

Iraq and the AC-130: Gunships Unleashed

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The article below, originally published in the Joint Force Quarterly, was written to improve AC-130 tactics in the Iraq theater of operations. Not surprisingly, technology and hardware play an enormous role in present gunship tactics and are the foundation for the gunship's inherent strengths and weaknesses. Tactics do not change easily in today's Air Force and improvements in technology and hardware can be even more difficult. The Vietnam War saw the invention of the side firing gunship (AC-47), two entirely new versions of the gunship (AC-119 and AC-130) and a mind boggling improvement in sensors and firepower in less than eight years. From eyeballs to electro-optical sensors and 7.62 caliber miniguns to 105 mm howitzers, Air Force personnel and contractors set a benchmark for wartime innovation.

Partially responsible for the less than optimum tactics in Iraq is the lack of knowledge of the gunship's technological advantage in irregular warfare. Deceptively simple and mostly limited to the niche role of special operations close air support, few see past the destructive capability of the rapid fire 105 mm howitzer. Perfectly suited though for the insurgent fight is the 40 mm Bofors cannon. Able to strike a target with a single 2.5 lb HE warhead with ten seconds notice for hours at a time, the gunship carries a warhead equivalent to one carried by an individual dismounted soldier. Equally unique is the steep trajectory of gunship rounds that nearly eliminates ricochets and inadvertent strikes of surrounding urban structures.

Take special note of the first sortie described in the article, and carefully consider the air asset, which was enroute to an unrelated tasking at the time, that finds and sorts hostile insurgents. The gunship subsequently notified the engaged units' command and control before the unit itself could call for help. Persistent, incredibly aware, and able to strike with a single 40 mm round, the technology and hardware behind the gunship cause America's most elite infantry units to be very wary of a mission that doesn't have its support.

Giving great hope to gunship advocates is the recently announced plan to procure the AC-27 "Stinger" gunship. Much smaller and less expensive than the AC-130, its creation has the potential to revolutionize gunship employment and the Air Force's contribution to irregular warfare. The AC-27's substantially lower cost and reduced crew and signature will go a long way to ease the risk aversion ever present since an AC-130 was shot down in the first Gulf War. It is also quite likely that a substantially cheaper gunship will result in US marines and soldiers determining that what's practically mandatory for America's special forces units should be mandatory for all infantry units. In the end, tomorrow's gunship tactics and combat effectiveness will only be limited by the skill and flexibility of her crews and the technology and hardware produced by today's scientists and engineers. — Major Seifert

Slayer 74, an AC-130U side-firing gunship, was en route to Fallujah, Iraq, on October 5, 2003, to work with a joint terminal air controller (JTAC) from the 82d Airborne Division on a routine countermortar mission. Approximately 5 minutes from Fallujah, the pilot, equipped with night-vision goggles, noticed surface-to-surface fire through the small window by his left foot. He immediately rolled into a 20-degree left bank and talked his infrared and all low light level television (TV) sensor operators onto the tracers. In less than 30 seconds, they had identified stationary U.S. military vehicles and several suspicious individuals fleeing the area.

Already in contact with the JTAC for the upcoming mission, the gunship navigator notified him of the likely insurgent attack, the precise coordinates of the attack, and the fact that the gunship was tracking the fleeing individuals in an unpopulated area. Within 2 minutes, an attack was confirmed on friendly forces at the location passed by the gunship, and Slayer was cleared to engage the enemy force. Only seconds away from being hit with a 105-millimeter (mm) warhead, the fleeing insurgents joined several personnel and their vehicle, prompting a request for further guidance from the JTAC. The JTAC Army commander said to hold fire and to track the car while he assembled both a helicopter and ground quick-

reaction force. With 3 hours of loiter time, the infrared and TV operators patiently tracked the insurgents as they drove off. The car traveled to a house where some of the insurgents got into a second vehicle and then proceeded to three other houses, depositing accomplices at all houses and a suspicious coffin-sized box at one.

With a flight of Army OH-58 Kiowa helicopters, two A-10s, and a Joint Surveillance Target Attack Radar System (JSTARS) assisting, the gunship crew kept a simultaneous watch on the four houses and two vehicles as they waited approximately 2 hours for the quick-reaction force to be formed, briefed, and driven to the first two insurgent compounds. Wanting maximum time on station for the compound assaults, the gunship departed for aerial refueling, leaving the A-10s and OH-58s on scene. Returning in less than 30 minutes from the KC-135 and now with 4 hours of playtime, Slayer provided armed escort to the two quick-reaction forces and covered the armed assault of the four insurgent houses over the next 3 hours. Those assaults resulted in 15 insurgents captured, 4 anticoalition houses identified and exploited, and 12 rocket-propelled grenades and AK-47s recovered from the suspicious box that Slayer witnessed the insurgents burying. The infrared operator actually walked the troopers to the location of the box and told them where to start digging.[1]

This article originally appeared in Joint Force Quarterly, Issue 45, 2nd Quarter 2007, which is published for the Chairman of the Joint Chiefs of Staff by National Defense University (ndupress.ndu.edu). Reprinted with permission.



The AC-130 40mm Bofors cannon. (Photo courtesy of Robert J. Seifert)

Although a relatively minor setback to the insurgent cause in Iraq, this defeat at the hands of the AC-130 was undoubtedly devastating in the psychological effect of an apparently all-knowing American force able to strike with speed, precision, and minimum force. More importantly, it provoked the AC-130 pilot, the present author, to begin questioning what Carl von Clausewitz would likely call the “routine methods” of gunship employment at the highest level.[2]

The purpose of this paper is to save American lives and improve the chances of a successful outcome in Iraq. Costly and demoralizing attacks continue unabated against coalition and Iraqi ground forces. Working hard to support these forces are AC-130 gunships and crews. They fly every night in Iraq but rarely identify a single insurgent due to the inefficient manner in which they are requested by the Army and employed by the Air Force. This article shows how a simple yet fundamental change in AC-130 employment can kill or capture more insurgents, save friendly lives, and improve prospects for coalition success.

PRESENT EMPLOYMENT

Close air support is the present mission of the AC-130 in Iraq.[3] Night after night, at least one AC-130 launches to fulfill one or more air support requests (ASRs). The ASRs are prioritized and approved by the Joint Special Operations Air Component, which is the air component of the Combined Forces Special Operations Component commander who exercises operational control of the AC-130. The organizations supported are often individual Special Operations Forces (SOF) units with the remainder of AC-130 support going to conventional Army, Marine, and coalition regiments and brigades. The SOF teams usually have a defined operation for the AC-130 to support, and the conventional units usually have the AC-130 searching for

insurgents in its individual brigade or regiment area of operations. A typical mission has the AC-130 supporting a single brigade’s ASRs followed by aerial refueling and another 2 hours with another brigade or SOF team. While well intentioned, this method of employment does not fully exploit the great potential of the AC-130 to hunt and kill insurgents, nor does it benefit from lessons learned in aerial conflict over the past 60 years.

Field Manual 100-20. In North Africa, in the early months of World War II, ground commanders insisted on dedicated defensive umbrellas, which Airmen derisively labeled as “penny packets.” This misuse of offensive-minded Airmen and their aircraft was partially responsible for the significant Allied losses at the Kasserine Pass in Tunisia in 1943 and contributed to the publication of War Department Field Manual (FM) 100-20, Command and Employment of Air Power. Signed into doctrine by General of the Army George C. Marshall, it has been called the most striking policy statement in Air Force history. Besides stating that ground and air forces were coequal, this doctrinal watershed demanded the centralized command of air forces, which has been accepted by ground and air forces after years of rigorous debate.[4]

Today’s AC-130 defensive umbrella of individual ground units resembles the penny packets of the North African desert. Present gunship employment methods require individual ground units to submit an ASR that details the time, location, and reason for the requested support. If approved, the gunship shows up on time for the appointed duration. It is a convenient way to employ the gunship, but a comparison of the highly effective sortie at the beginning of this

AC-130 gunner scans ground for threats. (Photo taken by Denise Boyd and provided courtesy of US Air Force)



AC-130U Spooky gunship (Photo courtesy of US Air Force)





Airman uses weapons control booth onboard AC-130U Spooky gunship to target and fire 105mm howitzer on practice range. (Photo taken by Greg L. Davis and provided courtesy of US Air Force)



AC-130H preparing for takeoff. (Photo taken by Susan Foreman and provided courtesy of US Air Force)

article and the ineffective sortie synopsis that follows should help to explain the need for a review of present gunship employment.

Tasked to Al Hayy. Ten months after finding and helping to capture the 15 insurgents and their weapons cache while en route to their assigned mission, a subsequent sortie sent the author to support a ground unit in Al Hayy for approximately 5 hours, with an aerial refueling in the middle. The second uprising of the Mahdi militia was in full swing in southern Iraq, and the crew was optimistic that an opportunity to engage insurgents would present itself. Unfortunately, 15 minutes after arrival on station, it was obvious to the crew that the chance of engaging insurgents in Al Hayy was slim to none. The two visual sensors and pilots (equipped with night-vision goggles) had searched the town for activity, located the friendly positions, and received a situation report from the JTAC that revealed an absence of observed insurgent activity and no plans for friendly offensive operations. With no option but to stay and wait for the scheduled tanker rendezvous time, the infrared and TV sensor operators repeatedly searched the town for anything remotely interesting that could be passed from the navigator to the local tactical air controller.

The trip to the tanker and the subsequent aerial refueling were uneventful until the return leg to Al Hayy, which happened to pass just north of the city of Najaf. Najaf was the location and inspiration of the August uprising but was without a gunship due to either a failure to submit a support request or a determination that the Najaf ground force commander's need was not as compelling as those units in Al Hayy and Fallujah. Be that as it may, the crew swung into action when the copilot spotted significant surface-to-surface fire in the city, which surely indicated that the Marines in Najaf were under attack.

Having worked with the Marines there previously, it took less than a minute to get their JTAC on the radio and inform him of the

gunship crew's situational awareness and nearby location. The JTAC confirmed that he had troops in contact and asked for immediate assistance. Unfortunately, the aircraft commander had to notify him of his inability to assist due to assignment to another unit. The aircraft commander told the JTAC to make a request immediately to the Air Support Operations Center (ASOC) and told him that he would also call to try and get released from his Al Hayy tasking.

Unaware as to how quiet Al Hayy had been, and probably due to the fact that the Marines' request for help had to travel from the ASOC to the Combined Air Operations Center to the Special Operations Liaison Element to the Joint Special Operations Air Component and then to the Air Force Special Operations Detachment, the decision was made for the gunship already tasked to the town of Al Hayy to complete its assigned mission. The gunship assigned to Fallujah, 30 minutes away, would be diverted to support the Marines as it was almost complete with its current mission. The author kept the frequency open with the Marines, hoping for a change in tasking, but the last call heard was the same JTAC clearing medical evacuation helicopters into his airspace to pick up the very Marines that the pilot and copilot had witnessed being attacked.

Due to the continued lack of insurgent activity at Al Hayy, the gunship was ordered home and landed with 3 hours of fuel in the tanks. Adding to the frustration was the fact that this sortie was the fourth night in a row "supporting" quiescent ASRs. The crew did not engage a single insurgent on any of the five sorties, even though August 2004 was one of the most violent months of the insurgency.

PAST EMPLOYMENTS

Gunships on Call. History supports the consideration of a different employment technique for Iraq's gunships. Early in the Vietnam War and before the AC-130 was born, the AC-47 gunship arrived in-the-

ater with what was then the 4th Air Commando Squadron. Within the first year of operation in South Vietnam, “Spooky” had defended 500 outposts and in a single 90-day period claimed to have broken up 166 enemy night attacks.[5] Allegedly, the enemy was so afraid of the first gunships that they were ordered not to fire at what they thought was a fire-breathing beast that might become even angrier.

The gunships in 1966 did not accomplish this feat or earn this reputation by being tethered to a single ground unit and waiting for it to be attacked, but rather by being on call for whichever outpost needed them most. Every outpost was in contact with higher headquarters, and as soon as an outpost was attacked, an AC-47 was diverted to its position.[6] To guarantee a particular outpost was never attacked would have required a dedicated gunship all night, but necessity detailed it to a centralized location, on call for any unit experiencing an insurgent attack (an employment more in line with the intent of FM 100-20).

Lieutenant General Julian Ewell, USA, commander of II Field Force, Vietnam, between April 1969 and April 1970, stressed the morale effects that the gunships had for an infantryman: “It gave him a lot of assurance and security to know that if he got in a tight spot, a gunship would be there in fifteen or twenty minutes and start hosing off the countryside.” General Ewell did not say that the gunship was reassuring overhead, but rather that

it was reassuring knowing that it could be there in “15 or 20 minutes”[7] if needed. The infantryman in Iraq does not have the same assurance because the AC-130 is trammled to a single ground unit for a prescribed period that is usually determined the day prior—a fundamental violation of the doctrine of centralized control.

The Ho Chi Minh Trail. As the Vietnam War progressed and the unique and effective abilities of the gunship became apparent, the Air Force created the more capable AC-130 gunship and began to use it in the interdiction role. AC-130s were specifically used to roam the Ho Chi Minh Trail hunting for trucks under the thick jungle canopy that were carrying supplies needed by the guerrillas in the South. To show the effectiveness of the AC-130 compared to conventional attack aircraft, one only has to look at the number of truck kills per sortie. Trucks moved most easily in the winter months, and in the winter of 1971-1972, AC-130s killed or damaged 8.3 trucks per sortie compared to fighter-bombers, which averaged 0.29 trucks killed or damaged per sortie.[8] Allegedly, North Vietnamese truck drivers were actually handcuffed to their vehicles to keep them from abandoning their trucks at the first sign of an AC-130.

So what does killing trucks in the jungles of Vietnam have to do with killing insurgents in Iraq? Both trucks and insurgents are fleeting and difficult-to-kill targets, yet the earliest version of the AC-130 excelled at killing trucks and their drivers. It did so in a disproportionate manner to any other asset and could do the same against the insurgents in Iraq. The AC-130s that killed over 10,000 trucks on the Ho Chi Minh Trail were not tied to one Army unit

but rather were tasked to kill trucks. Task the present-day and much improved AC-130 to hunt insurgents rather than provide 2-hour blocks of individual unit overwatch, and one can expect the same aweinspiring results as the Vietnam-era gunships. General Henry “Hap” Arnold’s words are as relevant to the gunships over Iraq as they were to the B-17s, P-47s, and P-51s of World War II: “Offense is the essence of airpower.”[9]

Time-sensitive Targeting of Insurgents. There are more recent examples of AC-130s being used flexibly versus the present inefficient overwatch of individual ground units for prescribed periods. The Air Force realized its lack of success in preventing Scud attacks on Israeli population centers in the first Gulf War and created a combined air and ground force to neutralize the Scud threat in the second Gulf War. Both air and ground forces had assigned areas to search and were ready to execute highly refined and practiced procedures designed to kill Scuds quickly, along with their support equipment and personnel. All air and ground assets were focused on preventing Scud launches, and there was a prioritized list of targets, with a raised Scud (that is, ready to launch) at the top of the list. Whether detected by ground, air, or space platforms, the nearest attack aircraft was immediately pushed by command and

control from its assigned search area to destroy the target.

The Air Force conducted three exercises at Nellis Air Force Base before the war to practice these procedures and helped ensure zero Scud attacks on Israel.[10] The Sunni Triangle is much smaller than the western Iraqi desert, and the continuing attacks and loss of lives in Iraq are having a strategic impact. Taking a similar plan and a comparable focus in stopping insurgent attacks is definitely a course of action long overdue.

PROPOSED EMPLOYMENT

Gunships on Call Again. Today’s AC-130 is far more effective than the AC-47s of yesteryear. Able to hunt, cover the critical minutes of offensive operations, and simultaneously be on call, only two gunships would be required each night in the Sunni Triangle. Helping to find the insurgents are the JTACs, who should be in near contact with every one of their ground units and in constant contact with either the gunship or the Air Support Operations Center. At a minimum, the AC-130 checks in with each brigade JTAC on the AC-130 frequency as it sequentially passes through each brigade’s area of operations during the course of an evening. It passes on any interesting information and requests the latest intelligence. With the range of the gunship radio, the aircraft is in continuous contact with several brigades at once. This allows near-immediate targeting of insurgents as they make contact with coalition forces. This nightly patrol and single frequency also allow both SOF and conventional units to count on gunship coverage for timesensitive raids requiring immediate exe-



AC-130U cockpit. (Photo courtesy of Robert J. Seifert)

cution. Present employment methods require several hours notice to guarantee gunship coverage of a SOF or conventional raid.

For those units out of gunship radio range, the ASOC would take their insurgent “point-outs” as they can now, but under the author’s plan, they would always pass them to the gunship on either the dedicated gunship frequency or a dedicated long-range frequency. The Air Support Operations Center is responsible for assigning the sensor-equipped fighters to work in conjunction with the two AC-130s as they patrol the Triangle, increasing the effectiveness of both gunships and fighters. The high speed of the fighters and their ability to capture insurgents with their sensor suite would ensure a response time within minutes, even when the gunship has simultaneous insurgent point-outs. The AC-130 can use its remaining radios to talk directly to those units engaged with the enemy. With seven radios, the gunship crew has no problem monitoring the many command and control agencies with radios to spare for those actually in contact.

The result of this proposed change would put one of two nightly gunships no more than 20 minutes from every coalition soldier in the Sunni Triangle. A gunship-assigned fighter cuts the sensor-on-scene time to no more than 10 minutes. Every JTAC in the Triangle would talk to an AC-130 crew several times per night versus several times per month.

Finding the Insurgents. Coalition ground forces must create a list of insurgent hot spots and request that gunships fly over these locations as often as possible. The list should include coalition bases, convoys, police stations, roadways infested with improvised explosive devices, patrols, and infrastructure. Individual Army and Marine units should include this information on their ASRs to the ASOC, which would generate new and more useful mission assignments for the AC-130 crews. These crews would then plan their route of flight using the latest intelligence on insurgent activity to improve the chances of finding insurgents in the act. This author stumbled on 3 insurgent ambushes during his most recent 25 sorties while en route to his mission assignments. The odds of finding insurgents every night in Iraq would be rather high if crews were actually tasked to hunt for them.

Neutralizing the Insurgents. Whether the AC-130 finds insurgents on its optimized flight plan or rushes to the aid of a friendly ground force, it has the ability to attack the insurgents nearly instantaneously when cleared by the JTAC and his ground force commander. It can do this because of its precise fire, low-yield munitions and ability to communicate and confer simultaneously with every level of theater Army, Air Force, Marine, and SOF command and control.

While immediate fire on the insurgents is often preferred, certain situations will require further analysis and preparation. The AC-130, with 4 hours of loiter time and the ability to refuel in air, can wait for a ground or heliborne quick-reaction force to be mustered to assist with the situation. These forces should be ready to

move immediately, knowing the well-practiced ability of the AC-130 to vector small ground units to the target area quickly and safely. Once on scene, the quick-reaction force uses the situational awareness and precise firepower of the gunship to help assess the situation and neutralize the enemy, if required.

OUT OF OUR OODA LOOP

Presently, the insurgents are deep in our OODA loop (observe, orient, decide, act) — that is, our decision cycle—which helps to explain our lack of success in defeating them. Their civilian dress allows them to observe us at will and orient themselves to ensure maximum chance of success. They decide to attack when coalition forces are most vulnerable and usually depart before any coalition advantage in firepower or personnel can be brought to bear. Thus, it is just as the insurgent OODA loop is complete that coalition forces begin to run their loop: “Did anyone observe where that fire came from? Will there be more? Should we orient ourselves offensively or defensively? Do we decide to stay or run? Do we request an Army quick-reaction force or Air Force close air support, or can we attack the enemy ourselves?” Again, this all occurs after the insurgent OODA loop is complete, and their goal of yet another brazen attack on coalition forces has been met.



AC-47 flies mission over South Vietnam. (Photo courtesy of US Air Force)

The proposed tactics would change the coalition OODA loop in the following manner: We have observed the enemy and know he often strikes anywhere in the Triangle—and the attack will be quick. Let us orient two gunships on flight paths optimized for search and communications connectivity and decide before the attack occurs that the gunship will be pushed immediately to attack or investigate any insurgents who might be caught in the act. Now 75 percent complete with their OODA loop, coalition forces eagerly wait for an attack to counter with their own attack. In many cases, the AC-130 will observe the enemy first and actually complete its OODA loop before the insurgents even know they have been acquired. Also in favor of the coalition is that their attack will be executed with an airborne artillery platform that is capable of communicating simultaneously with soldiers in the field, JTACs in their headquarters, and all command and control agencies upstream.

CENTER OF GRAVITY

Strategists yearn for a center of gravity to attack in order to crush the insurgency, and many claim there is none. They fail to see that the center of gravity is the individual insurgent and the location of his attack. For it is at that location alone, and only for a brief time, that the insurgent we struggle to define is an irrefutable enemy and a definable target. Strategists and tacticians both must look at each insurgent attack in the same light as our grandfathers looked at Germany’s war industry. Unlike during World War II, there are only minutes to plan and strike, requiring that a plan already be in place. Focus the same effort in striking this fleeting center of gravity as was

used on the centers of gravity in World War II and coalition results are sure to improve.

When discussing centers of gravity in an insurgency, the civilian population is rightly considered one as well. Unlike other centers, though, it must be struck with legitimacy. The AC-130 tasked to strike insurgents in the act with individual 40mm rounds does a much better job of this than some of the present tactics that often hurt more than help the coalition cause.

IMPLEMENTATION

The Air Force, and specifically the AC-130, is working hard in Iraq but has yet to reach its full potential in helping to defeat the insurgency. Whether we measure insurgents killed per sortie flown or jet fuel burned, the Air Force will run out of sorties and fuel before Iraq runs out of insurgents, if present tactics are continued. A simple yet fundamental change in AC-130 tactics is needed and could start immediately with zero increase in aircraft and personnel. The change required can be easily explained by highlighting what the ground and air forces must do, respectively.

Ground Forces. The ground forces must stop demanding dedicated coverage of individual units for specified periods, except for the most unusual circumstances. Rather, they must ask for two AC-130s on patrol and on call for the night and ensure that every brigade JTAC is on frequency with the forces under him. JTACs must also pass updated enemy activity and anticipated friendly operations to allow the gunship crews to optimize their routing in order to be overhead as much as possible. When attacked by insurgents, ground forces should continue to react as they have been trained, but with one small exception: Troops in contact must report the insurgent activity whether they believe they can handle the situation or not. Finally, ground forces must have a standing helicopter and ground quick-reaction force ready to respond to situations where the culpability of insurgents is in doubt and where collateral damage is a concern.

Air Forces. The Air Force must focus on finding and neutralizing insurgents in conjunction with the ground forces. Committing two AC-130s and available fighters and unmanned aerial systems to hunt for insurgents each night on a scheduled gunship frequency ensures that the majority of invaluable and limited AC-130 time is spent hunting, checking in with JTACs, and killing and capturing insurgents. Presently, gunships spend the majority of their time in transit to the Triangle and flying over a relatively small number of individual units for periods much longer than required or effective. As AC-130 crews and aircraft are limited, the Air Force must ensure that each crew has a maximum 12-hour crew day, which allows it to fly every other night and show at the same time each afternoon. This type of schedule ensures that well-rested crews are not forced to exceed their monthly flying hours limit, as they routinely do now.

Infrastructure, Command, and Control. The infrastructure already exists for those units out of touch with the AC-130 but wanting to point out insurgents. The ASOC is in place and already tasked to support ground forces needing help from air forces. The only difference would be how much more often the ground forces call and how rapidly the air forces respond. Command and control is also already in place, and personnel at some locations could be

reduced by eliminating the prioritization of preplanned and immediate ASRs every night. Unlike the present system, the proposed command and control plan is simple, flexible, and fast reacting. The aircraft commander and crew determine their effectiveness at each target location and decide how long to stay by comparing the effectiveness of what they are presently doing versus hunting for insurgents, maneuvering friendly ground forces overhead, or responding to an insurgent point out from the ASOC or individual unit JTACs.

The final justification for implementation of this AC-130 plan is that it could start tomorrow. ASRs could provide the call sign and location of every brigade and regimental JTAC and would include their list of likely insurgent locations and offensive operations for the evening. All ASRs would be supported with the amount of time and effort determined by present enemy activity and offensive operations in progress versus yesterday's enemy activity and anticipated operations. All JTACs would be on a single frequency, and as the gunship checks in with each, the crew could emphasize the importance of immediate notification of any insurgent activity and the readiness of their unit's quick-reaction force to respond.

Finally, we should challenge aircrews to find as much insurgent activity as possible and strive to set a record for how many and how often each JTAC can be contacted in a single sortie. The lethality of the process is easily measured and improved first by measuring how fast the gunship gets word of insurgent activity and second by how fast it arrives on scene. Finally, we should measure AC-130 success by insurgents killed and captured rather than ASRs supported, and we should not stop improving the process until the last American warfighter leaves a free and stable Iraq.

NOTES

- [1] The author flew all AC-130U sorties referenced in this article.
- [2] James S. Corum and Wray R. Johnson, *Airpower in Small Wars: Fighting Insurgents and Terrorists* (Lawrence: University Press of Kansas, 2003), 274.
- [3] The author flew his first Iraq AC-130 combat mission on March 21, 2003, and his final one on August 30, 2004. He has approximately 45 combat sorties in support of ground forces in Iraq. Much of the background information in this article comes from personal experience in 7 years of flying AC-130s and from conversations with other crewmembers returning from the Iraqi theater. Because the war in Iraq is ongoing, it must be realized that AC-130 tactics, techniques, and procedures there are evolving, and some information in this article might be outdated.
- [4] Daniel R. Mortensen, *Airpower and Ground Armies* (Maxwell Air Force Base, AL: Air University Press, 1998), 93-140.
- [5] Benjamin Franklin Cooling, ed., *Case Studies in the Development of Close Air Support* (Washington, DC: Office of Air Force History, 1990), 444.
- [6] Ibid.
- [7] Ibid.
- [8] Eduard Mark, *Aerial Interdiction: Air Power and the Land Battle in Three American Wars* (Washington, DC: Center for Air Force History, 1994), 352.
- [9] Charles M. Westenhoff, *Military Air Power: The Cadre Digest of Air Power Opinions and Thoughts* (Maxwell Air Force Base, AL: Air University Press, 1990), 110.
- [10] The author participated in one of the exercises at Nellis Air Force Base in January 2004 and flew several AC-130 combat missions searching for Scuds in western Iraq in the first weeks of Operation *Iraqi Freedom*.

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