBI Matrix delivers the most rugged, highest performing thermally protective outershell ever. (800) 896-6926, ext. 28. Web site: www.safetycomponents.com.

Circle No. 512 on Reader Service Card

Super Vac's MOUNTAIN MISTER converts any PPV or smoke ejector into a cooling rehab fan! It easily attaches to the fan's outlet guard to produce a cooling mist without requiring additional tools or hardware. Made of precision machined aluminum non corrosive components, with a rugged powder coat finish, the Mountain Mister uses three gpm and comes with a 3/4-inch garden hose connection and a quarter turn shutoff valve. The mist is injected into the center of the air stream to provide the maximum cooling range. It's perfect for increasing firefighter comfort and reducing heat stress. (800) 525-5224. Web site: www.supervac.com.



Circle No. 513 on Reader Service Card



The new **Kussmaul 091-141 LOAD MANAGER P BATTERY PROTECTOR** detects the battery voltage and shuts down a computer, radio, or other equipment when the battery is low. Includes a timer that shuts down the load one hour after the engine is shut off, permitting equipment to operate with the engine off while ensuring that the equipment does not completely discharge the battery. Designed specifically for ambulances, police cars, fire apparatus, and other emergency vehicles with laptop computers. The Load Manager P guards the battery so that it will always be able to crank the engine. (800) 346-0857.

Circle No. 514 on Reader Service Card

Featuring very high-bond adhesive or screw mounting, plus a snap-in locking latch, **Performance Advantage Company's GM HOOK** (part 1028) was designed to hold a gas mask when not in use. Made of super tough nylon, the GM Hook is excellent for securing the ring on gas masks, helmets, flashlights, keys, and more. The inexpensive GM Hook is great for storing these hard-to-mount items. Web site: www.pactoolmounts.com. (888) 514-0083.



Circle No. 515 on Reader Service Card

Bauer Compressors, Inc. introduces a new line of horizontal high-pressure **BREATHING AIR COMPRESSOR/PURIFICATION SYSTEMS** featuring our performance proven continuous duty air-cooled compressors. Heavy-duty formed sheetwork encloses all pressure-bearing components. Built to accommodate 5,000- or 6,000-psig three-, four-, or five-stage compressors with discharge capacities between 6.0 and 26.4 scfm charge rate (based on recharging an 80-cubic-foot tank from 500 to 3,000 psig). Standard features include "convertible" packing allowing choice of open or enclosed configurations, UL-listed electrical panel (an industry first), PLC controller final air pressure switch, magnetic starter, hourmeter, power-on light, and high-temperature shutdown switch. Powder coat paint offers rugged finish and aesthetically pleasing appearance. (757) 855-6006. E-mail: sls@bauercomp.com.



Circle No. 516 on Reader Service Card



When it comes to **FORCIBLE ENTRY TOOLS** and **PIKE POLES**, the best use the best—**FIREMARK TOOLS**. Our tools are designed and built to meet the tough jobs that firefighters face each and every day. Contact us for our free “Firefighting Equipment and Forcible Entry Tools.” (800) 845-6093. Web site: www.firemarktools.com.

Circle No. 517 on Reader Service Card



Scott's EAGLE IMAGER 160 offers groundbreaking thermal imaging technology in a streamlined ergonomic design, allowing the camera to be used in a variety of crawling, standing, or hands-free configurations. Its glass-filled nylon construction offers lightweight and superior durability. Other features include a large format diagonal LCD for optimal viewing, a simple-change self-contained battery pack, and easy-to-use push-button controls. The Eagle Imager 160's Fire-Cooled Microbolometer core features a 160 × 120 focal plane array, a 60 Hz update rate, and a 1,100°F dynamic range. (800) 247-7257.

Circle No. 518 on Reader Service Card



The **RESPONDER FLASHLIGHT** from **Bright Star Lighting Products** is UL listed for Division 2 hazardous locations. It can run for up to two hours providing 45,000 beam candlepower with a rechargeable 4.8-volt NiCad battery pack. Powered by four C-cell alkaline batteries, it provides five hours of 60,000 beam candlepower. The Responder uses a halogen bulb and includes two spare bulbs. Constructed of impact resistant super tough nylon, the waterproof Responder can survive a 30-foot drop onto concrete and comes with a lifetime limited warranty. Web site: www.flashlight.com. (800) 631-3814.

Circle No. 519 on Reader Service Card



Viking Life Saving Equipment now produces a full fire suit (coat and pant) weighing less than seven pounds. Viking's **LITE-WEIGHT FIRE SUITS** are made from the latest lightweight outer fabrics, Gore Crosstech moisture barrier, and a high-tech blended thermal liner. Viking is an international safety manufacturer of NFPA and ISO compliant fire suits. “Speed stock” delivery is available. Contact us for a free product brochure. (866) 845-4640. Web site: www.vikingfiresuit.com.

Circle No. 520 on Reader Service Card



WATERLINE ROPE from **Sterling** is among the highest-quality multifilament polypropylene/nylon water rescue ropes available. High-quality construction incorporates high twist levels in the sheath and DryCore to produce a rope that's strong, durable, handles well and floats. WaterLines also have higher tensile strength than other polypropylene float ropes. Available in 5/16-, 3/8-, and 1/2-inch; the 3/8-inch version is certified to NFPA 1983, 2001 edition. (207) 885-0330. Web site: www.sterlingrope.com.

Circle No. 521 on Reader Service Card



Half-inch construction makes **Sterling's** new and improved nylon **SUPERSTATIC ROPE** technically more advanced. Its smooth, tight sheath has been bulked up for greater abrasion resistance, and yarn has been added to the core for higher tensile strength. The uniqueness of SuperStatic ropes centers around two important technical components: Sterling's original 48-carrier static sheath and DryCore. They are incredibly durable, stay supple after extensive use, knot easily, and resist moisture. (207) 885-0330. Web site: www.sterlingrope.com.

Circle No. 522 on Reader Service Card



U.S. Patent No. 6,682,313 granted to **Trident Emergency Products, LLC** for its new **AIR-PRIME™ PUMP PRIMER**. New and revolutionary priming pump design is powered completely by air from the truck's airbrake system. The multi-stage venturi design has no moving parts, requires no lubrication, has no electrical

draw, generates no pollution, exceeds the performance requirements of NFPA 1901, and carries a full five-year warranty. Includes panel mounted push-button control. (856) 931-9155. Web site: www.tridentdirect.com.

Circle No. 523 on Reader Service Card



The first of its kind, **Rosenbauer AIRWOLF ARRF VEHICLE** is designed to serve smaller, general aviation airports and exceeds FAA specifications for Class 3 ARFF vehicles. Available in two- or four-door commercial cab configurations, the all-wheel drive Airwolf delivers durability and maneuverability in an affordable package. (651) 462-1000. Web site: www.rosenbaueramerica.com.

Circle No. 524 on Reader Service Card

Hannay Reels' FGCR 9-14-16 REEL is designed to provide a secure and efficient means for grounding vehicles and equipment. The FGCR reel simplifies vehicle grounding by providing easy cable payout from an emergency vehicle to a suitable ground in rescue, haz-mat, fire, lighting, and generator applications. The FGCR 9-14-16 has a manual rewind with a hand crank permanently attached to the disc. An internal rotary device on the reel axle provides a sturdy connection for the cable. The FGCR 9-14-16 features a standard 25 feet of #2 AWG-insulated extra flexible class K cable, a #6 smooth jaw ground C clamp, and a lead crimp type connector. (877) GO-REELS. (518) 797-3791. Web site: www.hannay.com/fire.

Circle No. 525 on Reader Service Card



With hundreds of installations nationwide, **MagneGrip EXHAUST EXTRACTION SYSTEMS** offer proven, reliable technology for the fire service. MagneGrip systems capture 100% of vehicle exhaust emissions and remove cancer-causing gases and particulates to protect firefighters and EMTs. No system is more dependable. No pneumatics, compressors, or electro-magnetics are needed. Gives you easier operation, less cost up front, and lowest maintenance year after year. MagneGrip has a system for every firehouse/apparatus application. (800) 875-5440. Web site: www.magnetgrip.com.

Circle No. 526 on Reader Service Card



FireTech™ introduces the **GAGE STATION BOOT**, an eight-inch, side-zip steel-toe boot featuring Quad Comfort™ technology by LaCrosse®. The Quad Comfort system features four cushioning layers built on a slip-resistant, shock-absorbing outsole for unmatched comfort, reduced foot fatigue, and protection in a steel toe boot. The eight-inch Gage by

FireTech is ideal station wear because of its lightweight construction and full-grain, polishable leather. The Gage's smooth-working side-zipper, padded collar, and the Quad Comfort system work together to take comfort on the job to a new level. (800) 557-7246. Web site: www.firetechboots.com.

Circle No. 527 on Reader Service Card



Vernon Software announces the **IN-SITE PERSONNEL ACCOUNTABILITY SYSTEM** for your PDA, tablet, or notebook computer. In-Site increases safety and eliminates freelancing by tracking all personnel at the scene of an emergency. In-Site logs all assignments and activity to a database for analysis and reporting. In-Site includes a wireless communications feature that shares assignment info with other PDAs at the scene. See us at FDIC booth 5855 in the ballroom. (877) 872-4266. Web site: www.vernonsoft.com.

Circle No. 528 on Reader Service Card



Tele-Lite is proud to introduce **NOVA-LITE**, our brightest idea yet! This self-contained lighting system has two 500-watt quartz halogen telescoping lights, two 500-watt quartz halogen portable lights, powered by a dependable Honda EB-3000 generator, with six- to nine-hour run time. All this is rack-mounted on a custom-built hand cart for easy and fast portability. (800) 538-0022.

Circle No. 529 on Reader Service Card



Intec Video Systems introduces the **VSS2100 VIDEO SENTINEL SCENE SURVEILLANCE SYSTEM**.

The VSS2100 features remote color zoom and infrared cameras with full pan and tilt capability, to be positioned atop a telescoping mast or aerial apparatus. This modular design can be tailored to fit any visibility needs and budget. (800) 468-3254. Web

site: www.intecvideo.com.

Circle No. 530 on Reader Service Card

Norfab's OMNI 45™, a Basofil blend **OUTER SHELL FABRIC**, has been providing the best heat blocking for the fire-fighter for the past seven years. Many departments have specified this fabric in their turnout gear, along with our **OMNIQUILT™ THERMAL LINERS**, also made using the superior heat blocking qualities of Basofil fiber. Visit Booth 1711 at FDIC. (800) 441-9680. Web site: www.norfab.com.

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Quest Enterprises, Inc. has become a leader in the **PROTECTIVE CLOTHING** industry since 1980. We have earned our reputation for producing exceptional protective clothing by meeting the wide-ranging requirements of today's fire/rescue professionals in both large and small departments. Quest success stems from offering many standard features and focusing on these essential factors: **PROTECTION** at critical interface and compression areas; **COMFORT** in design to meet stringent performance objectives; and **DURABILITY**, which comes from top quality components and construction. (800) 422-3833. Web site: www.questhq.com.

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911 Safety Equipment distinguishes itself from the competition by offering a full range of high quality **SAFETY PRODUCTS AND SERVICES** that address the needs of our customers more effectively than other companies serving the fire service market. Check out our easy to use transactional Web site, www.911SE.com. Shop online (866) 370-7800 or in person at our Norristown, Pennsylvania, store. 911 has a full line of products, many of which are on GSA schedule. Our **911 Clean** division is a certified NFPA 1851 gear cleaning-repair-tracking facility.

Circle No. 533 on Reader Service Card



XTREME POWER! The new **GENESIS C165 AND C270 CUTTERS** from **American Rescue Technology** produce more than 140,000 pounds of cutting force and have blade openings of 6.5 and 10.5 inches respectively. Weighing less than 40 pounds, these cutters are the strongest in the industry. These are the perfect choice for your heavy rescue needs. Contact your local Genesis Rescue System dealer for a free demonstration. (937) 228-2200. Web site: www.art4rescue.com.

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