

HOW 'SPOOKY' CHANGED THE WAR IN VIETNAM

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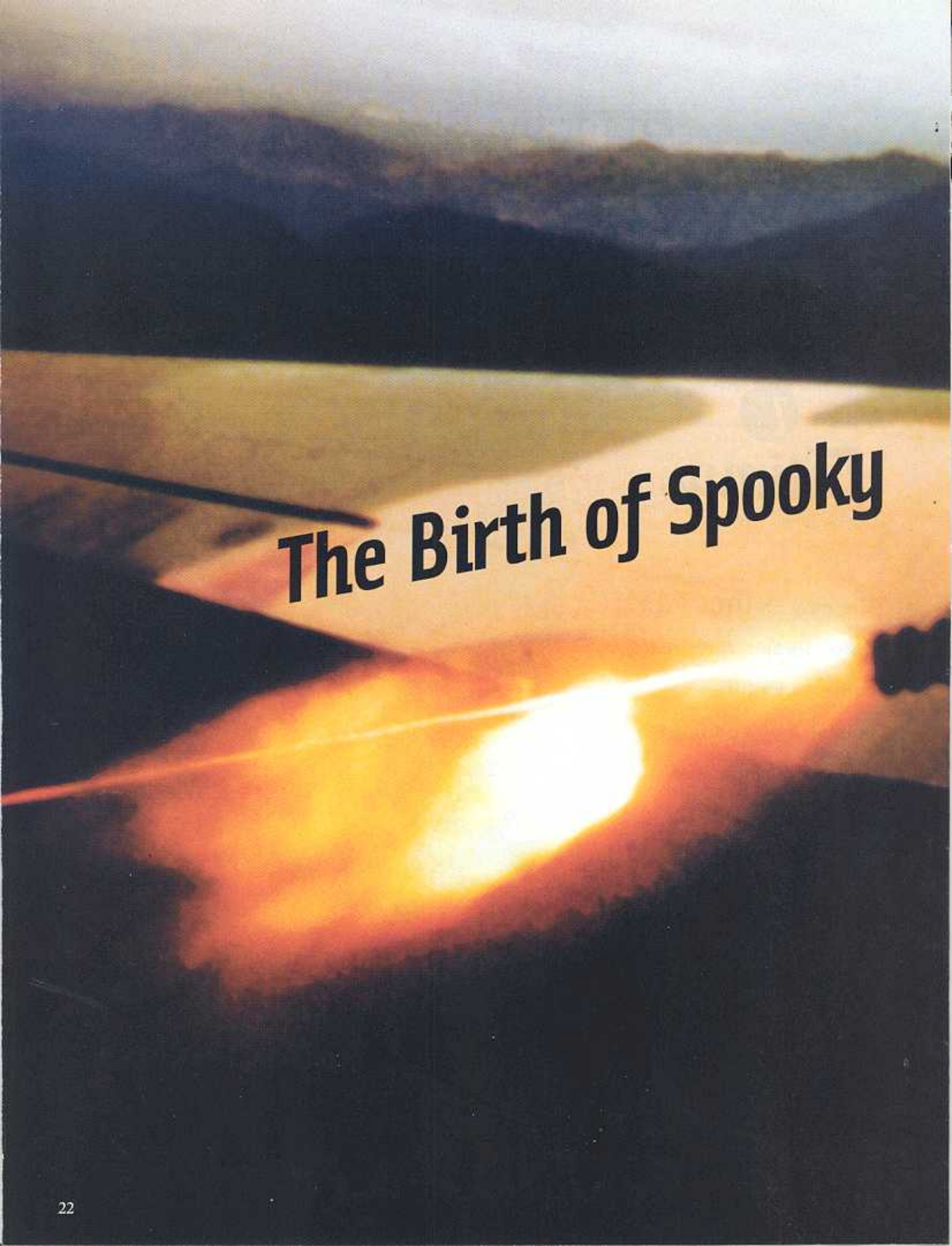
FAMOUS FLIERS REMEMBER THEIRS

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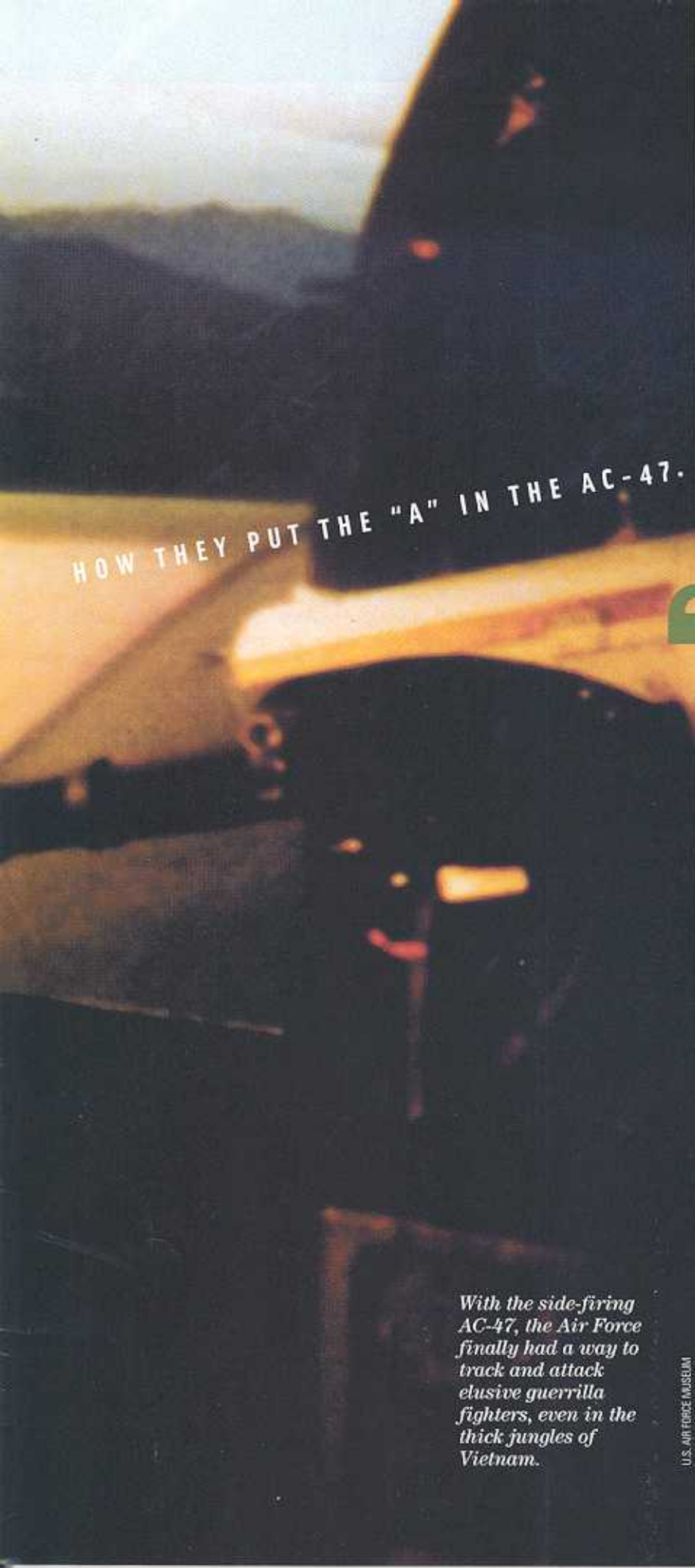
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The Birth of Spooky



HOW THEY PUT THE "A" IN THE AC-47.

BY MARSHALL MICHEL

With the side-firing AC-47, the Air Force finally had a way to track and attack elusive guerrilla fighters, even in the thick jungles of Vietnam.

U.S. AIR FORCE MUSEUM

Afghan resistance forces, in conjunction with American Special Forces and supported by AC-130 gunships, have begun their push today

toward..." This quotation could have come from any of a hundred news stories on the war that broke out after September 11.

Occasionally one of the 24/7 news networks airs a film clip showing a large four-engine aircraft identified as an AC-130 in a left turn, long streams of flame coming out of guns extending from its side, looking for all the world like a sailing ship from the early 19th century firing broadside.

To most of the world, gunships, along with Airborne Warning and Control Systems (AWACS), precision-guided munitions, and aircraft carriers, have become the ubiquitous symbol of U.S. post-Vietnam military power. Only the gunship, however, is a uniquely American weapon, conceived by a handful of determined individuals in response to a specific combat problem. It evolved despite huge bureaucratic obstacles and intraservice fighting.



The first aircraft to test the side-firing concept, a Convair C-131, was rigged with a single 7.62-mm mini-gun pod mounted on a cargo pallet and positioned at the rear cargo door.

Side-firing gunships are "one of the most successful developments arising from our experience in Southeast Asia."

General John Ryan, then Air Force chief of staff, concluded at the end of the Vietnam War. Colonel Ron Terry, a former fighter pilot who led the charge in the early 1960s to develop the AC-47 and its successors, the AC-130 and AC-119, points out today that the gunships have been one of the most "effective things the United States has had for engagements in Panama, Grenada, and Afghanistan."

The idea of a side-firing aircraft has a long history. The U.S. Army Air Corps mounted a .30-caliber machine gun on a DH-4 mailplane in the 1920s and the French mounted a side-firing 75-mm artillery piece on a bomber, but the side-firing weapon did not seem to offer any advantages over conventional mounts—it was an answer without a question. As Terry puts it, most combat planners felt that "military aircraft should dive at the ground, drop bombs, shoot guns. They don't fly in circles."

The first person to come up with the problem the side-firing gun might solve was Lieutenant Gilmour McDonald of the U.S. Coastal Artillery, who suggested one for anti-submarine warfare in 1942. Such an aircraft could orbit a surfaced submarine—

a maneuver known as a pylon turn—as the gun kept up a stream of fire at the submarine, eliminating the need to dive, attack, pull off, then reacquire the target to repeat the attack. The military did not adopt the idea, and McDonald's work languished for almost 20 years, until the early rumblings of the Vietnam War.

In his book, *Deployment and Employment of Fixed Wing Gunships*, Jack Ballard tells it this way: In 1963, Ralph Flexman, a friend of McDonald's and an engineer at Bell Aerosystems, applied the side-firing gun idea to the new problem of transient targets in a guerrilla war. He realized that by firing in a continuous turn the aircraft could keep the targets in sight constantly. Flexman shared his insights with Captain John C. Simons, an Air Force friend stationed at Wright-Patterson Air Force Base in Ohio, who in turn proposed the idea later that year to several groups interested in counter-insurgency warfare.

Analysts in the Air Force's Aeronautical Systems Division rejected the proposal as unsound because they thought that the bullet drop would make firing from such a flight path highly inaccurate. But Simons refused to give up. He experimented with pylon turns in a single-engine T-28 trainer and found it was easy to keep a target in sight during the maneuver. He got the military interested enough to assign it a name—project Tailchaser—and to give him access to a twin-engine C-131 trainer, the military version of a Convair 240 airliner.

AC-47s could fire accurately from as high as 3,000 feet.



Simons put a fixed sight and three cameras on the C-131 to record target tracking, but during the next year only a handful of flights could be made, due to a lack of funds. The program was for all practical purposes moribund when Captain Ron Terry arrived at the Flight Test Division at Wright-Patterson in 1964.

Cometh the hour, cometh the man. Terry, who had flown F-86s and F-100s, had just returned from looking at all aspects of air operations in Vietnam as part of an Air Force Systems Command team. While there he had learned that the Viet Cong had begun regularly attacking U.S. Special Forces outposts and Vietnamese hamlets at night to avoid air counter-attacks and that Air Force fighters had virtually no night attack capability. On the positive side, he noted that the U.S. flare ships—C-123s and C-47s—orbiting over hamlets at night effectively illuminated surrounding areas to protect against night attacks.

When Terry arrived at Wright-Patterson he went through old project reports and found Tailchaser. Intrigued, he flew with Simons on the modified C-131 and found that they could track a fixed point on the ground with ease if they held a steady banked turn. Terry realized that in defense of hamlets and forts, an aircraft with side-firing guns was the next logical step



very strong and determined leader, free spirited and sort of an adventurer."

The modification and calculations complete, Terry and his team headed for a raft target in the Gulf of Mexico. Terry orbited the target and began to blaze away, and Kimberlin remembers that "he frothed up the water all over the target while the cameraman took pictures, and we realized that the airplane could sit at 3,000 feet and shoot down at troops out of small arms range.

In just one minute, the AC-47's mini-guns could fire 6,000 rounds each, gobbling up the aircraft's ammunition.

A SIDE-FIRING AIRCRAFT COULD ORBIT a surfaced submarine—a maneuver known as a pylon turn—as the gun kept up a stream of fire, eliminating the need to dive, attack, pull off, then reacquire the target to repeat the attack.

beyond flare ships. "Tailchaser was a real major breakthrough," he says. "It gave the pilot a much longer tracking time."

Terry got approval for a live-fire test at Eglin Air Force Base in Florida. Since the program wasn't officially funded, he had to use his personal American Express card to purchase tools and hardware. Then he flew down in the C-131 with a small team.

At Eglin Terry recruited Lieutenant Ralph Kimberlin, the project officer for a new Gatling-type 7.62-mm mini-gun, the SUU-11A, which fired 6,000 rounds a minute. The two men mounted the gun on the C-131, aimed it out the cargo door, wired the trigger to the pilot's wheel, then had Ken Cobb, another engineer at Eglin, work out ballistic trajectories and firing tables for the system so the guns could be fired accurately. Cobb remembers Terry as "a

We began to think this was a pretty good idea." The next day Terry flew a demonstration with the commander of First Combat Applications Group, who came away wildly enthusiastic. Terry returned to Wright-Patterson and for a test bed was given a C-47, which proved an ideal platform: There were plenty of C-47s in Vietnam; they could carry large quantities of ammunition and flares, they could loiter a long time, and they could be converted back to a regular cargo aircraft if needed. The airplane had one disadvantage—it appeared vulnerable—but Terry knew C-47s had been operating for years as flare ships in Vietnam without undue losses and was not concerned.

A few months later, Terry got permission to take his findings and photos directly to Air Force Chief of Staff General Curtis LeMay at the Pentagon. Terry was planning to "talk about how effective the system would be attacking VC forces in the open

To take aim, the pilot had to maneuver the aircraft, not the guns, which were fixed in place.



before they got away" until he heard the intelligence briefing that immediately preceded him, and he decided on a new strategy. "The briefer was talking about a Viet Cong mortar and sapper attack on Tan Son Nhat [air base] that destroyed a lot of

A-1s and killed a bunch of our people," Terry remembers. "LeMay had chewed through about three cigars listening to that briefing, so when it was our turn I told the guy I had brought with me not to show any surprise no matter what I said.

"I opened with, 'General LeMay, I'm here to brief you on a new concept for air

base defense in Vietnam!' That got LeMay's attention. He listened and asked the three-stars what they thought—none liked it, except one general who said, 'General, this may revolutionize air warfare.' LeMay asked how many mini-guns there were. We told him there were nine prototypes and he said, 'Okay, take them to Vietnam and try it out.' We were on our way."

But unbeknownst to Terry, the program had powerful enemies in the Air Force who were apoplectic about using cargo aircraft for fire support, in part because of their rivalry with the Army. Air Force records show one message in which a four-star general complained to LeMay that the use of C-47s as gunships "was contrary to the Air Force's continuous and vigorous opposition to the Army equipping helicopters for fire-control missions...[and] is tantamount to

USAF approval for the use of all the Army's transport aircraft including helicopters for the same role." This message of opposition was also sent to the Air Force leadership in Vietnam.

Terry and his team landed in South Vietnam on December 2, 1964. He remembers, "We arrived at Tan Son Nhat and were met by a force of armed air police. They told us...we were not to talk to anyone and we and our equipment would be on the next plane back to the U.S."

But opposition to Terry's proposal did not sit well in Washington. In a curt reply to the general who sent the message, Vice Chief of Staff John P. McConnell (by then Chief of Staff designate; LeMay was to retire in a few months) told the general, "your concern is appreciated...[but] we cannot overlook or deny any weapon which will enhance our capability in this area of operation...[and] it is certainly in the Air Force interests to run the program rather than sit on the sideline commenting."

In Saigon the next morning, Terry received a copy of McConnell's message. "I kept it in my pocket the whole time we were there," he remembers. General Joseph Moore, commander of Air Force operations in Vietnam, invited Terry and his team to give a briefing, then gave his blessing to the project.

Using two C-47s from the First Air Commando Squadron, the men mounted 7.62-mm mini-guns on pods in the aircraft and began training a crew. On December 15 they went up for their first daylight mission with a crew of eight, including two pilots, two armament specialists, a loadmaster, an aerial photographer, a project engineer, and a Vietnamese observer.

The revamped C-47, now designated FC-47 (the "F" was for "fighter"), made its real mark on its first night flight on December 23-24 over the Mekong Delta, when the gunship was called to repel an attack on a U.S. Special Forces outpost. With the propellers whirling, the radio crackling, and guns at the ready, the loadmaster attached lanyards to large flares as the aircraft approached the target. After he threw them over the side, the flares drifted down into the darkness, suspended under small parachutes, to illuminate the area. Kimberlin vividly remembers: "We opened fire and it scared me half to death. I thought the guns had blown up. Flames not only came out of the muzzles but also blew back inside where they licked around the cans

An airman feeds clips into a 40-mm gun on an AC-130H.





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where the spent cartridges were going. It was really noisy too, with the din from all three guns going 'brrrrrap.' The gunships poured 300 rounds a second into the attackers, every fifth bullet a tracer, and a three-second burst put 150 tracers in the air, giving the impression of "fire coming out of a watering can," says Kimberlin. The Viet Cong broke off the attack.

Kimberlin, who manned the guns on many FC-47 missions, remembers the unique dynamic among the side-firing aircraft's crew. The Vietnamese observer would "talk via radio to the people in the villages below that we were defending and tell them where the Viet Cong were." When an attack was under way, the flight engineer, who could see both the front and the back, manned a safety switch so he could turn off the guns in an emergency. Kimberlin also recalls a mission in which the loadmaster turned bombmaster by cutting the parachutes off the flares and dropping them directly into a plantation building where Viet Cong were hiding. The building burned to the ground.

The early missions were so successful that before tests were complete, Moore asked the Air Force for a full squadron of

FC-47s as soon as possible. An Air Force report written a few months later said, "tests indicate spectacular success in killing Viet Cong and stopping attacks together with concurrent great psychological factor way out of proportion to effectiveness of other aircraft strike efforts and ground forces efforts." As an aside, in the course of their operations the FC-47 acquired two *noms de guerre*—"Puff, the Magic Dragon," from the Peter, Paul, and Mary song with that title, and a radio call sign, "Spooky."

The first combat use also showed that, while the aircraft took a few hits, the initial concern that the gunships would be exceptionally vulnerable to ground fire was unfounded. Mobile guerrilla forces attacking at night did not generally carry heavy machine guns; the guns they did carry were about the same caliber as the gunship's, but the ground forces fired up while the

While making a pylon turn, an AC-119 (also pictured below) traces a circle of fire, a pattern the Viet Cong called "dragon's breath."



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With members of the first AC-47 crew looking on, Captain Ron Terry (in hat) oversees the loading of ammunition for the 7.62-mm mini-gun.

gunship fired down, and this, combined with the fact that gunships operated at night, kept losses low.

The Air Force quickly took C-47s from the "boneyard"

and began modifying them. By November 1965, 20 AC-47s (renamed A [attack], allegedly because of grouching from the fighter community) had arrived in Vietnam to form the Fourth Air Commando Squadron. The gunships protected Special Forces camps that the Viet Cong had been attacking almost nightly. Praise poured in. By the time the last American AC-47 mission flew, in December 1969, the aircraft had defended over 4,000 outposts. The crews accurately boasted that no position

protected by an AC-47 had fallen.

Several of the AC-47s were sent to Laos for fire support missions and interdiction of North Vietnamese trucks coming down the Ho Chi Minh Trail, but while there were plenty of targets, there were also plenty of problems. Terry remembers, "The only way we could locate targets at night was to have a guy stand in the back door and look out. If he saw anything he'd say where it was—say, five o'clock—and the pilot would turn and line up his target visually.

"This proved very effective," says Terry, "but they had to be very low—as low as 1,500 feet—and the aircraft was heavily loaded and couldn't climb very well, so a bunch of planes literally flew into the high steep mountains." The heavier anti-aircraft defenses in Laos made the situation even more dire. Four AC-47s quickly disappeared without a Mayday call or a trace. The remaining gunships were immediately recalled to South Vietnam.

But the number of targets the AC-47s had found in Laos had convinced Terry—now a major—that the Air Force needed a more survivable gunship with increased firepower, night vision equipment, armor, a better navigation system, and a computerized fire control system for night interdiction of the Ho Chi Minh Trail.

The North Vietnamese used the trail, a

huge complex of roads covering over 1,700 square miles, to move trucks at night, when they were safe from air attack, to resupply their forces in the south. The trucks were protected by a large number of anti-aircraft guns, 23-mm and 37-mm and a few 57-mm, manned by skilled crews. Interdicting the trail was a formidable task but a vital one.

In January 1967 Terry got the go-ahead for a six-month project to modify a C-130A to carry night observation equipment, forward-looking infrared (FLIR), and side-looking radar, as well as two 20-mm Vulcan cannon and two 7.62-mm mini-guns, all of which were connected to an analog firing computer that took in all the sensor inputs to correct the pilot's side-looking

sight for wind, airspeed, and attitude.

In September the prototype AC-130A arrived in Vietnam, with Terry as the lead pilot. On one of its first missions it knocked out eight trucks, and the aircraft—now named Spectre—quickly showed it was much more effective than any other night-attack aircraft. The Air Force ordered eight more C-130As modified into AC-130s, and at the same time modified cheaper, older, twin-engine C-119s into AC-119 gunships to supplement the AC-130s and AC-47s.

But while the AC-130s were decimating the North Vietnamese trucks, its new systems were proving unreliable. The Air Force sent the aircraft back to the States for some quick maintenance in February 1968, but rushed it back into service within weeks.

The North Vietnamese responded to the improved side-firing gunship by bringing more anti-aircraft guns into Laos. The gunships predictably attacked from a left banked turn, and under certain conditions they were visible from the ground—a quarter moon with high thin overcast made a gunship look "like a fly on a movie screen," one crew member recalls.

To watch out for anti-aircraft fire, a crew member was assigned to look out the right side away from the attack, while another crew member, the illuminator operator, literally hung out over the lowered cargo ramp in the rear, secured by cables to look out the back. Often an evasive maneuver

BY MID-1969 IMPROVED VIET CONG defenses kept AC-130s out of some areas. Still, by April 1969 the Spectres had scored 42 percent of the truck kills in Laos while flying only 3.2 percent of the sorties.



COURTESY AIR FORCE MAGAZINE

threw him out of the aircraft and he had to pull himself back in by the tethers.

Despite these precautions, in March 1969 the first AC-130 was hit and in May the first AC-130 was lost. By mid-1969 improved North Vietnamese defenses kept AC-130s out of some areas. Still, by April 1969 the Spectres had scored 42 percent of the truck kills in Laos while flying only 3.2 percent of the sorties.

In July 1969 and again in 1971, Ron Terry, now chief of the AC-130 program, made additional changes to the aircraft to counter the increasingly potent defenses. By March 1971 the Viet Cong had moved SA-2 radar-guided surface-to-air missiles into Laos. Dodging supersonic missiles at night over the high Laotian mountains in a four-engine aircraft was a daunting task. When a missile approached, the AC-130 had to dive down into the anti-aircraft environment, then struggle back up to altitude. That year, while no Spectres were hit by missiles, one AC-130 was downed by anti-aircraft fire and 33 were hit, some seriously.

In the never-ending quest for better armament, Terry replaced the 40-mm cannon he'd added to the 1969 model with a 105-mm howitzer. Approved under the name Pave Aegis, it arrived on February 17, 1972, and became an instant hit. The howitzer fired a 5.6-pound shell instead of the 40-mm's 10-ounce shell, was extraordinarily

accurate, and had a very long range. When it hit, the shell gave a bright flash that other aircraft could use as a marker.

On March 31, 1972, the North Vietnamese began a massive offensive. For the AC-130s, interdiction became secondary as the gunships flew night and day close air support missions. The Viet Cong brought a new weapon with them—the shoulder-fired SA-7, the Saturday Night Special of surface-to-air missiles—which forced the gunships to a higher altitude, but the Spectres could still operate. On May 5, the day an SA-7 scored its first hit on an AC-130, another Spectre got credit for killing 350 enemy troops and saving 1,000 friendly forces.

By war's end, the gunship had made its bones, and Air Force chief of staff General John Ryan said: "We intend to keep this capability to deliver a tremendous volume of sustained accurate firepower in the tactical force."

In fact, that was not to be. The gunship had more bureaucratic battles to win before it was acknowledged as a genuine part of the U.S. military, but those post-Vietnam battles are another story. ➔

With surgical precision, the AC-130H pinpointed targets, even enemy soldiers who had infiltrated friendly positions.

Ground crew reload ammunition for another Spooky run.



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