

FIREPOWER

Volume 2

Issue 13

WEAPON FILE

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Published weekly by
Orbis Publishing Limited
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Printed in Great Britain

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Front cover: Tracer erupts from the 105-mm guns of an AC-130 Hercules gunship while in a tight turn over its target.

Picture acknowledgements

Front cover: US Air Force. 289-293: US Air Force. 294: US Air Force/US Department of Defense. 296: US Air Force. 297: US Air Force/US Navy. 298: US Air Force/MacClancy Collection. 303: US Air Force. 304: US Air Force/MacClancy Collection. 305: US Air Force. 306: MacClancy Collection/US Navy. 307: US Air Force. 308: US Army. 309: US Air Force/MacClancy Collection. 310-1: US Air Force. 312: US Air Force/US Army. Inside back cover: US Air Force. Back cover: US Air Force/US Department of Defense.

EV
SPRINGS

GUNSHIP

In Vietnam, the US Air Force took Dakotas, Flying Boxcars and Hercules transports and gave them deadly teeth to turn them into fire-spitting killers that were among the most-feared weapons of the war.

When the AC-47's battery of Miniguns opened up, the noise in the cabin was ear-splitting. Gunners had to wear ear protectors to let themselves think, let alone communicate with the rest of the crew. This man would soon be ankle-deep in spent shell cases.

If this were daylight, the Spectre would cast a big shadow over the green sea of trees. Not on this mission. It's so black out there it makes your eyeballs ache just finding where the ground ends and the sky begins. That suits us fine. The time is late 1971. We're on a night flight over Cambodia, a special (highly dangerous) operation. Our ship is an AC-130, callsign Spectre – the biggest, most deadly gunship the USAF ever used in Vietnam.

Now we're over the Trail. The guy on the TV surveillance set is watching for trucks. Contact.

The guns open up. A hit. Two, three fires. We turn the night into infra-red day as our sensors and Black Crow direction finder, tuned to Russian auto ignition systems, go to work. The beacon tracker picks up signals from a ground sensor and the computer gives directions.

Still holding the turn, we have more move-

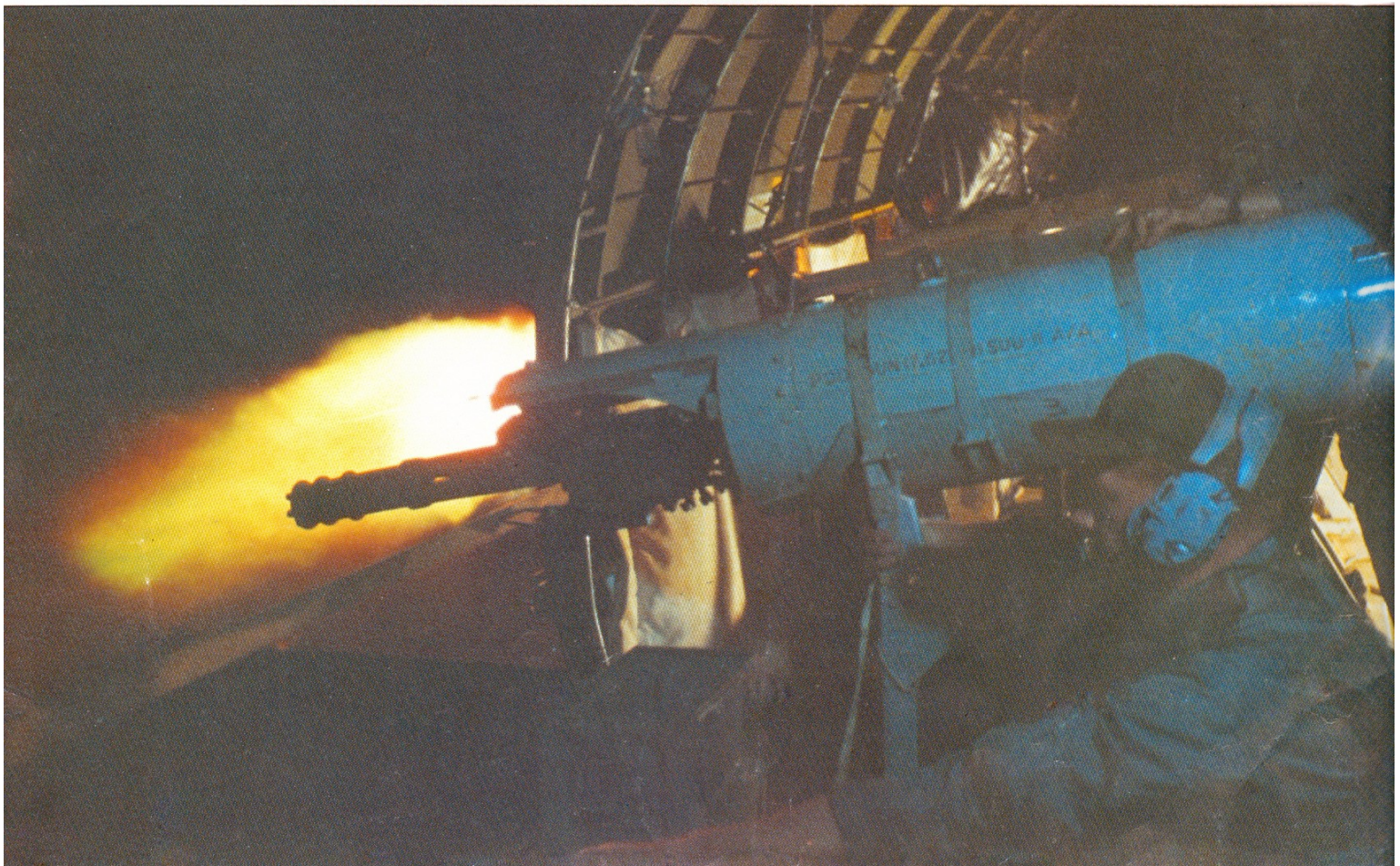
ment on the 'scope. Bang! Bang! A hit and one miss. Time to go home. Five trucks is a good night's work.

Fixed-wing gunships were the result of a combat classroom which started lessons using one old C-47, in 1964. Then, a group of pilots and crewmen went to South East Asia to prove that arming a cargo plane coming up for its 30th birthday was a great way to fight a modern war!

Circular orbit

The idea was not new. In 1927 a pilot had found that a D.H.4 biplane could, flying a circular, 'pylon turn' course, hit a small ground target with a side-firing machine-gun.

Although successful, the idea was shelved until the 1960s. It was found that by holding a C-47 in a bank to port and using a cockpit sight, side-firing guns could hit a small target with devastating accuracy while maintaining a

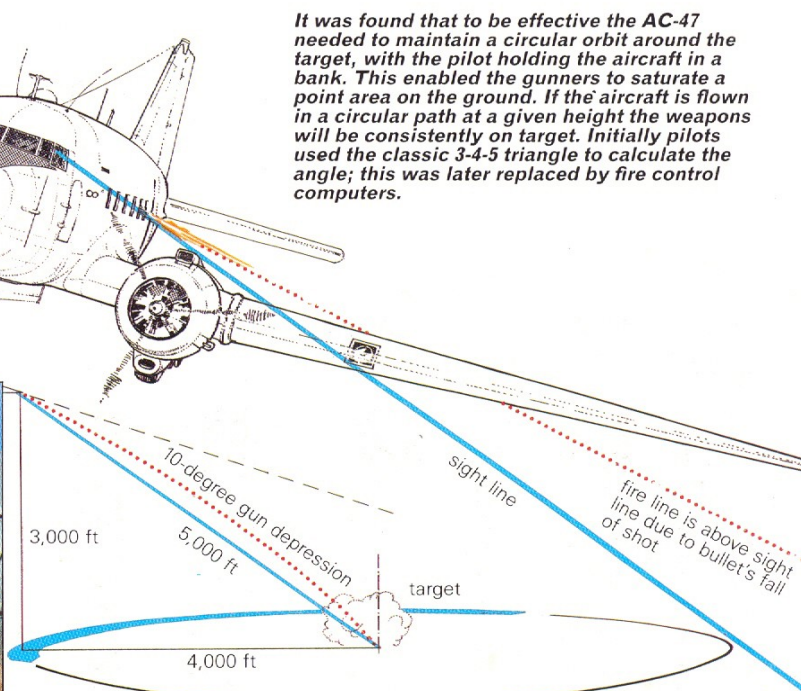


An AC-130 gunship can put a round into every square foot of a football field in just over 60 seconds.

Firing for accuracy

Early on, the AC-47 was fitted with a battery of standard machine-guns. These often jammed or overheated from the necessary high volume of rounds, so the more efficient, rotary-barrel General Electric Minigun became the answer to the gunship armament requirement. And it didn't need much modification to fit.

20-degree angle of bank



It was found that to be effective the AC-47 needed to maintain a circular orbit around the target, with the pilot holding the aircraft in a bank. This enabled the gunners to saturate a point area on the ground. If the aircraft is flown in a circular path at a given height the weapons will be consistently on target. Initially pilots used the classic 3-4-5 triangle to calculate the angle; this was later replaced by fire control computers.

Left: A battle-worn AC-47 gunship waits on the tarmac for the next night's bout of screaming fire-filled flying against the VC insurgents, who never seemed to get the message that the 'Sky Dragon' would burn them up wherever he found them. This is the standard three-Minigun battery of the early gunship.

circular orbit. With a modern revolving-barrel Minigun firing 6,000 rounds a minute, a four-second burst would put 400 bullets in a 31-foot diameter circle.

Someone thought the rain of fire looked like the hot breath of a dragon. 'Puff the Magic Dragon' was then a popular song, so Puff became the gunship callsign.

Early gunships lacked modern weapons. Engineers simply drilled holes in the C-47's door and windows for 0.3 calibre machine-guns to fire through. They weren't too reliable and often jammed – but they proved the gunship theory.

With just one aircraft, the Puff crews were kept very busy. In a war that was really hundreds of localised battles, commanders liked the pinpoint accuracy of Puff. Often they'd scream for gunship support rather than fighter bomber support. Clearly more AC-47s were needed – and fast.

In 1965 a new squadron, the 4th Air Commando, began training, and 20 C-47s were converted to gunships. The 4th ACS distributed its aircraft and crews throughout South Vietnam, on call to get ground forces out of trouble around the clock. At bases like Da Nang, Pleiku, Bien Hoa and Binh Tuy, the

telephones rang constantly in the Puff operations shack.

After a brief, near-suicidal try at interdicting the Ho Chi Minh Trail, where groundfire was deadly, the AC-47s stayed South. The 4th ACS became part of the 14th Special Operations Wing, widely known as the Antique Wing due to most of its aircraft being older than the men who flew them!

Decoy C-47

Gunships, which took the callsign Spooky in 1966, often worked in pairs. A favourite trick was to send out a standard C-47 fitted with

GUNSHIP Reference File

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Douglas AC-47 'Spooky'

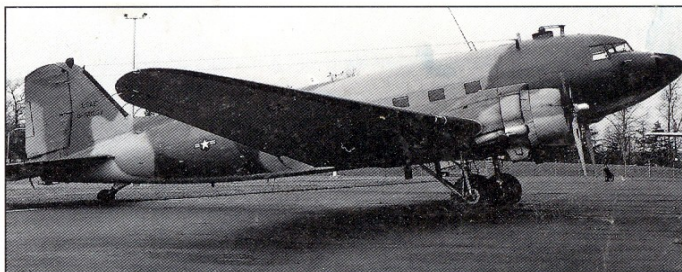


During the Vietnam War the US Air Force soon became convinced that a gunship aeroplane, able to pour down massive concentrations of fire on comparatively small areas of ground where an enemy might be hiding, could prove a decisive weapon.

The first such aeroplane was the 'Gunship I' development of the C-47D, initially designated FC-47D and then AC-47D 'Spooky'. This was a comparatively simple development of the basic transport aeroplane with three MXU-470/A Minigun multi-barrel machine-guns and 21,000 rounds of ammunition. The guns were located on the gunship's port side (in the fifth and sixth windows and the cargo door), and the operational tactic was a steady left-

hand orbit round the target area so that the pilot could aim and fire the weapons, whose ammunition was replenished by armourers who also launched flares in nocturnal operations.

Some 32 C-47Ds were converted to AC-47D standard, and these were operated from November 1965 by the 4th Air Commando Squadron, which was later divided into the 4th and 14th Air Commando (later Special Operations) Squadrons. The AC-47D was phased out of US service in December 1968, surviving aircraft being passed to the South Vietnamese and Laotian air forces.



Specification
Douglas AC-47D 'Spooky'
Type: six/seven-seat aerial gunship
Powerplant: two 895-kW (1,200-hp) Pratt & Whitney R-1830-92 piston engines
Performance: maximum speed 370 km/h (230 mph); range 2575 km

(1,600 miles)
Dimensions: span 29.11 m (95 ft 6 in); length 19.43 m (63 ft 9 in)
Weights: empty not revealed; maximum take-off 11793 kg (26,000 lb)
Armament: three 7.62-mm (0.3-in) Miniguns
Users: Laos, South Vietnam and USA

loudspeakers. This would orbit and implore the VC not to fire at it or great wrath would befall them. When the call was ignored, a blacked-out Spooky, invisible above the first one, would open fire. The last thing many an enemy soldier heard were the words, 'I told you so' echoing out of the night sky . . .

By 1967 a second squadron, the 3rd SOS, was in Vietnam. The AC-47s soldiered on for two more years until the AC-119 largely replaced it. The Flying Boxcar conversion got

Below: A time exposure photograph makes the streams of gunship fire in the sky over a target look like fireworks. Every line represents a stream of shells from Miniguns.

into service before the Herc, although the C-130 was the true Spooky follow-on.

Among the problems with the AC-47 was that it was slow, old, small and not very plentiful. The C-130 solved all these problems in one airframe big enough for the black boxes and sensor equipment to find Charlie wherever he hid, night or day.

Truck-hunting

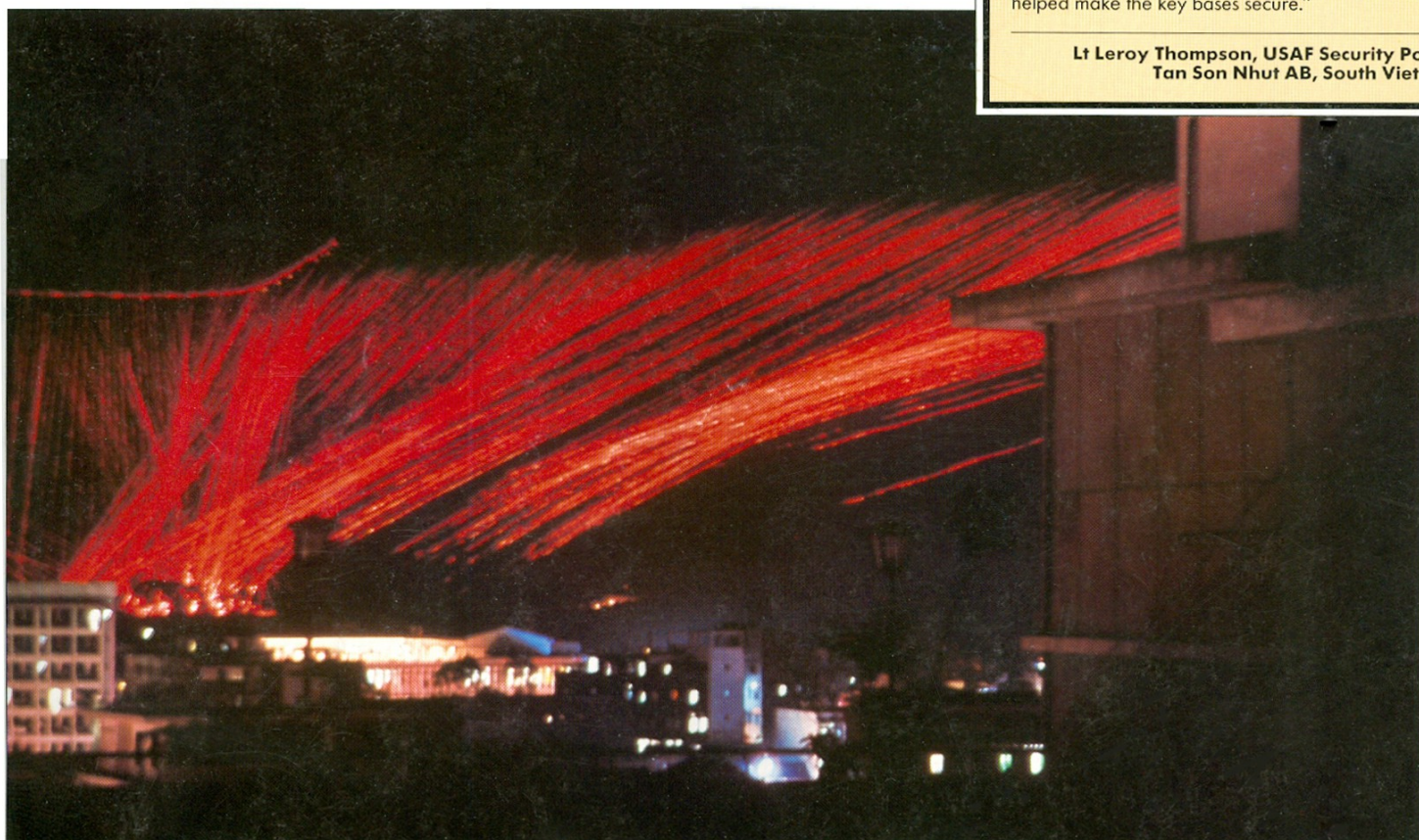
With one converted C-130A, Spectre went into combat. Armed with four 7.62-mm Miniguns and four 20-mm Gatling cannon, plus a Starlite Scope, searchlight and computer to work out the target co-ordinates, the Her-

The Professional's View:

AC-47 gunship

"The AC-47 made a lasting impression on anyone who saw its Miniguns open up at night. From the circling plane three streams of fire shot out of its fuselage toward the ground and a sound like a jackhammer ripping through canvas filled the air. When the firing stopped, there were rarely any prisoners to be taken in the devastated area. When Puff swept an area with fire, it was swept clean. Despite the superior firepower of the larger gunships, it is the venerable Gooney Bird, metamorphosed into a dragon that most ground-pounders remember best. Working with security police units on the ground, Puff helped make the key bases secure."

Lt Leroy Thompson, USAF Security Police, Tan Son Nhut AB, South Vietnam



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Lockheed AP-2H Neptune



It is a relatively little-known fact that the US Navy was also involved in the operation of aerial gunships during the Vietnam War. The main navy units involved were the Naval Air Test Center's 'Project TRIM' detachment at Cam Ranh Bay and other bases from late 1967, and Heavy Attack Squadron 21 based at Cam Ranh Bay for a few months from September 1968. These units operated mainly over the Mekong River delta on interdiction work until VAH-21 was disbanded in March 1969.

The aircraft involved were four P-2Hs modified to **AP-2H Neptune** standard with the E-Systems TRIM (Trails & Roads Interdiction, Multi-sensor) package. Little has been revealed about this target-acquisition package, but it

probably included a FLIR, low-light-level TV and terrain-avoidance radar. The aircraft were also adapted for nocturnal operations with flame-dampers on the exhausts of the piston engines, and 'hush-kits' on the auxiliary turbojets.

The armament described below (which included two rear-firing 20-mm cannon for the engagement of targets that had been overflown) could also be supplemented by pintle-mounted 7.62-mm (0.3-in) M60 machine-guns located on each beam in the removable rear-fuselage windows.

Specification
Lockheed AP-2H Neptune
Type: multi-seat aerial gunship
Powerplant: two 2610-kW (3,500-hp)



Wright R-3350-32W Turbo-Compound piston engines and two 1542-kg (3,400-lb) thrust Westinghouse J34-WE-32W turbojets

Performance: maximum speed 648 km/h (403 mph); range 3450 km (2,200 miles)

Dimensions: span 31.65 m (103 ft

10 in); length 27.94 m (91 ft 8 in)

Weights: empty not revealed; maximum take-off 36240 kg (79,895 lb)

Armament: six 20-mm M24 cannon, two SUU-11B/A pods each carrying one 7.62-mm (0.3-in) Minigun, and up to four pods for a maximum of 76 70-mm (2.75-in) rockets

A gunship has a more powerful gun armament than a Navy destroyer.

'Fabulous Four-Engined Fighter' was the affectionate nickname that AC-130 gunship crews gave their aircraft. These lethal Hercs were the logical follow-on to the Dakota, and they ended up carrying the biggest aerial gun of the war.



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Fairchild NC-123K 'Black Spot'



Another little-known participant in the interdiction campaign during the Vietnam War was the **NC-123K** 'Black Spot' version of the C-123K Provider light tactical transport. Only two such conversions were made, and these operated with the 606th Air Commando Squadron based at Nakhon Phanom Air Base in Thailand between 1968 and 1971.

The NC-123K featured an advanced sensor package second only to that of the AC-130A/E in sophistication, the nose being revised with a large radome above a substantial sensor turret. The package included forward-looking search radar, a FLIR, a low-light-level TV and a laser rangefinder, while the type also accommodated an advanced

navigation system and a computer-controlled release system for the type's disposable load of anti-vehicle and anti-personnel bomblets.

The two aircraft were used for nocturnal interdiction over the Ho Chi Minh Trail, and though they were quite successful they lacked the capabilities and survivability of the AC-130 variants and thus enjoyed only a limited career. After storage in the USA, the aircraft were restored to light transport configuration and transferred to Thailand.

Specification
Fairchild NC-123K 'Black Spot'
Type: multi-seat night interdictor



Powerplant: two 1864-kW (2,500-hp) Pratt & Whitney R-2800-99V piston engines and two 1293-kg (2,850-lb) thrust General Electric J85-GE-17 turbojets
Performance: maximum speed 367 km/h (228 mph); range 1665 km (1,035 miles)

Dimensions: span 33.53 m (110 ft 0 in); length 23.24 m (76 ft 3 in)
Weights: empty not revealed; maximum take-off 27216 kg (60,000 lb)
Armament: an unrevealed weight of bomblets
User: USA

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Fairchild AU-23A Peacemaker



In 1971 the USA was becoming increasingly involved in the 'Vietnamisation' of the Vietnam War in a programme designed to make South Vietnam better able to shoulder the burden of its own defence so that American forces could be pulled out. The programme envisaged, amongst other things, the development of 'mini-gunships' for South Vietnamese use, and one of the types considered was a STOL utility transport based on the Pilatus Turbo-Porter.

Though trials in 1972 at Eglin AFB, Florida, convinced most US Air Force officers that the **AU-23A Peacemaker** was too small and light for effective development into an aerial gunship, orders were placed late in the

year for 15 such machines. The type was fitted with four underwing hardpoints for light drop loads and rocket-launcher pods, but the gunship capability was vested in a 20-mm three-barrel located in the cabin to fire through the door with the aid of a TVS-5 night vision sight.

Testing in 1972 was delayed by a number of problems, but the AU-23A was finally cleared for operations. Effectiveness and survivability were rated marginal, and the aircraft were placed in storage for a time before 13 finally reached the Thai air force.

Specification
Fairchild AU-23A Peacemaker
Type: three/four-seat aerial gunship



Powerplant: one 496-kW (665-shp) Garrett-AiResearch TPE331-1-101F turboprop
Performance: maximum speed 280 km/h (174 mph); range 898 km (558 miles)
Dimensions: span 15.14 m (49 ft 8 in); length 11.23 m (36 ft 10 in)

Weights: empty not revealed; maximum take-off 2767 kg (6,100 lb)
Armament: one 20-mm XM197 cannon and up to 636 kg (1,400 lb) of disposable stores carried under the wings
User: Thailand

cules could now go truck hunting along the Trail. On the first mission, six trucks were blasted. The USAF ordered more Spectres.

As insurance, because the Trail was still one of the hottest spots in South East Asia, Spectres usually had a shotgun guard of F-4s. Meanwhile the AC-119 went into action to fill any gap left after AC-47 phase-out.

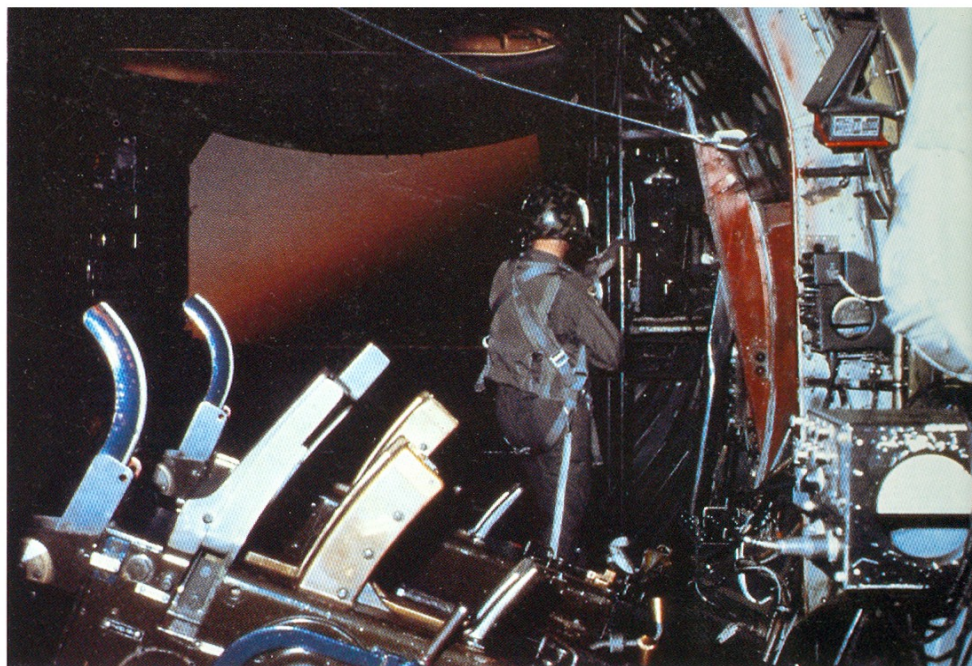
Two models

There were two AC-119 gunships, callsign Shadow. The G model, armed with four Miniguns, a xenon light, night observation sight and flare launcher, was a support ship while the K model, with two pod-mounted J85 jet engines, was a dedicated truck killer. The AC-119K, often known as 'Stinger', had two more guns, terrain-following and search radar, FLIR – Forward-Looking Infra-Red – and other magic tracking devices.

Entering combat in 1968 with the 14th SOW at Na Trang, two squadrons of Shadows flew every sort of mission, day and night, until late 1971.

Surprise package

By 1968, there were eight AC-130s, all of them slightly different. Aircraft No 9 was the prototype for the Surprise Package AC-130.



Above: In the belly of the Spectre, the breeches of two of the 40-mm cannon can be seen in the foreground and, beyond, the open rear loading ramp. The AC-130E was aptly named 'Surprise Package'.

That package consisted of a FLIR, an LLLTV – Low Light Level Television camera – beacon tracking, side-looking radar, laser

designator and a video bomb damage recorder. A digital fire control computer worked out the best attack profiles. To make room for the equipment, two Miniguns were taken out and replaced by two 40-mm Bofors guns.

For the enemy, worse was to come. The success of the early Spectres led to the far-

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Helio AU-24A Stallion



The competitor evaluated by the US Air Force against the Fairchild AU-23A in the 'Credible Chase' programme to provide the South Vietnamese air force with a simply maintained and easily operated 'mini-gunship' was the **AU-24A Stallion**, a development of the civilian Stallion Model H-550A. This was a utility light transport with excellent STOL capability, and 15 evaluation aircraft were ordered late in 1971.

For its military role the Stallion was provided with five hardpoints (two under each wing and one under the fuselage) as well as provision in the cabin for a side-firing 20-mm three-barrel cannon complete with its ammunition container and TVS-5 night

vision sight. Evaluation of the AU-24A got under way in April 1972, and despite several delays was completed by May of the same year.

Like the AU-23A, the AU-24A was judged to have only marginal capability and problematical survivability, so all 15 aircraft were relegated to outdoor storage at Davis-Monthan AFB, Arizona, at the end of the test programme. However, 14 of the aircraft were eventually delivered to the Cambodian air force.

Specification Helio AU-24A Stallion

Type: three/four-seat aerial gunship
Powerplant: one 507-kW (680-shp) Pratt & Whitney Canada PT6A-27



turboprop
Performance: maximum speed 348 km/h (216 mph); range 716 km (445 miles)
Dimensions: span 12.5 m (41 ft 0 in); length 12.07 m (39 ft 7 in)
Weights: empty not revealed; maximum take-off 2857 kg (6,300 lb)

Armament: one 20-mm XM197 cannon and up to 1043 kg (2,300 lb) of disposable stores carried externally
User: Cambodia

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Martin B-57G



To provide a high-quality night interdiction capability against the Ho Chi Minh Trail, 16 B-57B night intruders were converted into **B-57G** intruders with a self-contained night attack package in a drastically revised, bulbous nose. Developed by Westinghouse, the package included forward-looking search radar, a FLIR, a low-light-level TV and a laser ranger and marked-target seeker.

Eleven such aircraft were allocated to the 13th Bomb Squadron at Ubon Air Base, Thailand, from September 1970, and in the 'Tropic Moon III' campaign proved highly successful. Once detected and identified by the sensors, the target was ranged and illuminated by the laser system so that a 227-kg

(500-lb) guided bomb of the Paveway I series could home onto it with great accuracy. With this package the B-57 in its twilight years finally fulfilled the night intruder promise that had so long been denied by lack of adequate target-acquisition capability.

In the 'Pave Gat' programme, at least one B-57G was revised with a 20-mm XM197 three-barrel cannon in a trainable ventral mounting (in the bomb bay area) for evaluation as an aerial gunship. The trials were generally successful, but the type was not used operationally in Vietnam.

Specification Martin B-57G

Type: two-seat night intruder and



interdictor
Powerplant: two 3266-kW (7,500-lb) thrust Wright J65-W-5 turbojets
Performance: maximum speed 937 km/h (582 mph); range 3701 km (2,300 miles)
Dimensions: span 19.51 m (64 ft 0 in); length 19.96 m (65 ft 6 in) for B-57B

Weights: empty not revealed; maximum take-off 24948 kg (55,000 lb)
Armament: up to 2722 kg (6,000 lb) of bombs carried internally and up to 16 127-mm (5-in) rockets carried under the wings
User: USA



Above: Grenada was the AC-130's second war, and it did well again, spearheading the US invasion force and protecting unarmed transport Hercs by suppressing ground fire.

Below: American ground troops establish control during the invasion of Panama in December 1989. They can call on gunship support directly and often use their firepower to sanitise enemy strongpoints. Note the white armbands on the left arms of the soldiers: these enabled the gunships above, using infra-red sights, to identify friendly troops during nighttime operations.



reaching Pave Pronto programme, followed by the Pave Spectre AC-130E and H models, operated by the 16th SOS.

Tank targets

The last AC-130s packed a 105-mm howitzer to stand off, out of ground fire range and shoot up trucks with 44-lb shells. All Pave Spectre Hercs had the howitzer and as AC-130Hs, they did sterling work during the 1972 spring invasion of South Vietnam, when the targets were often tanks. Working with F-4s, the Spectres used their laser illuminators to guide smart bombs.

When the 16th SOS went home in 1975, it was not the end of the story. So well had gunships performed that the Air Force maintained them for later use in the Grenada invasion and Central American operations.

Smoke erupts from a gunship-hit target in central Panama during the invasion. Gunships are ideal weapons for use in surgical strikes in towns and cities, where their firepower can be directed with pinpoint accuracy.



Big Gunships

The third of the USAF gunships based on transport aircraft, the AC-119 'Shadow' was introduced to Vietnam combat in 1968 and was intended to fill any gap left by AC-47 phase-out. Along with the AC-130, the AC-119 did sterling work as a gunship.

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Fairchild AC-119G 'Shadow' and AC-119K 'Stinger'

The AC-47D's successor in US Air Force service was the AC-119 'Gunship III' conversion of the C-119 Flying Boxcar transport. The first version was the AC-119G 'Shadow' that was evolved in 1967 on the basis of the C-119G with a powerplant of two radial piston engines. This variant was designed for the 'in-country' fire support role, and was equipped along the port side of the central nacelle with a Night Observation Sight (NOS), four Minigun multi-barrel machine-guns, and an AVQ-8 searchlight: 26 conversions were made.



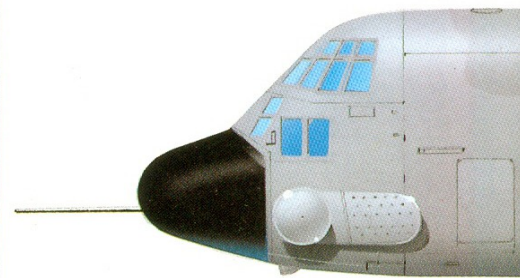
Last and best of the US gunships, the AC-130 had an airframe large enough to pack in all the latest late-1960s techno-surveillance devices plus awesome firepower.

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Lockheed AC-130A 'Plain Jane', AC-130A 'Pave Pronto' and AC-130E/H 'Pave Spectre'3

The most important gunships of the Vietnam War were undoubtedly the AC-130 conversions of the C-130 Hercules tactical transport. These 'Gunship II' types began with a single 1967 conversion of a C-130A to AC-130A standard with four Vulcan multi-barrel cannon and four Minigun multi-barrel machine-guns supported by multiple sensors (Night Observation Sight, low-light-level TV and laser rangefinder in the forward port-side door, and an APQ-133 beacon-



of Vietnam

WEAPON FILE GUNSHIP

The more advanced **AC-119K 'Stinger'** for 'out-country' interdiction of the Ho Chi Minh Trail had additional power as well as greater firepower and more advanced sensors in the form (nose to tail) of an AAD-4 FLIR, a NOS, a Vulcan six-barrel cannon, four Miniguns, a Vulcan cannon, an APO-133 beacon tracking radar and a searchlight: again, 26 conversions were made.

The type reached Vietnam in January 1969 in the hands of the 71st Special Operations Squadron, but the two primary operators were the 17th and 18th SOSs with the AC-119G and AC-119K respectively. The types were phased out of service in September 1971 and December 1972 respectively, surviving aircraft being passed to the South Vietnamese air force.

Specification

Fairchild AC-119K 'Stinger'

Type: multi-seat aerial gunship

Powerplant: two 2525-kW (3,400-hp) Wright R-23350-89W piston engines and two 1293-kg (2,850-lb) thrust General Electric J85-GE-17 turbojets

Performance: maximum speed 402 km/h (250 mph); range 3186 km (1,980 miles)

Dimensions: span 33.3 m (109 ft 3 in); length 26.36 m (86 ft 6 in)

Weights: empty 26436 kg (58,282 lb); maximum take-off 36469 kg (80,000 lb)

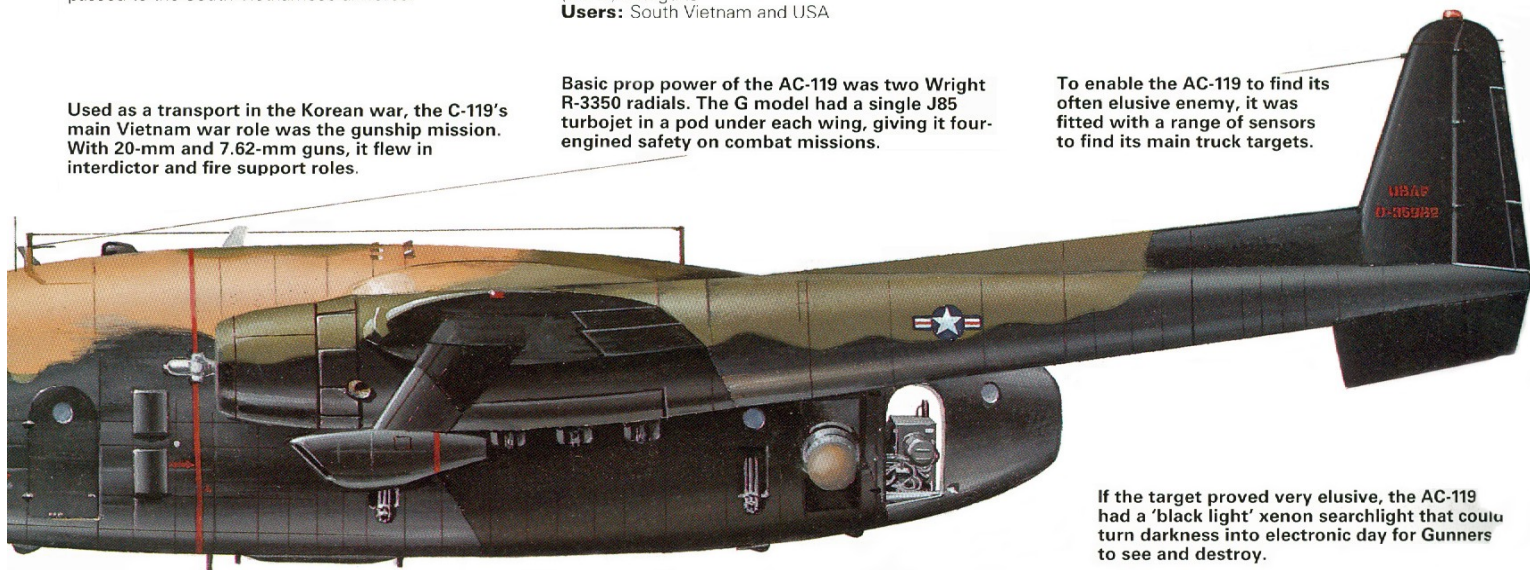
Armament: two 20-mm cannon and four 7.62-mm (0.3-in) Miniguns

Users: South Vietnam and USA

Used as a transport in the Korean war, the C-119's main Vietnam war role was the gunship mission. With 20-mm and 7.62-mm guns, it flew in interdiction and fire support roles.

Basic prop power of the AC-119 was two Wright R-3350 radials. The G model had a single J85 turbojet in a pod under each wing, giving it four-engined safety on combat missions.

To enable the AC-119 to find its often elusive enemy, it was fitted with a range of sensors to find its main truck targets.



If the target proved very elusive, the AC-119 had a 'black light' xenon searchlight that could turn darkness into electronic day for Gunners to see and destroy.

tracking radar in the rear port-side door). Vietnamese evaluation late in 1967 was so successful that seven JC-130A missile-tracking aircraft were modified to the same 'Plain Jane' standard, and these served with the 16th Special Operations Squadron from late 1968.

The concept was taken a step further in the nine 'Pave Pronto' aircraft: these had an armament of two Miniguns, two Vulcans and two 40-mm Bofors guns, while the sensors were augmented by an ASD-5 ignition detector, AAD-7 FLIR, AVQ-17 searchlight and APO-150 beacon-tracking radar.

The ultimate Vietnamese War gunships were the 11 **AC-130E** gunships with one of the 40-mm guns replaced by a 105-mm (4.13-in) howitzer. The aircraft entered service from 1971 and proved truly devastating, and in 1973 became **AC-130H** aircraft when fitted with more powerful T56-A-15 turboprops.

With its four Allison turboprops giving good power output and reliability, the C-130 was the ideal gunship. It also had better range than either the Spooky or Shadow types.

Specification

Lockheed AC-130E 'Pave Spectre'

Type: multi-seat aerial gunship

Powerplant: four 3020-kW (4,050-eshp) Allison T56-A-7 turboprops

Performance: maximum speed 612 km/h (380 mph); endurance 5 hours

Dimensions: span 40.41 m (132 ft 7 in); length 29.79 m (97 ft 9 in)

Weights: empty 33063 kg (72,892 lb); maximum take-off 70307 kg (155,000 lb)

Armament: one 105-mm (4.13-in) howitzer, one 40-mm Bofors gun, two 20-mm Vulcan cannon and two 7.62-mm (0.3-in) Miniguns

User: USA

The massive upsweep of the Hercules' rear fuselage enabled a wide ramp door to extend for vehicles to drive in. Gunships had a blister in the ramp floor to watch targets through.

Gun arming and firing followed a set sequence of actions, after detection by the sensors and positive identification. The pilot always set up the target and ordered the gunners to fire.



Although most Vietnam gunships had black undersides, a new colour, 'gunship grey', was actually found to blend better with the sky when the aircraft was seen from below.

NIGHT OF THE GUNSHIPS

When it came to interdicting the Ho Chi Minh Trail, transport conversion gunships were fast enough to stay out of trouble, but could throttle back to keep a target in sight.

The modern gunship is a grey ghost of an aircraft, packed with sophisticated target detection and acquisition systems and armed to the teeth. It has been used to great effect in recent US military operations in central America, most notably during the invasions of Grenada and Panama. But it was as a black-painted creature of the South East Asian night that the gunship made its name.

It was often said that the Vietnam night belonged to Charlie. This was certainly true in places, but the

Viet Cong soon found that when Spooky, Shadow or Spectre was around, then hails of leaden death from the skies meant that it was really the night of the gunship.

Snarling weapons

Gunships were unlikely candidates for the role as most effective weapon of the war, but these converted cargo planes saved the lives of countless ordinary grunts. From the epic battle for Khe Sanh through to countless individual actions in support of seemingly hopelessly cut-off patrols, gunships split the night with the characteristic snarl of their guns. And wherever the fountain of light created by their tracer shells touched down, then the enemy was taking a beating.

Gunship theory called for flying an aeroplane with side-firing guns in a turn so as to bring the guns to bear on a fixed point of the ground. It was not a system for use in high-threat environments, but for the counter-insurgency war in Vietnam it was ideal.

Spooky

The FC-47 conversion of the venerable C-47 proved remarkably successful at hosing down Viet Cong insurgents attacking US installations. Known as 'Spooky', or

'Puff the Magic Dragon', its designation was changed to AC-47 when fighter pilots complained at sharing a designation with a converted cargo bird.

By the 1970s, however, the war had grown considerably beyond counter-insurgency. A flood of men and material came pouring down the Ho Chi Minh Trail. The AC-47 did not have what it took to deal with such targets, so more capable

platforms were developed. Spooky was followed in its turn by conversions of the C-119 and the C-130 Hercules, which became known as Spectre and was the definitive gunship.

Below: The deadly hot breath of Spooky roars out over an enemy target in Vietnam. The AC-47 had few electronic detection aids, so flares were widely used to turn night into lethal daylight.



Left: The twin 'six shooter' barrels of a pair of Vulcans point menacingly from the flank of an AC-130. Very few things could stand up to the fire from these guns.

Right: Spectre aircrew with a single 40-mm gun aboard a Pave Aegis AC-130. A clip of four shells can just be seen.

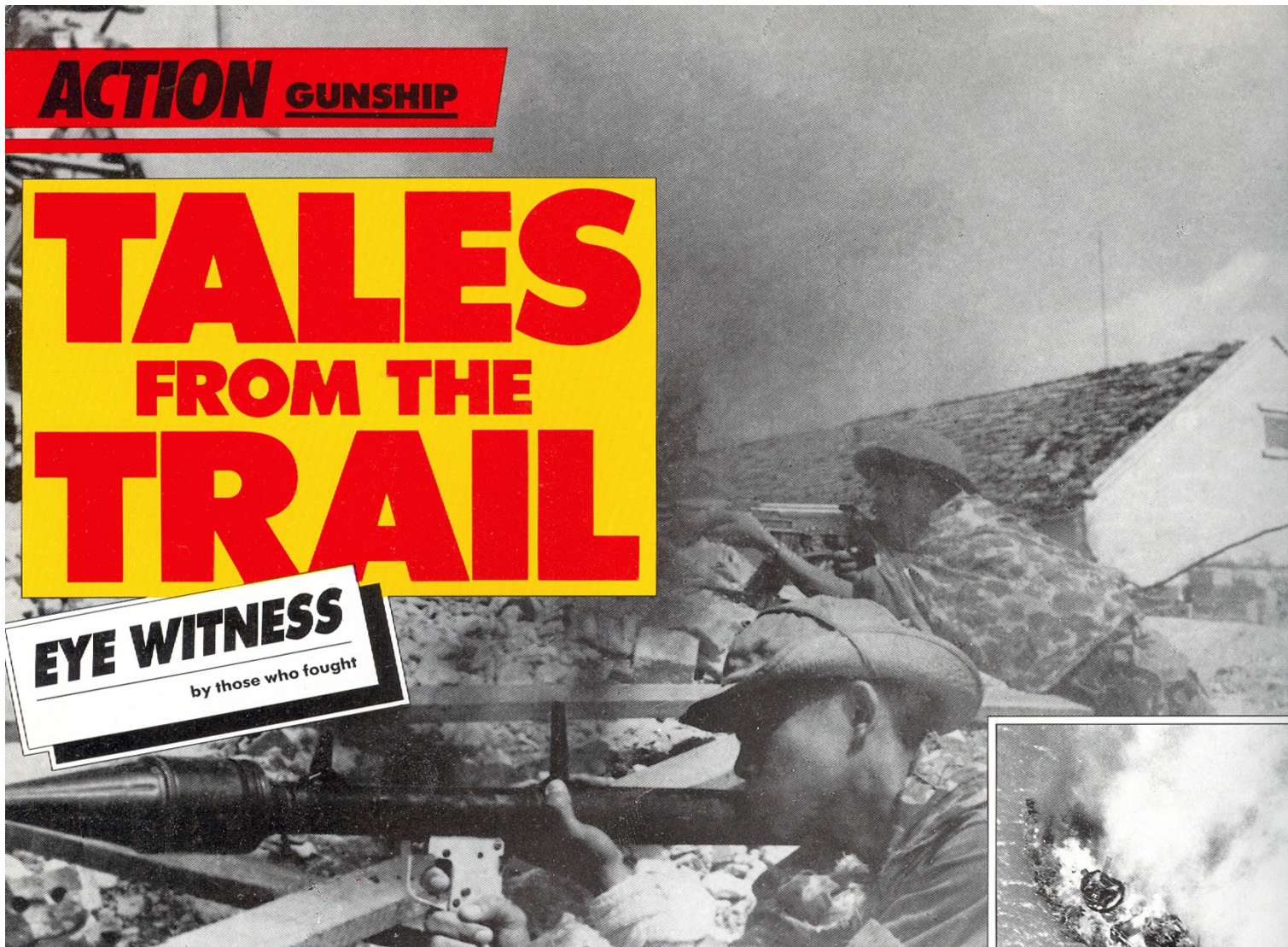


Left: Vietnamese AAA gunners watch a near miss before loading their gun to contest the next air strike in their sector.

Above: In the evening calm an AC-130 Spectre gunship heads out on another night mission in September 1972. By that time, the Hercules attackers had gained underwing hardpoints for extra sensors and flares, as shown here.

TALES FROM THE TRAIL

EYE WITNESS
by those who fought



During the Tet offensive of 1968, the AC-47 dealt savage blows against the Viet Cong. To the troops in camps all over Vietnam, Spooky became their true 'Guardian Angel'.

Spooky on the Line

The enemy's Tet offensive dictated an almost complete commitment of air power. Spooky gunships were hard-pressed to keep up with demands on them. On several occasions AC-47s on airborne alert were able to instantly pinpoint rocket and mortar positions firing on friendly installations. For example, as the offensive began, the 4th Air Commando Squadron AC-47s and crews were sent from Nha Trang and Phu Cat to Da Nang to bolster security in that often hit area. On the night of 3/4 March the Viet Cong and North Vietnamese assaulted 12 separate

locations in the Da Nang tactical area of operations but did not strike the air base. At the time, Spooky 11 and Spooky 12 were flying airborne combat patrols over Da Nang and its helicopter satellite field, Marble Mountain. Minutes after the enemy attacked south-west of the main base, Spooky 11 engaged the site firing the rockets. Secondary explosions erupted. The next day, ground parties came upon unused rocket rounds indicating a premature end of the enemy attack.

Two other operations underscored the advantages of the Spooky gunships in 1968. The

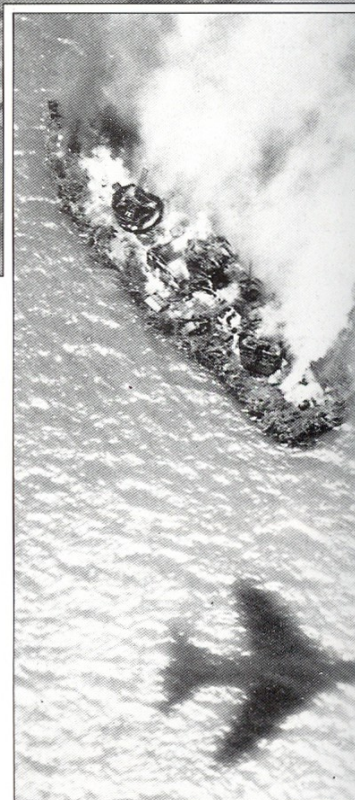
night of 1 March, Spooky 41 and Spooky 42 attacked a 700-ton munition trawler at Bai Cay Bay, 11 miles north of the gunships' base at Nha Trang. The trawler was exchanging fire with US and Vietnamese gunboats. In the words of Spooky 41's commander, Lt Col Richard C. Lothrop:

"We had been firing on the ship and it had run aground about 20 yards from the shore. It began burning. In a few minutes, the intensity of the fire had greatly increased. Then it just blew up. It was a spectacular explosion. . . . A fireball went 1,000 feet into the air. It was obviously a load of munitions."

Lt Col Robert C. Dillon, commander of Spooky 42 (which relieved Spooky 41), reported:

"There was a large secondary explosion when we fired on the tree line just north of the beach area where the ship was grounded. Ten minutes later we were working over an area south-west of the burning ship when we caused another secondary explosion about 180 feet up the side of a hill."

Together, Spooky 41 and Spooky 42 expended more than



38,000 rounds while on the scene from 0130 to 0700. They were credited with sinking one ship and destroying tons of enemy munitions.

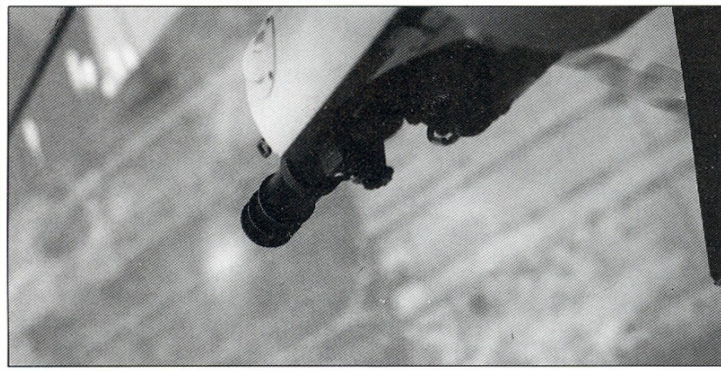
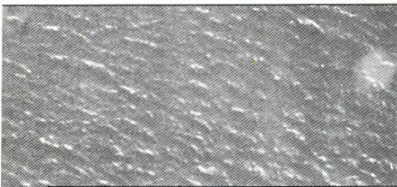
Call for help

The second Spooky operation occurred in western Quang Duc Province. It was in defence of a compound at Duc Lap consisting of MACV subsector headquarters,

TALES FROM THE TRAIL

Below: An AC-47 banks as the pilot sights the target and his gunners in the back crank out their continuous streams of Minigun fire. This was a relatively cheap way to cause harm to the enemy in a difficult jungle environment that gave him most of the advantages.

Left: When the Viet Cong burst into the suburbs of Saigon early in 1968, the war in Vietnam took a dramatic turn. Although squads of troops like these were wiped out, and gunships mopped up many danger areas, the conflict changed from then on.



Left: Even floating targets like a Vietnamese patrol boat were gunship fodder – anything the enemy used to move supplies was attacked by the prowling cargo aircraft. Recon photos like this were vital to get a big picture of where the enemy was and what his next move might be.

Civilian Irregular Defense Group camp, and outposts. The Viet Cong and North Vietnamese opened up on the compound at 0105 on 23 August. Firing of rockets and mortars was instantly followed by a sapper attack on key positions. US Army helicopters arrived within 30 minutes of a call for air support. Two Spookies from Nha Trang and Pleiku joined the action 15 minutes later.

At once they illuminated the area and raked the defence perimeters with Minigun fire. Enemy sappers cut through extensive wire emplacements and several fire fights broke out within the compound. Eight American advisors, six wounded, abandoned their burning bunker at 0700 to take up positions on the north-east defence perimeter. The gunships experienced heavy

Left: A Minigun spits fire across the Asian plain as an AC-47 gunship opens up on suspected VC positions in the Mekong Delta in 1966.

automatic fire from at least 10 anti-aircraft sites spotted around the embattled area. Major Daniel J. Rehm, pilot of Spooky 41, observed:

Anti-aircraft fire

"When we arrived, the buildings in the compound were all afire and the men were grouped in a blockhouse below the burning operations centre. We set up a quick orbit of the area and began firing on targets about 200 to 300 metres from the camp. Almost immediately we began receiving intense anti-aircraft fire from four different points. I began with a long burst at a target from my Miniguns but when the tracers started to fly close to us I moved to another altitude and began to

peck with short bursts at the enemy locations."

The enemy held to the attack in the teeth of an onslaught of gunships, tactical fighters, B-52s, and assorted Army aircraft. For the next several nights, at least one Spooky supplied flare illumination and firepower over Duc Lap. In 228 flying hours the gunships expended 761,044 rounds and 1,162 flares.

EYE WITNESS
by those who fought

Mayday over Laos

The night of 8 May 1970 witnessed an extraordinary display of airmanship when a Stinger from Udorn was heavily damaged by anti-aircraft fire.

Captain Alan D. Milacek and his nine-man crew had been reconnoitring a heavily defended road section near Ban Ban, Laos, when they discovered, attacked and destroyed two trucks. Captains James A. Russell and Ronald C. Jones, the sensor operators, located three more trucks. As the aircraft banked into attack orbit, six enemy positions opened up with a barrage of AA fire. The co-pilot, Captain Brent C. O'Brien, cleared the fighter escort for attack and the gunship circled as the F-4s worked to suppress the AA fire.

Another truck killed

Amid the heavy enemy fire, Captain Milacek resumed the attack and killed another truck. At 0100, just about two hours into the mission, "the whole cargo compartment lit up" as enemy rounds tore into the Stinger's right wing. A "sickening right dive of the aircraft" ensued and Milacek called "Mayday, Mayday, we're going in." He shouted orders to SSgt Adolfo Lopez, Jr, the IO [illuminator operator], to jettison the flare launcher.

Ready to jump for it

Captain Milacek directed the entire crew to get ready for instant bailout. As the gunship dropped about 1,000ft within a few seconds, Captains Milacek and O'Brien pooled their strength to pull the aircraft out of its dive.

By using full-left rudder, full-left aileron, and maximum power on the two right engines, they regained stabilised flight.

The full-engine power fuelled two/three foot flames – torchlights for enemy gunners as the crippled Stinger desperately headed for friendly territory. Navigator Captain Roger E. Clancy gave the correct heading but warned they were too low to clear a range of mountains towering between them and safety.

Fuel running out

What's more, the crew discovered that fuel consumption would likely mean dry tanks before reaching base.

The crew tossed out every possible item to lighten the load and the aircraft slowly climbed to 10,000ft. TSgt Albert A. Nash, the flight engineer, reported the fuel-consumption rate had fallen.

No-flap landing at 150 knots

Captain Milacek elected to land the damaged plane and when he approached the base area he ran a careful check of controls. He found that almost full-left rudder and aileron would allow him to keep control. With uncertain flap damage, Milacek chose a no-flap landing approach at 150 knots (normally 117 knots). Utilising every bit of pilot skill he landed the plane. Upon leaving the Stinger, the crew saw about one-third of the right wing had been torn off.

Chugging along at 180 knots, its insides gutted of all but the essential equipment to turn it into a fighter plane, the Fairchild AC-119 was a heavy old ship that wasn't really suited to the demanding gunship task. Too many people got involved in its development, and it was delivered later than expected – but Stinger and Shadow crews got the job done.

Below: Devastation like this, caused by the VC against a friendly village in South Vietnam, could be prevented if gunships were in the area and in contact with friendly troops.



EYE WITNESS

by those who fought

Spectre Target

Ubon ground crews readied aircraft 1629 for the evening's flight.

They put aboard Mk 24 and Mk 6 flares and 6,000 rounds of ammunition. The aircraft lifted off just before dusk. Within 10 minutes they were 'crossing the

fence' (the Mekong River separating Thailand from Laos), and made contact with the airborne battlefield control and command centre (ABCCC), which assigned *Spectre 01* an operating area.

"They reported 'on station' at 1720, and loitered, making contact with the F-4 Phantoms which would be suppressing AA fire. At 1815 they started to patrol a 15-mile segment of Route 922. Just 25 minutes later they identified Target 1 – four vehicles, moving east. Going into his left orbit at

4,500 feet, the pilot sighted in on his target. In four minutes he fired off 1,000 rounds of 20-mm.

"Target 2 came up at five minutes to seven. A single truck. Two minutes of orbiting attack and another 1,000 rounds of cannon fire finished him off.

"Just down the road, *Spectre 01* discovered three stationary trucks and what seemed to be an organised park. He illuminated the area with flares, and soon came under 37-mm anti-aircraft fire. For more than 20 minutes the aircraft made short 'pecking' attacks, firing off another 1,000 rounds in the process. An explosion and fire told of the AA gun emplacement's destruction.

Attack completed

"Two more stationary trucks became Target 4, at a few minutes after eight o'clock, and then two of the F-4s – Schlitz and

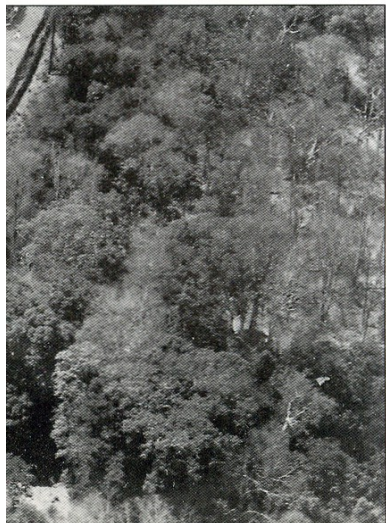
Combine their call signs – worked with *Spectre 01* to destroy two more AA sites. At 2020, the gunship returned to Target 3 – the truck park – and gave it another 1,000 rounds, just in case anything had survived the first attack.

"*Spectre 01* left the target area at 2035, having spent three-and-a-quarter hours there, and re-crossed the Mekong and touched down at Ubon at 2115, all her stores expended."

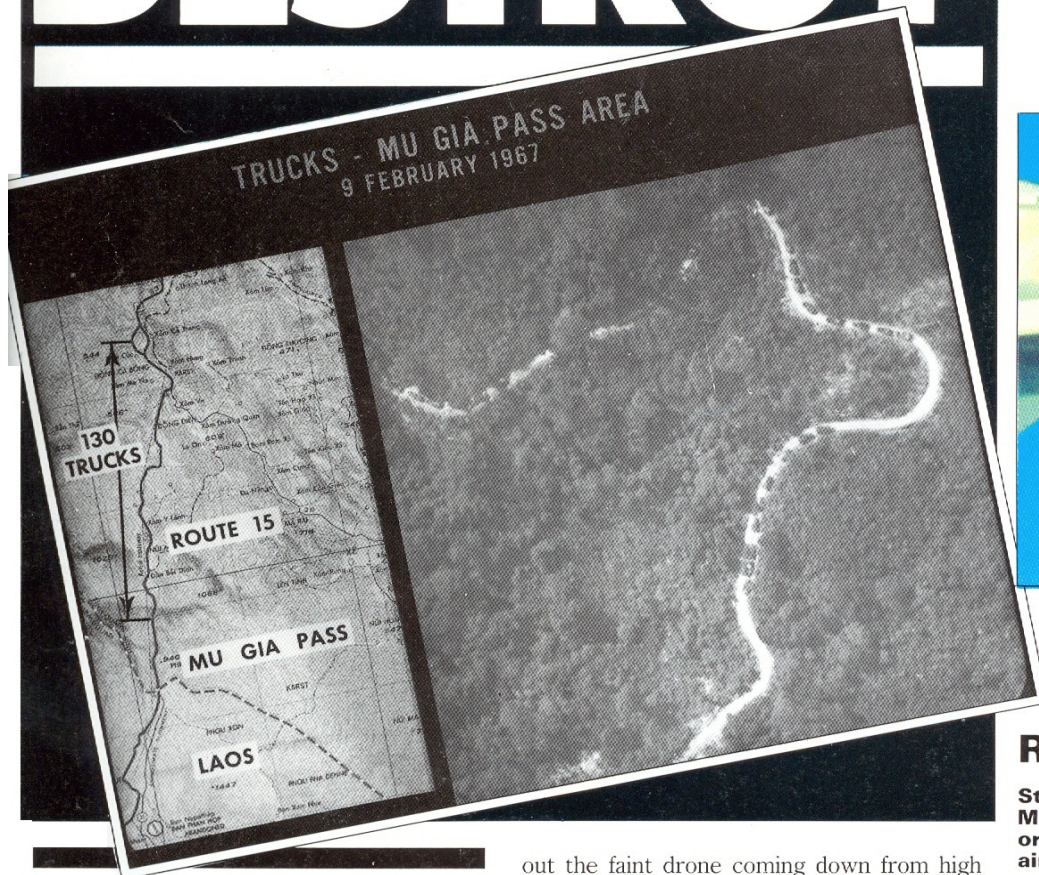
Below: A good loiter time was one of the outstanding advantages of using a big aircraft like the C-130 in the gunship role. In addition to carrying electronics and its crew, it could also give a huge amount of space to the storage of ammunition for the gun armament.



The NVA had some of the best AAA crews in the world. Throughout the war, flak caused the vast majority of US air casualties, and units like this, the 1st Battalion of the Sing Gianh AA brigade, did their share.



DETECT AND DESTROY



Killing trucks on the Trail was no problem for the USAF – if it could find them. A big effort went into the task.

The trucks roar through the darkness beneath the jungle canopy. They are filled with military supplies, destined for the communist forces in South Vietnam. There is no sign of American air activity, and there hasn't been for days. Travelling by night, always keeping under cover, the convoy should escape detection. Yes, the commander thinks, this is one convoy that will get through.

The sound of the engine of his truck drowns

out the faint drone coming down from high above. Even if he hears the plane, he will assume that it is too high to do any damage. And with the darkness and the leafy canopy, how can the Americans know that the trucks are here?

What the North Vietnamese commander does not know is that he has already been given away. It is the rumble of his own trucks which has done so. Even though there are no Americans within miles of the trail, the passage of the convoy has been heard. Two miles in the sky, hard American eyes are looking into a screen. The electronics fitted into the AC-130 Spectre gunship light the scene as bright as day. Zeroing in on the lead truck, the commander gives the order to fire. 40-mm shells make short work of the Soviet-supplied Zil truck, and even as exploding fuel lights the scene the North Vietnamese commander finds time to ask himself, "How did they know where to find us?"

1 Reconnaissance

The problem with locating targets on the Ho Chi Minh Trail was that the targets did not want to be spotted. Movement was by night, and much of the Trail was covered in heavy vegetation. The solution was technology. Aircraft were fitted with the most advanced sensors available at the time. The sensor package usually involved Forward Looking Infra-Red, Low Light TV, and a laser designator, making the detection of formerly invisible movements possible. 'Black Spot' was an experimental conversion of the C-123 Provider cargo aircraft, used operationally out of Ubon Air Base in Thailand. As the anti-air threat along the trail increased, 'Tropic Moon' conversions of the faster Martin B-57 bomber became more suitable.



Above: Phantoms dropped sensors, disguised as vegetation, along the Trail to detect enemy vehicles and troops on the move.

Recon, relay, response

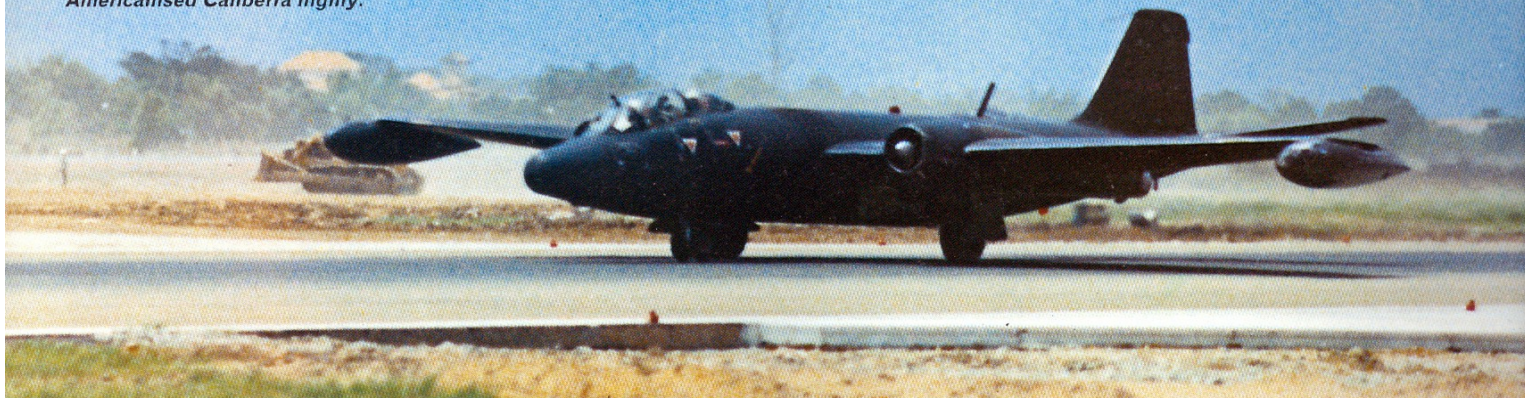
Stopping an enemy convoy on the Ho Chi Minh Trail involved a closely co-ordinated effort involving numerous aircraft and ground control stations.



1 B-57s fitted with infra-red sensors monitor known Trail routes and 'seed' surrounding areas with ultra-sensitive dart-like sensors that stick in soft earth and become almost invisible. They transmit the presence of vehicles or people.



Dark and deadly, the Martin B-57 was involved in a number of sophisticated surveillance-gathering programmes, including 'Patricia Lynn' and 'Tropic Moon', as well as being one of the first USAF aircraft to drop bombs on South Vietnam. Pilots and navs rated the Americanised Canberra highly.



2 Target Location

Aircraft cannot be in the air all the time, and in Vietnam they could not provide continuous cover of the hundreds of miles of the Trail. Project Igloo White was the code name for all of the electronic warfare operations carried out along the Trail to make up this deficiency. Automatic acoustic and seismic sensors were dropped along the main Trail routes. Acoustic sensors would remain inert until triggered by the sound of passing vehicle engines; seismic sensors would be triggered by the vibration of passing lorries or armoured vehicles.

2 Heavy enemy ground defences meant that faster, better-armed attack bombers like the Phantom took over the sensor-seeding task from more vulnerable aircraft, with the bonus that they could also knock out targets of opportunity.



3 Relay

Once the Igloo White sensors had been activated by passing traffic along the Trail, they would begin transmitting. Initially they would send their data to large EC-121R aircraft (conversions of the civil Lockheed Constellation airliner), but as the anti-air threat grew these were pulled back out of harm's way. However, the radio transmitters on the sensors were not very strong, so some kind of airborne relay

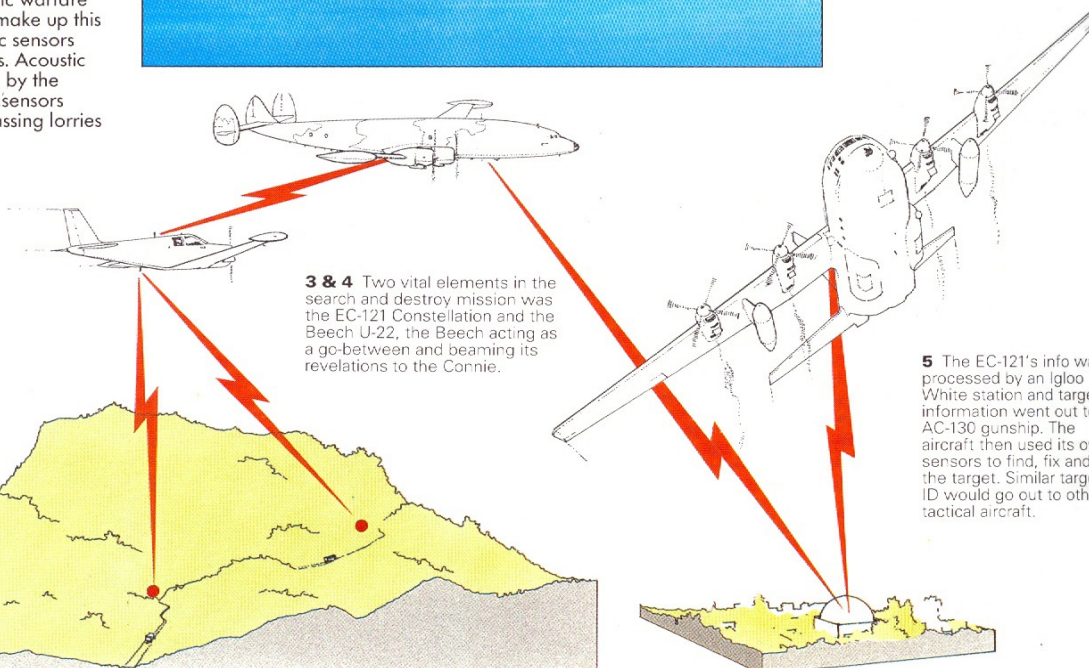
was essential. A cheap, unmanned drone was developed from the Beech U-22 single-engined monoplane, and these QU-22Bs became the initial stage of the relay.



Left: The Beech U-22 was a modified civil Bonanza lightplane ordered by the USAF for the *Pave Eagle* signal relay mission. Most of the cabin was fitted with equipment to allow the relay of signals from the Igloo White seismic sensor programme. They could be piloted or flown remotely.

3 & 4 Two vital elements in the search and destroy mission was the EC-121 Constellation and the Beech U-22, the Beech acting as a go-between and beaming its revelations to the Connie.

5 The EC-121's info was processed by an Igloo White station and target information went out to an AC-130 gunship. The aircraft then used its own sensors to find, fix and kill the target. Similar target ID would go out to other tactical aircraft.

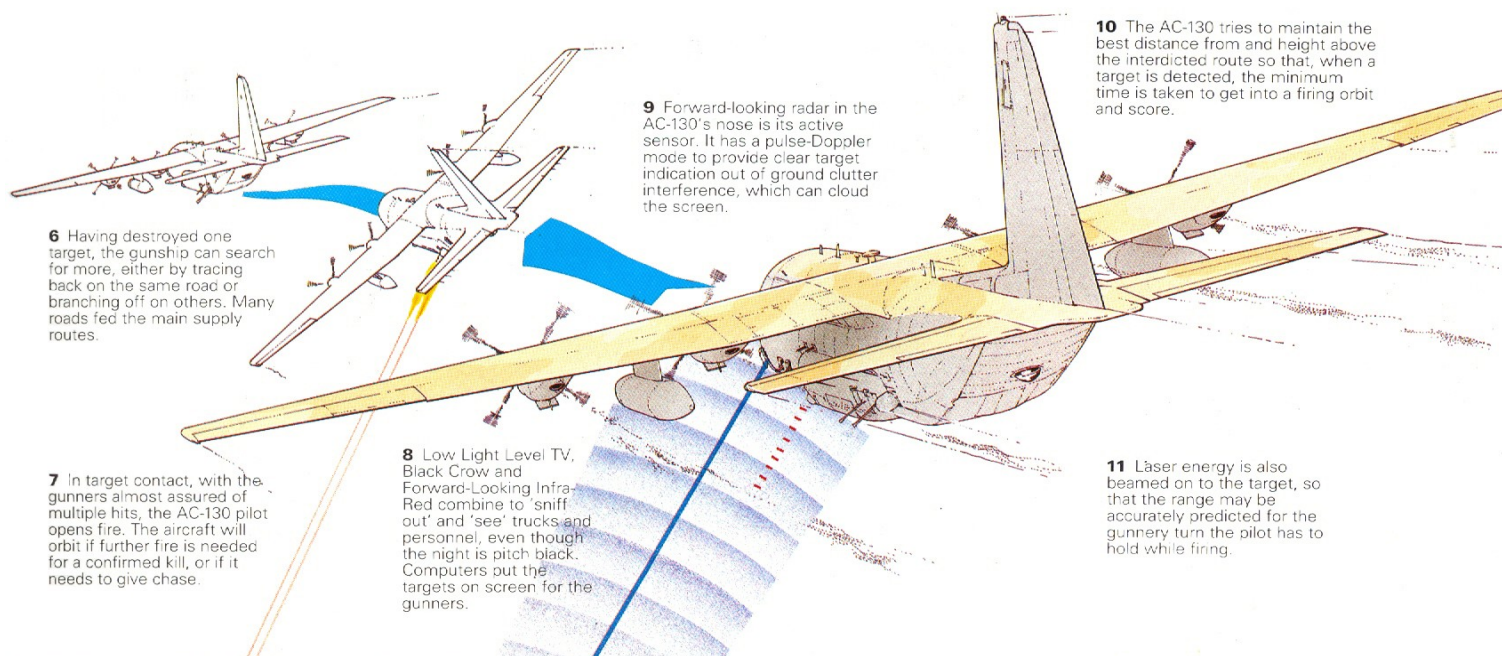




4 Long-Distance Relay

The QU-22Bs automatically relayed the data from the ground sensors to the EC-121Rs, orbiting well clear of any enemy anti-aircraft threat. The big four-engined relay aircraft would transmit the data onwards to the 'Dutch Mill' Infiltration Surveillance Center at Nakhon Phanom in Thailand, where the signal was analysed. If it seemed to be a worthwhile target, an interdiction mission could be mounted against the Trail. Tactical jets might be used, but the Lockheed AC-130 Spectre proved to be as good a truck-destroyer as you could get.

Right: An EC-121R 'Constellation' relay aircraft patrols for hours above the battle, transmitting messages from sensors, troops and other aircraft to control centres further south. The centres would then scramble aircraft into the attack.



6 Having destroyed one target, the gunship can search for more, either by tracing back on the same road or branching off on others. Many roads fed the main supply routes.

7 In target contact, with the gunners almost assured of multiple hits, the AC-130 pilot opens fire. The aircraft will orbit if further fire is needed for a confirmed kill, or if it needs to give chase.

9 Forward-looking radar in the AC-130's nose is its active sensor. It has a pulse-Doppler mode to provide clear target indication out of ground clutter interference, which can cloud the screen.

8 Low Light Level TV, Black Crow and Forward-Looking Infra-Red combine to 'sniff-out' and 'see' trucks and personnel, even though the night is pitch black. Computers put the targets on screen for the gunners.

10 The AC-130 tries to maintain the best distance from and height above the interdicted route so that, when a target is detected, the minimum time is taken to get into a firing orbit and score.

11 Laser energy is also beamed on to the target, so that the range may be accurately predicted for the gunnery team the pilot has to hold while firing.



5 Target in Sight! Fire!

The Infiltration Surveillance Center at Nakhon Phanom would alert an AC-130 Spectre to the interdiction mission. The aircraft is fitted with a comprehensive set of sensors. Once in the general area of the action, its Beacon Tracking Radar homes in on the signals emitted by the acoustic or seismic sensor on the ground. The Moving Target Indicator is a forward-looking radar picking up moving targets. Forward Looking Infra-Red picks up the heat generated by man-made objects such as trucks. Low Light Television amplifies available light to give the crew real-time imagery. The Black Crow detector is tuned to the signals given off by vehicle ignition systems. There is a visible/infra-red searchlight, and the dispenser pod under the right-hand wing can eject flares to provide additional illumination of the ground beneath. Armed with this range of sensors, the crew can pinpoint targets and attack even on the darkest nights.

What an NVA truck convoy looked like from the cockpit – in this case a Navy one. Trucks can be clearly seen on two roads, as can tyre tracks and bomb craters.

COMBAT TRAINING MANUAL

ENEMY BELOW

How would you interdict the enemy?

BRIEFING

A friendly third world country is suffering a major Maoist insurgency. The rebels are well organised and supplied, and are advancing on an important Allied military base, threatening Western interests in the whole region. The local authorities ask for assistance, but do not want to see ground forces committed to the battle.

You are the pilot of a Lockheed AC-130 Hercules gunship, tasked with interdicting

enemy supply routes through the jungles and with providing support to friendly forces in contact with the enemy. You have an amazing assortment of electronic wizardry enabling you to seek out targets in the blackest night, together with a ferocious gun battery. However, your plane is not armoured, and the enemy is plentifully supplied with anti-aircraft artillery.

Your task is vital. Every truck you destroy could mean saving the lives of 10 or 20 Allied fighting men. Your firepower is the difference between holding off an attack and going under.

1 Evasive action

You've almost completed a hunter-killer mission over the main enemy supply route and knocked out a convoy. Suddenly, the aircraft is taking hits. Should you:

- A** Call up the F-16 Falcon escort to deal with the ground fire?
- B** Shut down all your sensors and radar?
- C** Climb out of the area as fast as you can?

ANSWER: Maintain your altitude. Climb and they'll hit you again, for sure. Call up all members of your crew to ensure there are no injuries, get a damage report and check all your own flight instruments. You'll soon know if the aircraft has taken a vital hit. But these Spectres are tough, so chances are that even if the bad guys have hit an engine, you'll make it back OK. Switch off all equipment not essential to flight to prevent any ground radars tracking you and inflicting further damage. If you have wounded aboard, that'll be double the reason to abort the mission, at least for tonight. The USAF gunship force is pretty small and every man aboard the AC-130s is a trained specialist. Anyone out of action might mean you get a replacement who lacks integration with your crew. You're a well-knit team and want to keep it that way – and you want to use this ship again, because it's the one you're used to.

There's enormous firepower available from the 105-mm howitzer, 40-mm Bofors and 20-mm Vulcan Miniguns. Used in the right way, the AC-130 Hercules can pour more fire on an enemy than any other weapon in the world.



COMBAT TRAINING MANUAL

2 Communication

Your mission is to support TIC – Troops In Contact (with the enemy) – but the local ground commander speaks very poor English. He can't tell you exactly where he is. You know by the urgent calls that the friendlies are about to be overrun and you are the only gunship crew in the area. To carry out the mission and save the men on the ground, do you:

- A** Orbit and wait to see if your sensors pick up any positive ID?
- B** Look out for the usual evidence of a fire fight, like muzzle flashes or explosions?
- C** Call off the mission on the grounds that the risk of hitting friendlies is too great?

ANSWER: You can hardly go home and report that you could do nothing about a TIC call. The AC-130 has the ability to bypass human voice communications. You go to beacon tracking radar, which is there specifically for close support work. You get range and bearing readouts and these are stored by a coded miniponder about the size of a small wallet carried by the ground troops. It makes language transmissions unnecessary. If the guy on the ground can punch in the range and bearing to his position (which he's been briefed and trained to do), he then presses a button imprinted with the silhouettes of a man or a vehicle. The gunship picks these up and can be on the spot quickly, ready for the target.

3 Diminishing fire

About halfway into the mission, you've had plenty of targets. Ammo is running low due to the high rate of fire. One after another, the guns go dead. Then you spot a prime target: a fuel tanker. Simultaneously you get the call, 'Gunner down.' He's the only one who has ammo left and at this height, around 11,000ft, the lack of oxygen has made him pass out. Do you:

- A** Risk getting lower, below 10,000 feet, to revive the crewman and maybe get shot down?
- B** Abandon the target completely?
- C** Get another gunner to take over and try to get that fuel truck quickly?

ANSWER: Oxygen starvation can be serious – the ship doesn't carry any on missions because it can be a big hazard if it is hit by ground fire. The thing to do is to fly lower, where the unconscious gunner will recover quickly enough. Meanwhile, another gunner can take over to deal with the fuel tanker. Having gunners pass out at the higher altitudes is not unusual – and he, like all the crew, is a professional. He'd not want you to pass up a chance of knocking out a target that you'll probably have to hit another night if you abort now. A good score on enemy transportation is, after all, what you fly a night Spectre gunship for. And the 'Fabulous Four-engined Fighters' have a reputation to maintain!



Above: It may look like the lumbering cargo plane from which it is derived, but the lumps and bumps erupting from the surface of the AC-130's hull are the outward indications of a multi-million-dollar sensor fit which is used to direct the heaviest gun armament ever carried by an aeroplane.



Left: A ground observer communicates the presence of targets to the gunship circling overhead. Once the AC-130 directs its sophisticated radar, low-light, and infra-red sensors downwards, it can find hostile vehicles from two miles up even on the darkest of nights.

Below: A hostile armoured vehicle burns after having been smashed by an AC-130's guns. In low threat environments the gunship can operate alone, but where the enemy has any sort of air defences it requires tactical jets – 'fast movers' – to mount flak-suppression missions before going in to attack.

