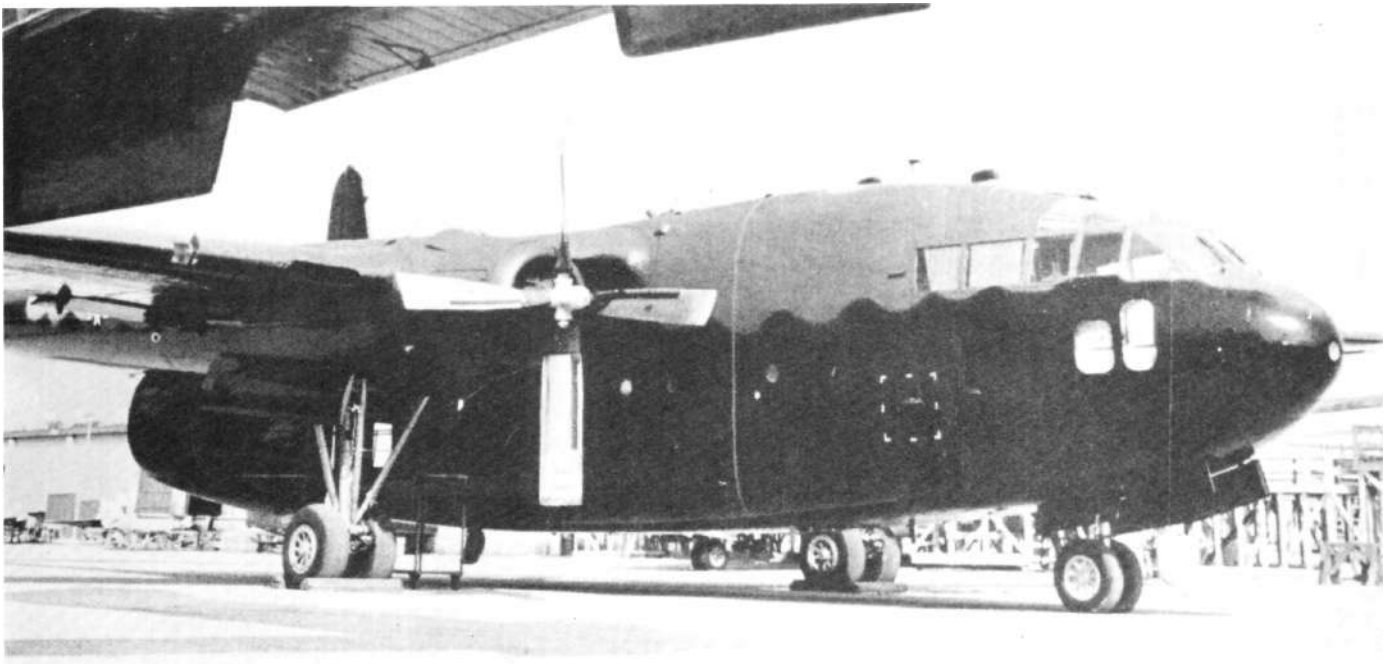
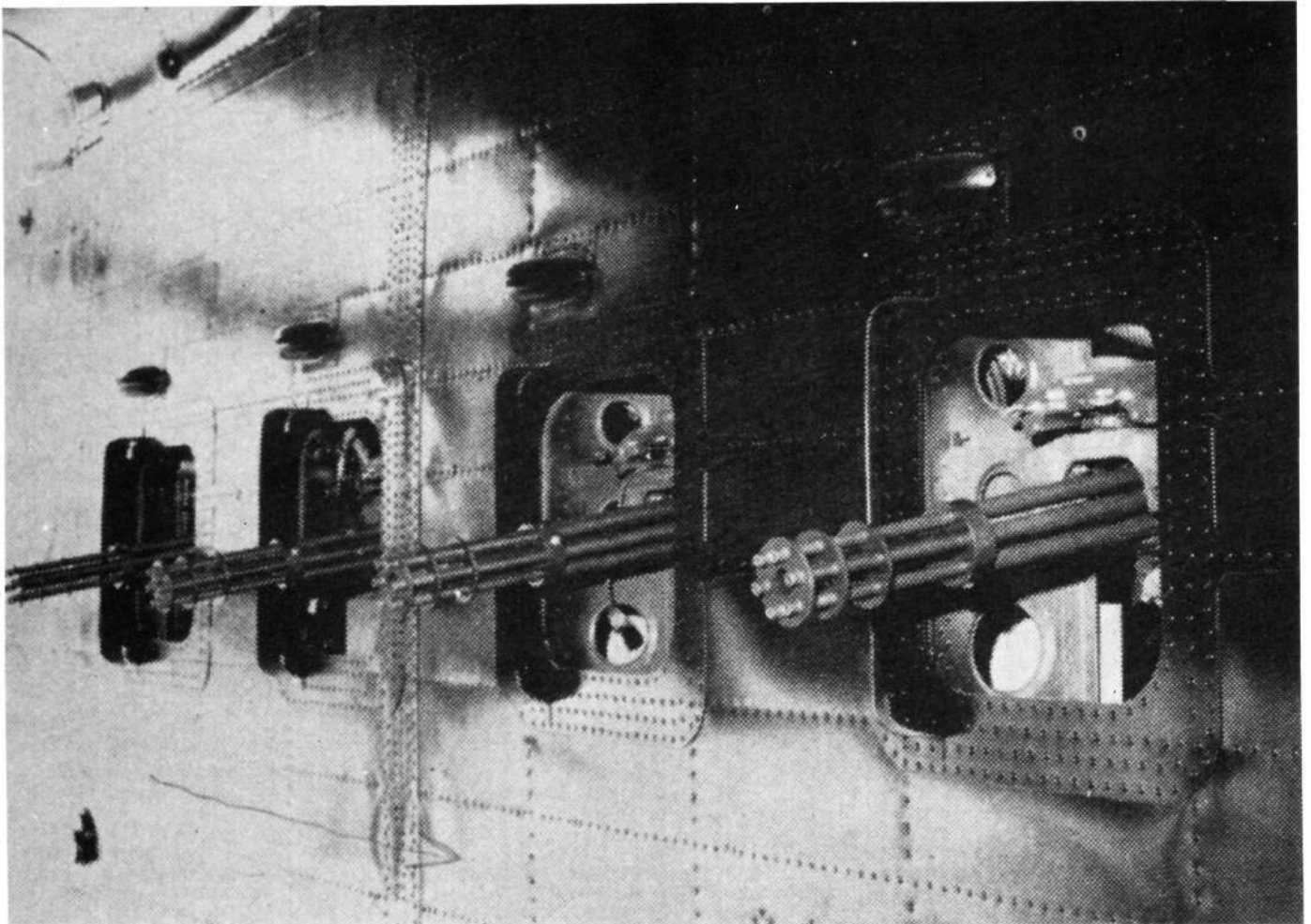




THE AC-119 "SHADOW" GUNSHIPS

by Kent A. Mitchell



BETWEEN APRIL 1949 THROUGH 1955, A TOTAL OF 1,183 production models of the Fairchild C-119 *Flying Boxcar* were built. Those aircraft performed yeomanly duty—not only with the U.S. Air Force and the U.S. Marine Corps—but with the Air Forces of Belgium, Canada, India, and Italy. The C-119s carried paratroops, cargo of all shapes and types (from howitzers, tanks, bales of hay—to sections of bridges extending from the open rear of the fuselage) and was even used to do midair retrievals of space capsules returning from orbit.

However, not even in the wildest dreams of aircraft designer Armand J. Thieblot did he imagine that "his baby" (the C-119) would near the end of its service life being used as a combat gunship. That occurred as a matter of happenstance.

From observations made in Vietnam during the early 1960s, the U.S. Air Force was convinced that concentrated air-to-ground fire power was an effective means of suppressing enemy ground activities. However, ground support attack aircraft in use at the time consisted of a gaggle of Douglas B-26 *invader* light bombers left over from World War II, converted North American T-28 *Trojan* trainers, and 1940s vintage Douglas A-1 *Skyraider* aircraft designed as Navy bombers—all flown by South Vietnamese pilots. Conventional tactical jet fighter aircraft of the period—not having been designed for a ground attack role—could carry only a limited ammunition supply in external machine gun pods or canisters for internally mounted cannons and thus could only make a few strafing passes before the ammunition was expended. Also, high-speed jet aircraft did not have any long loiter time capability. (The consideration for the use of jet fighters was not relevant at that time anyway, because our "rules of engagement" prohibited their use in Vietnam.) Therefore, a program was created to convert propeller-driven transport aircraft into weapon-carrying attack aircraft.

Beginning in 1965, the Air Force deployed 20 Douglas C-47 transports armed with General Electric 7.62mm *Miniguns* to Vietnam. Each aircraft had three guns mounted so that they fired from the left side of the fuselage. Two of the *Miniguns* protruded from slots in the aft passenger windows and the other fired from the open cargo door opening. The pilot, while flying a pylon turn maneuver over the target area, would fire the guns electrically while aiming through a ring-type sight in the left cockpit window.

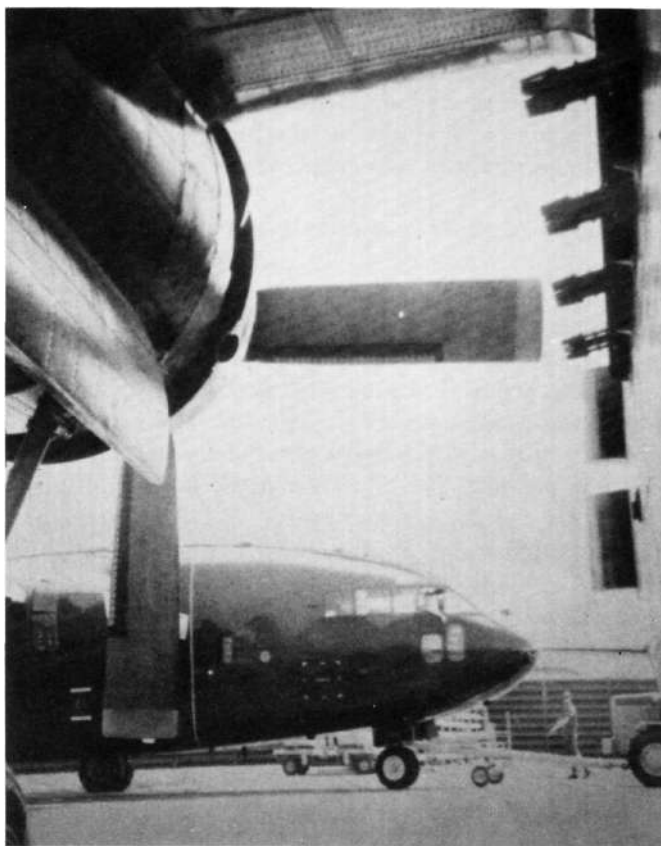
Text accompanying a photograph in *Aviation Week & Space Technology* magazine (December 6, 1965) mentioned that the Air Force Systems Command gave credit for the gunship concept to Reserve USAF Major Ralph E. Flexman. The major said he recalled that "... missionaries in South America often dropped a weighted bucket from a light air-

craft attached to a long rope and circled around it while villagers loaded the bucket with mail or supplies." As a flight instructor, Flexman also knew that pilots could hold a wingtip over a spot relatively easily while flying pylon turns. The airplane thus in effect could be used as a "stationary" flying gun platform.

Using techniques developed during evaluation trials at Eglin Air Force Base, Florida, the gunships were soon used extensively in Vietnam by the 4th Air Commando Squadron (Fire Support), assigned to the 2nd Air Division at Tan Son Nhut Air Base, Saigon. Officially designated the AC-47 *Dragon*, the gunship was soon dubbed "Puff, the Magic Dragon" by the ground troops being supported during night missions—because the flare dropping plane's light and noise of the high rate of fire from the *Miniguns* which quickly dispersed Viet Cong attacks. Another nickname for the AC-47 gunships was "Spooky," having been shortened from "Spooky Bird"—which itself had been derived from the standard C-47's popular name of "Gooney Bird."

Tactical operations of the AC-47 were so successful that the gunships were soon found to be inadequate. Each 7.62mm gun could fire at selectable rates varying from 300 to a maximum of 6,000 rounds per minute. Even though the AC-47 pilot would normally fire only two guns at a time, keeping the third in reserve, it was not unusual for a *Dragon* ship to expend 50,000 rounds from the three guns on a single flight. During hot firefights, the gunships had to return to base several times each night for more ammunition.

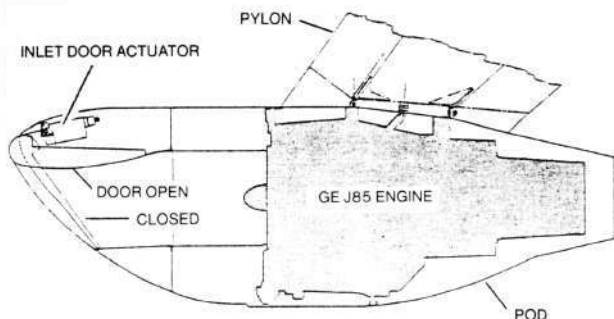
Coincidentally, at about this time there were growing numbers of surplus Fairchild C-119G transports being made



Flare-dropping night missions of the gunships soon led to the underside of the AC-119s being painted black. (Fairchild Photo, Author's Collection)

The four GAU-2 *Miniguns* seen protruding from the left side of an AC-119G produced a "Rain of Death" upon the enemy on the ground. (Fairchild Photo, Author's Collection)

The first of the AC-119G gunships arrived in Vietnam in January 1969. (U.S. Air Force Photo, Author's Collection)



TAKEOFF POWER 2850 POUNDS THRUST
MAX. CONTINUOUS POWER 2700 POUNDS THRUST



available due to the introduction of Douglas C-124s into the Air Force Reserve fleet. Realizing an opportunity, in August 1967 Fairchild marketing personnel submitted an unsolicited proposal to the Air Force to convert the venerable cargo plane to a gunship configuration. Such a modification would produce a gunship which would have more firepower, could carry more ammunition, and have greater loiter capability than the AC-47.

Fairchild had already conducted a structural integrity inspection of the remaining C-119 aircraft in 1965 and concluded that the original airframe design life of 20,000 flying hours remained valid. At that time, the average C-119 had logged 4,500 hours.

Therefore, the Air Force thought Fairchild's proposal was a good idea and gave a go-ahead to produce a prototype gunship for testing, with delivery before the end of 1967.

Also, at the time, Fairchild was engaged in a modification program for the Air Force to convert C-123B aircraft to a C-123K configuration. (See the author's article, "The C-123 Provider" in Vol. 37, No. 3, Fall 1992, *AAHS Journal*.) The major part of the modification program was the installation of two wing-mounted J85 auxiliary jet pylon-pod assemblies. On their own initiative and looking for additional business, Fairchild had already obtained a C-119G on bailment back from the Air Force and installed a pair of C-123K design jet pods to create the YC-119K prototype (AF tail number 53-3152, Fairchild MSN 11153, the 859th C-119 built). In addition to the J85-17 jet pods, the YC-119K was modified

AC-119K J85-17 turbojet installation.

(Author's Collection)

A camera time exposure captures the stream of fire unleashed by an AC-119 suppressing enemy mortars near Phan Rang Air Base.

(U.S. Air Force Photo, Author's Collection)

The first AC-119G delivered to the USAF (53-8069) had the standard camouflage paint scheme.

(Fairchild Photo, Author's Collection)

After an attack by a *Shadow* gunship, leaflets were dropped in the area letting survivors know what hit them. The top line of a leaflet reproduced here reads "Rain of Death." The bottom line says, "Here is the AC-119 gunship which just attacked you." (As appeared in the *Fairchild Hiller News*, Vol. 7, No. 10, Oct. 1970)

with the incorporation of a Goodyear electronic antiskid brake system. Painted with stars and red, white and blue stripes, the aircraft was taken on a tour of Air Force bases to spark interest and promote the possibility of obtaining a modification contract. The interest generated by the increased performance of the YC-119K was such that Fairchild submitted a second proposal to the Air Force to produce C-119 gunships in the K model configuration.

In the meantime, the initial tests of the side-gun-firing C-119 configuration had proved satisfactory and the Air Force was prepared to order 15 converted aircraft (with fiscal 1968 funds). Because the Air Force was in such a hurry to receive the new gunships and put them into service in Vietnam, the aircraft modification would just involve the quick and easy installation of four *Miniguns*. The armed aircraft would then be designated the AC-119G.

Then, because the AC-119 could carry considerably more ammunition and would have greatly increased loiter time than the AC-47, it was decided that the smaller aircraft would be phased out and replaced by the Fairchild gunships.

Consequently, on February 17, 1968, a contract was signed by the Air Force Logistics Command for Fairchild to produce 52 gunships. This was to be accomplished in two phases. The first phase would produce 26 AC-119G aircraft with four *Miniguns*, a gun-sight system, a flare launcher, and fuselage armor protection for the 8- to 10-man crew. The second phase called for the production of 26 AC-119K gunships with two General Electric J85-17 2,800-pound thrust jet engines in addition to their two reciprocating engines (3,500-hp Wright R-3350-89 turbo compounds). The AC-119K would be additionally equipped with two 20mm *Vulcan* Gatling-type cannons, a forward-looking infrared (FLIR) unit, a forward-looking radar, a side-looking radar, and a Doppler navigation system.

Because the Aircraft Division of Fairchild Hiller Corporation (Hiller was added to the corporate name in 1964) at Hagerstown, Maryland, was busily engaged with the C-123K modification program and producing the commercial FH-1100 helicopter, FH-227 airliner and Porter STOL aircraft—the gunship modification program was accomplished at the Aircraft Service Division, St. Augustine, Florida.

In addition to the C-119 gunship program, the USAF's Aeronautical Systems Division, Wright-Patterson AFB, Ohio, was also testing an AC-130A gunship. To preclude confusion about the growing collection of armed transport aircraft, the



Air Force decided that the AC-47 would be referred to as the *Gunship 1*, the AC-130A as the *Gunship 2*, the AC-119G became the *Gunship 3*, and the AC-119K was *Gunship 4*. However, the "official" names did not stick.

The first AC-119G (AF tail number 53-8069) was delivered on schedule to the USAF on May 19, 1968. Major General Francis C. Gideon, commander of the Warner Robins Air Material Area, accepted the aircraft from Fairchild Hiller vice president David W. Pertschuk. Fairchild claimed that, once the contract proposal was accepted by the Air Force, the C-119G was transformed from cargo carrier to gunship in less time than any other major overhaul and modification program in Air Force history. By early September 1968, 19 of the 26 *Gunship* is had been accepted into the USAF inventory.

Delivery of the first AC-119K soon followed. Installation of the auxiliary jet engines on the C-119s was made easy and accomplished in a timely manner because the engineering design of the pod assembly had already been finalized—the pod was identical to those the Fairchild Aircraft Division was installing on the C-123K. In fact, the pods were completely interchangeable between C-123K and AC-119K aircraft. The pods were built at the Hagerstown factory and shipped to the St. Augustine modification facility.

Prior to deployment to Vietnam, aircrew training for the gunships was conducted at Lockbourne AFB, Ohio, by the 4413th Combat Crew Training Squadron. Manpower for the new gunships was obtained by activating an Air Force Reserve unit, the 71st Tactical Airlift Squadron at Bakalar AFB, Indiana. Recalled in May of 1968, the unit was redesignated the 17th Special Operations Squadron (SOS) and moved to Lockbourne to retrain from airlift to gunship flying. The 17th SOS and their AC-119Gs arrived in Vietnam in January 1969 and were attached to the 14th Special Operations Wing (SOW), with headquarters at Nha Trang. Meanwhile, a second unit, the 18th SOS, was being formed at Lockbourne AFB for training in the AC-119K. The 18th was soon also deployed to Vietnam and it too was attached to the 14th SOW. The 18th SOS was based at Phan Rang Air Base.

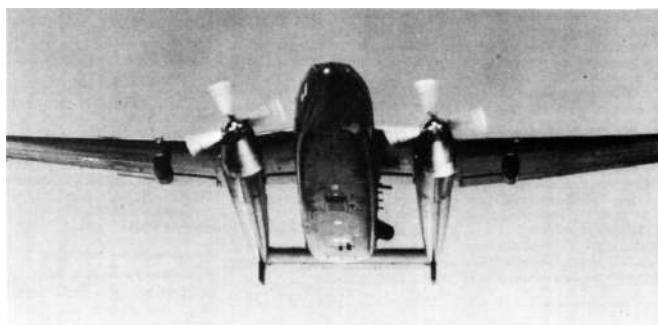
The AC-119 gunships were not in Vietnam very long before their operations earned them a new nickname—"The

Shadow." No doubt this was due in no small part because of their dark paint scheme. The Fairchild gunships were painted mostly black in the tradition of the Northrop P-61 *Black Widow* night fighter of WWII fame.

The gunships were also used sometimes, just before their nightly missions, to drop psychological warfare leaflets on enemy troops warning them of their impending doom. Each leaflet showed a picture of the AC-119 *Miniguns* and a message: "Here is a weapon the South has that your leaders have not told you about. It can see you in the dark of night, though you cannot see it. It has the firepower of over 1,000 men."

After an attack by a *Shadow* gunship, other captioned photo leaflets were dropped in the area letting survivors know what hit them. The top line of the leaflet read "Rain of Death." The line below the photograph said: "Here is the AC-119 *Gunship* which just attacked you." The reverse side of the leaflet was addressed to "Men in the Communist Ranks" and described the firepower and accuracy of the night observation devices aboard the gunship. "We will continue to attack you," the leaflet read. "Next time, will you escape death? We hope you will make the clear-sighted decision to rally to the National just cause to bring peace soon to the nation."

MUA DAN GIO CHẾT CHÓC



DAY LA PHONG PHAO CO AC-119 VUA TAN CONG CAC BAN

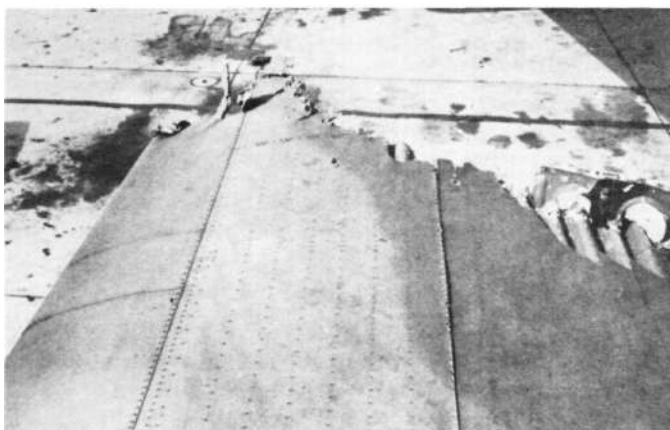


AC-119K 53-7883 lost half of the right wing to ground fire, but flew 180 miles for a safe landing. (U.S. Air Force Photo, Author's Collection)

Looking outboard where half of the gunship's right wing should be. (U.S. Air Force Photo, Author's Collection)

En route to a target area, night observation scope operator Air Force Major David F. Van Nest watches the sun set. (U.S. Air Force Photo, Author's Collection)

Publicity photo shows AC-119K with both props feathered and flying on jet power. (Fairchild Photo, Author's Collection)



By the fall of 1969, all USAF AC-47 gunship units in Vietnam had been deactivated and the aircraft turned over to the South Vietnamese Air Force (VNAF).

By early 1970, the AC-119s had proved to be highly effective—so much so that the Air Force crews boasted that the enemy had never succeeded in an attack on any hamlet or outpost protected by the gunships.

The gunships were not invulnerable, however.

AC-119K 53-7883, piloted by Captain Alan Milacek, had detected a convoy of enemy trucks moving south under cover of darkness and the jungle canopy. While in the process of giving them "the works" with the guns and cannon, the gunship was suddenly rocked by the explosion of an anti-aircraft shell into the right wing.

Milacek recalled, "We had been flying in a 30 degree left bank. Suddenly we were in a 60 degree right bank and diving. I called in a May Day and told the crew to prepare to bail out. Captain Brent O'Brien (copilot) and I were trying to get control again and get out of the dive. We finally did, but were down to about 1,000 feet altitude in the mountains over unfriendly territory. We had to gain altitude if we were going to clear the mountains. I didn't know how badly we were hurt and how long we could stay in the air. I told the gunners and crew to dump ammo and anything else they could."

Meanwhile, the gunship's navigator, Capt. Roger Clancy, had worked out a heading to avoid high terrain and 7883 headed toward home (180 miles away) with both jets and the recip at maximum power. That became another problem.

T/Sgt. Albert Nash, the flight engineer, reported that the engine power settings being used would cause fuel exhaustion about 30 miles short of the base.

"Fortunately, we had cleared the mountains so I was able to pull off the power and start a slow descent. We were still ready to bail out," Capt. Milacek said.

The fuel-saving efforts worked and the gunship made it to the field where Milacek made a flaps-up landing at 140 knots.

Upon exiting the airplane, it was then the crew was able to see the damage which up until then had been hidden in the dark of night: half of the right-hand wing was gone! Fourteen and one-half feet of the leading edge and 17 feet of the trailing edge had been completely shot away, which included the aileron. There were also holes in the fuselage. Had the crew been on a daylight mission and been able to see what had been done to their aircraft, they most probably would have bailed out!

An article in the July 1970 issue of the Fairchild company newspaper, which reported this incident, noted that a re-



placement outer wing panel was to be installed and the gunship would be returned to combat.

Other than being able to sustain a maximum amount of anti-aircraft shell damage and remain operational, part of the *Shadow's* success as a gunship could be attributed to its night observation scope (NOS) system. Operation of the NOS was based on the principle of light amplification. When the operator of the system, one of two navigators on board the gunship, spotted a target in his scope, he kept it centered and the coordinates were electronically fed to a gun computer. The computer directed the pilot so as to align the aircraft's position and altitude and fire the guns or cannons accurately without actually having seen the target. Thus, the enemy's former asset—the cover of darkness—was denied.

Using the NOS enabled one AC-119K crew to destroy 40 trucks in two nights' work. Major Richard Wargowsky and his gunship crew eliminated 19 trucks in one night over the Ho Chi Minh trail in Laos. They returned the next night and picked off 21 more. The missions were described in the local *Gunfighter Gazette*, published by Air Force personnel at Da Nang Air Base, Vietnam:

Only moments after they reached the target area the first night, sensor operator Major Tom Vandenack spotted the first of the many trucks he was to see that night.

"We started following a branch of the trail and there it was, like a big fat plum just waiting to be picked." A short burst of the 20mm cannons and the gunship was again prowling the trail for more targets.

'After blasting four trucks scattered down a short stretch of trail, the crew found themselves orbiting a truck park near an intersection of two trails. Feeding corrections to the firing computer, the gunship crew managed to allow for an erratic wind and soon found they had destroyed eight more vehicles.

"We took an awful lot of Triple-A on those first trucks," commented Staff Sgt. Jimmy Grant, one of two scanners who hangs out the back doors to watch for hostile fire. 'I was really scared when that stuff started coming as close as it was."

The crew returned to Laos the next night under a shimmering white moon. They soon found themselves orbiting a truck park and storage area. It took less than half an hour for the crew to destroy 15 trucks and move on to greener pastures.

A single burst of 20mm destroyed the next two trucks the crew ran across, and a third was damaged shortly after.

With fuel and ammunition rapidly running out, the crew began to scour the area, looking for two more trucks to bring their score to the magic 40 figure.

With about four minutes of target time left, the sensors located a pair of trucks, hidden deep under the heavy jungle foliage. Major Wargowsky lined up his gunsight and squeezed off a short burst. WHOOM flashed the truck as it exploded into oblivion. The sensor informed him they were still two close together, not far from the gutted truck, and as he fired the burst which emptied his cannons, both trucks lit up in the dense jungle far below.

"One of the major reasons we were able to get so many trucks was the fact the gunners kept the guns loaded as fast as I could fire them," commented the pilot. "With the aircraft dancing all over the sky to avoid Triple-A, it's hard enough to even stand up back there, let alone lug ammo cans around and work on the guns."

It was a tradition in the 18th SOS to award each man participating in a mission destroying or damaging 20 or more trucks to be entitled to wear a lapel pin depicting a 20mm cannon. Major Wargowsky and his gunship crew proudly wore their highly prized honor.

By mid-1971, another (and unforeseen) modification was found to be necessary for the AC-119 gunships. The change was to a three-blade Hamilton Standard propeller to replace the four-blade Allison Aeroproducts propellers installed when the venerable twin-boom cargo carriers entered the Air Force inventory some 20 years previous.

Spare parts and service support for the maintenance of the four-blade propellers had become increasingly difficult since they had long been out of production.

The three-blade propellers had recently become available from Lockheed C-121 *Super Constellation* aircraft retired by the Air Force. The prop change was feasible, since the C-121s and C-119s both used the Wright R-3350 engines.

Interestingly, the change gave the C-119s a performance increase of 20 percent in climb and seven percent in cruise, which in turn allowed a greater range due to reduced fuel consumption.

The propeller change was accomplished on aircraft in use in South Vietnam and U.S. bases by a field team from Robins AFB, Georgia.

While the AC-119 *Shadow* gunships proved themselves in combat, they alone could not end the Vietnam conflict. Politics did, however.

Four-party Vietnam peace pacts were signed in Paris on January 27, 1973. The last U.S. combat troops left the country March 29th.

Even so, Fairchild was still in the "gunship" business. By the mid-1970s, the company was busy producing another type of ground support aircraft—the A-10A *Thunderbolt II*. •

REFERENCES

- "AC-47s Being Deployed in Vietnam," *Aviation Week & Space Technology* magazine, November 22, 1965, p. 22.
- "Gunship Success Spurs Advanced Models," *Aviation Week & Space Technology* magazine, August 14, 1967, p. 27.
- "Aircraft Service Division Delivers First Gunship," *Fairchild Hitter News*, Vol. 5, No. 6, June 1968, pp. 1, 2.
- David W. Pertschuk (Vice President and General Manager, Aircraft Service Division), "Old Aircraft Given New Life, New Missions," *Fairchild Hitter News*, Vol. 5, No. 9, September 1968, p. 3.
- "AC-119 Gunship Readied for Deployment," *Aviation Week & Space Technology* magazine, September 23, 1968, pp. 40, 41, 43, 45, 49.
- "Fighting Boxcars for Spookie Gooneys," *Air Progress* magazine, January 1969.
- "First C-119 Gunships Arrive in Vietnam for New Action," *Fairchild Hitter News*, Vol. 6, No. 3, March 1969, p. 3.
- "Vietnam Gunships," *Aviation Week & Space Technology* magazine, February 10, 1969, p. 18.
- "AF Will Convert Another Reserve Unit to Gunships," *Fairchild Hitter News*, Vol. 6, No. 5, May 1969, p. 4.
- William R. Casey (Major, USAF), "AC-119—USAF's Flying Battleship," *Air Force/Space Digest* magazine, February 1970, pp. 48-50.
- "Continuing Growth in Capability Marks Aircraft Service Division," *Fairchild Hitter News*, Vol. 7, No. 5, May 1970, p. 2.
- "AC-119K Stinger Loses Half of Wing, Returns Crew Safely," *Fairchild Hitter News*, Vol. 7, No. 7, July 1970, p. 4.
- "'Nocturnal Airmen' Fly Gunships, Deny Darkness to Enemy in Southeast Asia," *Fairchild Hitter News*, Vol. 7, No. 11, November 1970, p. 4.
- "AC-119K 'Stinger' Crew Destroys 40 Trucks in Two Nights' Work" (reprinted from the *Gunfighter Gazette*, published at Da Nang AB, Vietnam), *Fairchild News*, Vol. 8, No. 6, June 1971, pp. 1, 4.
- "New Propellers Improve C-119 Range, Performance," *Fairchild World* newsletter, Vol. 8, No. 12, December 1971, p. 1.

Equipment common to both the AC-119G and AC-119K gunships

- General Electric SUU-11 gun pods (four each), each containing a GAU-2 *Minigun*. The 7.62mm NATO cartridge guns were Gatling-type weapons with six rotating barrels pointing out the left side of the AC-119 through square gun ports.
- Electro-Optical Systems AN/AVQ-8 airborne illuminator light set and night observation system. The illuminator system was pallet-mounted along with a large desk-size service module and control panel in the left rear of the aircraft. The night observation system was mounted on the left side of the aircraft forward of the wing.
- Stratos Western (a Fairchild division) LAU-74/A flare launcher mounted in the right rear fuselage and pointed out the clamshell paratrooper jump door.
- General Precision Systems, Inc. analog gunfire control computer system for aiming the guns.
- Chicago Aerial Industries gunsight, installed to the left of the pilot's seat.
- TRW Systems fire control safety display. The unit's purpose was to ensure that weapons were not inadvertently trained on friendly troops.
- Garrett 60-kva auxiliary power unit (APU) which supplied electrical power for the illuminator and other equipment. It was installed in a fireproof container. (The APU was similar to models used in the Boeing 727 and McDonnell Douglas **DC-9**.)
- Goodyear alumina ceramic armorplate for protection of crewmen in the cockpit area and cargo compartment.
- Government-furnished APR 25 and APR 26 radar homing and warning systems for passive electronic countermeasures.

Additional equipment carried by the AC-119K gunships

- General Electric SUU-16 pods (two each), each containing an M61A1 20mm Gatling-type cannon.
- Marconi AN/APN-147 Doppler navigation system.
- Texas Instruments AAD-4 forward looking infrared (FLIR) unit. The unit served as the secondary sensor to the night observation device.
- Motorola AN/APQ-133 sideward-pointing radar. The unit was mounted in the left rear fuselage and was used to monitor ground-based transponders to indicate the position of friendly troops.
- Texas Instruments AN/APQ-136 forward-looking radar, mounted in the nose of the aircraft for navigation purposes.

AC-119G SERIAL NUMBERS

Gunship S/N	AFS/N	Mfg. S/N	Gunship S/N	AF S/N	Mfg. S/N
101	53-8069	172	114	53-7852	11273
102	53-7833	11250	115	53-7851	11272
103	53-8089	192	116	52-5938	11125
104	53-8123	226	117	53-8155	258
105	53-8114	217	118S	53-7848	11269
106	52-5898	11065	119	52-5892	11059
107	53-8115	218	120	53-3145	11156
108	53-3205	11218	121	53-3170	11181
109	52-5907	11074	122S	53-3178	11189
110	52-5927	11106	123	52-5905	11072
111	53-3136	11147	124A	53-8131	234
112	52-5942	11129	125	53-3192	11203
113A	52-5925	11104	126	53-3189	11200

AC-119K SERIAL NUMBERS

Gunship S/N	AF S/N	Mfg. S/N	Gunship S/N	AF S/N	Mfg. S/N
151	53-7877	11306	164	53-8148	251
152	53-7837	11254	165	53-7883	11317
153	53-3187	11198	166	53-7850	11271
154	53-8145	248	167	53-3154	11165
155	52-5910	11089	168	53-3156	11167
156	52-5911	11090	169	53-7879	11308
157	53-7831	11248	170	53-7854	11275
158	53-3197	11210	171	53-8121	224
159	52-5926	11105	172	52-5864	11023
160	52-5940	11127	173	52-9982	11143
161	53-3211	11227	174	52-5935	11114
162	53-7826	11239	175	52-5945	11132
163	53-7830	11247	176	52-5889	11056