

Exploring an Approach to Training Observed Fire Procedures: The ModSAF Call for Fire Trainer

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In our quest to achieve the level of technical and tactical proficiency required of our future leaders to succeed, we must continue to develop new and innovative technologies and training. Additionally, we must exploit those existing technologies and look for new ways to apply them to the learning process. Future leaders at Fort Rucker, Alabama are being provided a new simulation experience based in part on an existing technology. The Modular Semi-Automated Forces (ModSAF) Call for Fire Simulator is providing new Army aviators the opportunity to execute calls for fire in a modern simulation environment.

The 1st Battalion, 145th Aviation Regiment, 1st Aviation Brigade has the mission of training Army aviation warrant officers, lieutenants, and captains. Classes generally average 40 warrant officers and lieutenants. Aerial adjustment of artillery is taught during the Basic Combat Skills portion of students' flight training. Army aviation students at Fort Rucker currently receive sixteen hours of classroom instruction on aerial adjustment of artillery. We can provide the student with the technical base of knowledge to perform a call for fire, but the application of that knowledge is another matter. Budgetary limitations and the lack of a firing battery at Fort Rucker prevent placing a student in an aircraft and executing an actual call for fire. The Training Simulator Forward observer (TSFO) is available, but is not designed to execute calls for fire from an aircraft. The TSFO, antiquated at best, only provides the view of a ground observer and does not allow the student to see "how it applies to me in the cockpit." Limitations on the types of fire missions are limited to the technology at hand. Taking hold of a "good idea piñata," put forward by my battalion commander, LTC Wade B. Becnel, of the 1-145th Aviation Regiment, we set out to develop a new training simulation to enhance existing instruction. In a matter of thirty days and within the existing budget, a system was put in place with unlimited capabilities to execute virtually all types of fire missions. With the assistance of our local Aviation Test Bed Simulation Center and with Lockheed Martin personnel providing the technical support, we developed the ModSAF Call for Fire Trainer (MCFFT).

Taking a bit of existing technology

The initial proof of principle entailed taking a portion of Aviation *Simnet* (Simulation Network) and remoting the system to a classroom. *Simnet* is a multimedia simulation system widely used throughout the Army. In its normal application, individual vehicle simulators are linked into a network to simultaneously conduct operations in a virtual environment. Under these conditions the soldier in the simulator must operate his vehicle, navigate, communicate, identify, and engage targets while achieving his objective. In our MCFFT, the student is not required to operate the simulated vehicle, but must still navigate, communicate, identify, and engage targets with the appropriate call for fire. After receiving instruction on the procedures for using indirect fires, the student is provided with a map of the terrain, a protractor, pen, and maneuver graphics (in the advanced phase). The student is placed in the position of an aerial observer, in this case an OH-58 Kiowa helicopter.

The aircraft is "flown" from a stealth station by the controller. The student is allowed to focus on the tasks at hand, locating and engaging targets in multiple scenarios. In the basic portion, the student is provided with examples of adjust fire engagements including grid and polar missions. Acting as the fire support element/fire direction center, the student will develop his call for fire and send it to the instructor, either orally or over a radio. The controller plots and executes the call for fire as requested by the student.

While the fire mission is being executed, the student can observe that they may need to mask/unmask or relocate while the guns are readied for delivery of rounds to the target area. The controller can execute these maneuvers from the stealth station. After the initial round is delivered, the student analyzes the adjustment required and sends it to the FSE/FDC. The direction is obtained when the student is placed in the cockpit view and obtains his heading from the computer-heading indicator.

Actual target effects are achieved when the student adjusts the rounds into the target area. The student receives additional instruction on advanced adjustment of artillery, which covers special missions such as immediate suppression and immediate smoke. The students also cover marking round missions for close air support and engagement of moving targets. These topics are covered in a second round of scenarios in the MCFFT. The student is given the opportunity to execute a shift from a known point, immediate suppression, smoke, and marking round missions. Each mission is offered in a progressive overall operation to apply the exercise to an actual mission. Additionally, the students are exposed to suppression of enemy air defense (SEAD) fires as they are attached to an air assault mission during the exercise. The type and number of scenarios that can be executed is limited only by the class time available. New scenarios can be generated in minutes and executed immediately. The terrain database can be altered to reflect Fort Knox, NTC, Hunter Liggett, Bosnia, or any other available ModSAF database.

The ability to provide Army aviators with an aerial observer's view greatly enhances the students' understanding of the call for fire process and how they can apply fires from the cockpit. However, other members of the combined arms team can utilize the simulation in the same manner. A tank, Bradley, or wheeled vehicle can be easily substituted in place of the aircraft. Dismounted operations can also be portrayed in the MCFFT. Target arrays can be single vehicles or large unit formations such as a motorized rifle battalion.

Adhering to the "crawl, walk, run" training methodology, leaders can capitalize on the use of ModSAF. The ability to expose the students to the *Simnet* environment and familiarize them with the terrain, navigation, vehicle identification, and communication is a valued training bonus. These bonuses can be realized in both the Close Combat Tactical Trainer (CCTT) and/or the AVCATT-A simulator. When the students occupy actual individual simulators, they enter into the training at a higher experience level. This will allow units to concentrate training time on missions rather than on familiarization. Additionally, the soldier is more apt to utilize indirect fires, because he understands how it works and what it will do for him. Units can perform rehearsals of operations prior to occupying the simulators, saving training time. The 1-145th is actively exploring ways to integrate ModSAF into additional combined arms applications for the captains and senior warrant officers.

ModSAF: An "Off the Shelf" Opportunity

Maximizing our training time and enhancing the readiness of our soldiers is something we all strive to accomplish. "Enabling knowledge speed to enhance and exploit maneuver speed" is one of the primary goals in achieving a higher level of technical and tactical proficiency. Now granted that the ModSAF Call for Fire Trainer utilizes off the shelf technology, it does so in a new and exciting manner. It has provided us the capability of a remote simulation that is now being used in the classroom, but could easily be remoted to any theater of operations for training and rehearsals of future operations. The ModSAF Call for Fire Trainer is helping us address problems noted during CTC evaluations including the lack of calls for fire from aviators and a lack of understanding of the observed fires processes. Additionally, we are using the MCFFT to review the observed fires principles with the Aviation Advanced Course captains. We believe that training with the MCFFT will bring about a deeper understanding of indirect fire capabilities and an aviator who is more apt to employ the field artillery system when appropriate. This training is required to maintain our fighting edge and winning spirit. The footprint is small and the equipment necessary can easily fit into the space of two foot lockers. In a classroom or a GP medium tent, the ModSAF Call for Fire Trainer has the potential to assist commanders in both addressing deficiencies and achieving the goals of today and tomorrow.

Student Responses:

“...This is the best use of simulation I have seen at Fort Rucker...”

“...ModSAF really helped me understand how to do a proper call for fire, GIVE ME MORE!”

“...Great simulation, allocate more time or even use ModSAF for the exam...”

What's the Bottom Line Cost?

The equipment utilized for our ModSAF Call for Fire Trainer is as follows:

1 Pentium desktop computer to power the LINUX based ModSAF software (cost with software \$7000.00*).

1 Pentium desktop computer to power the MS Windows 95 based *Meta VR Stealth* software (cost with software \$7000.00*).

2 LCD Projectors with screens (cost \$3500.00 each).

1 Uninterruptable Power Supply (UPS) (cost \$670.00).

Misc. supplies to conduct the exercise, i.e. *Simnet* maps, protractors, pens, and overlays (cost \$500.00).

Total hardware and equipment cost is approximately \$22,170.00. (* costs are approximate)

In addition to the hardware costs, it takes an estimated 40 hours to train a controller, if one is not available through your local *Simnet* facility. Several terrain databases are included when you purchase the ModSAF system. If additional databases are required, they can be purchased separately.

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