

The Future of Marine Corps Close Air Support: The Urban Environment

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The Future of Marine Corps Close Air Support:  
The Urban Environment

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# Report Documentation Page

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## **Introduction**

On December 17, 1903, Wilbur and Orville Wright flew their historic first flight at Kitty Hawk, North Carolina. Their flight changed the world in many ways, and one change was the use of aircraft in the military. The Marine Corps started using aircraft as early as 1914, leading to what is now known as offensive air support, which officially entered into existence during World War II. In 1935, close air support (CAS) was formally established in a document entitled Tentative Landing Operations Manual that provided the foundation for modern CAS. Although many changes in aircraft and their capabilities have occurred since 1935, close air support has remained an integral part of a Marine air-ground task force (MAGTF) as one arm of a combined arms team. As more of our nation's conflicts occur in urban areas vice rural areas, changes to tactics and training will be necessary to provide effective close air support.

## **CAS and FAC defined**

Offensive air support (OAS) is one of the six functions of Marine Corps Aviation. OAS is subdivided into two categories, deep air support (DAS) and CAS. The purpose of CAS is to provide the MAGTF with flexible and responsive fire support through the use of aircraft. CAS

is defined as, "air action by fixed and rotary-wing aircraft against hostile targets that are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces. This detailed integration is accomplished using positive control that is provided by terminal controllers, i.e. FACs (Forward Air Controller) or FAC(A)s (Forward Air Controller Airborne)."<sup>1</sup> A FAC is a qualification taught at Tactical Air Control Party (TACP) School, and is the same for FAC(A), which means that the qualification is based on the pilot flying the aircraft, not the type of aircraft. For example, not all F/A-18 pilots are qualified as FAC(A)s. The Marine Corps currently has two aircraft that can designate pilots as FAC(A)s, the F/A-18D Hornet (two seat version) and the AH-1 Cobra helicopter. The FAC or FAC(A) provides the necessary information to the attack aircraft pilot by use of a nine-line format brief. The following is contained in a standard brief:

- 1) IP: Initial Point to be used for attack aircraft to start their attack run.
- 2) Heading: Attack heading from the IP to the target.
- 3) Distance: Distance in nautical miles from the IP to the target.

- 4) Elevation: Elevation of target.
- 5) Target description: Type of target.
- 6) Location: Universal transverse mercator (UTM) grid coordinates or Latitude/Longitude of target.
- 7) Mark: Type of mark used to help pilot acquire the target.
- 8) Friendlies: Azimuth and distance of closest friendly troops to the target.
- 9) Egress: Direction for the attack aircraft to leave the target area.

TOT (Time on target): Time of bomb's impact on the target.

Remarks: Any additional remarks needed for a successful attack.

The FAC provides terminal control in one of three ways, which are designated Type I, II, and III. Type I CAS means that the pilots may not release weapons until the FAC has made visual contact with both attacking aircraft and the target environment and has given the pilot clearance to release weapons. For type II CAS, the FAC has to have visual contact with either the attacking aircraft or the target environment but not both. Type III CAS is the least restrictive, as pilots have clearance to engage targets that are not necessarily in direct contact with friendly

forces. The aircrews acquire and engage the target while the FAC monitors their activity. The FAC has the authority to either clear the pilot to release ordnance or abort the attack run.

### **Factors that can effect CAS**

Many factors determine whether or not CAS aircraft can effectively engage targets. Some of these factors, such as weather and the fog of war, cannot be controlled, but other factors, such as aircraft capabilities, rules of engagement, and the experience of the aircrew and FAC can. Aircraft capabilities are always improving, making the aircraft much more user-friendly for pilots. Recently, aircraft equipment such as radar, FLIR (forward looking infra-red), and various targeting pods have helped pilots acquire targets. Target acquisition is one of the most important and most challenging aspects of CAS. Attack pilots are trained to deliver weapons accurately, as long as they can see the target. Rules of Engagement (ROE) can also hinder the pilot's ability to locate targets. For example, during the first few weeks of OIF I, attack aircraft abided by a minimum altitude restriction of 15,000 feet in order to keep out of range of enemy air defenses. At 15,000 feet, and without the aid of a targeting pod, it

was difficult to visually acquire a vehicle sized target, and identifying it was virtually impossible. Aircraft capabilities like the targeting pod not only help pilots acquire targets, but they also aid other aircraft in acquiring targets by use of laser designators and infrared (IR) markers. These capabilities are often used by FAC(A)s to mark the target for attacking aircraft as well.

### **Urban CAS**

Urban CAS presents unique problems that traditional CAS in a rural environment wouldn't have. The first problem is, again, target acquisition. In an environment where many buildings look the same and are in close proximity to each other, a good FAC must be able to provide a verbal description of the target area to get the pilots looking at the proper target (talk on). The FAC must also incorporate some sort of mark to provide a quick and effective talk on. Another problem in urban areas is the close proximity of friendly troops and civilians. This proximity makes it essential for aircraft to carry precision-guided munitions (PGM) to prevent fratricide and collateral damage.

Another challenge the Marine Corps has faced recently is the capabilities of the FAC. FACs recently deployed to

Iraq and Afghanistan have said that the equipment was both inadequate and inconsistent. A target designator, range finder, and IR pointer are essential tools. The most popular type of laser designator is the Infrared Zoom Laser Illuminator (IZLD) which has the capability to mark targets with an infrared beam. This capability allows almost instantaneous target acquisition and is considered the best way to mark a target.<sup>2</sup> All of these new capabilities help the pilots and the FACs, but there is still room for improvement.

### **Recent changes to Marine Corps CAS**

The recent deployment of Marines to both Afghanistan and Iraq inspired changes to Marine Corps CAS, but more changes are needed for the future. One big change has been the use of Keyhole CAS instead of traditional CAS. For Keyhole CAS, the FAC first reads the target location to the pilot and then gives him or her a radial (heading) and distance from the target from which to either hold or commence the attack. This method works well in a low-threat environment. In traditional CAS, the aircraft would hold at contact points further away from the target to keep out of the range of surface threats. Keyhole CAS allows FACs to stack numerous aircraft near the target in

different directions, which can be controlled more expediently. This method was recently used quite effectively in the towns of Hit and Fallujah.<sup>3</sup> FACs and pilots deployed recently to Iraq and Afghanistan have agreed that the use of a nine-line brief was rarely used. Keyhole CAS is currently a Tactics, Techniques, and Procedures (TTP), but should be added as doctrine soon.<sup>4</sup>

Another new concept that was used in Fallujah was dividing the town into sectors, labeling the streets, and numbering all of the buildings. Maps with these labels were distributed to both the FACs and pilots. In addition to the building numbers, there were also coordinates listed to correspond to the buildings. The use of labeled maps was an exceptional way of providing the pilot with a quick talk on to a target.<sup>3</sup> A typical transmission from a FAC would be, "The target is building 1040." The pilot would then type in the grid coordinates associated with that building and cue the aircraft sensors to it. He or she would then describe the target to the FAC to confirm it. This method proved to be extremely efficient, with or without the use of a laser or IR marker to confirm the target.

The use of inert weapons to reduce civilian casualties and collateral loss was another tactic employed during OIF

I. Some Marines have complained that the use of inert weapons was ineffective. The weapons damaged the buildings but lacked the firepower needed to do any serious damage.<sup>3</sup> One other capability in the works is Target Locator Designator Handoff System (TLDHS). It is a system that digitally sends the information from a nine-line brief to aircraft through a data burst transmitted by the radio, but voice communication is not required. TLDHS is a high tech concept but doesn't provide anything that can't already be accomplished by traditional methods. The pilot still needs to talk to the FAC to confirm the proper target, especially in urban areas.

UAVs (Unmanned Air Vehicles) have surfaced lately as a new capability that can be used in CAS. Typically, UAVs are used by different branches of the military to provide real time reconnaissance. Some new versions of the UAV, such as the Predator, can carry limited amounts of ordnance, such as the AGM-114C Hellfire missile and the FIM-92 stinger missile, and can provide a much greater time on station than manned aircraft. Although they are being used in DAS type flights, work is in progress to incorporate them in CAS flights as well.<sup>5</sup>

### **Training for Pilots and FACs**

CAS training needs to be changed so that all Marines have access to realistic training, to include urban environments. Currently, there is only one target complex in the United States for Marine Corps aircraft to practice urban CAS. It is located at a range near Marine Corps Air Station (MCAS) Yuma, Arizona, and it provides realistic training.<sup>3</sup> Ground fired indirect fires are prohibited, so a traditional marking of the target is the only limitation. The talk-ons and urban CAS training are very realistic, but an east coast squadron only gets to train about once a year because of the training facility's remote location. Annual training hardly provides enough opportunity for east coast squadrons to train effectively. An urban CAS range that can be used by all Marine Corps aircraft on the east coast is a much needed asset. Another training limitation has been the employment of precision guided munitions like the ones used in urban CAS. "On the job training" during combat deployments was typical for many junior pilots. Pilots need realistic training prior to deployments instead of learning in combat environments.

### **Changes required for the future**

The Marine Corps is generally proficient in its training for and execution of Close Air Support; however, CAS training and execution needs improvement. The first

change needed is to provide more frequent training in urban environments for both pilots and FACs. Creating an east coast urban range would allow all east coast pilots to train more frequently. It is also necessary to allow pilots to train with the precision weapons required in urban areas prior to deployments. Critics might say that the Marine Corps can't afford to shoot live weapons, but eliminating unnecessary programs such as TLDHS could provide the necessary funds. The development of Keyhole CAS and the continuance of traditional nine-line CAS will help ensure effective CAS operations. Tactics that work in one area of operations may not be suitable in others, so Marines must be prepared for both types of missions. The Marine Corps must remember the saying "train as you fight" and continue to use every means necessary to provide the Marines on the ground the flexible and responsive firepower that aircraft can provide, especially in urban areas.

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<sup>1</sup> United States Marine Corps, MCWP 3-23 Offensive Air Support, 2-2.

<sup>2</sup> Matthew S. Ducar, James B. Hunt, James K. McBride, *Joint Aviation in Operation Enduring Freedom V*, Marine Corps Gazette, Nov 2004, 35.

<sup>3</sup> Colonel Dunard, M.E., United States Marine Corps, *Urban Close Air Support (Urban CAS): A summary of collected lessons, observations, interviews, after action reports and relevant documents from OEF, OIF I, and OIF II*, April 2005.

<sup>4</sup> Jansen, Dienna, et al. *Lines one through three....N/A*, Marine Corps Gazette, April 2003, 32-36.

<sup>5</sup> Jay Stout, *CAS using Armed UAVs?*, Proceedings of the United States Naval Institute, July 2005, Vol 131, 28-32.

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