AC-130 Employment

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Author Captain Robert Hornick, USMC

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Opening

Neutralizing a company of enemy tanks in a city within minutes, or killing an enemy sniper positioned in an attic, without causing any collateral damage, is thought to be impossible; the truth is just the opposite. In today's world most of the conflict is taking place in urban settings. Troops on the ground are finding themselves in need of constant, reliable, and up-to-date intelligence. At the same time the troops need air support available at a moment's notice whose purpose is not to destroy an entire building or city block, but to kill or capture a single target in a specific room in a building. The AC-130 gunship is an aircraft that can provide all of these needs. Regrettably, there are too few AC-130's in the inventory to cover all the needs of troops on the ground. Future operations, especially those in urban terrain are battles in which collateral damage will not be tolerated. An AC-130 capable of employing lethal and non-lethal fires is an answer to this problem. The Department of Defense must build more AC-130s and continue to develop them for future operations because they are the most versatile aircraft the military owns.

AC-130 as a CAS platform

The primary missions for the AC-130 are close air support, air interdiction, and armed reconnaissance. Other missions include perimeter and point defense, escort, landing, drop and extraction zone support, forward air control, limited command and control, and combat search and rescue. During the last few years, Marines have found the AC-130H/U gunship to be the favored aircraft used for close air support. This is especially true for Operation Iraqi Freedom II, in which Marines found most of the fighting to be in urban settings. A few reasons for this favoritism include: accurate and sustained firepower, time on station, and advanced optics.

AC-130s carry a lethal mix of firepower that varies slightly depending on whether it is an AC-130(H) Spectre, or AC-130(U) Spooky model. Both models are equipped with a L60 40mm Bofors cannon capable of firing up to one hundred rounds per minute as well as a M102 105mm howitzer capable of shooting six to ten rounds per minute. Spectre models are equipped with two M61 20mm GAU-4 Vulcan cannons capable of firing four or six thousand rounds per minute, where the Spooky model has one 25mm GAU-12 gatling gun capable of shooting eighteen hundred rounds per minute. Standard load

outs for each weapon are as follows: three thousand rounds for the GAU-4 and GAU-12, two hundred fifty six rounds for the L60 40mm, and one hundred rounds for the 150mm. The accuracy of fire and its use in urban settings can be seen in the following statement:

> The AC-130, call sign “Basher” became a ubiquitous and re-assuring presence over the city at night. By using the IR fireflies and strobes to mark friendly positions, Basher’s highly destructive and accurate ordnance could be brought to bare within 200 meters or less of covered troops. The AC-130 was often the only CAS platform that could be used in the city because of the proximity of friendly troops. In most cases, this was the first time that USMC battalions had had an opportunity to work with this aircraft since it is normally used in support of Special Forces.[1]

Marine Corp jet aircraft need approximately five hundred meters or more from friendly troops to engage targets, making the AC-130 the weapon of choice in urban environments.

Time on station or an aircraft’s loiter time is important in combat, especially in urban fighting. The key reason for a longer loiter time is the increased situational awareness (SA) for the aircrew. A jet aircraft traveling in excess of five hundred miles per hour to a target has barely enough time to get the required information to identify the target let alone get a good

understanding of what else is happening all around him. After weapons release the jet has to egress the area to line up for another run. AC-130’s can loiter for up to six hours over an area, which allows the crew to build incredible SA. Also, since AC-130’s are FAC(A) capable, the number of time consuming turnovers between FAC’s and FAC(A)’s can be reduced, allowing for a more seamless fight.

In addition the AC-130 has optics and sensors unlike any other aircraft in the United States Military’s inventory. They are equipped with low-light television cameras capable of viewing targets in the near-infrared (IR) spectrum. This capability allows the crew to work with its own laser and ground IR pointers and engage two targets simultaneously. In addition, the magnification and resolution are much greater than that of the LITENING II targeting pod carried on the AV-8 and F/A-18. This technology allows the crew to place rounds with first round accuracy. Using synthetic aperture radar allows the crew to map the ground through cloud layers, giving them an all weather capability. “Also, since it [radar] can track several types of ground beacons, it can provide CAS to ground forces employing a beacon. By using an offset

direction and distance given by the ground FAC, the gunship can engage targets in close proximity to friendly forces while shooting through a cloud layer."[2]

Airframes and employment

Given the AC-130s wide variety of missions, and the fact that it is a high demand low density aircraft, it is hard to believe there are only twenty-one AC-130's in the inventory. Due to the low number of aircraft and the unwillingness to put the aircraft in danger, the AC-130 is currently only employed at night.

In addition, night employment is mainly preferred due to the fact that most sensors aboard the AC-130 are designed for use at night; using heat contrast or an IR signature to locate a target. A large consideration for the AC-130's night employment is that it must circle at seven to ten thousand feet above the objective area to be within its optimal firing parameters.[3] At these altitudes it is susceptible to man pad threats. In the current operating environment the threat level dictates how the AC-130 is employed.[4] If troops on the ground only fought at night there would be no problem with the AC-130's current employment, but the fact is troops fight day and night

making it necessary to refine the gunship's use during daylight hours.

A recent, real-world example of the AC-130's use is the battle for Fallujah. Troops in Fallujah witnessed the awesome firepower of the AC-130, but only at night. "The AC-130 – what a great platform," says one Army officer in Iraq. "When it's flying, the insurgents are killed by the buckets. However, they will not fly during the day … In Fallujah, we had a better time during periods of darkness, and in the day [we] experienced difficulties because of the absence of the AC-130."[5] Ground commanders understand why the AC-130 is not employed during daylight hours in areas with an active man pad threat, but they argue that the Air Force Special Operations Command (AFSOC) is ignoring the intelligence and actual capabilities of the insurgent. "Not only do the Russian-style surface-to-air missiles found in Iraq top out in range below the AC-130's normal operating altitude, but these insurgents are operating with old, worn-out equipment."[6] The only reasonable argument made by the AFSOC is that due to the time it would take to repair a damaged AC-130, the aircraft should just be flown at night when the chances of being damaged are slim.

More AC-130 aircraft should be added to the inventory to allow for its use during the day. Seeing as they cost approximately seventy-two million dollars each, and the Department of Defense is trying to cut back on spending, there is much opposition to this option. But the simple fact is that this aircraft is the most versatile in the inventory, and it plays such a significant role in supporting troops on the ground that it is worth every penny spent. With more aircraft in the inventory, the damage to a few aircraft would not be as crippling. Ground and AFSOC planners need to see eye to eye on what the real threat is and plan accordingly. The overall mission is to support ground troops when they need support, whether it is day or night.

## Future Operations

Military engagements are becoming more and more “people friendly” in that massive damage to the infrastructure of the country will not help the military goals. The enemy is one who does not fight in the traditional sense of face to face. The current enemy hides among the populace and uses the innocent as shields and their homes and places of worship as safe haven. The military is finding itself involved in Military Operations

in Urban Terrain (MOUT) more often. The uses of non-lethal weapons are becoming more popular especially with the public growing weary of innocent civilian casualties. Future operations are going to rely on non-lethal weapons to minimize lose of life and the AC-130 is the perfect platform to employ these non-lethal weapons.

The DoD defines non-lethal weapons as “Weapons that are explicitly designed and employed so as to incapacitate personnel or material, while minimizing fatalities, permanent injury to personnel, and undesired damage to property and the environment.”[7] Non-lethal weapons are ultimately intended to have relatively reversible effects on personnel or material. They are generally placed into two categories: anti-personnel, and anti-material.

There are a variety of non-lethal anti-personnel weapons: optical, physical restraints, low kinetic impact, and directed energy-high power microwave. Optical weapons are low powered lasers designed to disrupt human vision or optical sensors. These lasers can temporarily damage optic nerves to render the target blind for a short duration of time. Physical restraints are designed to immobilize personnel by use of super adhesives, binding coatings, anti-traction compounds, and foams. Low kinetic impact

weapons are projectiles that stun targets upon impact. “Examples of low kinetic weapons are rubber bullets, sting balls, SPLLAT (Special Purpose Low Lethality Anti-Terrorist shell) and low-KE rounds.”[8] Directed energy-high power microwave (HPM), also called the active denial system fires a millimeter wave electromagnetic energy beam over long distances. The beam penetrates 1/64$^{th}$ of an inch in to the skin causing the water molecules to heat up, resulting in an extreme burning sensation.

Anti-material weapons are similar to anti-personnel weapons only they do not target personnel. These weapons are designed to blind optical sensors or targeting devises, disabling electronic equipment, and causing computer driven systems to fail. There are two anti-material weapons currently being designed for use in aircraft: chemical and electromagnetic pulse (EMP). Chemical non-lethal munitions are super acids, caustics, or aggressive agents designed to eat through any type of material.

These weapons would require precision delivered fires, such as those the AC-130 can provide. These weapons rely on the fact that small amounts of damage to key points on any system or machine can render it ineffective. For example, a 40mm shell loaded with a metal eating acid is used to

target the engine blocks of vehicles or tanks. The acid eliminates collateral damage while rendering the target ineffective. Electromagnetic pulse weapons simply deliver high energy pulses capable of destroying or damaging electronic components. Today’s reliance on computers to run the simplest equipment makes this a very dangerous weapon.

The weapons mentioned above are currently being tested. There is currently a laser system and active denial system designed for the AC-130. In fact the active denial HPM is expected to be integrated into the AC-130 in 2008.[9] The physical restraint, low-KE, and chemical weapons exist, and only need to be fitted for munitions the AC-130 currently uses, a process currently being worked on. The use of these weapons could change the face of combat in the near future.

Imagine an aircraft with the ability to target a single person in the middle of a crowd without bringing permanent harm to him or those around him or an AC-130 loaded with chemical munitions capable of eating through four feet of steel and rendering a tank battalion useless in the matter of minutes. With the public becoming less and less accepting of death, these non-lethal weapons will be the future of combat.

## Conclusion

The AC-130 is the most versatile aircraft in the Department of Defenses' inventory. It has a use in almost every type of combat or military operation. Its use as a CAS platform is unparalleled at night. Successful use of the AC-130 is dependant on integrated planning, intelligence, and employment to allow for its use any time of day. More airframes must be added to the inventory to allow the AC-130 to deploy to the many different areas the military is operating in today. In future operations, the use of AC-130's, capable of delivering lethal and non-lethal fires simultaneously, will bring a new era to air support and combat operations.

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[2] Alexander W. Johns. "Slayer for the Masses." Marine Corps Gazette, May 2005, Vol. 89, Iss. 5; Pg. 44. Retrieved November 20, 2005, from Proquest database.

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[5] Elaine M. Grossman. "Troops in Fallujah lost bid for daytime AC-130 gunship fire support." Inside the Pentagon, 25 November, 2004; pg. 2. Retrieved November 20, 2005, from MCU research archives.

[6] Elaine M. Grossman. "Troops in Fallujah lost bid for daytime AC-130 gunship fire support." Inside the Pentagon, 25 November, 2004; pg. 3. Retrieved November 20, 2005, from MCU research archives.

[7] Justin L. Bobb. Non-Lethal Weaponry: Applications to the AC-130 Gunships. Maxwell AFB; Alabama, 2002; pg. 1.

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