Call in the A-10

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A-10Cs from what was then the 188th Fighter Wing of the Arkansas Air National Guard fly formation maneuvers over Fort Smith in 2013. The A-10 is slowly disappearing. The 188th divested itself of its last Warthogs (and its "Fighter" designation) in June 2014. (USAF/Senior Airman Matthew Bruch)

Near the top of that peak, right there. That's where they're hiding," Marine Corporal Justin Bradley said. Without rising from his crouch position he pointed to a mountain on the north side of eastern Afghanistan's Pech River valley. It was October 2005, and minutes earlier, insurgents from that location, with machine guns and rocket-propelled grenades, had ambushed a platoon of Marines, then taken cover and continued their attack as the Marines returned fire. "Now watch it get lit up," Bradley said.

A second Marine spoke into one of three radios he carried: "Boar two-one, you're cleared hot. I repeat, you're cleared hot." The air above us tore open with a string of concussive reports—WHIZ! WHIZ! WHIZ!—as 30mm, high-explosive rounds sped toward their target at more than half a mile per second.

The insurgent position erupted in a shower of blinding yellow bursts as popping crackles echoed throughout the valley. Then the shadow of a straight-wing aircraft flicked along the

valley cliffs and slopes, followed by the scream of twin turbofan engines a hundred feet overhead as the gray airplane banked hard to the right.

The turn revealed the weapon that dispatched those rounds: a GAU-8 Avenger seven-barrel high-speed rotary cannon protruding from the aircraft's nose like a stinger. Pulling into a steep climb, the aircraft released a volley of bright yellow flares, a countermeasure against possible heat-seeking missiles.

"I love the A-10!" the Marine next to me yelled as others cheered. "Those gun runs never get old!" A few more passes ensured that the attackers on the mountain would never strike again.

This is CAS (spoken as "cass"), or close air support: aircraft engaging ground targets that are in close proximity to friendly forces.

An Airplane Built Around a Gun

About a decade after that day in Afghanistan, Air Force Lieutenant Colonel Brett "Zero" Waring explains why the tool I'd seen in action is so effective: "The aircraft's stability. The A-10 allows us to directly engage targets who are very, very close to friendlies, with confidence." Waring, who has more than 2,500 hours in the A-10, flew in Afghanistan in the summer and fall of 2005. It's possible he was the pilot flying the A-10 attack on the enemy position in the Pech that I witnessed.

The A-10 Thunderbolt II—colloquially, the Warthog, the Hog, or sometimes just Hawg—occupies a unique space among America's fixed-wing military aircraft: It was designed for air-to-surface attack missions, to support ground forces.

"It's not like they built an airplane and squeezed a big gun into it," says Major Ben "Rigg" Rudolphi. "They built a gun capable of destroying all types of ground targets—including heavily armored tanks—and then built the A-10 around that gun." A weapon that powerful can only be fired accurately from a stable platform. That means a big, straight wing.

Air Force Reserve Colonel Mike "Tiger" Greiger says that the 58-foot wingspan makes the Hog stable at slow speeds. "The pilot can pound nails with that gun," Greiger says, perhaps with a touch of envy.

An F-16 pilot with over 10,000 hours in various types, Greiger served for six years as the Chief of Joint Fires at United States Central Command, making him an authority on the weapons that each armed service uses against ground targets. "The A-10's design allows the pilot to keep the pipper [aim point] precisely on the target for much longer than other aircraft, even through turbulent air," says Greiger.

For CAS and the types of insurgency wars the United States has fought in recent years, this accuracy reduces the chances of friendly fire casualties, or killing or injuring non-combatants.

Air Force Major Bennett “Ion” Merriman flew A-10s in Afghanistan from the fall of 2011 to the spring of 2012. He praises the A-10’s maneuverability and ability to orbit above an area for extended periods of time.

It has “a long loiter time and a very tight turn radius,” he says. “It was designed with the wing’s center of lift far enough from the airplane’s center of gravity. So it takes a significant amount of force—turbulence or wind gusts or pilot control inputs—to make a pitch change.”

But the A-10 has another trick up its long, straight sleeve, says Merriman: An “autopilot ground stabilization system” that kicks in whenever the pilot pulls the trigger of that GAU cannon.

Renaldo Richardson loads an A-10C’s 30mm cannon at Kandahar Airfield in 2010. (USAF/Staff Sgt. Stephen Schester)

Brett Waring in the cockpit of an A-29 Super Tucano at Barksdale Air Force Base in Louisiana, August 2016. (USAF/Senior Airman Mozer O. da Cunha)

Where There's Willie Pete, There's a Way

Those big wings provide lots of room for other weapons systems: four hard points on each side, plus three on the bottom of the fuselage. The hard points can accommodate laser-guided and GPS-guided bombs (as well as the GBU-54, which uses both forms of precision guidance); the AGM-65 Laser Maverick, a laser-guided air-to-ground missile; rocket pods; external fuel tanks to provide extra loiter time or range; and even air-to-air missile systems.

Air Force Major Mark "Mango" Malan, who has flown about 3,000 hours in the Hog, explains that the rocket pods the A-10 carries can be loaded with high-explosive warheads, or with more specialized loads. "We can use white phosphorous rockets, what we call 'Willie Pete,' to put down markers," he says. Upon impact, white phosphorous rounds emit bright white smoke, a marker that other aircraft in the area, as well as friendly forces on the ground, can spot easily. "It builds situational awareness, so we can identify friendly and enemy positions. Once we put down Willie Pete, we can get on the radio with others on scene and determine exactly everyone's location by finding out how many meters and in what direction from the mark or marks they're located."

Malan recounts a battle near the village of Garmsir in the Helmand River Valley in southwestern Afghanistan's Helmand Province. He and his wingman took off from Bagram Air Force Base, topping off their fuel from an airborne tanker before embarking upon the two-hour

flight to Garmsir. The two A-10s would be supporting British ground forces operating throughout the important opium-growing region. “I dialed up their frequency and the radios were just exploding,” Malan says. “You know a guy’s in trouble because he’s using foul language and you hear gunfire in the background.”

The sun was coming up and the Brits were taking fire from a well-concealed enemy in close proximity. Circling overhead, Malan asked them to “pop a smoke grenade so that I could get the friendly position.” Malan and his wingman worked from that landmark, and the British soldiers’ reports of the direction of the incoming fire, to determine the location of the target.

“We bracketed the compound with the Willie Pete,” Malan says. “And the friendlies confirmed that to be the location.” The first attack, a high-angle gun run from west to east, came very close to the British. “We got an abort call as we were about to do a second run, as we got a little too close to the friendlies.”

Malan and his wingman set up an east-to-west run to mitigate the visibility problems caused by the low sun and haze. “We set up a low-altitude, low-angle attack, so our guys on the ground could visually acquire us and ensure that our guns were aimed exactly at the target, and for the next hour we did run after run, until we were out of ammunition.” This gave the British soldiers cover under which to move to a less vulnerable position. “We weren’t so much killing the enemy as much as we were saving friendlies,” Malan recalls.

Air Force Major Drew “Rudy” Hext, an A-10 pilot whose 2,300 hours of cockpit time were in part earned over four deployments to Afghanistan between 2005 and 2012, recounts a close air support mission in Afghanistan that pushed the limits of pilot skill and the A-10’s capabilities. “The Taliban knew how to shut down the use of airpower,” he says. “They’d get as physically close to friendlies as possible to keep us from firing. They’d engage in hand-to-hand combat if they could.”

In 2010 Hext and his wingman had been called to assist an American unit (likely special operations forces, since Hext couldn’t specify the kind) working with Afghan soldiers in central Afghanistan’s Urozgan Province. Knowing that it would be difficult to distinguish friend from foe in the dense overgrowth of the river valley, Hext asked the friendlies if they had smoke. They did, and he told them to keep it ready for when he would need to spot them quickly. Hext knew this terrain was ideal for an ambush, so he located some buildings to which the friendlies could retreat should they come under attack.

The Hog has 11 hard points on its underside for carrying an array of weapons. (USAF/Staff Sgt. Kenny Kennemer)

Ryan Castle and Brian Chatham load munitions at Bagram, 2013. (USAF/Staff Sgt. Stephenie Wade)

Shannon Hughes and Damon Johnson expose a Warthog's innards during an inspection at Bagram in 2006, when demand for close air support was high. (USAF / Maj. David Kurle)

When Hext's wingman departed for fuel from a tanker aircraft, an unseen group of fighters attacked the friendly position. "They watch us, and as soon as we leave, they'll attack," Hext says.

Hext told the friendlies taking fire to pop a red smoke grenade to mark their position. "I put down some Willie Pete, and they confirmed that to be the enemy position," he says. "It was just 50 meters away"—perilously close for a gun run. Hext dove his A-10 toward the still-burning white phosphorus and unleashed a burst of 30mm, high-explosive rounds.

"Then the enemy closed on the friendlies to about 15 meters," he recalls. The pilot instructed the ground force to fall back to the buildings he'd identified upon his arrival, then set up for another attack. "They were really close to our guys, so I told [the friendlies] to watch my nose, to make sure I wasn't pointed at them, and got down really low, then strafed." That stopped the advance.

The Sound Barrier

Throughout the wars in Iraq and in Afghanistan, U.S. and Coalition forces operated under ever-stricter rules of engagement, which prohibit them from firing on any target other than those positively identified as hostile. These rules didn't preclude pilots from loudly announcing that they would shoot. Numerous A-10 pilots I interviewed spoke of making a "show of force,"

roaring at just 100 feet above a suspected enemy position—a very loud reminder to keep fingers off triggers, or else.

The mere presence of A-10s, even high overhead, aided friendly forces in Afghanistan and Iraq in unexpected ways. “We got overhead of a combat outpost, and the guys on the ground immediately zipped themselves into their sleeping bags,” says Waring of his 2005 deployment. “I got on the radio and they told me that when the A-10s were overhead was the only time that they could get good sleep. I know I have it easy compared to the guys on the ground. We just show up and make noise, and that allows friendlies their breathing room, to get sleep, just two hours of sleep.”

Lieutenant Colonel Ryan “Grease” McLean says this deterrent role is typical; he recalls a Humvee that broke down just before sundown in northern Afghanistan. “They were definitely being tracked, being watched by the enemy, and the weather deck was getting really low, so it was really difficult to get down to see them,” he says. McLean and his wingman made a series of low passes and deployed flares. “That was exactly what they needed. It took them an hour to fix the vehicle, and then they got moving again,” he says. “The bad guys knew we were there. It was like staying with little brother to make sure nobody picks on him.”

Elements of the 354th Fighter Squadron and the 210th Rescue Squadron conduct a combat search-and-rescue demonstration at the Joint Pacific Alaska Range Complex. (USAF/Staff Sgt. Ashley Nicole Taylor)

Bennett Merriman at Namest Air Base in the Czech Republic in 2012 (USAF/Senior Airman Natasha Stannard)

Overwatch

While A-10 pilots get plenty of opportunities to engage ground targets, another, less publicized role they perform is simply keeping watch from overhead: nontraditional "intelligence, surveillance, and reconnaissance"—ISR, in military language.

Basically, the bubble canopy affords pilots a broad view, and they can use binoculars, or their infrared or "television" sensors, to scan the ground day or night. "We're not an ISR platform, but whatever guys on the ground need, if we can provide it, then we'll provide it," says Captain (now Major) Ryan "Copper" Allen. In Afghanistan, he and his fellow pilots were frequently asked to look for insurgents placing improvised explosive devices underneath or on the sides of roads at night.

If this suggests that A-10 pilots' primary role is to serve the troops on the ground, they're okay with that, according to Captain (now Major) Joshua "Juice" Jones, who was deployed to Afghanistan circa 2011-2012 and then to fight ISIS in Iraq and Syria in 2015. "Some of the most memorable moments from my deployments were of visiting combat outposts and meeting with ground forces commanders to explain our capabilities, and to really get to learn the needs of the ground guys," Jones says. "They all said that our visits were the first of their kind for them. The discussions really helped us help them."

Search and Rescue

Another mission for which A-10 pilots train is to locate and recover aviators shot down in combat. This is combat search and rescue, or CSAR- (spoken as “see-sar”). Obviously this mission is one that pilots hold dear, Jones says.

On these missions, A-10 pilots use the call sign “Sandy,” just as A-1 Skyraider pilots did in Vietnam. These missions may comprise up to eight A-10s, with Sandy- 01, the CSAR mission leader, coordinating ground rescue personnel with Air Force “Jolly” search-and-rescue HH-60 Pave Hawk helicopters, and sometimes Army “Dustoff” medevac helicopters. They drill to prepare for rescuing downed personnel as quickly as possible, regardless of enemy or environmental conditions.

A now-mothballed Arkansas Air National Guard Hog from the former 188th Fighter Wing practices CAS (Arkansas Air National Guard)

Soldiers from the 187th Infantry Regiment watch an A-10 drop flares over Sahak, Afghanistan, during Operation Sham Shir, 2013. (US Army National Guard/Sgt. Joshua Edwards, 129th Mobile Public Affairs Detachment)

More Than a Bomb Truck, But...

When friendly forces are not in close proximity to a target, A-10 crews sometimes fill a less specialized function. “While we’re much more than a bomb truck, sometimes we’re called upon to drop them,” Allen says.

Jones recalls being dispatched to stop a bomb with a bomb: “Intelligence learned that [ISIS fighters had] stuffed a dump truck to the gills with tons of high explosives, and were just minutes from driving it into a populated area and setting it off. They were preparing it in the parking lot of an abandoned shopping center, and it was an urgent moment. We needed to make it go away fast.” Jones dropped a GBU-38—a GPS-guided 500-pound bomb—on the truck, detonating the explosives in it. “I’ve never seen an explosion like that before,” says Jones. Once the debris cloud dissipated, they could see that what had been the derelict shopping plaza was now just a crater in the ground.

Painting the Bullseye

Another task performed by A-10 pilots is FAC(A), or forward air control (airborne), directing other aircraft to attack ground targets. Merriman trained for FAC(A) in South Korea. “We practiced contingency operations right along the border,” he says. “[The North Koreans] would mess with us, using different electronic means, although I can’t get into specifics. We were there as a backstop. I flew the same airspace repeatedly for two years and had it mapped in the back of my head, so when, for example, F-18s came up, we could make sure they stayed in the proper airspace. Luckily we didn’t fly any combat sorties, but we were always training like that training mission could be our last before hostilities kicked off.”

Had Bennett been required to cross into North Korea, he and other A-10 pilots would have attacked pre-determined targets, then immediately shifted focus to locate and destroy previously undiscovered ones—a mission called strike coordination and reconnaissance, or SCAR. Merriman and other pilots would have flown into some of the most heavily defended airspace in the world, an environment for which Fairchild Republic created the A-10 in the 1960s and 1970s. “We have a titanium tub that wraps around us that can stop many anti-aircraft rounds, the windscreen is bulletproof, and the systems are all redundant,” Jones says.

Major Ben Rudolphi’s claims of the hog’s survivability are more colorful. “You can fly it with one of the twin tails blown off, half a wing blown off, and on just one engine,” he says. “It has two hydraulic systems, and if both go out, the landing gear drops, as it takes hydraulic pressure to keep the gear up.”

The landing gear rotates toward the rear of the craft, by gravity alone, and without sufficient hydraulic pressure, it automatically locks. “And if it doesn’t drop, the wheels never retract completely into the [main wheel faring], so you just drop whatever you have on the fuselage hard points and you can bring down the airplane with minimal damage.”

The A-10 is a “manual reversion” aircraft, meaning that even if there is no hydraulic power, it can still be flown, through cables to the aircraft’s control surface trim tabs.

“It’s not instantaneous control, but you can fly to a controlled bailout area,” Rudolphi says. One reason the A-10 gives pilots so many second chances is the location of the engines: on the rear of the aircraft, on pods away from the fuselage. “It’s nearly impossible to get anything sucked into them, and if an engine blows it won’t hurt the main body of the aircraft.”

During recent engagements against ISIS, Jones says, an A-10 lost an engine, but the pilot was able to reach Al Asad Airbase in Western Iraq and land safely.

Maintenance personnel replaced the engine, and the Hog was airborne again in under 24 hours. “Had it been an internally mounted engine,” says Jones, “the repair time would have been much longer.”

During a close air support training exercise, an A-10 fires an AGM-65 Maverick missile. CAS is the combat role at which the A-10 remains unsurpassed. (USAF/Senior Airman Brett Clashman)

Expeditionary Forces

Training operations in Europe during Operation Atlantic Resolve—the ongoing U.S. show of support for NATO during a period of increased Russian military activity in Ukraine—proved another capability that designers intended for the aircraft: exploration.

"We flew into and out of a number of abandoned, overgrown, dilapidated Soviet-era airfields," Allen says. "It showed that A-10 squadrons can function in an expeditionary manner, without a huge logistics train behind us, and operate out of austere conditions."

Despite its age—the first A-10 was accepted by the Air Force 40 years ago—the current variant, the C, is very much a 21st century aircraft. It boasts an advanced targeting pod. Its all-digital cockpit has color multifunction displays. It can carry up to four radios so the aircraft can work as a "communications bridge" between other aircraft and ground units.

Finally, there's Allen's favorite feature: the helmet-mounted cueing system. "The cueing system takes information from our central computer, takes input from our targeting pod, and data link from other aircraft, and projects it on a monocle mounted on our helmet," he says. "So we can see symbols showing locations of targets, friendlies, and other aircraft as we look outside." The system helps the pilot to develop situational awareness and locate and engage targets.

"Flying the aircraft is not the hard part," he says. "It's the sorting out the situation on the ground, trying to figure out who to shoot—to get the right people and not the wrong people."