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Continuing Education Course

Tips for Improving Effectiveness in Forcible Entry

BY BILL GUSTIN

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Tips for Improving Effectiveness in Forcible Entry

Educational Objectives

On completion of this course, students will:

- Describe how to preplan forcible entry challenges
- Describe the method of size-up doors and windows for forcible entry
- Identify the reasons why forcible exit is so important
- Describe how the different components of forcible entry tools can be used to the best advantage

BY BILL GUSTIN

FIREFIGHTERS DO THEIR BEST WORK INSIDE A FIRE building; that's where they can most effectively save civilian lives and stop fire from taking possession of a structure. Unfortunately, fear or crime has made the firefighter's job of getting inside buildings increasingly more difficult. Today, rural and suburban firefighters face forcible entry challenges that were encountered predominantly in big cities just a few years ago.

RULES THAT ENHANCE FORCIBLE ENTRY EFFECTIVENESS

Following are some fundamental rules that will enhance firefighters' effectiveness and safety when performing forcible entry operations.

Preplan forcible entry challenges.

Don't wait until it is 0300 hours with smoke pushing from a building to try to figure out how to force a door or gate assembly you have never seen before. Effective forcible entry begins with prefire planning. In today's fire service, many fire companies conduct most of their preplanning informally while on medical calls. For example, a member of my company noticed while on an EMS run an unfamiliar pattern of bolt heads in a heavy steel door at the rear of a liquor store. Once we released the patient to the ambulance, we asked the proprietor if we could see how this door was secured on the inside. There, we became familiar with a new security device. Further, we noted the brand name of the device and consulted with a local locksmith on the most effective way to defeat this assembly. The locksmith said he had installed dozens of these new devices in our response area and that although it looked intimidating—with steel bars that slide into each side of the doorjamb—it is operated by a fairly simple mechanism. The locksmith suggested we force the device "through the lock," by removing a protective shroud covering the lock cylinder, pulling the cylinder with our lock-pulling tool, and unlocking the device with a screwdriver.

(1) In prefire planning, firefighters become familiar with security devices and devise techniques for forcing them. (Photos by Eric Goodman.)

Never pass up an opportunity to familiarize yourself with security installations in your area. Devise the most effective method of forcing a lock, door, or gate before you encounter it at a fire.

Get off the apparatus with the right tools for the job. You may carry a wide assortment of forcible entry tools but not have staffing necessary to bring every tool to the fire building. Therefore, you must choose which tools to take, depending on what you expect to force. From prefire planning, we learn that similar occupancies tend to be secured in similar ways. For example, panic hardware on double-exit doors in schools are often chained together after school hours and secured with a padlock. Similarly, doors in rooming houses in my district are commonly secured with a chain through the hole in the door where the knob used to be and a hole punched in the wall. If operating in a rooming house or a school when it is not in session, bring bolt cutters to cut the chains securing the doors.

You can easily force, without causing damage, double aluminum-glass doors at the entrances of stores, schools, and offices if they meet in the middle without a center astragal or jamb. If you expect to force double doors, bring a hook fashioned from a welding rod, an automobile antenna, or other ridged wire

(2) A hook fashioned from ridged wire opens double doors. (3-4) A paint roller inserted between double doors actuates panic hardware.

(photo 2). Insert the hook between the doors and then rotate to exert a pull on the panic bar or latch paddle. A member of my company suggested that we try a paint roller for this purpose (photos 3-4), and we have had excellent results.

If you are ordered to open the rear of a commercial building, expect to cut heavy steel doors with a rotary saw. If you use abrasive metal-cutting disks instead of a metal-cutting diamond blade, bring extra blades, because abrasive disks wear rapidly when cutting steel.

Secure any overhead door that has been raised under fire conditions in the open position with at least one pike pole. If you intend to cut and open overhead doors in a commercial building, take long—at least 10-foot—pike poles to brace the doors open. Long pike poles are necessary to reduce or, preferably, eliminate the space for potential freefall between the bottom of the door and the head of the pike pole. Out of habit, firefighters most often take six-foot hooks with them. The hooks, however, are too short to stop a 10-foot overhead door from crashing down, trapping them inside a fire building.

Doors to apartments and hotel rooms usually open inwardly, away from firefighters performing forcible entry. Accordingly, a company ordered to force doors in a multiple dwelling should take its hydraulic forcible entry tool. This tool, however, may be of less value at fires in commercial occupancies, which typically have outward-swinging doors.

Size up before forcing entry.

A proficient forcible entry team sizes up its obstacle to entry and fire conditions before going to work. Information learned in a size-up can indicate the most effective method for gaining entry, which tools to use, and how much property damage is acceptable. Following are some factors to consider in a forcible entry size-up:

- How is the door constructed, and how strong is it?
- How are the door frame and adjoining wall constructed? How strong are they? Look beyond the door. Wall construction determines how much a jamb can flex away from the door. A size-up may indicate that it would be faster and easier to breach a wall than to struggle with a difficult door.
- Does the door open toward or away from the forcible entry team?
- What are the lock's strength, design, and operating characteristics? Would it be most effectively defeated by "through-the-lock" forcible entry techniques?
- What is the lock's brand name? A brand name can tell much about a lock—its strength, design, and resistance to force. If you recognize the brand name of a high-security lock, you can immediately call for power tools and not waste your time or strength attempting conventional forcible entry.
- Does the door have bolt heads? The presence of four bolt heads at waist level is a strong indication that a drop bar is across the inside of the door or that the door is secured with some type of high-security lock assembly. Bolt heads located in the top and bottom of a door may indicate that the door is secured with surface-mounted locks, such as slide latches or barrel bolts. A pattern of bolt heads in a heavy steel door should be like a large flashing neon sign that says, "Go get the saw!"
- Is there a lock cylinder in an unusual location, such as in the middle of the door? This typically indicates a lock with sliding bars that engage each side of the doorjamb and possibly the top of the doorjamb and a strike or receiver in the floor as well.
- Look for the weakest component. Does a door have a glass, wood, or sheet metal panel that you can easily and inexpensively break to be able to reach in and unlock it?
- Is the door hot? Check the door and the knob with the back of your hand. You can rapidly scan with a thermal imaging camera several doors in a strip shopping center or warehouse complex. A hot door may indicate a fire is close inside. It is also a sign that you should use caution, because opening the door will allow oxygen entering the building to intensify the fire or, in a worst-case scenario, precipitate a backdraft.

Change techniques if they are not working.

A company officer directing a forcible entry operation must judge the effectiveness of his firefighters' efforts and devise alternate techniques if they are not making progress. A company officer must project strong leadership over aggressive firefighters who are physically engaged and mentally focused on high-intensity forcible entry. At times, I have been so determined to get through a difficult door that I was reluctant to stop what I was doing and try a different technique. Fortunately, I worked for some good company officers who would stop me when it was time to try something different.

A company officer must also watch his crew for signs of fatigue. As firefighters tire, their effectiveness and safety diminish rapidly. But, don't expect a fatigued firefighter to stop working on his own and to hand over his tool to someone else.

A company officer cannot effectively supervise his company

Basic Forcible Entry Tools

Take to every forcible entry operation the following basic tools: a halligan, a flathead ax, a sledgehammer with at least a 10-pound head, and a lock cylinder-pulling device. Additionally, carry in the pockets of your protective clothing a screwdriver with multiple, interchangeable heads; adjustable or locking pliers; and cutters to free yourself if you should become entangled in wire from the inner helix of flexible ventilation ductwork or telecommunication cables above a hanging ceiling.

Every firefighter should have two types of devices to hold doors in the open position. I prefer a device that hooks over a door hinge instead of a wedge; wedges tend to get knocked out of place. However, wedges are still necessary for certain doors where a hinge device will not work. Aluminum and glass storefront doors, for example, do not have hinges. They swing on "pivots" located at the top and bottom of the door.

Finally, carry a four- to six-foot section of rope or nylon webbing, fashioned with a loop on one end and a strong snap link or carabiner on the other end. This has a multitude of uses, including controlling the opening of an inward-swinging door. An inward-swinging door forced by any technique can swing uncontrollably and strike a person lying within the range of its swing. But, there is a greater danger: Firefighters forcing a door to a unit in a multiple dwelling could be seriously burned if the door opens uncontrollably, allowing fire within the unit to "blowtorch" into the public hallway. The danger is greatly intensified when firefighters encounter a wind-driven fire in a high-rise building.

When forcing an inward-swinging door, restrain it by attaching the short rope or strap to the doorknob. A few years ago, firefighters in South Florida responded to a fire in a large, non-sprinklered high-rise condominium facing the Atlantic Ocean. On forcing the door to the fire occupancy, the strong sea breeze blew fire over their heads and down the hallway. Fortunately, the firefighters had control over this inward-swinging door with a short nylon strap, which enabled them to slam the door closed, regroup, and advance their hoseline into an adjoining condominium unit. There, they breached the wall between residences and operated their stream into the fire unit until the intensity of the wind-driven fire was decreased.

In my company, the firefighter responsible for the flathead ax and halligan has standing orders to *always* take a sledgehammer along with the "irons." You may ask the same question that firefighters temporarily detailed to my company often ask, "Why do you need *both* a sledgehammer and an ax, especially if you have an eight-pound ax?" Some techniques for forcing doors and doorway bar gates necessitate the use of all three tools: the sledgehammer, the flathead ax, and the halligan. The ax is used for cutting wood and laminated impact-resistant glass. The ax blade can be a powerful chisel for cutting fasteners or sheet metal when it is driven with a sledgehammer (photo 4).

The ax blade, when driven between an outward-swinging door and its jamb, acts as a wedge, widening the gap, allowing easier insertion of the halligan fork or adz. Widening this gap with an ax blade also allows a metal-cutting rotary saw blade to spin freely, directly cutting lock bolts and latches without unnecessarily cutting the jamb and the edge of the door.

The ax blade also serves as a wedge to maintain the gap pried between a door or gate and its jamb. Position the ax blade flat between a door or wall to act as a fulcrum, increasing leverage of the halligan. Placing an ax blade behind a halligan provides additional surface when an adz or spike would otherwise penetrate a wood or light metal-covered door. A sledgehammer is superior to an ax as a striking tool, because it is heavier, thus exerting more force, and has no sharp edges to cut a firefighter accidentally struck by the tool. Force an inward-swinging door by striking it with a sledgehammer near its locks or hinges. Striking an inward-swinging door may be effective alone or in conjunction with the prying action of a halligan. Doors that are recessed in a masonry wall can be difficult to force, because the swing of a sledgehammer driving a halligan and the halligan's range of motion when using the fork is restricted (photo 6). Use a sledgehammer to break brick or concrete block out of the doorway so you have enough room to work with the tools.

If you are serious about forcible entry, your company should have a halligan tool similar to the one in photo 7. Notice that the adz, spike,

(1) Carry wedges and hinge devices to hold doors open. Notice nails are positioned to avoid catching on things. (2) A hinge device holds a door open. (3) A strap controls the opening of this inward-swinging door being forced with a hydraulic forcible entry tool.

(4) An ax blade acts as a chisel and shears masonry anchor.

(5) An ax blade, positioned behind a halligan, acts as a fulcrum when prying the right side door of these double doors.

if he is physically engaged in the forcible entry operation. An officer with a tool in his hands will naturally narrow his focus to the working end of the tools. Consequently, he can lose sight of the overall operation, the condition of his firefighters, and the effectiveness of their efforts.

Communicate delays and difficulties.

A company officer who anticipates or experiences a delay in forcing entry should notify the incident commander (IC) immediately. Whether it is ego or pride, firefighters (myself included) can be reluctant to admit that they are not being successful at a task. Consequently, they may fail to notify the IC of their difficulties until it is too late. The success of an IC's strategy, however, may depend on his company's implementation of tactics, such as forcible entry, in a timely fashion.

As an example, the chief's strategy may be to stop the horizontal spread of fire in a common cockloft in a strip shopping center. He knows that he must get ahead of the fire by forcing into adjoining stores, pulling ceilings, and operating hose streams into the overhead. The chief knows this will take time and that the fire will continue to spread to adjoining occupancies while his companies get into position. Anticipating the spread of fire, he directs his companies to exposure D-3, three stores to the right of the original fire occupancy, and exposure B-3, three stores to the left of the fire. His strategy to confine the fire depends on getting into exposures D-3 and B-3 before fire passes overhead. Now, let's say that firefighters forcing entry into exposure D-3 encounter an extremely difficult door and anticipate a delay in getting in. The company officer directing the forcible entry should immediately notify the chief. That information may influence the chief to change his plan: write off exposures D-1, D-2, and D-3 to give his companies time to force entry and make a stand in exposure D-4.

Firefighter safety takes precedence over rapid forcible entry.

Just before dawn, a police officer reports a fire at a steak house that has been closed for several hours. First-arriving companies find smoke showing from the front doors and from ventilation equipment on the roof above the kitchen. An officer conducting a 360-degree size-up notes aluminum and glass doors at the main entrance in the front and substantial steel doors in the rear. On further investigation, he notices a pattern of bolt heads on the rear doors; the doors are hot when he touches them with the back of his hand. Which door should be forced first? Which

Basic Forcible Entry Tools

(6) A recessed doorway restricts the swing of the sledgehammer. (7) A "true" halligan.

shaft, and fork are all one solid piece of forged steel. This is a "true" halligan, with an adz that has a slight downward curve and a slender, tapered fork beveled to act as a fulcrum to increase the force exerted on a door. The halligan in photo 7 is 30 inches long, which may not seem long enough if you consider, theoretically, that a longer tool would apply more leverage. But, firefighters deal in reality, where a longer halligan may be too long to work with in a recessed doorway or other small space.

To increase grip, one of my company members wraps the shaft of the tool with small-diameter rope and hockey stick tape. Marks painted on the adz and fork indicate the depth of the tool's penetration in relation to the thickness of a door.

Unfortunately, some fire departments still use those chrome-plated "fake" halligans with a straight adz and a big thick fork attached to the shaft with drive pins. The large fork on these tools makes it extremely difficult to drive it between a door and jamb and around the edge of the door.

Include a device that pulls lock cylinders with the standard complement of tools. The fire service has been using the K-tool to pull lock cylinders for years. It is an excellent forcible entry tool, but it will not work in every situation. For example, a doorjamb that projects beyond the surface of a door or steel mesh covering glass can prevent a K-tool from getting a "bite" on a lock cylinder. My department has replaced the K-tool with a refined version of an "officer tool" with a specially designed lock-pulling head (photo 8). Some of our personnel have purchased their own officer tools and had the manufacturer modify them by adding a spike and a fork. Members of Florida Task Force One used our "little halligan" in New Orleans, following Hurricane Katrina. Members searching flooded residences used the tools to force hundreds of doors and security gates.

You can tell much about a fire company's commitment to forcible entry by the location and condition of its tools. A company that keeps its halligan in the left front compartment and its ax in the right rear compartment can't give much thought to forcible entry. Store prying tools, such as the halligan, and striking tools, such as the ax and sledgehammer, in the same compartment. Aggressive fire companies may keep their most frequently used forcible entry tools in the cab. Keep tools stored in the cab restrained in brackets specifically designed to prevent them from becoming missiles should there be an accident.

Finally, a company that takes pride in its forcible entry tools cleans and maintains them by removing rust and rough edges with a wire wheel and grinder. Strip metal surfaces or tools of the paint applied at the factory, and protect them against rust with a thin coat of oil. It is a good idea to distinguish a company's tools with a stripe of distinctive paint. My company's tools have a stripe of Chevrolet Engine Block Orange; the rescue squad company in our fire station identifies its tools with a stripe of Ford Engine Block Blue.

(8) This "officer tool" with a refined lock-pulling head has been modified by the addition of a spike and fork.

(5) Fire showing from a swing door in this strip warehouse occupancy, a paint and body shop. Firefighters attacked fire from this doorway but did not make entry because it leads to a dangerous, poorly constructed office. The overhead door, behind the auto, was chosen as the point of entry.

door should be used to advance a hoseline into the steak house? At first glance, the aluminum and glass doors, the front entrance doors, look like the best choice, because they are fast and easy to force. But, firefighters who choose the front doors for their hose advance are in for a slow, difficult, and personnel-intensive job.

On entering the front, firefighters advancing the hoseline will encounter multiple obstacles and corners that will slow their advance and necessitate additional firefighters. More firefighters must be positioned along the hoseline to keep it moving around the hostess counter, through the cocktail lounge, and past tables and chairs in the dining area.

Fire officers directing companies into a commercial building with no civilian life hazard must understand the risks: The deeper they penetrate into a hostile environment, the farther they will be from their means of escape and the greater the danger of being lost, disoriented, running out of air, being caught in a collapse, or trapped with fire over their heads.

Firefighters who choose to advance through the rear doors face a difficult and time-consuming forcible entry that necessitates extensive use of a metal-cutting rotary saw. But, consider the benefits: The back door leads directly to the kitchen, where most restaurant fires begin. Remember that the rear door was hot, indicating that firefighters operating a 2½-inch handline or portable master stream device from the doorway stand a good chance of reaching the fire with their stream.

Now, consider that the front of many restaurants has a very high parapet or large façade to conceal the ventilation and exhaust equipment on the roof. It is prone to sudden, early collapse. Firefighters operating at the front doors of a restaurant often position themselves under a facade or within the collapse zone of a parapet.

A basic tenet of forcible entry is to force the door that the occupant uses to enter. This is a good rule, because doors can be heavily secured on the inside with steel drop bars or chained panic hardware. Shelving may block a door the occupant never uses. There is, however, one door in a building that cannot be locked or blocked on the inside—the door occupants use to enter the building. That is the door that will be the fastest and easiest to force. But remember, firefighter safety takes precedence over rapid forcible entry.

Consider a fire in a strip warehouse in the early morning hours. Strip warehouses are typically constructed with concrete block, concrete tilt-up, or metal frame walls and roofs of lightweight steel or wood trusses. Strip warehouses are becoming very common throughout the country, because they can be rapidly constructed and divided to accommodate a wide variety of commercial occupancies. Each unit or "bay" will have one or more swinging and overhead doors. Firefighters attempting to gain entry into a strip warehouse occupancy will have to decide whether to force a swinging or an overhead door. If speed is the primary consideration, naturally, they will choose a swinging door, because the occupant uses it to enter his business. Hence, it can't be locked on the inside.

Conversely, overhead doors are typically locked on the inside by sliding "L" bolts or hoisting chains secured with padlocks. But, speed should not be the firefighters' first priority, especially in a business locked up after hours. Where does a swinging door in many strip warehouse occupancies lead? There is a good chance that it leads to an office or sales area the occupant built without a permit after passing a Building Department inspection and receiving his occupancy license. Consequently, these illegal structures, built at night and on weekends, are nothing more than poorly constructed wood-frame shacks and a "maze" of counters, stock, and furniture. The top of these structures, which is several feet below the warehouse roof, makes a convenient storage loft for literally tons of auto parts, building materials, or other heavy stock.

Firefighters entering a strip warehouse through a swinging door may find their thermal imaging camera to be almost useless because a ceiling conceals fire conditions in the warehouse and the effect on its truss roof construction (photo 5).

Now, consider the overhead doors. True, it may take longer to gain entry, but it leads directly into the warehouse and opens to a main aisle, if there is rack storage.

An overhead doorway provides a large means of access, egress, and ventilation. Additionally, an overhead doorway allows for the most effective operation of 2½-inch handlines or portable master stream devices.

Consider forcible exit options.

When civilian lives are not threatened, you should be more concerned with how fast you can exit a building should you get into trouble than how fast you can enter a building to fight a fire. Rapid intervention teams (RITs) should be proactive in making the fire building safe for firefighters operating inside; they should not just stand by awaiting a Mayday. Vital functions of the RITs should include forcing doors, especially in the rear, and raising ladders to upper floors to provide alternate means of egress. Similarly, firefighters must quickly perform "forcible exit" at the rear of commercial occupancies when a fire occurs during business hours. Customers and employees can escape through the front doors of a business, but they can be trapped at rear doors that are illegally locked, blocked, or barred (photo 6).

(6) A rear door illegally locked during business hours can trap occupants, necessitating prompt "forcible exit" at the rear of commercial occupancies.

Justify the damage forcible entry causes by the urgency of the situation.

An engine company is dispatched to an automatic fire alarm activated in a single-family residence. On arrival, no smoke is visible; but on further investigation, firefighters smell a faint, familiar odor of food burning on the stove. The company officer decides not to force the front door, which disappoints his probationary firefighters, who are anxious to practice the forcible entry skills they learned in the fire academy. The company proceeds to the rear of the house, where a smoking pot of food on the stove can be seen through a kitchen window. The officer orders his firefighters to examine each side of the house for a window that could possibly be unlatched. He orders that a ladder be raised to second-floor windows, because they are more likely to be unlatched than those on the first floor. He also considers shutting off gas to the house, if it has a gas stove, or electricity, if it has an electric stove. The officer examines each exterior door to determine which one could be forced with the least property damage. Perhaps one of them could be opened by pulling the hinge pins. This situation does not need or justify rapid, aggressive forcible entry. Firefighters have the time to be meticulous, causing as little damage as possible.

My company frequently responds to medical alarms for elderly people who have fallen and cannot get to the door to unlock it. We choose the method of forcible entry after we make contact with the patient to determine his condition.

Firefighters should not hesitate to rapidly force entry when lives could be in danger or fire threatens to spread. Conduct forcible entry in accordance with tactical priorities—life, of course, takes precedence over property. If life or property is not threatened, then property conservation should be the priority. In this case, firefighters should keep the damage caused by forcing entry from exceeding the damage caused by the fire. ●

● **BILL GUSTIN**, a 35-year veteran of the fire service, is a captain with Miami-Dade (FL) Fire Rescue and lead instructor in his department's officer training program. He began his fire service career in the Chicago area and teaches fire training programs in Florida and other states. He is a marine firefighting instructor and has taught fire tactics to ship crews and firefighters in Caribbean countries. He also teaches forcible entry tactics to fire departments and SWAT teams of local and federal law enforcement agencies. Gustin is an editorial advisory board member of *Fire Engineering*.

Notes

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BY BILL GUSTIN

SUCCESS IN CONVENTIONAL FORCIBLE ENTRY depends on the strength of firefighters and their knowledge and skill in forcible entry techniques. Success also depends on using the right tools for the job: a sledgehammer, a halligan-type tool, and a flathead ax. The need for all three tools is explained in "Tips for Improving Effectiveness in Forcible Entry" (April 2008). Experienced firefighters can recognize a door that can be forced by conventional techniques and those that call for power tools or "through-the-lock" methods. Firefighters experienced in forcible entry also know when they are fighting a losing battle with tools and techniques that are not working and know when to stop and try something else. In this course, I will focus on forcing doors by conventional techniques—that is, the use of hand tools to pry and strike.

FORCING INWARD-SWINGING DOORS

You can identify inward-swinging doors (doors that open away from firefighters performing forcible entry) by the absence of hinges. Some training materials state that an inward-swinging door can also be identified by its being recessed three or four inches into a wall. This indicator, however, is not reliable, because both inward- and outward-swinging doors can be recessed in a masonry wall. This can be seen in the photos of forcing an outward-swinging door in this course; the door is recessed three to four inches in a concrete block wall.

Before we look at techniques for forcing inward-swinging doors, let's review some terminology that should be common knowledge for all firefighters. A swinging door closes against a stop, or a rabbet, on the top and sides of a doorjamb. Although a stop and a rabbet serve the same purpose, they are different. A stop is a strip of wood approximately ½-inch thick that is nailed to a wood doorjamb; it is commonly found on interior doors, such as bedroom doors. A rabbet is more substantial than a stop, because it is an integral part of a doorjamb that is one piece. A rabbet is the shoulder approximately ½-inch thick that is milled into a wood doorjamb and is commonly found on exterior doors. Steel doorjambs are usually fabricated with a rabbet and are seldom fitted with a stop.

Additionally, doors may close against a threshold at the bottom of a doorway. You can see a stop or rabbet from the outside of an inward-swinging door; it helps firefighters identify the door as inward-swinging. The stop or rabbet is the part of the doorjamb that covers the gap between the door and the jamb about ½ inch. Weather stripping is often fastened on the stop or rabbet and threshold of exterior doors. A stop or rabbet prevents firefighters from inserting a pry tool directly between an inward-swinging door and its jamb. A door without a stop or rabbet could continue to swing past the point when its lock bolts and latches line up with the doorjamb. This would exert leverage on the hinges that could tear them out of the doorjamb.

When teaching forcible entry, the question inevitably arises, "Why don't we just kick or bash in the door?" As a practical matter, kicking or battering a door with a sledgehammer may be the simplest and fastest way to gain entry through an inward-swinging door. You can force some inward-swinging doors by striking them with a sledgehammer near their locks or hinges. Striking an inward-swinging door may be effective alone or in conjunction with the prying actions of a halligan.

I can remember when our ladder apparatus carried a battering ram. I also remember that it was extremely heavy, but I can't ever remember a fire where it was used. It can be difficult to deliver a powerful kick or batter a door when encumbered in full protective clothing. That's why police and S.W.A.T. team members have more success with this method

(1-2) The adz is driven into the wood doorjamb lock on the left. A downward movement of the shaft rotates the adz and forces the spike against the door. (Photos by Eric Goodman.) (3) The spike is driven into the wood doorjamb lock on the right. A downward movement of the shaft forces the adz against the door. (4) The ax blade prevents the spike from puncturing the door.

than firefighters. Additionally, firefighters have injured their legs and knees kicking a door that will not yield. Remember, a door that you kick or batter in can swing open uncontrollably unless you control it with a rope or a strap.

Forcing an inward-swinging door with a halligan is more meticulous and less strenuous than attempting to kick or batter it in.

TECHNIQUES

The first techniques is using an adz and the spike end of the halligan to exert a shear or pushing force against a door. The techniques for using the adz and the spike can be used alone or in conjunction with the fork.

Remember that the construction of a door's jamb is an important factor in a door's forcible entry size-up; it can influence the choice of tools and techniques. If you find a wood doorjamb in your size-up, you can use your sledgehammer or an eight-pound ax to drive the halligan's adz or spike into the wood jamb behind its stop or rabbet, a few inches above or below the lock (photo 1). The objective here is to use the adz or spike imbedded in the wood doorjamb as a wedge and a fulcrum, transferring force against the door. Pushing the shaft of the halligan in a downward direction, then inward toward the door, exerts considerable force (photo 2). "Should I drive the adz or spike into the jamb?" you ask. That depends on which side of the door the knob, locks, and latches are and how your halligan is configured.

Using my department's halligan, the spike is driven into the jamb when the lock is on the right side of the door (photo 3), and the adz is imbedded when the lock is on the left (photos 1-2). When the adz is imbedded in the jamb, the spike forced against the door may puncture or tear a lightweight wood or foam-filled metal covered door. You can prevent this by placing an ax blade flat between the spike and door to increase its surface area (photo 4).

Once you have gained an initial purchase with this technique, drive the spike or adz right above the lock cylinder. Downward movement on the tool will apply considerable shear force directly on the lock.

One firefighter may be able to force an inward-swinging door set in a wood jamb by himself, using only the halligan. The key is to swing the halligan like a baseball bat to imbed the spike or adz into the doorjamb. If conditions allow the firefighter to stand, he should put his shoulder into the door as he pushes inward and downward on the shaft of

(5) The adz is inserted behind the rabbet of the steel doorjamb.

(6) A downward movement of the shaft rotates the adz. Notice that the deadbolt is beginning to fail. (7) Pulling the shaft toward the door exerts force directly on the lock.

(8) The adz, repositioned to the inside of the doorjamb, achieves additional leverage to force the barrel bolts at the top or bottom of the door.

the halligan.

Now, what if you should encounter an inward-swinging door set in a steel jamb? In this case, it is unlikely that you can imbed the adz or spike into a substantial steel jamb, but you can still apply considerable shear force to the door. Your objective is to insert the adz behind the steel rabbet a few inches above or below the lock or between locks if there is more than one (photo 5). Often, it is possible to set the adz by simply tapping it in place with the palm of a gloved hand.

Inserting the adz behind the rabbet provides only about ½ inch of purchase, the thickness of the rabbet, but that may be sufficient to apply significant force against a door. Pushing the shaft of the halligan downward rotates the adz, forcing it to widen the gap behind the rabbet and the door (photo 6). Often, this is sufficient to force steel doors locked with only a doorknob latch. If your first attempts do not force the door, reposition the adz directly over a lock cylinder (photo 7). Now the lock cylinder acts as a fulcrum, increasing leverage when the shaft of the halligan is pulled toward the door. This works well with the hotel room key-card locks because their large profile can provide a significant fulcrum and leverage effect.

There is another technique involving the adz of a halligan that you can use when an inward-swinging door is secured with a surface-mounted sliding "L" dead or barrel bolts. Often, these devices are mounted at the top or bottom of a door. Firefighters who force the main lock may find that some other device is still holding the door closed. In this case, maintain the gap between the door and the jamb at the main lock by inserting an ax blade. Then position the adz on the *inside* of the doorjamb and pry downward and inward, working toward the surface latch or barrel bolt (photo 8).

Will the preceding techniques work on every door? Of course not. There is no forcible entry technique that guarantees success every time. But firefighters who fail to force a door by using the adz and spike end of a halligan have not wasted their time, because those techniques almost always result in crushing the door and jamb, providing a gap into which you can insert the fork of the halligan.

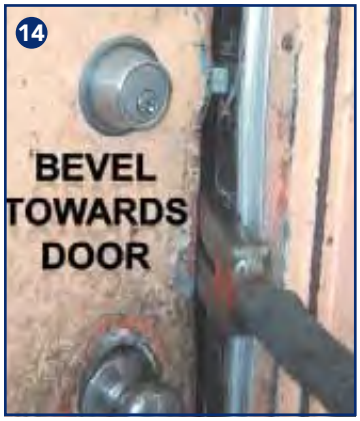
USING THE FORK

A "true" halligan has a fork that is tapered and slightly beveled, or curved. Once you drive the fork deeply between the door and the jamb with the bevel or outward curve toward the door, the bevel will act as a fulcrum, increasing shear force against the door when you push the shaft of the halligan inward toward the door. The spreading of the fork and the shear imparted by the bevel attack a door with force in two directions.

(9-10) The fork bevel is toward the door and driven deeply past the inside jamb.

To begin this technique, place the fork, with the bevel toward the door, a few inches above or below the lock or in between locks. Start with the shaft of the halligan at about a 45° angle from the face of the door. Now tap the adz end of the halligan with a flathead ax or sledgehammer to push the tip of the fork behind the rabbet or stop. Once the tip of the fork is set, pull the shaft of

(11-13) The fork, with the bevel away from the door, is driven between the tight-fitting steel inward-swinging door and the jamb. Note that the deadbolt is beginning to fail.



(14-15) After crushing the door and jamb, the fork is rotated so that the bevel is toward the door. The deadbolt fails when the shaft is pushed toward the door.

the halligan slightly away from the door, and strike the tool with vigor. After each strike, pull the shaft farther from the door. This allows the fork to work its way past the edge of the door. To be successful, you must continually move the shaft of the halligan away from the door as you drive the fork deeper between the door and the jamb (photos 9-10). If you encounter a metal door in a tight-fitting metal jamb, it will be almost impossible to drive the fork with the bevel toward the door. In this case, rotate the fork so that the bevel is away from the door, and reposition the shaft of the halligan so that it is parallel to the face of the door. With most halligan-type tools, the tip of the adz will touch the door when the halligan is in this position. Now the curvature of the fork makes it easier to drive or "wrap" it around the edge of the door (photos 11-13). Once you have gained a sufficient purchase by crushing the door and the jamb, rotate the fork so that the bevel is again toward the door (photos 14-15), and continue driving in the fork and pulling the shaft away from the door.

Now consider a tight inward-swinging metal door that is recessed in a masonry wall, an alcove at the entrance door of a garden apartment or at the end of a narrow hallway. This can interfere with driving the fork with the bevel away from the door, because when the shaft of the tool is parallel with the door, the adz end will be a few inches from a wall. This restricts the swing of a sledgehammer or ax when striking the adz end of the tool. This can necessitate striking the "shoulder" of the fork until the shaft of the tool can be pulled away from the door enough to bring the adz end within striking range. If a door is recessed in a masonry wall, consider using a sledgehammer to break out brick or block that is interfering with striking the halligan. Once the shaft of the halligan is 90° to the door (photo 9), continue to strike the tool to drive the fork in further until it is one to two inches inside the doorjamb (photo 10). Then pry the door open by pushing the shaft of the halligan toward the door; put two firefighters on the tool to exert more force. Attempting to pry a door before the fork is deep enough in the jamb will usually result in its slipping out of its purchase point.

To gauge depth, grind a notch or paint a stripe on the fork of the halligan. Some departments mark the fork 1½ to 1¾ inches from the end. This indicates the average thickness of a door. (The actual thickness of doors ranges from 1⅜ to 1⅞ inches.) I know of an ambitious company that paints a stripe 3½ inches from the tip of the fork. This allows for the thickness of most doors between 1½ and 1¾ inches and as much as two inches of fork in contact with the inside of the doorjamb.

VICTIM BEHIND THE DOOR

Firefighters gaining entry through an exterior door or opening interior doors for search may find a victim directly behind the door. Statistics tell us that a significant number of fire victims are found in exit paths. That's why firefighters are trained to quickly search the area around and behind a door.

The fear of home invasion has caused residence owners and occupants to install one or more deadbolt locks on their doors, usually a "double deadbolt." A double deadbolt lock does not have, as its name implies, two deadbolts; it has two lock cylinders, one on each side of the door. Double deadbolt locks may lock out intruders, but they also lock occupants in their residence, requiring them to use a key to escape a fire. In my company's district, double deadbolt locks and iron security bars are the norm, not the exception. It is not uncommon to find residence doors and iron security gates equipped with two double deadbolt locks, each requiring a different key. This can require as many as four keys to exit. As a result, residents attempting to escape a fire may pass out from the smoke before they can find their keys or collapse behind the door they were attempting to unlock. An unconscious victim behind an

(16-18) An unconscious victim is behind the door. The spike driven into the doorjamb acts as a fulcrum. When you pull down the shaft of the halligan, the adz exerts force against the hinge.

(19) Forcing an outward-swinging door with an adz.

(20) The adz is driven to the full thickness of the door, as indicated by the orange mark.

inward-swinging door is a real problem.

Firefighters performing forcible entry may find a door that opens just a few inches, because it is blocked by an unconscious victim. Unless another entrance can be found, such as another door or a nearby window, you will have to cut the door with a power saw or "lay it down" by forcing it at its hinges. A size-up that determines whether a door has a steel or wood jamb will indicate the tools and techniques necessary to force an inward-swinging door at its hinges.

Firefighters in this situation should consider themselves very lucky if they find a wood doorjamb. In this case, you can drive the adz or spike of the halligan, depending on which side of the door the hinges are located, into the jamb, near the door's uppermost hinges (photo 16). The adz or spike imbedded in the doorjamb acts as a fulcrum when you pull down the shaft of the halligan, forcing the adz or spike against the door, separating it from the top hinge. Striking a door at its hinges with a sledgehammer is also effective; this can be done alone or to hasten the prying action of the halligan. As explained earlier, when the adz is imbedded in the doorjamb, the spike may puncture or tear the door. If this occurs, position an ax blade between the spike and the door (photo 4).

Once the top hinge fails, insert an ax blade in the gap at the top of the door. Now, use the adz or fork to pry the door, working downward toward the second hinge (photos 17-18). Once the second hinge fails, push at the top of the door; its leverage will tear out the bottom hinge. Be sure to control the falling door with a rope or strap hitched to the doorknob so that it does not injure the victim.

Firefighters encountering a victim behind a heavy steel door in a substantial steel jamb will face an extremely difficult and time-consuming task if they must force the hinges conventionally. Firefighters facing this challenge should call for a hydraulic forcible entry tool to pry a door from its hinges and, if smoke conditions permit, a metal-cutting rotary saw to cut the hinges.

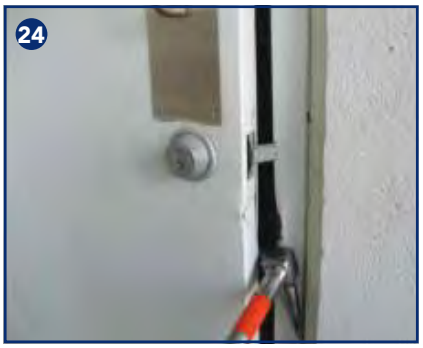
OUTWARD-SWINGING DOORS

Doors that swing outward, toward the forcible entry team, are readily identified by hinges that are visible and accessible. This brings up the question, "Why don't we just pull the hinge pins?" Pulling the hinge pins may be the best method to gain entry when the urgency of the situation does not require rapid entry and does not justify damage.

Forcing a door from its hinge side doesn't always work. Hinge pins are commonly spot welded in place or secured by an allen set screw that is not accessible when the door is closed. And, cutting the hinges does not ensure success.

Years ago, I ordered my company to cut the hinges of a door at the rear of a commercial building. Now, I thought confidently, we can easily pry open the door from the hinge side. My confidence changed to embarrassment when we failed after repeated attempts. We later found that this door had large masonry nails driven into the edge on the hinged side. When closed, these nails fit into holes drilled into the doorjamb. I was naive to think that a businessman would spend a lot of money on a heavy door and several locks but leave the hinges vulnerable.

To force an outward swinging door with a



(21) The shaft of the halligan is pushed downward and rotates the adz, increasing the spread between the door and the jamb. This allows

(22) the adz to be driven past the edge of the door to achieve maximum leverage, causing

(23-24) the deadbolt to fail.

(25) The prying action of the fork is restricted in this outward-swinging door recessed in a concrete block wall.

halligan, begin by driving the adz between the door and the jamb a few inches above the lock or between locks if there is more than one (photo 19). Make sure to position the halligan with its fork toward the hinge side of the door. This allows the slight curvature of the adz to help it work its way around the edge of the door.

Gaining the initial purchase between the door and the jamb can be time consuming with a strong, tight-fitting steel door. Widen the gap between the door and jamb by driving an ax blade in the space with a sledgehammer. This will allow for easy insertion of the adz.

It is important to drive the adz to a depth equal to the full thickness of the door—that is ⅜ to 1¾ inches. If, in your haste, you drive the adz to an insufficient depth and then attempt to pry the door, you may end up tearing a wood door or "skinning" a metal-covered door, leaving the lock latch and bolt intact. Conversely, if you drive the adz deeper than the thickness of a door, it will become imbedded in the doorjamb, making the task of prying the door more difficult.

Judging how far to drive the adz is usually not a concern with a door set in a substantial steel jamb. Experienced firefighters are attuned to the sound of the ax or sledgehammer striking the halligan; the metallic "clang" will change to a solid "thud" when the edge of the adz makes contact with the steel doorjamb. To ensure proper depth, fire departments may grind a notch or paint a stripe on the adz 1½ to 1¾ inches from the tip, indicating the average thickness of the door (photo 20).

Once you drive the adz to the full thickness of the door, pull the shaft of the halligan away from the door. Don't hesitate to put two firefighters to work on the tool. If the door does not pry open, use the weight of two firefighters to push the shaft of the halligan down. This action will rotate the adz, increasing the spread between the door and the jamb and, hopefully, crush the door and jamb sufficiently to allow the slightly curved adz to work its way around the edge of the door (photo 21). Now you can drive the adz to its maximum depth, achieving greater leverage (photos 22-24).

If these techniques fail, you have not wasted your time, because the adz will crush the door and the jamb, allowing for easier insertion of the fork.

When driving the fork between an outward-swinging door and its jamb, position it with the bevel against the doorjamb. This will allow the curvature of the fork to work its way around the edge of the door.

Leverage exerted by the fork of a halligan can be limited when a door is recessed in a masonry wall, because the shaft of the tool strikes the doorway, restricting its range of motion (photo 25.) Again, this is another reason to always take a sledgehammer along with the irons. A company that encounters an outward-swinging door recessed in a masonry wall may be able to use its sledgehammer to break brick or concrete block out of the doorway, allowing room for the shaft of the halligan.

The fork, however, may be of no use when an outward-swinging door is recessed in an alcove, which is common in garden apartments or at the end of a narrow hallway, because a wall restricts the prying movement of the halligan. Experienced firefighters will recognize this obstacle to conventional forcible entry and, on encountering a strong recessed outward-swinging door, may call for a metal-cutting rotary saw to cut lock bolts, latches, and hinges if smoke conditions allow the operation of its gasoline engine. Success in conventional forcible entry depends greatly on the proper positioning of tools. Questions such as "Should we begin forcing this door with the adz or the fork?" and "Should we place the bevel of the fork toward or away from a door?" can be answered during prefire planning and company drills. Fire companies should frequently select buildings in their response district and determine the proper tools and techniques necessary for fast and effective forcible entry in these structures.

Some fire companies seldom get a chance to practice hands-on forcible entry because acquired structures scheduled for demolition can be rare, especially in relatively new, suburban communities. Additionally, forcible entry training simulators may be beyond a small fire department's limited budget. Firefighters fortunate enough to find a door on which to practice forcible entry should maximize this valuable opportunity. You can force one door several times by wedging it closed by driving a flathead ax under the door. This will provide enough resistance for firefighters to repeatedly practice tool positioning and prying techniques. ●

● **BILL GUSTIN**, a 35-year veteran of the fire service, is a captain with Miami-Dade (FL) Fire Rescue and lead instructor in his department's officer training program. He began his fire service career in the Chicago area and teaches fire training programs in Florida and other states. He is a marine firefighting instructor and has taught fire tactics to ship crews and firefighters in Caribbean countries. He also teaches forcible entry tactics to fire departments and SWAT teams of local and federal law enforcement agencies. Gustin is an editorial advisory board member of *Fire Engineering*.

Tips for Improving Effectiveness in Forcible Entry

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To receive credit and your certificate of completion for participation in this educational activity, you must complete the program post examination and receive a score of 70% or better. You have the following options for completion.

Option One: Online Completion

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COURSE EXAMINATION

1. Preplanning forcible entry challenges often occurs informally during:
   a. public education presentations
   b. neighborhood surveys
   c. EMS responses
   d. food runs

2. A paint roller can be used as a forcible entry tool to:
   a. open panic hardware bars
   b. create a purchase point
   c. turn a lock cylinder
   d. "gap a door"

3. After forcing a commercial overhead door, you should secure it with a pike pole that is at least:
   a. 6 foot
   b. 10 foot
   c. 12 foot
   d. 16 foot

4. The presence of four bolt heads at waist level likely indicates the presence of:
   a. a drop bar
   b. panic hardware
   c. deadbolt lock
   d. fire exit hardware

5. When being used for forcible entry, a sledgehammer's head should be at least:
   a. 5 pounds
   b. 8 pounds
   c. 10 pounds
   d. 12 pounds

6. In addition to wedges, firefighters use what device to keep doors open?
   a. door hanger
   b. door stopper
   c. wedge extender
   d. hinge device

7. In their pocket, firefighters should carry a piece of webbing or rope that is at least:
   a. 4-6 feet
   b. 5-7 feet
   c. 6-8 feet
   d. 8-10 feet

8. A sledgehammer is superior to an ax as a striking tool because it has no sharp edges to injure firefighters and:
   a. is easier to carry
   b. can be "married" to a halligan
   c. is heavier, making it more forceful
   d. its handle is made of wood

9. The "traditional" lock pulling device is known as the:
   a. K-tool
   b. J-tool
   c. "lock-puller tool"
   d. ax

10. Forcing an overhead door in a warehouse will often lead to:
    a. the office area
    b. the main aisle in rack storage
    c. the hazardous materials storage area
    d. the sprinkler control valves

11. You can identify the presence of an inward-opening door by:
    a. the fact the door is made of wood
    b. the absence of hinges
    c. the presence of a deadbolt
    d. the presence of four bolt heads

12. A swinging door closes against a stop or a:
    a. rabbet
    b. rabbit
    c. bulkhead
    d. threshold

Tips for Improving Effectiveness in Forcible Entry

13. When dealing with hotel room key-card locks, the adz of the halligan tool should be placed:

a. at the top of the door
b. at the bottom of the door
c. directly over the lock
d. directly above the lock

14. When dealing with a metal door in a tight-fitting metal jamb, place the fork bevel:

a. toward the door
b. away from the door
c, at the top of the door
d. at the door's threshold

15. Most door thicknesses range from:

a. 1½" to 1¾"
b. 1½" to 1⅜"
c. 1½" to 1⅞"
d. 1⅜" to 1⅞"

16. Double deadbolts:

a. require that the occupant have a special permit for the lock
b. are illegal
c. have a key to open the lock on the inside of the dwelling
d. must be connected to a smoke detector

17. With a victim trapped behind a door with a wood jamb, firefighters "laying down" the door should first:

a. drive the adz or spike into the jamb
b. drive the fork into the jamb
c. attack the door lock with the ax blade
d. drive the ax blade into the door threshold

18. On an outward-swinging door with a multiple locks:

a. drive the fork between the jamb and door, between the locks
b. drive the adz between the jamb and door, between the locks
c. drive the fork between the jamb and door, above the top lock
d. drive the adz between the jamb and door, below the bottom lock

19. Fire departments often paint stripes on the fork:

a. 1½" to 1¾" from the end
b. 1½" to 1⅜" from the end
c. 1½" to 1¾" from the top
d. 1½" to 1⅜" from the top

20. A "stop" is typically made of wood, attached to a bedroom door's wood jamb, and approximately:

a. ⅛" thick
b. ¼" thick
c. ½" thick
d. ¾" thick

Notes

Tips for Improving Effectiveness in Forcible Entry

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If you wish to purchase and complete this activity traditionally (mail or fax) rather than Online, you must provide the information requested below. Please be sure to select your answers carefully and complete the evaluation information. To receive credit, you must answer at least six of the eight questions correctly.

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Last Name (PLEASE PRINT CLEARLY OR TYPE)

First Name

Profession/Credentials License Number

Street Address

Suite or Apartment Number

City/State Zip Code

Daytime Telephone Number with Area Code

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E-mail Address

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Mail or fax completed answer sheet to
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1421 S. Sheridan Road, Tulsa OK 74112
Fax: (918) 831-9804

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Examination Fee: $25.00 Credit Hours: 4

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Please provide the following (please print clearly):

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ANSWER FORM

Please check the correct box for each question below.

1.	❑ A	❑ B	❑ C	❑ D	11.	❑ A	❑ B	❑ C	❑ D
2.	❑ A	❑ B	❑ C	❑ D	12.	❑ A	❑ B	❑ C	❑ D
3.	❑ A	❑ B	❑ C	❑ D	13.	❑ A	❑ B	❑ C	❑ D
4.	❑ A	❑ B	❑ C	❑ D	14.	❑ A	❑ B	❑ C	❑ D
5.	❑ A	❑ B	❑ C	❑ D	15.	❑ A	❑ B	❑ C	❑ D
6.	❑ A	❑ B	❑ C	❑ D	16.	❑ A	❑ B	❑ C	❑ D
7.	❑ A	❑ B	❑ C	❑ D	17.	❑ A	❑ B	❑ C	❑ D
8.	❑ A	❑ B	❑ C	❑ D	18.	❑ A	❑ B	❑ C	❑ D
9.	❑ A	❑ B	❑ C	❑ D	19.	❑ A	❑ B	❑ C	❑ D
10.	❑ A	❑ B	❑ C	❑ D	20.	❑ A	❑ B	❑ C	❑ D

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Please evaluate this course by responding to the following statements, using a scale of Excellent = 5 to Poor = 1.

1. To what extent were the course objectives accomplished overall?	5	4	3	2	1
2. Please rate your personal mastery of the course objectives.	5	4	3	2	1
3. How would you rate the objectives and educational methods?	5	4	3	2	1
4. How do you rate the author's grasp of the topic?	5	4	3	2	1
5. Please rate the instructor's effectiveness.	5	4	3	2	1
6. Was the overall administration of the course effective?	5	4	3	2	1
7. Do you feel that the references were adequate?		Yes		No	
8. Would you participate in a similar program on a different topic?		Yes		No	

9. If any of the continuing education questions were unclear or ambiguous, please list them.

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