They mark the room and move on to the next.

This type of room clearance requires more training, but the benefits to be gained are worth the extra effort, and the training can also be interesting for the soldiers. Targets similar to those used by the FBI and SWAT teams should be developed for use in the Army's MOUT live-fire training facilities. Civilian targets should be mixed with opposing force (OPFOR) targets—and different objects could be placed in their hands, such as purses, cameras, pistols, or rifles—so that the assaulting soldiers could develop the proper reactions. MILES equipment could also be used for this training, and personnel in civilian clothes could be integrated with the OPFOR soldiers. Additionally, quick-fire training should be incorporated regularly as part of marksmanship training. Again, soldiers must be given an opportunity to develop their reaction time when fighting at close range.

These proposed changes would not completely eliminate noncombatant or friendly casualties in city fighting, but the positive effect on the morale of both the local population and the friendly forces would be of great advantage to an assaulting force. After all, an alienated local population can greatly hamper the accomplishment of both tactical and strategic objectives. And it is well to remember that noncombatant casualties receive much greater attention today than they did before the age of television and satellite communications.

Although ammunition requirements for urban operations would still be much greater than those for operations on open terrain, the proposed changes would reduce the overall amount needed. Since city fighting requires so much in the way of resources, our doctrine needs to accommodate, to a certain degree, our anticipated logistical constraints.

With an increasing likelihood of our fighting on urban terrain in future conflicts, our MOUT doctrine deserves closer study. Reducing civilian casualties and our logistical requirements would certainly improve our ability to accomplish MOUT missions. Incorporating the outlined proposals into our doctrine would accomplish these goals and contribute to the Army's continuing improvement in *AirLand Battle doctrine*.

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Live Fire Exercises

CAPTAIN WILLIAM B. CREWS

Live fire exercises require a considerable amount of an Infantry company's time and other resources, but they do not guarantee a good return on the investment.

At their worst, live fire exercises are counterproductive and potentially dangerous. More closely akin to demonstrations, they are characterized by numerous controllers and carefully rehearsed soldiers following a rigid scenario. Such exercises teach soldiers the wrong lessons, destroy their confidence in themselves, and teach their leaders absolutely nothing.

At their best, however, live fire exercises can teach soldiers more in a couple of hours than they would learn from days of blank firing and the leaders more than they would learn on countless FTXs. A properly designed exercise will tax a company's SOPs and find training weaknesses that otherwise would never come to light short of actual combat.

To conduct this kind of exercise instead of the worthless kind, a company commander must take several steps—securing resources, planning the exercise, organizing and preparing the range, appointing controllers, and then executing the entire exercise.

A live fire exercise begins with an ammunition forecast and a range request. The ammunition must include service rounds for all the weapons the exercising unit has. (The only exceptions are that 40mm target rounds are used instead of 40mm HEDP, and 35mm subcaliber rounds instead of LAWs; AR 385-63 mandates that live rounds from these weapons be fired into permanent impact areas.)

If the mission allows it, claymore mines, hand grenades, and demolitions should be used. In a light infantry company, it is better to use Dragon rounds against simulated bunkers instead of against armored hulks. The use of the Dragon in such a role is very likely, and both Dragon gunners and riflemen must become accustomed to its launch signature and its explosive effect.

After securing the needed resources, the company commander begins his planning. The mission he chooses for the training will be a function of the resources available and the battalion commander's training guidance. Limited training land may also restrict the type of mission and the unit echelon that can be trained. For a platoon live-fire exercise, for example, the ideal area is an installation with a low troop density. (A good example is Fort Hunter Liggett, California, where a unit can choose the real estate it needs instead

of using an established range.) In any case, the terrain should have easily identifiable features to facilitate control. The preparation of the range fan, in accordance with AR 385-63, can be as easy or as difficult as the range control officer chooses to make it.

Planning also includes deciding on the learning objectives of the exercises. The mission is not necessarily the learning objective. A movement to contact, for instance, may be used to reinforce the need to overwatch movement or to demonstrate the need for fire control measures and fire commands. Live fire missions are an excellent way to evaluate a unit's degree of proficiency in coordinating fire and movement, controlling the rate and distribution of its fires, breaching obstacles under fire, reconsolidating and reorganizing after contact, and evacuating casualties and captured equipment.

Once the mission has been decided upon, the range needs to be organized. The target array that will be used must be much more than simply a group of targets strewn about the landscape. Properly placed targets improve realism and act as both safety and control measures. It is important not to use too many targets—a platoon on a movement to contact should not confront more than seven to ten targets at a time; a squad on the same mission should not face more than three. Target banks can be arranged in sequence with the successive groups of targets representing a moving enemy force. The important point is that a unit should never face at one time more targets than it can realistically engage.

Aside from the IRETS (infantry remoted target system), there are basically four types of targets that can be used: simulated firing positions (such as sandbags to simulate a bunker), E-type silhouettes, remote-controlled pop-up targets, and oxy-acetylene machinegun simulators. Each of these devices has certain peculiarities but all of them have a place on any live fire range. A warning is in order on two of the systems, however. The control device on the remote-controlled targets often malfunction. (The targets are more reliable when they are "hot wired" and activated by two bare strands of WD-1 wire touched together.) This warning also applies to the oxy-acetylene machinegun simulators, which present the additional difficulty of keeping the proper gas mixture.

To allow for a more objective evaluation of accuracy and to provide an element of competition, it is useful to staple balloons to all of the targets. Subjective judgment must be used to evaluate suppression of a target.

When the remote-control system is being used, the receivers should be placed out of the target area and clustered together. This removes the receiver from the target area, improves reception, and makes maintenance easier by grouping the most troublesome devices.

When the "hot wire" method is to be used, the positioning of the bare wires becomes critical; the controller must wargame the exercise to see where he thinks he will be when the targets must be activated. Regardless of the system used, all wires must be buried two or three inches to give them some protection. Even so, some wiring will probably have to be replaced after each exercise.

LIMITS

Finally, the left and right limits of the range must be established. With the approved range fan as a guide, markers should be placed on either flank. In addition, a marker is needed at the start line and another at the last group of targets. The total number of markers used will depend upon the terrain as well as the training level of the unit. (A VS-17 panel is an excellent device for marking boundaries.)

The next step is formalizing the control plan, which is a critical point in the process. A well-conceived control plan will allow a unit to execute its mission with no interference, while a poor one may require changes in the unit's operations order and limit what can be done because of safety considerations. No doctrinally sound action should be stopped.

The first measure of control is the use of operational graphics. Boundaries, phase lines, and objectives add not only realism but also control. Imaginary units can be established to prevent certain maneuvers.

Controllers are then appointed, ideally one per fire team but at least one per squad. The senior controller also needs to play the role of the next higher commander. Unit leaders should be included in the control plan as well to supplement the dedicated controllers—if the unit leaders are to share the responsibility for control and safety in combat, they must have an opportunity to do the same in training. In fact, as much as possible, the exercise controllers should be inconspicuous observers. An overly aggressive controller can cause a leader to relinquish his duties to the controller and lead soldiers to wonder who is really in charge.

Controllers must walk their lanes several times and know all areas of them. An internal checkpoint system must be established so that each controller quickly knows where the others are.

For communications, each squad controller needs one AN/PRC-77 or AN/PRC-68 radio. The senior controller needs two nets, one for communicating with the other controllers and another to keep him in constant contact with Range Control. Ideally, a third net could serve as the company commander's or platoon leader's radio to allow radio communications with the unit on the range. Because most units do not have that many radios, however, face-to-face contact with the unit leader may be the only way to pass along instructions from the imaginary higher headquarters. This is not necessarily bad.

As a final step before execution, "stage props" can be placed on the range. These can take the form of OPFOR weapons strewn selectively about the objective, electrically detonated artillery flash simulators to simulate preparatory fires, and "blood-stained" field dressings in abandoned positions. Concertina wire will add a degree of difficulty as will Soviet-style mines (usually available from training aids centers). The addition of mines and wire will test supplemental mission skills as well as unit SOPs and the leaders' ability to think quickly.

If the mission is a night ambush or a night defense, a portable cassette player can add greatly to the realism. A tape containing troop noises—metal-on-metal contact, coughs, breaking branches—can create the illusion of an actual enemy. The best procedure is to record the noise at the very end of a tape but to start the tape at

the beginning. This will allow controllers to turn the tape player on before the unit is actually in position. In an ambush, the long time lag will serve as a good test of the unit's alertness, patience, and discipline.

When the unit arrives in the training area, the leaders are given their mission. The operations order (OPORD) or fragmentary order (FRAGO) must be doctrinally correct and must be prepared for one echelon above the unit going through the exercise. (A platoon leader should not receive a platoon OPORD from a controller!) When a leader is briefed on the location of the imaginary units to his left and right and on pertinent operational graphics, he is forced to create his own control plan to keep from firing on friendly units. This serves, to some extent, to keep fires within the range limits.

Before the leader issues his OPORD, he should be allowed to conduct a tactical leader's reconnaissance. This reconnaissance should allow the leader and his reconnaissance element to see what they could realistically be expected to see in combat. Unless range regulations require a unit to conduct a dry run of the exercise first, it should not do so, because dry runs destroy the realism of the training and can cause safety problems if leaders try to outsmart the scenario.

Before a leader gives his OPORD, he should back-brief the senior controller on the plan in the same manner as he would back-brief his commander before an operation. This will ensure that the leader has correctly interpreted the OPORD and has planned adequate internal control measures. It will also allow any necessary corrections to be made before the order is given to the soldiers.

After the OPORD has been given, a safety briefing must be conducted. The entire unit should be brought to one location and briefed personally by the company commander. This not only gets the information down to the lowest level, it gives the senior controller a chance to impress upon each soldier his safety responsibilities. Although this mass gathering damages realism and disrupts the continuity of the exercise, it is fairly well established that platoon and squad operations orders are not the most effective way to disseminate safety instructions. At the end of the safety briefing a *realism* briefing should be conducted. In essence, this briefing tells the soldiers, "do the mission as you would in combat" and "if it isn't safe here it's not safe anywhere."

Once the execution phase starts, some basic rules must be followed. Leaders must make their decisions without interference from the commander unless the problem is becoming disorganized. Above all else, simulation should not be allowed. Whether a task is breaching a minefield or treating a simulated casualty, it must be done to Soldier's Manual standards.

When the battle is joined, all the planning comes together, and soldiers orient their movement on the targets as the targets appear. With the targets selectively placed, the maneuvering units and their fires can be guided away from each other.

The use of MILES helmets and body harnesses and a control gun allows overly aggressive soldiers and fire teams to be suppressed without the controllers interfering with the problem. Selectively "wounding" and "killing" soldiers, along with MILES wound cards, can significantly slow the action down and also tax the platoon medic and the aid-and-litter teams. Care must be taken to "kill" leaders only if that is a planned situation to be injected into the exercise or if a leader obviously seems to consider himself invulnerable. The best candidates for simulated casualties are soldiers who are careless or inattentive to orders.

Suppressive fires can reduce entire squads to a slow crawl by making casualties of soldiers who do not respond to the simulated enemy fire. By using enemy action to set the pace at which units can maneuver, control can be more than adequately maintained without resorting to administrative measures.

Once an action has been completed, a thorough after-action review (AAR) should be conducted on the objective in the same manner as a MILES AAR. Immediate feedback should be provided to the unit on the number of targets successfully engaged as well as on the unit's losses.

If a live fire exercise is well-planned, it can be an invaluable training event in preparing for combat. For maximum value, each exercise must have a realistic scenario and a control plan that ensures safety and realism. Such an exercise is too costly in time and resources to be conducted any other way.

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Air Defense
With Small Arms

CAPTAIN ANTHONY J. O'CONNOR

The critical role that tactical air support has played in conflicts over the past few years points to a continuing role for it in the future. This means we must have a good air defense capability. Our current air defense artillery (ADA) weapons could control a great deal more air space than those of World War II, and we have almost twice as many of them. But the tac-