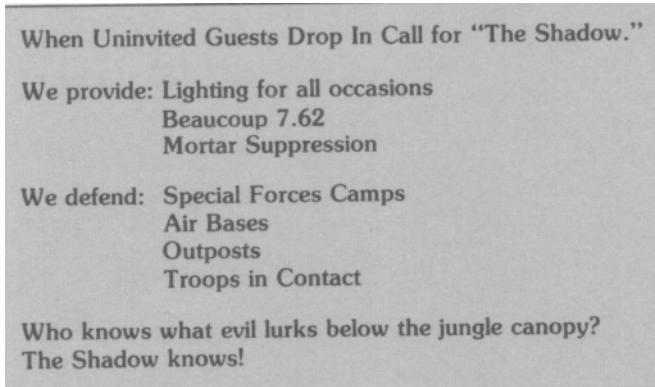


V. Gunship III (AC-119G/K)

A visitor to one of the offices associated with AC-119 gunship operations might find conspicuously posted a small business card:



When Uninvited Guests Drop In Call for "The Shadow."

We provide: Lighting for all occasions
Beaucoup 7.62
Mortar Suppression

We defend: Special Forces Camps
Air Bases
Outposts
Troops in Contact

Who knows what evil lurks below the jungle canopy?
The Shadow knows!

This card summarizes in brief the operations of the AC-119G Shadow in the Southeast Asian war in late 1968. Add "Beaucoup 20-mm," "Interdiction Services," and change the name to "Stinger," then one can also fairly state the activity of the AC-119K (Stinger). These two models of the old C-119 Flying Boxcar transport were the chief replacements for the AC-47s and the most numerous of Air Force gunships. "Gunship III" in chronology, they represented a distinct chapter of the total gunship story.

In 1967 the search for a follow-on aircraft to the AC-47 Spooky had narrowed down to the C-119 and C-130. The Air Force deemed these high-wing aircraft best suited as gunships. Commanders in the Pacific favored the advantages of the larger four-engine C-130. Nonetheless, urgent Southeast Asia gunship requirements, the definite need of C-130s for airlift, and the availability of C-119G airframes tilted the scale to the C-119. The Air Staff wanted the jet-assisted C-119K, but in June 1967 Air Force Secretary Brown chose the AC-119G (with a later option on the AC-119K) as the AC-47's immediate successor. His decision sparked considerable controversy, but the program of converting C-119Gs into gunships began in earnest.

Soon after Secretary Brown's decision, Air Force headquarters instructed AFLC to submit a cost and feasibility study on the modification of thirty-four and forty-six C-119Gs. The directive also called for similar data on conversion of C-119Ks.*¹ The Air Staff planned to deploy twelve

*Items specified for the AC-119G included: standard Southeast Asia communications equipment; four GAU-2B/A (7.62-mm) guns; 50,000 rounds of ammunition for day operations (35,000 rounds and sixty flares for night); inert fuel tanks; gunsight; jettisonable

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AC-119Gs to Southeast Asia in or shortly after October 1967.² So on July 20, Dr. Brown asked Secretary of Defense McNamara to allow transfer of forty-six Air Force Reserve C-119Gs to the active force.³ Mr. McNamara tentatively agreed on August 10 but requested more facts for a detailed review.⁴

Though approved in June 1967, the AC-119 gunship program progressed at a snail's pace. Modification scheduling slipped due to a major funding problem, Mr. McNamara's hesitant approval to release C-119 airframes, and changes in plans for equipment.⁵ All hope for an early AC-119 deployment rapidly vanished. While needed decisions were pending, however, action got under way on an AC-119G prototype. On October 20, 1967, Air Force headquarters directed installation of equipment in the prototype.⁶

As agreed by the Air Force Logistics Command and the Air Force Systems Command, the prototype modification and test could be done either by contract or "in house" at a depot. The two commands decided on a contract with Fairchild-Hiller. The Air Staff designated WRAMA as program manager and Systems Division to supply engineering support. It set a March 15, 1968, delivery date for the prototype, and fixed the total cost at \$200,500 (later revised upward).⁷

Further review of the AC-119 program took place toward the close of 1967. By dint of favorable reports from Southeast Asia on the AC-130 prototype, the Air Force secretary decided on a mixed AC-130/AC-119 force. The Air Staff follow-up study on this proposal, required by Dr. Brown and submitted on January 26, 1968, recommended thirty-two AC-119s, backed up by extra training/attrition aircraft. In the mixed gunship force concept the AC-119 "would specialize in in-country day/night tasks associated with hamlet defense, fire support for ground forces, close air support, and convoy escort."⁸ The projected thirty-two AC-119s would be organized in two squadrons of the 14th Air Commando Wing and operated from six bases suitably spaced throughout South Vietnam. The AC-119s could take up continuous orbit stations during the hours of darkness at about a 100-mile radius from such bases as Nha Trang, Da Nang, Phu Cat, Pleiku, Phan Rang, Bien Hoa, and Binh Thuy. Seventh Air Force would exercise command support and operational control. The AC-119s would of course assume the AC-47s' role in South Vietnam as the Spookies shifted more and more to base defense missions.

The Air Staff study also addressed the AC-119 configuration and costs. It highlighted the problems in holding down aircraft gross weight to insure a 200 foot-per-minute, single-engine rate of climb under hot-day

(footnote continued from previous page)

flare launcher and sixty flares; and ceramic armor protection for six-eight crew members and critical components. Conversions of the C-119K would add these items: an improved fire-control system, four 20-mm guns, 1,500 rounds of 20-mm ammunition (35,000 rounds of 7.62-mm and sixty flares), night observation device, infrared capability, doppler radar, and an illumination system.

conditions.* The desired configuration clearly implied that the AC-119K with its jet pods, twenty-five percent more loading capacity, and significantly greater single-engine performance, would be an improvement over the G model. The study said that the deployment schedule would be about the same whether the G or K model was selected—gun procurement possibly being critical. The K model would afford the best configuration, the G model would cut costs.⁹

	<i>AC-119G</i> (millions of \$)	<i>AC-119K</i> (millions of \$)
1 prototype aircraft	.5	2.0
Unit cost (production aircraft)	.3	1.3
51 aircraft	16.2	68.7
Spares and support†	1.8	16.6
Total program cost	18.8	88.6

†Includes equipment and technical data for the AC-119G equipment and engines for the AC-119K.

If the Air Staff entertained hopes of persuading Secretary of the Air Force Brown to turn to the AC-119K, they succeeded only in part. The secretary reviewed the mixed gunship force data then let the chief of staff know, on February 2, 1968, he was approving one squadron (sixteen aircraft) of AC-119Gs and one squadron (sixteen aircraft) of AC-119Ks. A total fifty-two C-119s would be modified (twenty-six of each model) to take care of losses and crew training. Dr. Brown believed at least six AC-119Gs with crews should be in Southeast Asia by July, four AC-119Ks with crews by November. He agreed that Phase I training be conducted at Clinton County AFB, Ohio, and Phase II at England AFB, La. The secretary went beyond the Air Staff proposal and suggested the AC-119G include a better illuminator and a night observation device along with the associated fire-control system. Dr. Brown thought that this equipment's weight could be handled by cutting back on flare storage and by removing the beacon-tracking radar. "The important element," he said, "is that we provide a substantially improved gunship as augmentation to the AC-47 force—at an early date and at reasonable cost." An option could be taken later—if needed—to upgrade more AC-119Gs to AC-119Ks. For the present, however, the AC-119K offered "very little more in the way of capability" yet cost far more than the AC-119G. In fact, the AC-119K program surpassed "the AC-119G program cost by a factor of almost five."¹⁰

On February 8 Secretary Brown asked Secretary McNamara to approve the AC-119G/K force of thirty-two gunships for Southeast Asia and modification of a total fifty-two aircraft. Dr. Brown said: "I see a clear distinction between the more localized support and protective role of the AC-119 aircraft and the predominantly search-and-destroy concept envisioned for the AC-130." He planned to "proceed with the AC-119G in the interim, while working at full speed on the AC-119K as well."

*Hot-day conditions were 100° Fahrenheit, 80 percent dewpoint, and 400-foot-pressure altitude, the worst climate conditions in which the aircraft could safely conduct operations.

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Approval of this force would lift the total to seventy combat-unit gunships—thirty-two AC-119G/Ks, thirty-two AC-47s, and six AC-130s (a total of seventy-two was attained by adding two more AC-130s). The enemy's 1968 Tet offensive had injected a note of urgency in the Air Force secretary's request.¹¹

During the secretary of defense's review of the AC-119G/K force, the Air Staff on February 10, 1968, assigned AFLC management to the AC-119 program and directed an all-out effort. The first AC-119Gs were due in Southeast Asia by July 1968, AC-119Ks by November 1968. Inasmuch as the program funding was already assured, AFLC could go ahead with procuring long-leadtime items. The Air Staff harbored misgivings over possible competition between the AC-130 and AC-119G/K programs for sensor, gun and illuminator subsystems. It cautioned AFLC and AFSC that the aims of both programs had to be met.¹²

The Air Force Logistics Command picked WRAMA as project manager for the AC-119 modifications on February 10 and the latter created a program office the same day. Maj. Gen. Francis C. Gideon, WRAMA commander, quickly selected Col. John M. Christenson as overall manager and formed a special engineering team within the WRAMA Service Engineering Division to expedite the work.¹³ WRAMA perused the proposed program and advised AFLC a higher priority for the project "compatible with or greater than that assigned the C-130" would be needed if schedule deadlines were to be met. It further proposed that the C-119s undergo IRAN concurrently with the reconfiguration and that some equipment be removed from other aircraft to overcome delays foreseen with new procurement.¹⁴

WRAMA believed Fairchild-Hiller, manufacturer of the C-119, could best accomplish the modification program.¹⁵ The firm had completed engineering work on the AC-119G prototype in early February which lent further weight toward its selection.¹⁶ On February 17, 1968, WRAMA awarded a letter contract to the company for modification and IRAN of fifty-one C-119s (the prototype was separate). Fairchild-Hiller's Aircraft Service Division at St. Augustine, Fla., would do the bulk of the work. Cost estimates for the project (including IRAN, spares, and aerospace ground equipment) totaled about \$81 million.*¹⁷

On February 21 the Air Staff designated the AC-119G/K project "Combat Hornet."¹⁸ It also told AFLC and AFSC the high precedence rating of AC-130 components now applied to certain equipment items of the AC-119G prototype and the first six follow-on aircraft. These were: NODs, FLIRs, DPN-34 radars, 20-kw illuminators, SPR-3 radars, associated fire-control system computers, as well as 7.62-mm and 20-mm

*Air Force Modification Requirement 932 (FS-2151/C-119K), March 20, 1968, formally directed conversion of twenty-six C-119G aircraft to AC-119K gunships. These aircraft would have two additional J-85GE-17 jet engines at an approximate cost of \$110,000 per airframe. The Air Force chose the J-85 engine for its 5,700 pounds of thrust at an additional weight of 1,500 pounds and because it was already in use on the C-123K which eased its logistic support.



Top: Crew chief Sgt. James R. Alvis, attaches the "Shadow" sign on 71st SOS equipment; left: Mr. Harold Henderson of Fairchild Systems and Lt. Col. William E. Long, CO, 71st SOS, Phan Rang AB.

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guns. The Air Force kept tight rein on these high ratings and used them solely to meet aircraft delivery schedules. Other Combat Hornet items were procured under the previously assigned precedence rating.¹⁹

WRAMA suggested to AFLC that the C-119s be obtained from one or two units of the Continental Air Command (CONAC) rather than securing a few aircraft from several units. The one or two units could then give up aerospace ground equipment and spare parts along with the aircraft and thereby expedite the eventual AC-119 deployment to Southeast Asia.²⁰

On February 24 Deputy Secretary of Defense Paul H. Nitze approved Secretary Brown's mixed gunship force plans, including the thirty-two AC-119 gunships for Southeast Asia. He stipulated that the actual AC-119 deployment be funneled through the deployment adjustment request system* and contain an analysis on the continued need for the AC-47 force.²¹

The Commander in Chief, Pacific Command, sent the Joint Chiefs of Staff a request for the mixed gunship force on March 3, 1968. The proposal would add 1,161 personnel in South Vietnam for supporting 32 AC-119s, 387 in Thailand for eight AC-130s, and twenty in Okinawa for maintaining AC-119s and AC-130s.²²

At about this time, the President announced a new ceiling on SEA increases, based on MACV recommendations. Known as Program 6 and disclosed by the Joint Chiefs of Staff on April 6, it lifted the South Vietnam ceiling by 24,500 to a total of 549,500. It did not provide for the 1,161 spaces CINCPAC asked for to support the AC-119s, however.²³ The Joint Chiefs held off seeking a further rise in the ceiling because of the timing of CINCPAC's request with respect to the new ceiling approval. Instead, the Joint Chiefs asked CINCPAC to rework the AC-119 requirement to fit Program 6 manpower limits.²⁴ These limits quickened the study of ways to squeeze more gunships into South Vietnam²⁵ for at stake now was a possible trade-off with another desired program. Discussions on the matter continued for some months.

Amid AFLC modifications actions and high-level force decisions, TAC planned AC-119 crew training. It had tailored a fairly complete training program by the middle of February. Continental Air Command—responsible for releasing the Reserve C-119s—would also conduct simulator, field, and Phase I training through the 302d Tactical Airlift Wing at Clinton County AFB.²⁶ CONAC evaluated base facilities on February 6-7 and reported that it could handle the planned training.²⁷ It set a March 20, 1968, starting date for Phase I training which was essentially crew checkout. The Air Training Command (ATC) and TAC would administer peculiar equipment and sensor training and all Phase II flight training. TAC activated the 4413th CCT Squadron (under SAWC) to begin Phase II training on March 1 at Lockbourne AFB.²⁸

* This request enabled OSD to monitor force changes with regard to theater manpower ceilings.

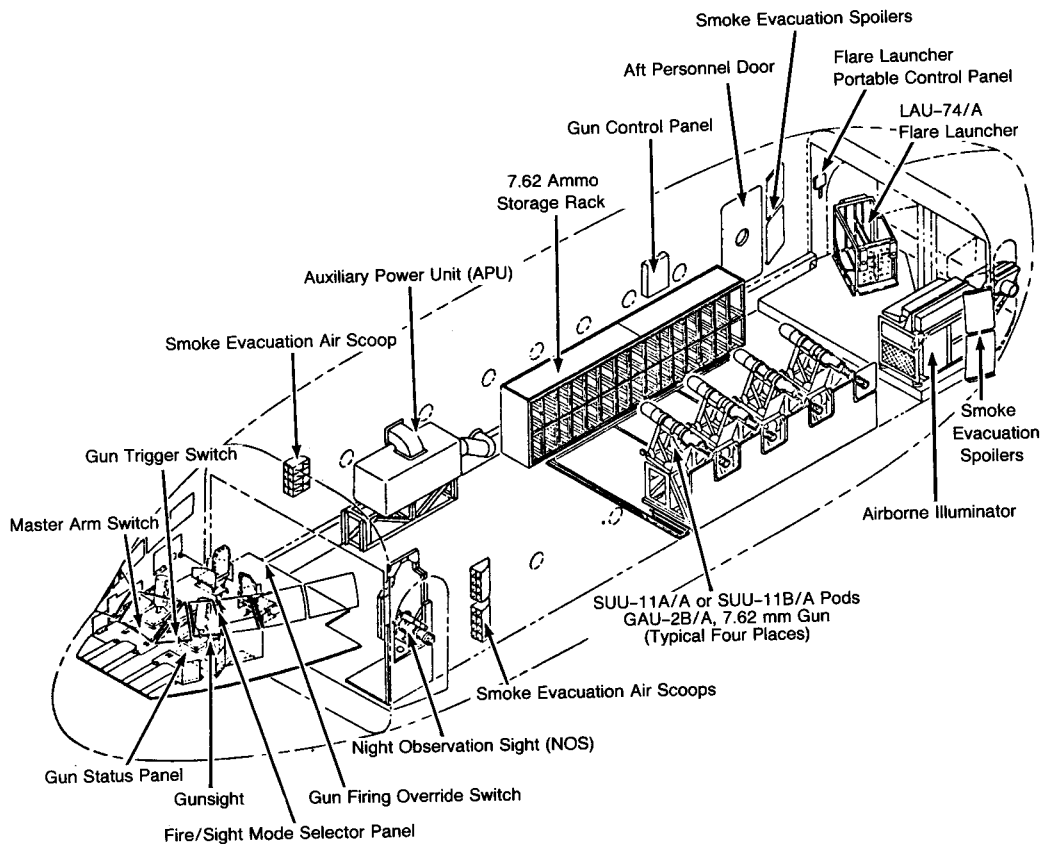
The Air Force secretary's queries on tripling the number of gunships triggered a flurry of activity in late March 1968 (see Chapter III). Several force options furnished the secretary by the Air Staff impacted little on final AC-119 plans. The AC-119G/K program of fifty-two gunships remained firm.²⁹

Slippage in the procurement of several items (other than sensors and guns) loomed in April 1968. To keep gunships and gas turbines on schedule, Headquarters USAF extended the high precedence rating to them. During the first three weeks of May, it likewise put electronic components worth \$1.3 million on priority lists, pushing up total program costs. To curb repeated requests for high precedence ratings and rising expenditures, Air Force headquarters told AFLC it would turn down any further appeals for special coverage. Forced to relent, on July 3, it granted a high precedence authorization to cover illuminator, image-intensifier tubes, and control switches, when it seemed that slippage of these items would retard the overall program. Air Force headquarters later reviewed procurement actions and discovered a number of high-priority contracts for AC-119 items being funded from production allotments in place of research and development money. It accordingly cracked down harder on the more costly high-priority procurement.³⁰

Trouble beset procurement of guns for the AC-119G as modification got under way. At first it was thought 7.62-mm guns from the AC-47s could be switched to the AC-119Gs. The AC-119 fleet expanded beyond mere AC-47 replacement, however, and new sources had to be found. A search uncovered sufficient SUU-11 gun pods for ten AC-119Gs and the VNAF installation. In addition, the Seventh Air Force had another operated by the VNAF. The AC-119 program's higher precedence halted the VNAF installation. In addition, the Seventh Air Force had another sixteen gun pods inoperative due to parts. PACAF cautioned against using these pods and urged instead that AFLC speed up procurement of MXU-470A modules.³¹ WRAMA originally intended to use the thirty-nine SUU-11 pods earmarked for the VNAF but in the middle of March 1968 arranged with the Army for enough guns to satisfy the program's monthly requirements.³² On March 18 WRAMA notified PACAF it no longer needed the SUU-11 gun pods in Southeast Asia.³³ In May WRAMA awarded the General Electric Company a \$1.3 million letter contract for new 7.62-mm gun modules that would in time meet gunship needs.³⁴

Difficulties with Fairchild-Hiller on certain items surfaced at the outset of the modification program, the smoke-evacuation system being a chief case in point. Survival of aircraft and crew was at stake if a magnesium flare ignited. The fire would fill the plane with blinding, choking smoke, impairing vision and movement. The Air Force specified that to be safe a smoke-removal system had to clear the smoke in ten seconds. Since the AC-47 had such a system, Fairchild-Hiller was expected to have little trouble with an AC-119 design. Notwithstanding, on April 19, 1968, the Air Force notified the company it was dissatisfied

AC-119G Fuselage Arrangement



with their system's potential deficiencies and the contractor's attitude toward fulfilling requirements. Tests supported WRAMA's position and the contractor made adjustments, largely in the location of the air-inlet scoops. Successful tests of the smoke-evacuation system at Eglin AFB on June 26 ended months of strained relations between the Air Force and Fairchild-Hiller over the matter.³⁵

WRAMA hosted logistic support conferences from time to time as the C-119 modifications made headway. An April 23-25, 1968, meeting on AC-130/AC-119 support was one of the most meaningful. The representatives* discussed ways to ease problems and coordinate aircraft delivery actions. They hammered out a revised production schedule specifying delivery of twenty-six AC-119Gs from May 21 through October 22, 1968, and the AC-119Ks from October 14 to March 31, 1969. The monthly forecast was:

	1968							1969			
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
AC-119G	2	3	8	4	5	4					
AC-119K						1	2	4	6	6	7

The conferees confirmed the distribution of eighteen AC-119Gs to PACAF and eight to TAC with a like division of the AC-119Ks. They agreed that deployment deadlines would tightly limit testing of the AC-119s in the United States. As for logistic support, the representatives believed it would take up to a year for the Air Force to assemble an inventory of necessary spares. Up to that time, contractor support would supply peculiar items and aerospace ground equipment for the AC-119 program.³⁶

Fairchild-Hiller delivered the first AC-119G gunship to the Air Force on May 21, 1968.³⁷ TAC received it on June 9 and instantly began limited flight-testing side by side with instructor-cadre upgrading. By June 15 two instructor pilots drawn from AC-47 instructor crews had trained four new instructor pilots. The achievement owed much to TAC's borrowing two CONAC C-119Gs to accelerate its training program.³⁸ With this limited instructor upgrading, the 4413th CCT Squadron accepted its first training class for Southeast Asian duty on July 3.³⁹

Tactical Air Command's Special Operations Forces conducted the AC-119G test and evaluation at Eglin AFB. It included testing of the fire-control system, night observation device, illumination systems, smoke-removal system, flare launcher, and overall aircraft performance. The twenty-five test sorties flown during June 9-30 took more than fifty-three flying hours. Equipment problems and delays developed. For example, a modified computer didn't arrive until June 21 and its erratic operation

*Representatives were from Headquarters USAF, AFLC, PACAF, TAC, CONAC, ATC, ASD, WRAMA, Oklahoma City Materiel Area, Ogden Air Materiel Area, San Antonio Air Materiel Area, 1st ACWg, 4413th CCTSq, SAWC, General Electric, and Fairchild-Hiller.

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prompted test personnel to term the offset performance of the fire-control system unsatisfactory. Even more serious was the aircraft's failure to reach Air Force profile standards.*⁴⁰ The AC-119G had to sustain a 200-foot-per-minute rate of climb with one engine feathered during hot-day conditions at a gross weight of 62,000 pounds. Minimum loiter time was specified as four hours out of total sortie time of five hours and forty minutes.

Test personnel saw that the AC-119G's combat configuration would go over the 62,000 weight, forcing a cutback in fuel load and in turn loiter time.⁴¹ On June 21 WRAMA proposed reducing the single-engine rate-of-climb requirement to 100 feet-per-minute, but this was turned down⁴² and tests on the Southeast Asia mission profile capabilities continued. The final test report recommended that AFLC conduct a weight-reduction program.⁴³ On July 1 TAC informed Air Force headquarters that tests confirmed "weight, performance, and capability problems exist in the AC-119G."⁴⁴ On July 11 Gen. Gabriel P. Disosway, TAC commander, reported to General McConnell, Air Force chief of staff, on a meeting he had on the subject with commanders† and other key Air Force officers. General Disosway said: "We are in agreement that the AC-119G as presently configured will not provide the desired SEA combat capability. We strongly recommend the deployment be delayed until the deficiencies are corrected."⁴⁵

Air Force headquarters directed a conference be convened at Warner-Robins AFB "to discuss alternatives for improving the aircraft performance in order to meet mission requirements."⁴⁶ For the conference, Air Force headquarters asked: (1) WRAMA to identify nonessential items for removal to reduce the AC-119G's weight,‡ (2) PACAF and Seventh Air Force to review mission requirements and recommend removal of specific equipment items and/or reduction of the 200-foot-per-minute rate-of-climb standard, and (3) TAC to brief results of the AC-119G's Category III test and suggest any improvements.⁴⁷ The disappointing AC-119G test results and this call for a weight-reduction conference shattered optimism about meeting the deployment goals.⁴⁸

*The Seventh Air Force typical day/night mission profile went like this: start engines, lift off, and climb to 3,000 feet; cruise five minutes to orbit start; loiter four hours at 130 knots; climb to 5,000 feet; forty mile dash at 180 knots to target area; one hour in attack mode, including descent to 3,500 feet, expend ammunition and flares; climb to 5,000 feet and cruise sixty miles to home base; land with 1,000 pounds of fuel reserve. [Ltr, Col. William S. Underwood, 7th AF Dir/Programs, to DCS/Plans, Seventh Air Force, Subj: AC-119G Performance Improvement Conference, Aug 13, 1968.]

†Gen. George S. Brown, who assumed command of the Seventh Air Force on August 7, 1968; Gen. James Ferguson, Commander, Air Force Systems Command; Gen. Jack G. Merrell, Commander, Air Force Logistics Commands; and Gen. Joseph J. Nazzaro, Commander in Chief, Pacific Air Forces.

‡The AC-119G's weight problem had arisen because many components being installed proved heavier than expected. Also, PACAF had drawn up the mission profile after modifications had begun and performance standards were more stringent than the engineers anticipated.

On July 26, 1968, WRAMA hosted the two-day AC-119 weight-reduction and performance-improvement conference at the Fairchild-Hiller plant, St. Augustine, Fla., rather than at Warner-Robins AFB. In attendance were representatives from Headquarters USAF, PACAF, TAC, AFLC, Seventh Air Force, and the contractor. The conferees determined the G model's total weight when ready for takeoff was 66,282 pounds—3,350 pounds excess.⁴⁹ In the course of lengthy discussions, more than thirty items were listed for removal, weighing a total of 3,277 pounds.⁵⁰ Nearly 1,500 pounds of such equipment would be removed in Southeast Asia. Removing the rest of the excess weight would be up to Fairchild-Hiller or WRAMA.⁵¹

The conferees believed that PACAF and the Seventh Air Force needed to adopt the weight-reduction recommendation and at the same time relax the single-engine climb-rate standard from 200 to 100 feet-per-minute. (They emphasized that 100 feet-per-minute was standard for the AC-47.) The only alternative would be to strip an additional 3,500 pounds from the AC-119. This would of necessity be peculiar equipment such as sensors and guns, thereby degrading gunship capabilities.⁵² Air Force headquarters pondered these recommendations then let PACAF know that the Southeast Asia mission profile could be met by adopting the conference's initial weight-reduction recommendation together with lowering the single-engine rate-of-climb standard of 100 feet-per-minute. Air Force headquarters stressed that the lower standard of performance afforded "adequate operational safety." Moreover, the AC-119 would be given a pilot-operated jettisonable flare launcher, weighing about 1,100 pounds with flares. Jettisoning the launcher in an emergency would boost the single-engine rate-of-climb to around 150 feet-per-minute.⁵³

On August 15, 1968, PACAF replied that it would lower the rate-of-climb criterion to 100 feet-per-minute. It urged "comprehensive flight testing before deployment" after the gunship's weight had been reduced. The command conveyed concern over armorplate removal, thinking it would make the gunship unsatisfactory for day missions.⁵⁴

The Air Force looked for the best way to accomplish the weight-reduction program, expecting it to require some 350 manhours. On August 24, WRAMA suggested the aircraft be cycled through the contractor's St. Augustine plant rather than having contract/depot field teams attempt the job. WRAMA assumed weight-reduction engineering could be completed by September 20, engineering for other deficiencies by September 27. It forecast the first aircraft entering recycling on November 1 with a flow time of fifteen days for each aircraft. The estimated cost of the program

*An experienced C-119 pilot said survival in an emergency at 100 foot-per-minute rate-of-climb on one engine demanded perfect crew performance. A minute was a long time to a pilot trying to reach an altitude not much higher than good-sized trees. [Intvw. author with Col. Joe T. Pound, Asst for Res Affairs (AFR), Dir Aerosp Prgms, June 27, 1972 (Colonel Pound commanded the 930th Tactical Airlift Group (TAGp). CONAC, when it was mobilized to form the 71st SOSq.)]

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was \$664,000.⁵⁵ The Air Staff accepted the plan, and Fairchild-Hiller reworked the AC-119G aircraft.

The slow resolution of the theater headroom problem softened the jolt of the weight-reduction program to the SEA deployment schedule. For almost six months after Deputy Defense Secretary Nitze's approval of the AC-119s in February 1968, work had focused on fitting the force under the headroom ceiling by trade-offs in other areas. One way had always been to replace AC-47s with AC-119s. On July 13, 1968, however, Air Force headquarters urged CINCPACAF to "exhaust all other possibilities" before considering this action.⁵⁶ Other courses had proven most difficult as General Momyer, Seventh Air Force commander, commented: "We have no room for maneuver on these directed programs. MACV is confronted with deficits they consider of more importance than these service interest programs." General Momyer saw the answer in taking AC-119s on a one-for-one trade with the AC-47s. Even then, this would require 337 more spaces which Momyer "agreed to dig . . . out of my hide." He reported to Gen. Bruce K. Holloway, Air Force vice chief of staff, that General Abrams, MACV commander, favored this one-for-one trade and was receptive to a message to CINCPAC and the Joint Chiefs of Staff along these lines. General Momyer restated his concern with the "operational deficiencies" of the AC-119 which he felt made it "less desirable than the AC-47 in many respects." He cautioned that if at all possible "we not go for a complete replacement of the thirty-two AC-47s."⁵⁷

During the AC-119's modification, the Seventh Air Force had doubted the gunship's capabilities, especially that of the G model. On July 20 it predicted trouble, noting the AC-119G was "not suited for night operations over heavily canopied jungles or rugged mountainous terrain where targets are not easily identified." The Seventh also scored the AC-119G as inflexible because it had but one sensor, the night observation device.⁵⁸ In mid-1968 the Seventh Air Force ad hoc Program Review Committee (cost-review panel) addressed the question: "Should the AC-119 Gunship force programmed for introduction into the theater be deferred as a cost-savings measure?" The panel reported that the AC-119G was so "underpowered with a full fuel load and ordnance that on station time will be sacrificed for ordnance capability or vice versa." It likewise criticized the 7.62-mm minigun's "hitting power." The gun's top slant-range effectiveness of 5,500 feet would be potent against personnel but do scant damage to buildings, bunkers, or trenches. The cost-reduction panel viewed the AC-119K in a more favorable light due to that gunship's auxiliary jet engines and 20-mm guns. Despite anxiety over the AC-119's anticipated performance, the panel rejected a deferment of the two AC-119 squadron deployment.⁵⁹ Air Force headquarters tried to reassure the Seventh Air Force regarding the AC-119G. "The Air Staff," it advised, "is well aware of these deficiencies in its current configuration and its

shortcomings as a combat aircraft. We are endeavoring to assure correction of these deficiencies that are correctable.”⁶⁰

At one time hope had existed that all AC-119Gs could be configured into AC-119Ks, thus ridding the G model of deficiencies that disturbed commanders in Southeast Asia. After study the Air Staff gave up the idea because: (1) converting twenty-six AC-119Gs into Ks would slip AC-119G deployment four or five months; and (2) expanding AC-119Ks beyond one squadron would demand more J-85 jet engines, seriously hurting the C-123K modification and maybe other programs. In short, configuring all AC-119s to the K model was clearly advantageous, but the Air Staff didn't think it practical to do in a fairly short time.⁶¹

With the approach of autumn, the several-times-delayed deployment of the AC-119s came closer to reality. On October 11, 1968, the Air Force officially accepted the last of the twenty-six AC-119Gs as it ended modification. On the other hand, only the first aircraft had gone through all test phases and begun its weight-reduction at Fairchild-Hiller's St. Augustine plant.⁶²

Production delays stretched the time for readying support equipment and refining supply procedures. On September 20, 1968, the Air Force contracted logistic support from Fairchild-Hiller. The agreement called for the company to keep men around the clock at main support bases in Southeast Asia. Initially, they would perform “depot overhaul and depot supply” services for contractor-furnished equipment and modified government-furnished parts. Various civilian specialists would remain in Southeast Asia for six months. AFLC used normal budget channels to fund the contract.⁶³

As weight-trimming of the AC-119s moved forward, the support equipment was collected and shipped to combat-theater locations. In October 1968 the stock level of various support items ranged from seventy-seven percent for ground equipment to ninety-two percent for common spare parts. Equipment peculiar to the AC-119G was to be delivered from December 1968 to June 1969 by Fairchild-Hiller. WRAMA dispatched a nine-man rapid area supply support team to Southeast Asia on November 8 to smooth out the receipt, identification, and storage of spare parts and support items.⁶⁴

The late arrival of the AC-119Gs in South Vietnam also allowed extra time for completion of the base support facilities. At Tan Son Nhut AB, for example, the programmed revetment area and operations/maintenance facility slipped months beyond completion dates in the Seventh Air Force program.⁶⁵ Back in May 1968, the 14th Air Commando Wing had alerted Seventh Air Force headquarters that Red Horse (engineering/construction units) resources were “not sufficient to accomplish assigned Combat

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Hornet projects within required time frames."⁶⁶ The Gunship III deployment slippage undoubtedly eliminated some severe crowding problems that loomed with the original mid-1968 goal.⁶⁷

Composition of the AC-119G unit added one more complication. To keep abreast of the Gunship III timetable, the Air Force had decided in early 1968 to take both C-119G aircraft and personnel from the Air Force Reserve.^{*68} On May 13, 1968, the 930th Tactical Airlift Group (CONAC), a C-119 Reserve unit based at Bakalar AFB, Ind., was called up for twenty-four months active service with the Tactical Air Command.⁶⁹ The 930th's 71st Tactical Airlift Squadron was redesignated the 71st Special Operations Squadron and TAC beefed it up with 930th Group resources, including more than 300 of the 383 personnel mobilized. During June 1-15, 1968, TAC moved the 71st Squadron from Bakalar to Lockbourne AFB, where its personnel formed the bulk of the first AC-119G training classes. Most of the 71st's men were experienced and qualified in C-119 crew and support positions, so the training stressed equipment and procedures peculiar to the gunship. The C-119Gs of the 71st Special Operations Squadron were gradually sent to St. Augustine for modification or to other units as replacements for their commitment to the modification program. The Air Staff ordered men from various Air Force sources to fully man the 71st Special Operations Squadron,⁷⁰ which was scheduled to depart for Southeast Asia on July 27, 1968.⁷¹ Delays in the departure ensued however.

With the 71st Special Operations Squadron composed of many reservists ordered to active duty, concern grew over the future release of this force to inactive duty. On September 4, 1968, as the 71st Squadron awaited deployment to Southeast Asia, TAC hosted a conference on the matter. A proposal emerged calling for these actions: (1) deploy the 71st SOSq with the AC-119Gs between November 1968 and January 1969 (based on aircraft availability), (2) exchange AC-119Gs for Southeast Asia AC-47s one-for-one, (3) gear training of AC-119K personnel to aircraft deliveries and deploy in the fourth quarter of fiscal year 1969, (4) return the 71st SOSq to the United States in the fourth quarter of fiscal 1969 in a one-for-one trade of AC-119Ks for AC-119Gs, and (5) inactivate the 71st SOSq in the fourth quarter of fiscal 1969. The conferees expected that the AC-119Ks could begin deployment and commence the trade with the AC-119Gs as follows: three in April 1969, seven in May, and eight in June. (This would equip a squadron of sixteen AC-119Ks and allow two AC-119Ks for attrition.)⁷²

In its initial review of the TAC conference proposal, Air Force headquarters noted that with AC-119K crew training beginning in October 1968, the April 1969 deployment would impose some personal hardships. It also cautioned that the trade-off for AC-47s—with their possible transfer to Vietnamese, Thai, or Laotian air forces—might have to exceed

*The C 119 had been out of the regular Air Force inventory since 1956.

one-for-one, to tuck the increased AC-119 squadron personnel under the theater manpower ceiling.⁷³ The Air Staff received more favorably the conference's suggestion that the Reserve personnel be demobilized in the fourth quarter of fiscal year 1969. It oriented planning toward this goal.

Adoption of the foregoing proposal would have shaped a gunship posture in South Vietnam of one sixteen-aircraft AC-47 squadron and one sixteen-aircraft AC-119K squadron. General Brown, Seventh Air Force commander, thought this unsatisfactory and reiterated that AC-119Gs and AC-119Ks should be deployed as additive forces—one squadron of AC-119Gs and one of AC-119Ks as originally approved. Seventh Air Force plans rested on a four-gunship-squadron concept and the general resisted any basic alteration of them.⁷⁴ As for the headroom problem, he felt that the proposed move of the Airborne Battlefield Command and Control Center to Thailand and new personnel accounting procedures might offer possible spaces.⁷⁵

General Nazzaro, Commander in Chief, Pacific Air Forces, chose the middle ground on the deployment/headroom issue. He notified General McConnell, Chief of Staff, on September 25, 1968, that the enemy's stepped-up infiltration and attacks on populated areas and military installations proved the need for two AC-119 squadrons. Nevertheless, by reason of manpower ceilings and possible disruptive effects of a short-term AC-119G deployment, CINCPACAF recommended: (1) retention of two AC-47 squadrons, (2) holding the 71st Special Operations Squadron in the United States, and (3) earliest possible deployment of the one AC-119K squadron. He figured that a complete AC-119K squadron would need 662 manpower spaces. These could be covered by 454 spaces made available from the move of the ABCCC from Da Nang, South Vietnam, to Udorn, Thailand, and more than 300 spaces by other actions. General Nazzaro judged the alternatives entailing AC-47 trade-offs least desirable. Even so, he outlined how more AC-47s could be turned over to South Vietnam, Laos, or Thailand should such trade-offs be required.⁷⁶

Debate over the headroom spaces and the AC-119 deployment extended into November. Air Force headquarters dismissed the idea of inactivating the 71st SOSq, with its replacement by AC-119Ks. It likewise rejected PACAF's recommendation for holding the AC-119G squadron in the United States. The search quickened for ways to shoehorn Gunship III manpower within the Vietnam headroom ceiling. In October the Air Staff approved 301 spaces for AC-119G/AC-47 trade-off actions. When these spaces were combined with those gained from accounting adjustments and the contemplated move of the ABCCC to Thailand, enough headroom would exist for deployment of one AC-119 squadron. Even then, the trade-off awaited CINCPAC and MACV approval and there was a question on the counting of transients in personnel strength figures. As of October 10, 1968, the Seventh Air Force was razor-close to its ceiling, just 82 under (including the transients), and leaving no room for an AC-119 unit.⁷⁷ The

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662 spaces wanted for the AC-119K squadron presented yet another headache but one less time-pressing. All the same, PACAF reported by November it would allow deployment of three AC-119Gs in November, seven in December, and eight in January.⁷⁸ These aircraft would be additions to the AC-47s in Southeast Asia.

Deputy Defense Secretary Nitze approved on November 27, 1968, the deployment to South Vietnam of the 71st Special Operations Squadron (the AC-119G unit). He coupled the approval to a request for re-study of the need for the AC-47s. Deputy Secretary Nitze asserted: "I am not convinced we need to retain the two AC-47 squadrons in the U.S. force in South Vietnam." He proposed consideration of these points: "(1) the requirement for additional gunships as opposed to deletion of the AC-47s, (2) the acceleration of the turnover of AC-47s to RVNAF, and (3) retention of the four gunship squadrons and withdrawal of two tactical fighter squadrons." Mr. Nitze wanted this analysis ahead of any deployment request for the second AC-119 squadron.⁷⁹

The approval by Deputy Secretary Nitze roughly coincided with the completion of the 71st Special Operations Squadron's training. The reservists, augmented by active duty members, had progressed through the 4413th Combat Crew Training Squadron's program at Lockbourne AFB and were considered ready for the combat-theater commitment in November. Most of these men had crewed the C-119 Flying Boxcar but they now shifted from paradrops to side-firing passes. The instruction climaxed with day- and night-firing on the range at Camp Atterbury, Ind.⁸⁰ The combat crews* had been hampered and delayed in their training by such problems as inoperable fire-control-system computers in the first four aircraft⁸¹ but were now prepared to ferry the AC-119Gs to South Vietnam and start theater familiarization.⁸²

A WRAMA conference of November 4, 1968, went into the ferrying of the AC-119Gs to South Vietnam. The conferees agreed to remove four guns (960 pounds) and their mounts (328 pounds) and to install a 500-gallon rubberized tank for extra fuel load. The aircraft would fly in pairs from St. Augustine to Nha Trang via: McClellan AFB, Calif.; McChord AFB, Wash.; Elmendorf AFB, Alaska; Adak; Midway; Wake; Kadena AB, Okinawa; and Clark AB, Philippines. The guns and mounts would be shipped to Nha Trang so as to arrive at the same time as the aircraft.⁸³

Later in November, the Seventh Air Force questioned 14th Special Operations Wing plans for employing AC-119Gs in armed reconnaissance and interdiction roles. It told the Wing that General Brown desired Phase I of the AC-119G combat evaluation to center on a comparison of AC-119G and AC-47 capabilities in the AC-47's current role. The specified priorities were:

*Each crew comprised two pilots, two navigators (one a night observation device operator), one flight engineer, two gunners, and one loadmaster.

<i>Priority</i>	<i>Mission</i>
1	Close fire support of friendly troops in contact with the enemy.
2	Close fire support of U.S. and friendly military installations including forts and outposts.
3	Close fire support of strategic hamlets, villages, and district towns.
4	Preplanned armed reconnaissance and interdiction of hostile areas and infiltration routes.
5	Search and rescue support.
6	Night armed escort for road and close offshore convoys.
7	Illumination for night fighter strikes.
8	Harassment and interdiction.

Seventh Air Force said that the evaluation of armed reconnaissance and interdiction should be deferred until the later phases of the combat test.⁸⁴

The advance elements of the 71st Special Operations Squadron were in place at Nha Trang by mid-December 1968.⁸⁵ The first two AC-119Gs left Lockbourne AFB on December 5 and touched down at Nha Trang on December 27, a total of four AC-119Gs arriving there by the end of the month. TAC and PACAF maintenance personnel set to work at once. They reinstalled and adjusted the miniguns, removed the special ferry fuel tanks, and in general got the aircraft operationally ready. This proved a stiffer job than expected. The first AC-119G arrived with a broken gunsight, hard nosewheel steering, poorly functioning hydraulic system, inoperative spark advance on one engine, and a faulty illuminating device.⁸⁶

Seventh Air Force plans called for the 71st Special Operations Squadron to furnish air support mainly in the southern portion of the Republic of Vietnam. The AC-119K unit (designated the 18th Special Operations Squadron) would be assigned to the northern portion. Nha Trang, headquarters of the present 14th Special Operations Wing, would serve as the main support base for the 71st Special Operations Squadron as well as the location for five AC-119Gs. Forward operating locations were to be established at Phan Rang AB (six planes) and at Tan Son Nhut AB (five planes).⁸⁷ The first AC-119Gs would fly combat missions out of Nha Trang.

The AC-119G Shadow* began operational sorties and its combat evaluation. From January 5 to March 8, 1969 (date of the last evaluation combat sortie), the evaluation team analyzed the Shadow gunship's performance in: combat air patrol for base and hamlet defense, interdiction, armed reconnaissance, forward air control, and close air support missions. The evaluation report revealed that the weapon system performed all missions satisfactorily except forward air controlling. The aircraft was rather slow, hard to maneuver, and vulnerable to enemy fire—

*Initially, the call sign "Creep" had been authorized for the AC-119G. A howl of indignation arose from the 71st SOSq over this selection and a change of the call sign to Shadow was requested, to be effective December 1, 1968. [Msg, 14th CSGp to 7th AF, subj: 14th SOW Aircraft Call Sign, Oct 21, 1968.]

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hence not well-suited to the forward air control role.* Four of the five main subsystems—the night observation device, side-firing guns, semiautomatic flare launcher, and fire-control system—demonstrated “acceptable reliability and effective operation.” The illuminator worked well until maintenance problems made it unreliable. As expected, the AC-119G had decided limitations: its gross weight usually held mission flying time to not more than six hours. The miniguns were of limited value against vehicular traffic. Lack of an all-weather capability crippled its operation in fog and haze. All the evaluation missions took place in undefended or lightly defended areas. The evaluators recommended the aircraft not be used in a high-threat environment.⁸⁸

Throughout the combat evaluation, the bulk of the targets (371 of 589) turned up during harassment- and interdiction-type missions. Such missions commonly grew out of armed reconnaissance operations. A Shadow gunship was assigned to patrol a “box”—an area bounded by precise coordinates.† It navigated to and within the box area by TACAN with ground-radar backup. Shadow kept a terrain clearance of 500 feet as it pressed an unrestricted search for the target with the night observation device or visually by means of the flares/illuminator. When a target was identified, the gunship plotted the coordinates and called the controlling agency for clearance to fire. (Often it dropped Mk-6 flares [marker logs] to pinpoint the target’s position.) Upon receipt of firing clearance, Shadow climbed to 3,500 feet, usually selected a semiautomatic firing mode, banked into the left orbit, and fired. Sometimes, the gunship dropped flares to illuminate the area and operated one or two guns, often at a slow rate (3,000 rounds-per-minute).⁸⁹

The evaluators had less trouble in assessing the results of the close air support missions than the harassment and interdiction strikes. The Gunship III used its illuminator and flares many times to assist troops in contact with the enemy. One Shadow was directed to an outpost near Dak To and the ground unit asked for flares and/or use of the illuminator. The enemy had lobbed mortar rounds on the outpost and probed its perimeter but withdrew when the gunship lit up the area. AC-119G firepower was even more telling. A Shadow attack on a suspected enemy troop concentration and storage area north of Pleiku AB touched off 80 secondary explosions. Another Shadow out of Nha Trang aided a U.S. Army unit pinned down by the enemy. The call of the ground unit’s radio operator showed that the AC-119G had tilted the balance: “Thanks a lot,

*Col. Conrad S. Allman, 14th Special Operations Wing commander (Mar 18, 1968–Mar 5, 1969) supported the negative conclusion on forward air controlling. In his End of Tour Report he noted that the size and speed of the AC-119G made it impossible to maintain either a constant target acquisition or constant visual contact with the fighters, both essential to direct a fighter strike and adjust ordnance delivery. He flatly recommended discontinuance of the AC-119G’s use as a forward air controller. [Kott, *The Role of USAF Gunships in SEASIA*, p 23.]

†Many of the boxes were located west of the cities of Kontum and Pleiku where Cambodia, Laos, and South Vietnam converged.

Shadow, you made my trip home possible."⁹⁰ The evaluators concluded that the close air support role was the "most effective" one for the AC-119G.⁹¹

Shadow attacks in the course of the combat evaluations recorded noteworthy statistics, including 6 enemy killed and another 184 estimated killed. The AC-119Gs silenced five .50-caliber gun positions and destroyed or damaged thirty-one trucks. Many secondary explosions triggered by attacks on ammunition/fuel dumps, vehicles, and base camps were confirmed. Shadow maintained an operational readiness rate of 78.8 percent over the evaluation period.⁹²

Up to March 8, 1969, the AC-119G Shadows had reported eighty-six instances of ground fire but suffered only one hit. A Shadow was flying an interdiction mission near Da Nang when fire from an unknown type of small-arms weapon damaged the right wingtip. On several Shadow flights, fighter escort suppressed antiaircraft fire.⁹³

As the combat evaluation progressed, more aircraft and crews came to South Vietnam. By March 1, 1969, all eighteen aircraft* of the 71st Special Operations Squadron† were in the combat theater.⁹⁴ The squadron gained combat-ready status on March 11, 1969.⁹⁵ The complete deployment of this unit, commanded by Lt. Col. James E. Pyle, and the promising combat debut of the AC-119G (called a "flying anachronism" by one authority)⁹⁶ marked the fruition of the months of arduous development and sharp debate over the gunship force.

Meantime, work on the AC-119Ks went on. WRAMA told AFLC on August 13, 1968, that the modification pace was slowed by adjustments on the cockpit configuration and by nonreceipt of the forward-looking infrared and the 20-mm gun system.⁹⁷ The holdup of the FLIRs from Texas Instruments created the more acute problem. In June 1968 WRAMA had proposed fixing aircraft schedules to the availability of the infrared system and delivery of the first few AC-119Ks to TAC and PACAF without FLIRs. These aircraft would be fitted with the FLIR in the field later.⁹⁸ In August WRAMA remained confident that four K models, minus the delayed FLIRs, would be ready in November for deployment to Southeast Asia.⁹⁹

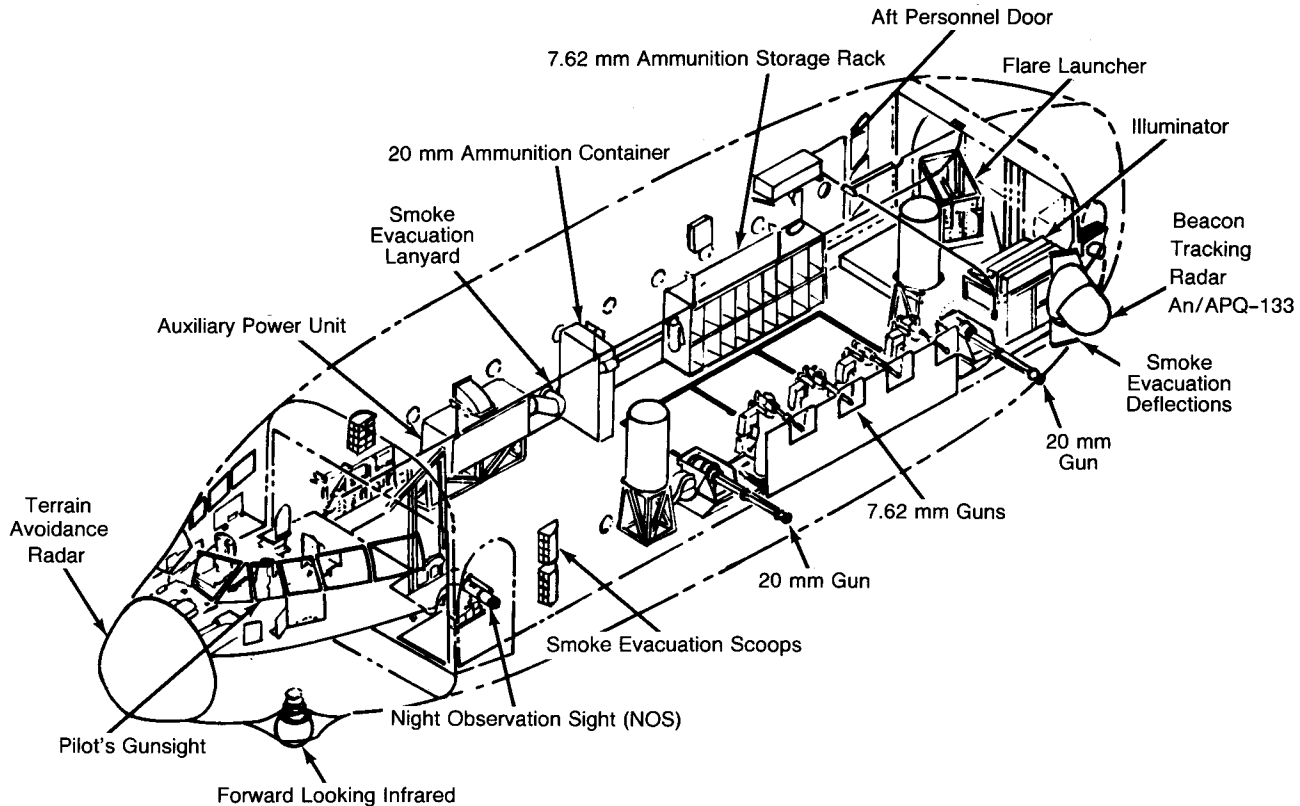
The FLIR delivery problems were not so easily nor quickly resolved. Fall came and Texas Instruments let WRAMA know it could not meet FLIR schedule deadlines. The priority afforded the installation of the first eight FLIRs in the AC-130As drew out the delivery delay. By the first few days of October 1968, it was clear the first eighteen AC-119Ks coming out of modification would have simply the basic components to accommodate and support the infrared sensor.¹⁰⁰

Frustrated by the delays in the mission-essential FLIR, WRAMA complained that Texas Instruments had vastly "over committed" itself in agreeing to the delivery schedule. It thought of canceling Fairchild-Hiller's

*This included sixteen unit-equipment aircraft plus two not operationally active.

† Later designated 17th Special Operations Squadron.

AC-119K Fuselage Arrangement



subcontract with the Texas firm but dropped the idea upon realizing Texas Instruments was the one company capable of filling the order within a reasonable time. Hughes Aircraft, the only serious competitor, was at least a year away from delivery of a comparable system.¹⁰¹

To expedite the FLIR delivery, a WRAMA Tiger Team* went to the Texas Instruments plant on December 2, 1968. A revised schedule for FLIR-equipped AC-119Ks resulted:

	FY 1969					FY 1970		
	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>
TAC	1	2	1	0	0	0	1	3
PACAF	0	0	4	4	5	4	1	0

WRAMA estimated that the sensor could be installed in the AC-119K in the field within one day, if necessary, utilizing thirty-two man-hours (four men, eight hours each).¹⁰²

Despite the new schedule, doubt persisted about FLIR deliveries. It was by no means certain that Texas Instruments had the "bugs" out of the equipment. This became a fact when the company notified the Air Force on January 24, 1969, it was suspending production of the sensors until design problems were licked and the production line changed. In February 1969 the firm reported that it might require eighteen months to complete the contract and need an additional \$5 million to cover costs. The Air Force had no choice but to extend the letter contract with Texas Instruments and to push any necessary re-engineering, production, and delivery.¹⁰³

Texas Instruments' production difficulties impeded the AC-130 and AC-119K programs. Troubles beset the air conditioning of the FLIRs in the AC-130s. Early versions of the FLIRs proved hard to maintain, operated below standard and failed often. In the opening months of 1969, a dearth of spare parts made supply and maintenance marginal for the high-priority AC-130s. To lessen these support problems, AFSC proposed a redistribution of the FLIR assets. It would first replace the AC-130 FLIR systems in Southeast Asia and equip the other AC-130s being readied for deployment. AFLC, PACAF, TAC, and the Air Staff approved this plan even though it would further delay the training and deployment of the AC-119Ks. An ASD/contractor team visited Southeast Asia in February 1969 and identified what modifications would improve the FLIR operation and maintenance. These changes were then embodied in Texas Instruments' production models of the sensor.¹⁰⁴

The first FLIR, originally due at Fairchild-Hiller in June 1968, did not arrive until May 3, 1969.¹⁰⁵ Installed in an aircraft, it underwent initial airborne tests on May 20, 1969.¹⁰⁶ The Air Force received the last FLIR in April 1970, nearly a year later. With this long delay and despite a lengthy hold on AC-119K deployment, three K models reached Southeast Asia

*A team that specialized in studying and recommending solutions to contractor production problems.

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without the FLIR installation. They flew G-model mission profiles until the sensors arrived.¹⁰⁷

The AC-119K's excessive weight also plagued its modification program. Even before the first roll-out ceremony for the AC-119K (September 24, 1968), the aircraft's estimated weight raised ripples of concern. On August 8, 1968, TAC suggested the weight problem be tackled at an AC-119K performance improvement conference, similar to the one held for the AC-119G. TAC believed "an early meeting would reduce impact upon aircraft modification/deliveries as well as crew training and deployment."¹⁰⁸ WRAMA, however, evaluated the weight problem without recourse to a formal meeting. On August 23 it informed AFLC that "total weight of K model components increased 6946 pounds over initial estimates, thereby decreasing mission duration."* One of the PACAF mission profiles—belatedly sent to WRAMA—showed that in addition to the expected use of the AC-119Ks' jet engines during takeoff and climb, they were used in the attack phase. This would require 950 pounds of added fuel. WRAMA established a weight-reduction goal of 5,079 pounds, of which 1,525 pounds could be cut via the same route as the AC-119Gs' weight reduction. It mounted an all-out effort to trim the remaining 3,554 pounds.¹⁰⁹

WRAMA sought to slim down the AC-119K by means other than stripping it of selected items. One possibility was a carburetor modification to permit operation of the R-3350 engines at a lean mixture during higher power settings. A structural analysis of the landing gear and nacelle was undertaken to determine if the ground limit of 77,000 pounds could be scaled upward to the inflight limit of 83,000 pounds. As a last resort, WRAMA would recommend to PACAF a cutback in loiter-time requirements from four to three hours and/or elimination of gunship items such as armorplating.¹¹⁰ Removal of armorplating had been previously avoided because PACAF wanted the AC-119Ks to fly interdiction missions which exposed them to larger-caliber ground fire.[†]

On September 27, 1968, WRAMA reported a solution to the AC-119K weight problem (see Table 5). With it WRAMA believed the aircraft could fly the most demanding Southeast Asia combat-mission profile and yet return to base with 1,050 pounds of fuel. To drop the weight outlined, the first few production aircraft would recycle. The majority still in modification would do it at St. Augustine.¹¹¹

Moves to organize the AC-119K squadron paralleled the modification, recycling, and testing of the AC-119K aircraft. Unlike the 71st Special Operations Squadron, the new unit would have many aircraft before activation.¹¹² A deployment conference in mid-December 1968 agreed to

*Of this total, 2,825 pounds was common to the AC-119G while 4,121 pounds was equipment peculiar to the AC-119K.

†CINCPACAF stated on August 15, 1968, the "primary role of [the] AC-119K is night interdiction of lines of communication to destroy wheeled or tracked vehicular traffic on roads as well as sampans and other small maritime traffic in the canals." [Msg, CINCPACAF to CSAF, TAC, AFLC, 152344Z Aug 68, subj: Combat Hornet.]

TABLE 5. WRAMA SOLUTION TO THE AC-119 WEIGHT PROBLEM

<i>Action</i>	<i>Pounds Saved</i>
Remove AC-119G weight-reduction items applicable to the AC-119K	1,630.5
Remove armor in the area of the 20-mm guns*	783.0
Raise the maximum gross ramp (ground) weight from 77,000 to 80,400 pounds with minor ground-handling precautions	<u>3,400.0</u>
Total	5,813.0
<hr/>	
<i>AC-119K weight after above savings</i>	<i>Pounds</i>
Maximum ramp (ground) weight	80,400.0
Loaded AC-119K less fuel:	
Basic AC-119K weight	57,864.0
Crew and oil	3,068.0
Ammunition and flares	<u>4,947.0</u>
Total	65,879.0
Fuel capacity	14,521.0

*Agreed to after Fairchild-Hiller reported gunners would spend little time at the 20-mm guns and thus could stay in more protected areas.

Source: Msg WRAMA to AFLC, CSAF, TAC, CINCPACAF, 7AF, USAFSOF, subject: AC-119K Weight Reduction, 271400 Sep 68.

retain production aircraft nine through thirteen at St. Augustine awaiting the 18th Special Operations Squadron's activation. TAC said it lacked the people on station to maintain these five extra aircraft until the squadron was formed. A TAC conference at Lockbourne AFB on January 13, 1969, discussed activation of the 18th SOSq and the slow aircraft deliveries.¹¹³ The 18th Special Operations Squadron first operated at Lockbourne in late January. For several months it concentrated on crew training, aircraft familiarization, and development of mission procedures.

The late delivery of AC-119Ks hampered combat crew training. At one time, the first combat crews were to enter Phase I training at Clinton County AFB, Ohio, on October 3 and complete the phase in December 1968.¹¹⁴ A shortage of aircraft, however, delayed entry dates and created problems for classes moving from one training phase to the next. Moreover, the first AC-119Ks were without FLIRs which further weakened training. TAC finally had to draw upon its AC-130 experience and take special measures to train FLIR operators. The training program nonetheless planned to ready five crews each month, February through May, and four in June 1969.¹¹⁵ The ten-man crew of the AC-119K consisted of an aircraft commander, pilot, navigator/safety officer, FLIR/radar operator (navigator), NOD operator (navigator), flight engineer, three gunners, and an illuminator operator. Plans envisioned aircrew manning at a 1.5 ratio per assigned aircraft.¹¹⁶ The experiences of the 71st Special Operations Squadron guided the 18th SOSq's training and deployment.

In mid-March 1969 WRAMA personnel met with those of TAC, 18th SOSq and 4440th Air Delivery Group to complete the AC-119K ferry

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configuration. The group picked the same route used in deploying the AC-119Gs (except for substituting Malmstrom AFB, Mont., for McClellan AFB) and readied a logistic plan for enroute support.* Three 500-gallon rubberized fuel tanks would be installed in each aircraft, requiring the temporary removal of cockpit/cargo armor, 7.62-mm and 20-mm gun installations, the radar, and the flare launchers. In May 1969 WRAMA advised AFLC that final preparations for the ferry/deployment configuration were over.¹¹⁷ On May 20 it closed out its AC-119 Gunship Program Office and assigned further management of the gunship program to the Cargo Aircraft Systems Management Division.¹¹⁸

In the spring of 1969, the development of the 18th Special Operations Squadron appeared near at hand, but several factors held it up. Finding headroom for the AC-119K squadron plagued planners in early 1969. The transfer of the AC-47s to the Vietnamese air force enabled Seventh Air Force to eke out enough manpower spaces by the end of April. At that time, however, the Secretary of Defense had not approved the deployment adjustment request.¹¹⁹ More serious in holding up deployment was the slow production of the FLIRs. WRAMA reported on March 12, 1969, that further slippage would result in this delivery/installation schedule:

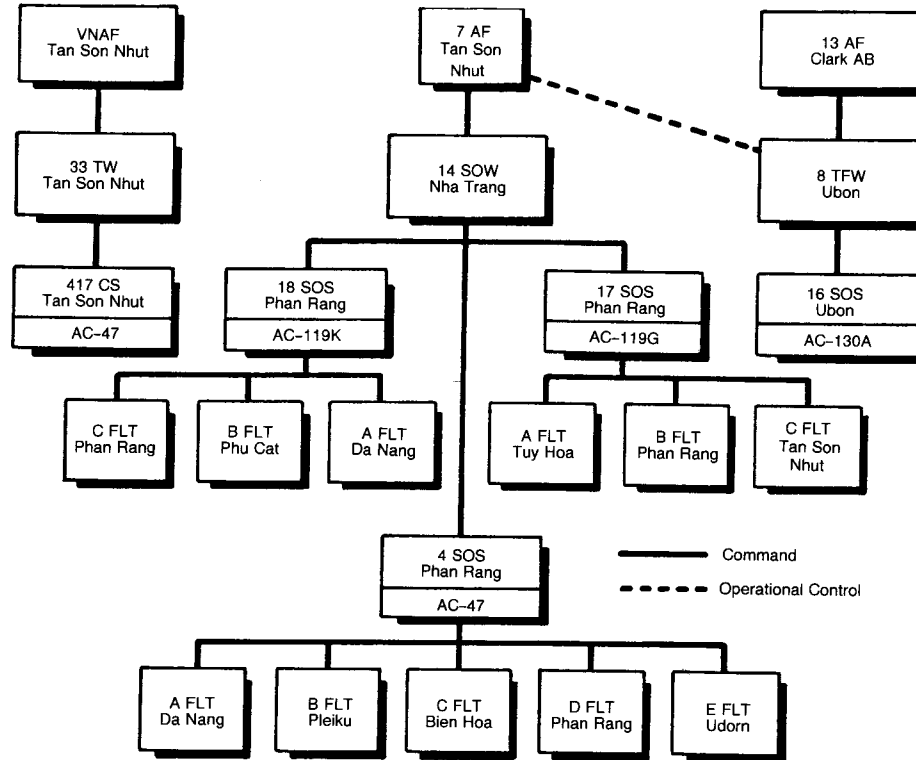
	FY 1969			FY 1970					
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
FLIRs delivered	1	1	2	6	7	8	3		
FLIRs installed			1	0	3	5	8	7	2

Air Force headquarters proposed a possible May-June deployment without FLIRs. CINCPACAF suggested a squadron deployment in September 1969—without FLIRs if production so dictated. TAC favored an August-September deployment. On April 22, 1969, after weighing the command responses, Air Force headquarters set an early September 1969 target date for deployment with an initial operating capability in Southeast Asia by September 30. The Air Staff knew the FLIR installation was the pacing factor but assumed some AC-119Ks could be entirely equipped by that time. TAC projected in May that the 18th Special Operations Squadron would have two complete aircraft in October, 10 in November, 17 in December, and 18 in January 1970.¹²⁰

Another problem came to light during TAC's test of the AC-119K in April, May, and June. The aircraft's flux-gate compass fed inputs to the fire-control system computer that were up to 40° in error after flying a firing circle. This plus a known error in the computer enlarged the overall error to 1,000 meters.¹²¹ On May 22, 1969, TAC notified the Air Staff and AFLC that the tests verified the AC-119K's current configuration did not "possess a

*To support the ferrying of the AC-119Ks: three built-up R-3350 engines, two built-up props, two built-up J-85 engines, and a war readiness kit were prepositioned at McClellan AFB (but later at Malmstrom AFB) to support the aircraft in the United States; a built-up engine, a built-up prop, and a war readiness kit were prepositioned at Clark AB and a war readiness kit located at Hickam AFB, to support the aircraft in the PACAF theater.

Organization and Dispersal of Gunships (Nov. 1969)



NOTE: 1. VNAF and USAF gunship effort in-country coordinated in 7AF TACC.
 2. USAF gunship effort out-country coordinated in 7AF Command Center (BLUE CHIP).

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reliable offset-fire capability." TAC said it could not "in good conscience recommend employment of the existing AC-119K in the offset-mode in close air support role."¹²² New tests revealed that replacement of the flux-gate compass with a two-axis gyro system could shrink the error to 400 meters. This in turn could be cut to 50 meters by giving the AC-119K a "complete solution" analog computer. AFLC recommended retrofitting the whole AC-119 fleet with the new compass and computer at an approximate cost of \$4.5 million.¹²³ TAC agreed if 50-meter accuracy would result.¹²⁴ Previous to the AC-119K deployment, the Air Staff assented to the installation of the two items. When the two-axis-gyro modifications were through, a recheck termed the offset system satisfactory.¹²⁵ WRAMA teams would fit the AC-119s with the analog computer in Southeast Asia during June 1970.

Not until October 21, 1969, did the 18th Special Operations Squadron's first six AC-119K gunships depart Lockbourne AFB for South Vietnam. Lt. Col. Ernest E. Johnson, the squadron commander, and the rest of the advance party reached Phan Rang AB on the 11th of October. The first AC-119K arrived there on November 3,¹²⁶ and by the close of the year twelve AC-119Ks were in the theater. The final contingent of six aircraft deployed on December 27, the eighteenth, and last, AC-119K ending its transpacific flight on January 25, 1970.¹²⁷ All aircraft were combat-configured by February 4, 1970.¹²⁸

The deployment of the 18th SOSq signaled the close of Combat Hornet, the AC-119G/K development program. Over 2½ years had gone by from the moment Secretary Brown decided to use the C-119 as a gunship to the arrival in South Vietnam of the 18th SOSq's last AC-119K. A long arduous project, it had been riddled with indecision, controversy, technical/engineering problems, contractor/subcontractor equipment-development delays, and competition with higher-priority weapons systems.¹²⁹

In addition, the Combat Hornet program had met with stiff cost overruns. On June 18, 1969, Air Force headquarters singled out the AC-119 program to AFLC as a prime example of an undesirable cost-overrun trend.¹³⁰ These costs caught the eye of economy-conscious Senator William Proxmire, chairman of the Subcommittee on Economy in Government. On February 3, 1970, he asked Philip N. Whittaker, Assistant Secretary of the Air Force (Installations and Logistics) why the twenty-six-aircraft program's estimated costs began at \$50 million and climbed to \$158 million. "I wonder if you would verify these facts and explain why there has been such a large increase in the modification costs," said the senator.¹³¹ The Air Force replied that the 52 AC-119G/K modification program was first pegged at \$81.2 million with a new estimate of \$141.4 million. It attributed this sizable rise to numerous changes in design and equipment and a greater quantity of spares.¹³² Not offered in rebuttal to Senator Proxmire were the delays in defining the contract and the premium overtime pay dictated by the project's urgency. Inflation, too, appeared to have played a part.¹³³

The long-delayed arrival of the AC-119Ks wound up a major realignment of gunship forces in South Vietnam. The Nha Trang Proposal, approved earlier in the year, had called for the relocation from Nha Trang to Phan Rang of the 14th Special Operations Wing headquarters, the 71st Special Operations Squadron and the 18th Special Operations Squadron (yet to arrive).¹³⁴ When the 18th SOSq left the United States, it went directly to Phan Rang AB. The 71st SOSq suffered more turmoil. It not only moved its headquarters to Phan Rang and its Flight A to Tuy Hoa AB but underwent a major reorganization as well. The 17th Special Operations Squadron, activated on June 1, replaced the 71st SOSq which returned¹³⁵ to Bakalar AFB, Ind., for inactivation.¹³⁶ The 17th Squadron absorbed about two-thirds of the 71st's personnel. The remainder were reservists who departed South Vietnam for the United States on June 6 and reverted to inactive status by June 18, 1969.¹³⁷ This drain of skilled men imposed stringent training demands. Nevertheless, by the end of June, the 17th SOSq, commanded by Lt. Col. Richard E. Knie, had trained replacements and reestablished routine operations. With the two AC-119 squadrons in place, the Air Force inactivated the 3d and 4th SOSqs and transferred their AC-47s to the VNAF or RLAf. Thus the AC-119 units became the sole USAF gunship force based in South Vietnam.

At the close of 1969, the AC-119s were deployed as follows:

	<i>Aircraft Assigned</i>	<i>Aircraft Planned</i>
<i>17th Special Operation Squadron</i>		
A Flight, Tuy Hoa Air Base	4 AC-119G	6
B Flight, Phan Rang Air Base (Main Support Base)	7 AC-119G	6
C Flight, Tan Son Nhut Air Base	5 AC-119G	6
<i>18th Special Operations Squadron</i>		
A Flight, Da Nang Air Base	6 AC-119K	6
B Flight, Phu Cat Air Base	3 AC-119K	6
C Flight, Phan Rang Air Base (Main Support Base)	3 AC-119K	6

The distribution of AC-119 aircraft reflected early gunship concepts and experience and an effort to respond rapidly to Army close air support needs. Its soundness would be open to question should the AC-119K be largely used for interdiction in the Steel Tiger area of Laos. This seemed to be the case, for the Da Nang and Phu Cat contingents of the 18th SOSq were already heavily out-country oriented. Their aircraft were scheduled daily by the Seventh Air Force against vehicle traffic on the Laotian roads.¹³⁹ CINCPAC had told the Joint Chiefs of Staff that twelve AC-119Ks of the 18th Squadron would supplement other self-contained night attack systems in Laos.¹⁴⁰ These facts and concern over keeping the more sophisticated AC-119K at a number of forward locations impelled the 14th Special Operations Wing to propose another look at AC-119K deployment. The wing recommended that the Seventh Air Force locate twelve AC-119Ks at Da Nang and six at Ubon RTAFB. This would put the

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TABLE 6. COMBAT EVALUATION OF THE AC-119K
(3 November 1969-28 February 1970)

<i>Attacks on</i>	<i>Number</i>	<i>Destroyed</i>	<i>Damaged</i>
Suspected enemy locations	144		
Known enemy locations	137		
Trucks	1,290	302	271
Sampons	27	26	1
Storage areas	42		
Bridges	4		
Other targets	23		

Positive target results: 538 secondary explosions and 186 secondary fires.

Target illumination: 178.1 hours with illuminator; 115 Mk-24 flares expended.

Rounds of ammunition fired: 1,354,846 of 7.26-mm and 595,519 of 20-mm.

Flying time: 2,417.2 hours of which 2,117.3 were combat hours.

<i>Type of Sortie</i>	<i>Number</i>
Armed reconnaissance in support of U.S. and other friendly ground forces or against LOCs along major enemy land/waterway supply routes	638*
Support	85†
Check flights	36
Training	19
Total	778

*410 flown outside and 228 inside South Vietnam.

†52 for troops in contact with the enemy.

Source: TAC OPlan 120 subj: Final Report Combat Introduction/Evaluation AC-119K. Gunship III (Combat King), August 1970, pp 41-61.

AC-119Ks closer to the target area and let them use the special maintenance equipment at Ubon—equipment common to both AC-130s and AC-119Ks. The Seventh Air Force rejected the proposal in the main, but on February 17, 1970, activated Flight D at Udorn RTAFB with three AC-119Ks and four aircrews taken from Flight B at Phu Cat AB.¹⁴²

The 18th SOSq's combat operations commenced side by side with the AC-119K's combat evaluation (known as Combat King). The initial cadre of the 18th Squadron entered training and theater indoctrination with the 17th SOSq. On November 13, 1969, barely ten days after the first AC-119Ks arrived, the first combat mission was flown.¹⁴³ During the combat evaluation (November 3, 1969-February 28, 1970), eighteen AC-119Ks flew a total of 778 of the 865 sorties scheduled, a ninety percent rate. The type of sorties ranged from armed reconnaissance to check flights (see Table 6). On February 1 the 18th Special Operations Squadron began flying the full rate of ten sorties a day as directed by the Seventh Air Force.¹⁴⁴ After all this activity, the Combat King evaluators concluded that "the AC-119K effectively supported the PACAF mission requirements by flying its assigned combat missions. It was capable of destroying trucks and attacking

targets as assigned.”¹⁴⁵ By the end of 1969, MACV had judged the AC-119K a successful system.¹⁴⁶

The nearly four-month combat evaluation of the AC-119K did disclose certain deficiencies. Maintenance manning, made difficult by decentralization, was found inadequate to properly support the forward operating locations. Likewise, squadron manning did not provide for a commander and operations officer at the FOLs so full-time crewmembers had to discharge these duties. Aerospace ground equipment was short and logistic support in general needed reevaluation. The forward-looking infrared, rated an essential and effective sensor, was kept operational only through contractor maintenance support. The final evaluation report recommended the four 7.62-mm miniguns be removed and one additional 20-mm gun be installed. As currently configured, the AC-119K needed to carry more 20-mm ammunition, since it expended an average of 655 rounds on each truck. Furthermore, the high failure rate of the 20-mm system, due chiefly to the ammunition-feed system, created concern. The beacon-tracking radar was not evaluated because of little utilization during the test period.¹⁴⁷

The AC-119K had been into the combat evaluation almost a month when it received a new call sign and thus a new nickname. The 18th Special Operations Squadron reviewed a list of available calls including Gun Shy, Poor Boy, and Charlie Brown. The men of the squadron dejectedly picked Charlie Brown as the “least of these evils” but strongly asserted they deserved better. It turned out later the 366th Tactical Fighter Wing at Da Nang had an unused tactical voice call sign—Stinger. The 18th SOSq, backed by the 14th Special Operations Wing, put in a claim for it. The 18th saw Stinger as slightly off the gunship tradition but a satisfactory compromise, a sign around which unit pride could be built and a continuation of the “S” alliteration of gunship call signs.¹⁴⁸ The Seventh Air Force approved the call-sign transfer and the AC-119K became Stinger on December 1, 1969.¹⁴⁹ Stinger now joined Spectre in armed reconnaissance of enemy supply lines in Laos and Shadow in a variety of missions in South Vietnam. Spooky was also around, carrying the flag of allied nations.

The AC-119Gs were in combat virtually a year before the AC-119Ks. The AC-119G squadron solidly buttressed the 1969 war effort although bedeviled by aircraft corrosion/equipment problems,¹⁵⁰ redeployment and reorganization, and ceaseless retraining of aircrew/support personnel. At the time its designation switched to the “17th Special Operations Squadron” (June 1, 1969), the 71st SOSq had flown 1,209 missions (1,516 sorties) and 6,251 combat hours; fired 14,555,150 rounds of 7.62-mm ammunition; dropped 10,281 flares; killed 682 enemy troops (1,104 probables); and destroyed 43 vehicles (eight probables).¹⁵¹ From June through December 1969, the 17th SOSq’s performance exceeded: 2,000 sorties and 8,000 combat hours flown; 20 million rounds of ammunition fired; 12,000 flares expended; 800 enemy killed; 150 sampans destroyed;

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and 800 secondary explosions recorded.¹⁵² The 14th Special Operations Wing still proudly claimed that no allied outpost had been overrun while the gunships were overhead.

During 1969 the night observation device and computerized fire-control system of the AC-119 Shadow enabled it to edge ever closer to offensive missions. The AC-47 Spooky largely reacted to enemy strikes but the Shadow actively sought out enemy supply convoys and troop concentrations.¹⁵³ The AC-119K Stinger's more sophisticated gear supplied a stronger punch for even more offensive missions.

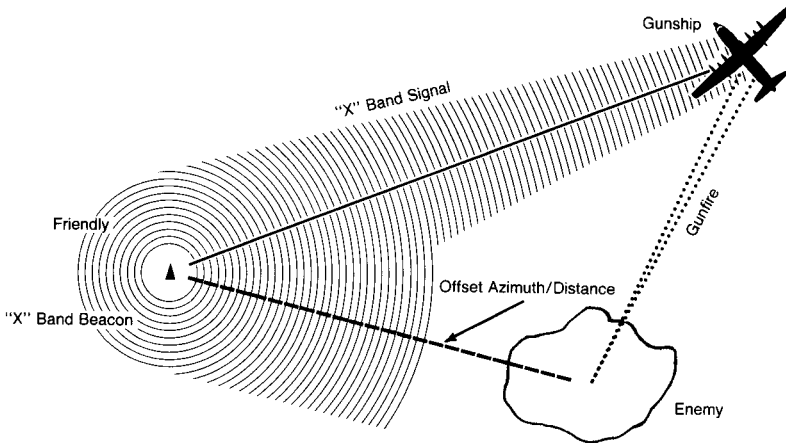
An attempt to capitalize on Shadow's see-in-the-dark capability occurred in February 1969. Since October 1968, observers had sighted unidentified flying objects of helicopter speed and altitude in the Duc Co area of western II Corps. The matter aroused operational interest because the enemy might be transporting men and equipment by helicopter from Cambodia to strategic locations in South Vietnam. The Seventh Air Force committed Shadows to joint surveillance with the Army Hawk radar element, counter-mortar radar, and Cobra helicopters. On several missions into the area, the AC-119Gs saw UFOs but could not identify and/or intercept them.¹⁵⁴

Shadow gunships at first joined the AC-47s in protecting friendly outposts. Special Forces camps, district towns, or other fixed military positions under enemy assault. The Spooky Count became the Spooky/Shadow Count. The two gunship types defended 1,296 friendly positions in the first three months of 1969. Not one position fell while the gunships circled above. By December the Shadows had entirely replaced the Air Force Spookies.¹⁵⁵

Cooperation between Shadow crews and ground personnel during support missions steadily improved. Allied troops and direct air support agencies became more familiar with the AC-119G and what it could do.¹⁵⁶ A typical ground-support episode unfolded on June 7, 1969. Enemy forces tried to overrun 25th Infantry Division fire-support base "Crook," which nestled near an enemy route into Tay Ninh Province. AC-119G/AC-47 gunships and USAF tactical fighters answered the call for assistance. To help turn back the enemy attack, the gunships used flares and miniguns, the fighters napalm and bombs. A sweep of the area afterwards counted 323 enemy killed. The few prisoners questioned told how the aerial firepower surprised and overwhelmed them.¹⁵⁷

Very early the AC-119G had a small role in an effort to improve air support of ground forces. In September 1968 Air Force headquarters had directed TAC to use Shadow in two evaluations—Combat Cover and Combat Rendezvous.¹⁵⁸ In Combat Cover an OV-10A armed FAC joined the AC-119G in sustaining an Air Force strike presence over an Army unit. The aim was to slash response time to Army requests for air support. Combat Cover's first phase shaped FAC/gunship mission profiles and the second phase rated reaction times. The FAC response averaged 2.4 minutes, the gunship 5 minutes from notification to target area and 3.4

Combat Rendezvous (AC-119/AC-130)



minutes to swing into firing position. TAC evaluators considered the concept feasible but pointed to the discomfort and extra workload of the OV-10A pilot and the "debatable use of the gunship in the close air support role."¹⁵⁹

General Momyer, TAC commander, informed Air Force headquarters that Combat Cover revealed; no marked improvement in reaction time, the armed FAC (perhaps compromising the FAC role) had little firepower to apply, the OV-10 was too noisy for the strike role, and the gunship was vulnerable to anything larger than .30-caliber fire. The general recommended cancellation of an evaluation of the concept in Southeast Asia. Other organizations did not share these negative views and the Air Staff set the tests for mid-1969.¹⁶⁰ TAC nevertheless went on record as opposed to the allocation of gunships to Army divisions as well as use of the gunship in a phased-response concept.¹⁶¹ The chief upshot of Combat Cover was the arming of the OV-10s. As to Combat Rendezvous, AC-119s and AC-130s participated in the test at Hurlburt Field, Fla., from November 18 to 22, 1968.¹⁶² The evaluation centered on close air support by means of offset firing, utilizing a ground force's beacon or transponder as a reference point. Combat Rendezvous uncovered concept/equipment potential but also a need for further development.

Arranged visits between gunship crewmembers and U.S. Army unit commanders sought to strengthen air/ground coordination. The visits were designed to widen perspectives and pinpoint requirements for effective operations. Crewmembers of the 17th Special Operations Squadron visited the Americal Division in the last quarter of 1969. A written guide for aiding Army commanders on gunship-employment techniques grew out of these exchange visits.¹⁶³

Shadow flew a far different mission early in 1969. A friendly compound lost electric power during a Viet Cong attack. At that time a doctor was performing a delicate operation on a wounded Vietnamese soldier. Responding to the call for help, an AC-119G from the 71st SOSq

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hovered over the compound, its one-million-candlepower illuminator pouring light over doctor and patient. Lt. Col. Burl C. Campbell and his crew held the aircraft in a tightly controlled orbit despite the bright beam's marking the gunship for enemy gunners. The Vietnamese trooper lived, his operation and Shadow's a success.¹⁶⁴

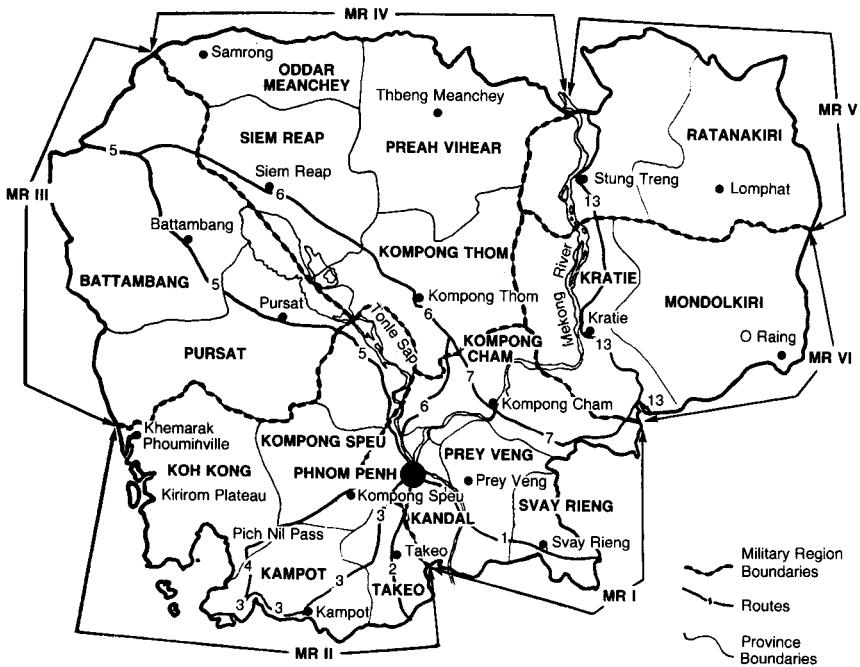
In the last half of August 1969, the 17th Special Operations Squadron put in for relief from at least one AC-119G mission per night due to the strain on aircraft maintenance. Four Shadows incurred battle damage and on August 6 one more took .50-caliber hits in the fuselage and one engine, producing an engine fire and extensive damage. Corrosion-control work, maintenance inspections, and disruptions in the supply of parts (owing to unit movements under the Nha Trang Proposal) aggravated the aircraft problems.¹⁶⁵ The 17th SOSq lost its first aircraft on October 11—Shadow 76 crashed upon takeoff for a mission from Tan Son Nhut AB. Six crewmembers were killed and the aircraft was destroyed.¹⁶⁶ Another AC-119G sustained severe damage on November 10 when its right gear collapsed on landing at Chu Lai AB.¹⁶⁷

The drop in squadron missions, a decline of enemy activity, and worsening weather slightly altered the "seek and destroy" concept of the first half of 1969 to a "combat air patrol" operation.¹⁶⁸ By mid-December most of the problems afflicting the AC-119Gs had eased and the squadron's posture strengthened.¹⁶⁹

January 1970 ushered in the second year of Shadow operations. Enemy action had so dwindled within South Vietnam that many missions were directed to border areas with more interdiction targets.¹⁷⁰ Specific strikes zones (Shadow boxes) were designated for armed reconnaissance. Intelligence officers determined each afternoon which boxes would likely prove most lucrative. A box would be assigned to a Shadow for the night mission. Enroute, the navigator secured artillery ("arty") clearances that often required a roundabout approach to the area and a great deal more time to reach the target. The aircraft commonly flew a TACAN radial to a prominent landmark in the box. It acquired the landmark with the night observation device and dropped a ground marker for positive positioning. The Shadow descended to 3,500 feet for the target search. If the aircraft detected a vehicle, for example, it might drop another ground marker for better reference as the attack began. Through study and briefings, the aircrews had to know all roads and trails in the box so Shadow could reconnoiter any new parallel routes.¹⁷¹ These missions yielded few enemy vehicles destroyed because the AC-119G lacked the weapons punch needed.

The Shadows were at their best in defense of the CIDG camps at Dak Seang and Dak Pek. Aided by Stingers, the Shadows flew one or two sorties a night to cover the besieged posts during the hours of darkness. From April 1 to May 22, 1970, the AC-119 gunships flew 147 sorties and used up 2,380,161 rounds of 7.62-mm ammunition and 21,796 rounds of 20-mm in defense of the two camps. In addition, the Shadows were called upon to

Cambodia



illuminate a drop zone while C-7A Caribous tried to resupply the defenders by air. Three C-7A s had been downed in previous tries. Gunship/Caribou teamwork evolved whereby the gunship would orbit the posts and provide fire support until the Caribou reached the initial point for its drop. At that instant the gunship turned on the illuminator. The cargo away—and upon signal from the C-7A—Shadow switched off the illuminator and the Caribou escaped in the darkness. This tactic worked in a total of sixty-eight drops (April 6–May 1) without a Caribou being hit.¹⁷²

Meantime, Shadows joined in the Duffel Bag Unit Systems Evaluation of new airborne equipment that monitored signals from ground sensors. From April 3 to May 31, AC-119Gs from Tan Son Nhut AB carried a portable UHF receiver. It could receive, decode, and display the sensor signals and audio transmission. Shadow 77 picked up signals on April 18 that signified movement in a sensor field. The gunship fired nearly 6,000 rounds of 7.62-mm ammunition into the area and 28,500 rounds the next night after again detecting the movement. Shadow further assisted an airstrike into the region. A later ground sweep of the zone discovered 150 enemy dead and netted seventeen prisoners, plus nine crew-served weapons as well as sixty-seven individual ones. The final assessment recommended the new equipment be permanently placed in the AC-119.¹⁷³

On May 1, 1970, United States and South Vietnamese forces crossed the border into Cambodia with a dual objective. They were to (1) shore up the weak Cambodian army struggling with North Vietnamese units, and

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(2) destroy the enemy forces and the supplies long stored in numerous border base camps. AC-119 gunships flew many missions in close support of this big offensive. In anticipation of support requirements, particularly in the Parrot's Beak* area, gunships had been shifted to Tan Son Nhut and Phan Rang on May 3. These AC-119s soon returned to their permanent bases because the ground force met light enemy resistance.¹⁷⁴

The Air Force gave first mission priority to support of troops in contact with the enemy in Cambodia, followed in turn by convoy escort and armed reconnaissance. On a number of occasions, the AC-119Gs competently supported friendly units under night attack. At times the assaults were broken off when Shadow appeared overhead. Obtaining a count of enemy dead was difficult due to the fluid offensive. Furthermore, the friendly forces were reluctant to sweep battle areas before daylight, allowing the enemy time to dispose of those killed or wounded.¹⁷⁵

At the height of Cambodian activity, new artillery clearance procedures speeded up gunship flights to the aid of ground units. The Air Force coordinated artillery clearances from Phan Rang AB to the Cambodian border with the Army before the gunships took off. Formerly, the gunships had secured clearances when airborne which meant more course alterations to avoid guns not shut down. This change slashed reaction time and afforded the gunships more time-over-target.¹⁷⁶

Both river and road convoy escort missions assumed an early importance because of a critical petroleum shortage in Phnom Penh, the Cambodian capital. The Seventh Air Force controlled an air-cover package of aircraft from three services, put together for armed escort of Navy convoys plying the Mekong River. The Navy generally gave a three-day advanced-planning notice for their river convoys. An AC-119G would circle the convoy for twenty-four hours at 3,500 feet. An Army light fire team† flew coverage at 1,500 feet during daylight. The helicopters cycled between the convoy and their base at Chi Lang for refueling. The Navy employed two UH-1Bs and two OV-10s for low-altitude coverage at night. These planes cycled from their command-and-control vessel anchored in the Mekong River at Tan Chau, across the border in South Vietnam.¹⁷⁷

Shadows escorted road convoys in Cambodia either alone or with forward air controller aircraft. When paired, the FAC searched for enemy ambush preparations along the convoy's route while the AC-119G flew in a large elliptical orbit overhead.‡ An excellent example of a successful convoy-escort mission occurred a year later when the enemy was aggressively attacking convoys. On June 30, 1971, a fifty-one-truck convoy left Phnom Penh headed southwest on Route 4 for Kompong Som. An

*The tip of the Cambodian salient west of Saigon.

†The team contained one command-and-control helicopter, two Cobra helicopter gunships, and two light observation helicopters.

‡The Cambodians often upset convoy-escort planning. They scheduled their own convoys and failed to coordinate the air cover.

escort FAC detected enemy movement north of Route 4 and suspected an ambush in the making. The FAC requested strike aircraft and a diverted AC-119G arrived. A recheck of the area confirming his suspicions, the FAC cleared the Shadow for attack. The gunship poured 7.62-mm fire on the clusters of troops who then answered with ground fire. The AC-119G raked the enemy position until the last truck had rolled safely by the planned ambush site.¹⁷⁸

Cambodian armed reconnaissance missions zeroed in on trucks and river sampans. The AC-119Gs' 7.62-mm miniguns could do little against these targets and far less when the enemy armored the sampans. In July 1970 the AC-119Ks with their 20-mm cannons undertook this role. Even the Stinger had to use 20-mm armor-piercing incendiaries to sink the sampans when 20-mm high-explosive incendiary rounds could not. The AC-119G picked up punch when it tried a few 7.62-mm armor-piercing incendiaries from the U.S. Army against vehicles and watercraft. Additionally, the sparks of the armor-piercing rounds upon impact helped the pilot gauge his firing accuracy.¹⁷⁹

This short span of Cambodian operations (May 5–June 30, 1970) saw the AC-119 gunships fly 178 sorties.¹⁸⁰ The U.S. ground operations in Cambodia quickly closed but the gunship continued supporting Cambodian and Vietnamese troops. Over nine months (July 1970–March 1971) the Shadows and Stingers destroyed or damaged 609 vehicles, destroyed 237 sampans and damaged 494, and killed 3,151 of the enemy.¹⁸¹

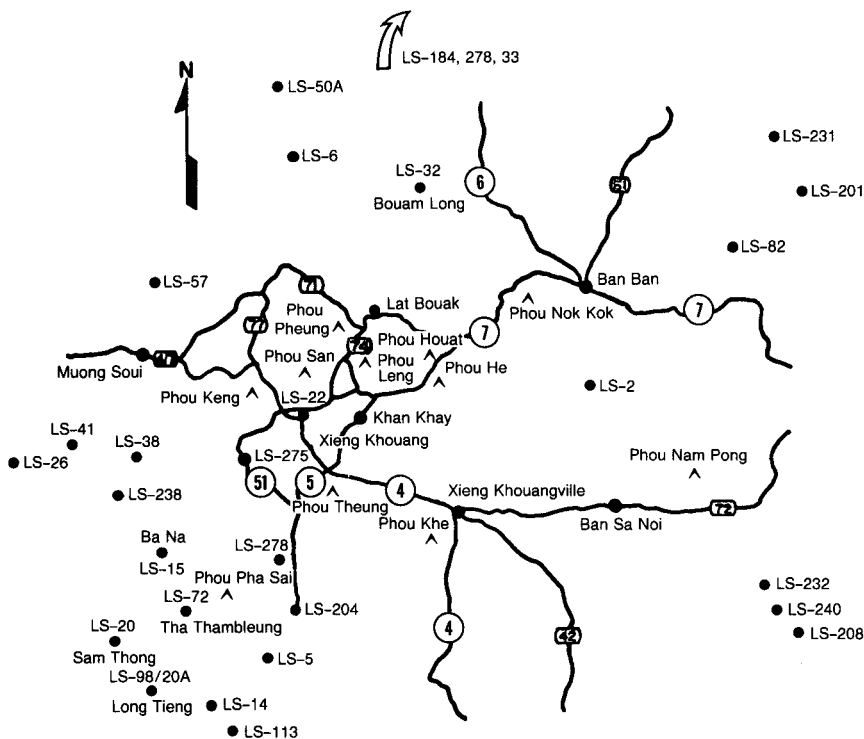
Fortunately, the gunships found the Cambodian area lightly defended. The small-caliber enemy fire inflicted no aircraft losses. On August 1, 1970, the AC-119Gs, joined by a few AC-119Ks, started daytime air interdiction—a further reflection of feeble enemy antiaircraft fire.¹⁸²

On April 28, 1970, the 17th Special Operations Squadron did lose another aircraft. The gunship lost an engine on takeoff from Tan Son Nhut AB, crashed, and killed six of the eight crewmembers. The Air Force then trimmed the AC-119Gs' maximum gross takeoff weight by cutting fuel/ammunition loads to achieve a 150-foot-per-minute rate of climb on a single engine.¹⁸³

While the Cambodian offensive opened a new war area for the gunships, especially the AC-119Gs, operations progressed in the panhandle and Barrel Roll areas of Laos. As 1970 began, an enemy offensive alarmingly succeeded against General Vang Pao's forces in northern Laos. With PACAF's permission, the Seventh Air Force directed a trail deployment of AC-119Ks to Udorn RTAFB in support of Barrel Roll during February's high moon phase. On February 5 Seventh ordered an operational test during February 17–27 from Udorn.¹⁸⁴ On February 15, three AC-119Ks, four crews, and thirty maintenance men deployed to that base from Phu Cat AB. The AC-119K's main mission was armed reconnaissance along Routes 7 and 61 in Barrel Roll and secondarily the support of Lima Sites under attack. The first Stinger mission was flown out of Udorn on February 17.¹⁸⁵

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PLAIN OF JARS



About this time the enemy's offensive crested. The North Vietnamese and Pathet Lao forces captured the Xieng Khouang airfield then rolled west and overran the Royal Laotian Air Force T-28 base at Muong Soui. The key Lima Site 22 gave way after a 2½-hour nighttime assault when no gunship support was scheduled. By February 24, 1970, the enemy again occupied the Plain of Jars with pro-government forces clinging to a defensive perimeter west and south of the Plain.¹⁸⁶ The AC-119K operations intensified to meet the crisis. As the end of Stinger's ten-day operational test neared, the Seventh Air Force stretched its stay at Udorn to July 2, 1970, with reevaluation set at that time.¹⁸⁷

The Stingers significantly strengthened the effort in northern Laos. In view of the AC-47's anticipated release, the AC-119K's ongoing role in Barrel Roll operations seemed essential.¹⁸⁸ On March 21, 1970, the Thai-based detachment's strength rose to four aircraft, seven crews, and forty-seven support personnel.¹⁸⁹ The total aircraft dropped to three (five crews) on May 20 as bad weather slowed ground operations.¹⁹⁰ In June, the Seventh Air Force asked CINCPACAF to keep the AC-119Ks at Udorn another 120 days, explaining the "AC-119K had been the number one truck killer in Barrel Roll, accounting for 70 percent of all trucks destroyed."¹⁹¹

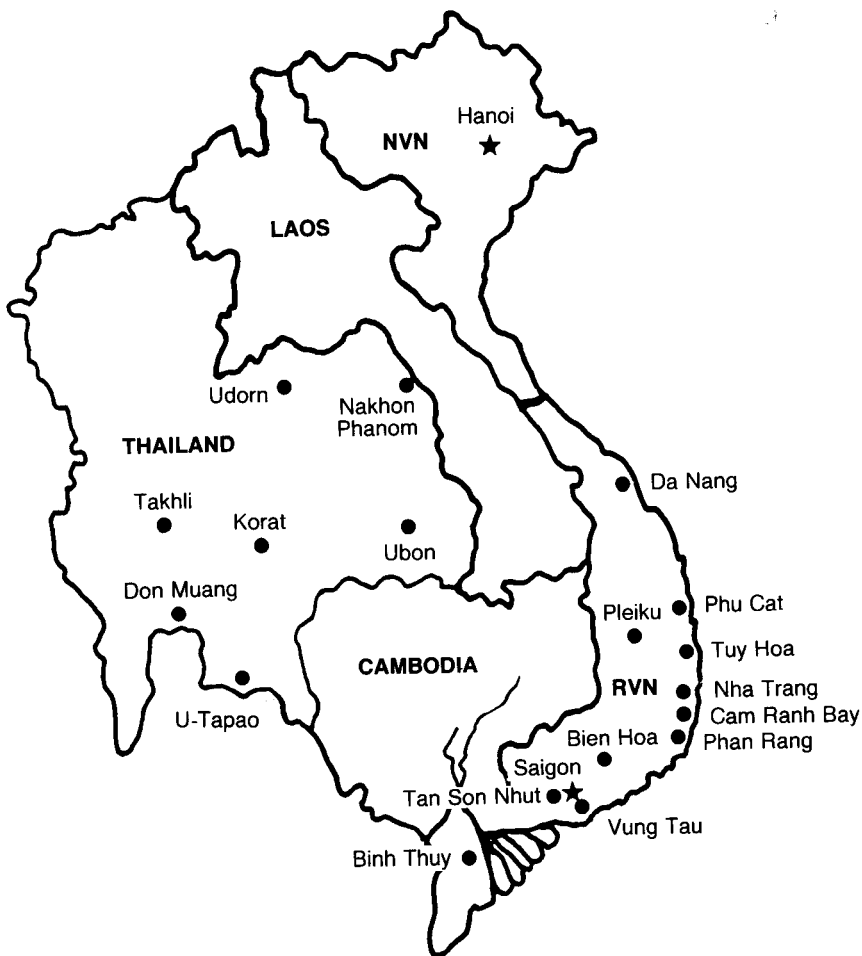
Although Barrel Roll occupied part of the 18th's aircraft, the squadron was chiefly charged with interdiction in Steel Tiger and the adjacent A Shau Valley area. The AC-119Ks shared with the AC-130s a heavy commitment to stop every enemy truck they could. The last Stinger contingent had reached South Vietnam in February 1970. Shortly thereafter, estimates of tonnage trucked by the North Vietnamese through Laos toward Vietnam soared. Pressure on truck-killing paralleled this surge of traffic. Mission reports disclosed 2,321 trucks were destroyed during one month—2,125 of them in Steel Tiger. Gunships claimed sixty percent of these kills.¹⁹² Da Nang-based Stingers flew four sorties per night against heavy truck traffic on Routes 92 and 922.¹⁹³ The AC-119Ks at Phu Cat went from two missions a night on January 1 to five a night by February 1.¹⁹⁴ Over the first quarter of 1970, Stingers claimed 406 trucks destroyed and 607 damaged. On April 25, 1970, the 18th Special Operations Squadron operating location at Da Nang—focal point for most squadron interdiction missions—claimed its 1,000th disabled truck.¹⁹⁵

Support problems and the demand for greater time-over-target soon spurred a further adjustment in 18th Special Operations Squadron basing. The first few interdiction missions from Phu Cat clearly proved that base unsuitable for such out-country sorties. Phu Cat's distance from the target area and the AC-119K's fuel load confined Stinger operations to certain areas in Laos.¹⁹⁶ Even to the closest areas, the Stingers had trouble getting 1½ hours on target. On March 3, 1970, CINCPACAF suggested that Seventh Air Force reappraise the entire 18th SOSq concept if the Udorn operation continued. CINCPACAF felt the current logistical/maintenance headaches pointed up the need to consolidate bases.¹⁹⁷

On March 16, Seventh Air Force began planning for redeploying the 18th Special Operations Squadron, tailored to the new tactical situation and support requirements. The 14th Special Operations Wing proposed moving B Flight's remaining assets from Phu Cat AB to Da Nang AB, expanding the AC-119Ks there from six to nine. Timed with this move, the A Flight of the 17th SOSq would depart Tuy Hoa AB and occupy the vacated 18th SOSq facilities at Phu Cat. This latter change would permit programmed base-closure actions at Tuy Hoa to progress and at the same time assure a faster gunship response to I Corps support requests.¹⁹⁸ The plan was approved, and the Seventh Air Force authorized the Da Nang buildup on April 5. It was completed on April 23, 1970.¹⁹⁹ The A Flight of the 17th SOSq accomplished its move from Tuy Hoa to Phu Cat on April 12, 1970.²⁰⁰

A fresh study in June of Stinger's time-over-target (TOT) led the 14th Special Operations Wing to urge a beddown of twelve AC-119Ks at Da Nang and six at Ubon. This would bring the Stinger force closer to the armed reconnaissance areas. The commander of the 14th SOWg, told the Seventh Air Force commander that in 1,395 hours the AC-119K had destroyed/damaged 1,712 trucks—an average of 1.23 trucks disabled per hour-over-target. "Since there is a direct relationship between TOT and truck

Southeast Asia Air Bases



kills, increased TOT appears the most readily available potential to exploit in improving effectiveness," he said. The 14th Wing commander offered deployment of the AC-119K force to Da Nang and Ubon as the best way to capitalize on greater target time.²⁰¹ He also advocated setting up the main support base for the AC-119Ks at Da Nang and removing Stinger's beacon-tracking radar to reduce weight and allow a greater fuel load.²⁰²

The Seventh Air Force replied that it favored a move from Udorn to Nakhon Phanom RTAFB rather than to Ubon. Seventh reasoned that the Nakhon Phanom location would add flexibility to both Steel Tiger and Barrel Roll operations. Then too, the projected force cuts at Nakhon Phanom would open up facilities there.²⁰³ Planning for executing a move to Nakhon Phanom pushed ahead but at mid-1970 the AC-119 basing stood as follows:²⁰⁴

<i>Location</i>	<i>Aircraft assigned</i>
Phan Rang AB, RVN	7 AC-119G/4 AC-119K
Phu Cat AB, RVN	5 AC-119G
Tan Son Nhut AB, RVN	5 AC-119G
Da Nang AB, RVN	9 AC-119K
Udon RTAFB, Thailand	3 AC-119K

The beacon-tracking radar figured in discussions of where the AC-119K would be based because its extra weight cut twenty to thirty minutes from the aircraft's time-over-target. Consequently, the AC-119Ks flew without the beacon-tracking set during the early days at Da Nang and Phu Cat. Since it was designed for close support of ground troops, the system was considered nonessential for interdiction missions.²⁰⁵ Furthermore, the lack of test equipment at the forward operating locations hampered radar maintenance.

The Seventh Air Force received a requirement in January 1970 to support a special operations team equipped with transponders to be inserted into Laos. A maintenance team from Phan Rang AB visited the operating locations and installed the beacon-tracking radar in all AC-119Ks.²⁰⁶

Equipping the Stingers with beacon-tracking radar opened the way to test their offset firing. The earlier Combat Rendezvous tests in the United States had underscored the offset firing system's potential, but development of the concept and associated equipment had lagged. The Army Limited War Laboratory offered mini-ponders (5-watt and 400-watt) to the U.S. Army in Vietnam in February 1970 for Southeast Asia evaluation.²⁰⁷ The 14th Special Operations Wing sent Seventh Air Force a proposed test order on February 21. The test—Combat Rendezvous Phase II—would introduce an all-weather close-support capability for all gunships fitted with the radar.²⁰⁸

In the spring of 1970 a ground beacon was placed at Dak Seang under the auspices of the Seventh Air Force Tactical Air Control Office and the II Direct Air Support Center. Using a Stinger from Da Nang, the test firings yielded excellent results. However, a later demonstration for Army commanders was less impressive because the firing was against Army-placed point targets in lieu of the more advantageous area targets. Some all-weather firing with the APQ-133 cued on a ground transponder was successful at Bung Lung, Cambodia. Although the system was relatively impressive in testing situations, it was not fully integrated into AC-119K gunship operation, but was employed in selected high risk tactical situations where ground troops had transponders.²⁰⁹

The heavy demand for AC-119K support of ground operations and interdiction of the enemy's dry-season supply effort contributed to some early losses. The first occurred on February 19, 1970, when a Stinger crashed short of the Da Nang runway while returning from a combat mission. The final approach had gone normally until the landing gear and flaps went down about two miles out at 500- to 600-foot altitude. A sudden

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power loss in the jet and reciprocating engines on the left side, apparently due to fuel starvation, prevented the pilot from maintaining either directional control or altitude. The crash demolished the aircraft but the crewmembers escaped with only minor injuries.²¹⁰ Another AC-119K was nearly lost when a 37-mm round shattered the nose section as the aircraft worked a few miles north of Ban Bak, Laos. The crew nursed the Stinger back to Da Nang but damage was extensive.²¹¹

Concern about AC-119K vulnerability to antiaircraft fire, especially to fire encountered over the Laotian trail and road system, led to use of fighter escorts as developed on AC-130 operations. F-4 Phantoms from the 366th Tactical Fighter Wing at Da Nang flew constant escort and antiaircraft suppression for all Stinger armed reconnaissance flights. At the height of the truck-hunting season the 366th TFWg averaged six escort sorties per night.²¹²

The 18th Special Operations Squadron lost a second aircraft on the night of June 6, 1970. Shortly after the plane took off from Da Nang, its left-engine propeller went out of control. The pilot tried to head back to base but the situation deteriorated and the crew bailed out over the South China Sea just east of Da Nang. The empty aircraft kept on seaward, creating a momentary flurry of excitement since it seemed headed for China's Hainan Island. The Stinger crashed at an undetermined spot. All crew members but one were safely recovered.²¹³

The night of May 8, 1970, witnessed an extraordinary display of airmanship when a Stinger from Udorn was heavily damaged by antiaircraft fire:

Capt. Alan D. Milacek and his nine-man crew had been reconnoitering a heavily defended road section near Ban Ban, Laos, when they discovered, attacked and destroyed two trucks. Capt. James A. Russell and Capt. 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 copilot Capt. Brent C. O'Brien, cleared the fighter escort for attack and the gunship circled as the F-4's worked to suppress the AA fire. Amid the heavy enemy fire, Captain Milacek resumed the attack and killed another truck. At 0100, just about 2 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 goin in." He shouted orders to SSgt. Adolfo Lopez, Jr., the IO [illuminator operator], to jettison the flare launcher.

Captain Milacek directed the entire crew to get ready for instant bailout. As the gunship dropped about 1,000 feet 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 stabilized flight. The full-engine power fueled 2- to 3-foot flames—torchlights for enemy gunners as the crippled Stinger desperately headed for friendly territory. The navigator Capt. Roger E. Clancy gave the correct heading but warned they were too low to clear a range of mountains towering between them and safety. 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 10,000 feet. TSgt. Albert A. Nash, the flight

engineer, reported the fuel-consumption rate had fallen. 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). Utilizing every bit of pilot skill he landed the plane. Upon leaving the Stinger, the crew saw about one-third of the right wing (a 14-foot section and aileron) had been torn off.²¹⁴

Captain Milacek and crew received the Mackay Trophy for "the most meritorious flight of the year." General Ryan, Chief of Staff, presented the trophy on August 5, 1971, during a Pentagon ceremony.²¹⁵

In the latter half of 1970, AC-119 gunship operations continued to expand in Cambodia. AC-119Gs from Tan Son Nhut AB interdicted communist supply lines, joined by AC-119Ks at the end of July. In addition, Shadows and Stingers were the chief defenders of Kompong Cham, Kompong Thom, Skoun, and Phnom Penh. Protection of these towns was crucial since they were control points on key highways.²¹⁶ The commander of Cambodian forces at Kompong Thom (north of Phnom Penh) reported that 17th Special Operations Squadron gunships played a prominent role in lifting the enemy siege of that provincial capital. From December 12 to 15, 1970, a typical ground-support action took place at Prey Totung. Thirty-two Shadow missions supported the town's defenders, expending 555,800 rounds of 7.62-mm ammunition and 128 flares.²¹⁷ AC-119 Cambodian sorties in October were credited with killing 1,400 of the enemy.²¹⁸ As the main air interdiction force in Cambodia, the AC-119s were seen as a big reason why Cambodian population centers stayed in the hands of friendly forces.²¹⁹

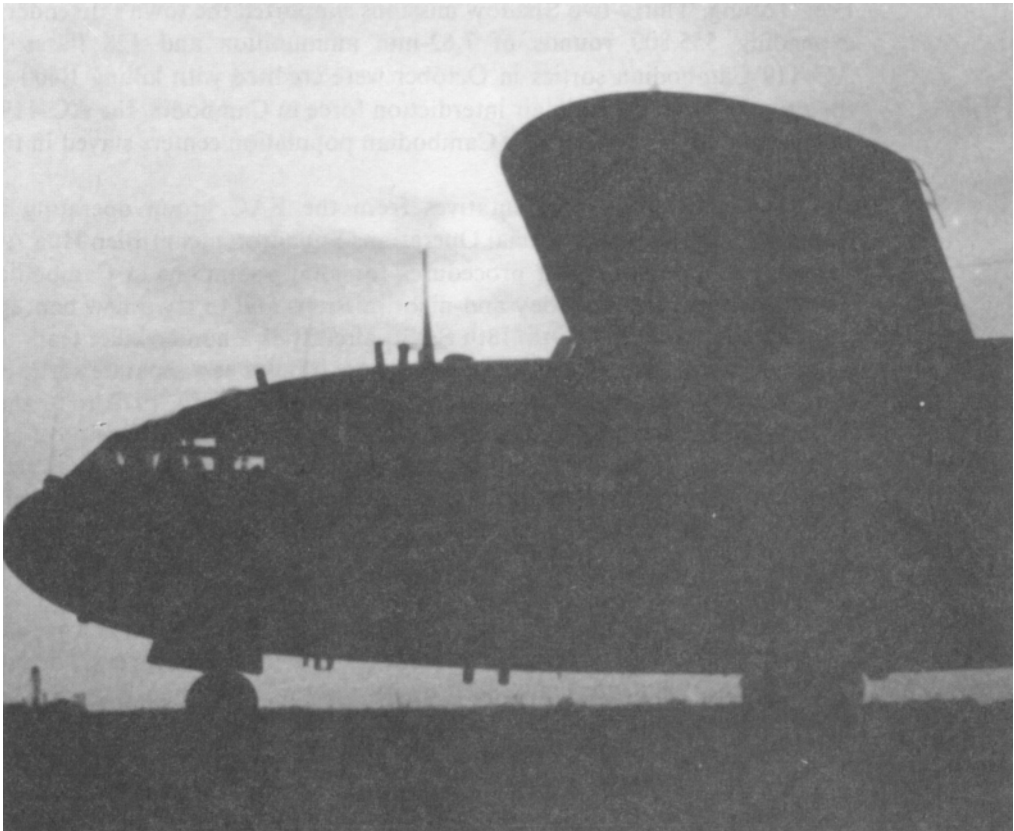
In August 1970 representatives from the FAC group operating in Cambodia and the 17th Special Operations Squadron met at Bien Hoa AB to refine coordination and procedures for joint operations in Cambodia. They agreed to schedule day-and-night missions and to try a new concept that mated a FAC and 17th/18th SOSq aircraft as a hunter-killer team on selected interdiction missions. AC-119s were fraged as a separate sortie in a night truck/sampan hunter-killer effort. On September 2, 1970, to further refine coordination in Cambodia, an EC-121 served as an extension of the tactical air control center. This aircraft furnished better control of aircraft separation, sharpened airstrike coordination, and speeded up firing clearances. French speaking interpreters went along on night gunship missions to help with air-to-ground communication and to gather intelligence.²²⁰

On December 7, 1970, the 17th Special Operations Squadron was ordered to fly night support for Laotian forces on the Bolovens Plateau. Three aircraft and four crews accordingly moved from Phan Rang to Phu Cat.²²¹ Several Lima Sites were surrounded and the situation was deteriorating. Even so, U.S. and RLAf gunship support by night and other attack aircraft by day enabled the Lima Sites to reset their outer defenses in about five days.²²²

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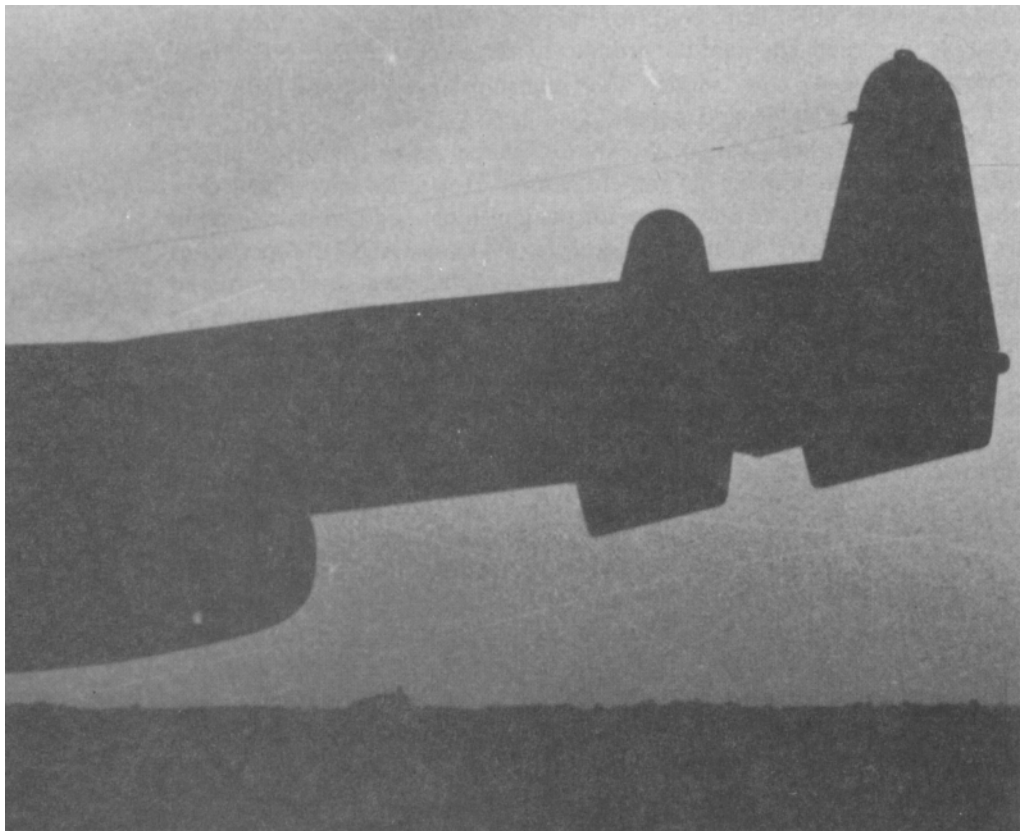
AC-119K interdiction operations picked up markedly in December 1970 after a longer-than-usual wet season. On December 16 a Stinger set a new high for truck-kills by a single AC-119 aircraft in one night—29 trucks destroyed and 6 others damaged along Route 92 near Ban Bak, Laos.²²³ Collectively, the Stingers recorded 312 trucks destroyed and 196 damaged in the last three months of 1970²²⁴ and 1,845 destroyed/damaged in the first quarter of 1971.²²⁵ The AC-119Ks were also pitted against North Vietnamese tanks as the Stingers shouldered heavy support commitments growing out of the South Vietnamese offensive into Laos (Lam Son 719). On February 28 Stinger destroyed eight PT-76 tanks.²²⁶ The AC-119Ks compiled their interdiction record despite bad weather early in the hunting season and diversions for emergency support of Lima Sites and troops in contact with the enemy.

The AC-119K's truck-killing record rested in part on a mix of 20-mm rounds—armor-piercing incendiary (API) and high-explosive incendiary (HEI). First tested on November 18, 1970,²²⁷ the mixed rounds fully demonstrated their worth against tanks in Lam Son 719.²²⁸ Another plus was the reworking of the 20-mm guns, including new gun barrels. Also, a



concentrated maintenance effort eased the maintenance/operational headaches from these guns over the months of Stinger operations. Moreover, the removal of the beacon-tracking radar had been approved which stretched Stinger's time-over-target up to 30 more minutes. The AC-119K had tested a more advanced fire-control computer in late 1970 but problems prevented its quick use for Stinger operations.²²⁹

The AC-119 force deployment adjusted to new tactical needs. The Seventh Air Force's recommended shift of the 18th SOSq's D Flight from Udorn to Nakhon Phanom was carried out from October 26 to 29, 1970, with practically no break in mission plans. During October 10–November 27 the 17th SOSq moved more aircraft to Tan Son Nhut from Phu Cat and Phan Rang to satisfy operational demands in Cambodia. On December 29 A Flight of the 17th SOSq was inactivated at Phu Cat, its personnel and aircraft assigned to B Flight at Phan Rang.²³⁰ As 1970 closed, the AC-119s were spread over five bases—Phan Rang (seven AC-119Gs), Tan Son Nhut (nine AC-119Gs), Phan Rang (three AC-119Ks), Da Nang (seven AC-119Ks) and Nakhon Phanom (six AC-119Ks).²³¹



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Amid expanding AC-119 operations, plans were afoot to turn over the AC-119Gs to the Vietnamese Air Force, consistent with the Nixon administration push for Vietnamization of the war. This spawned proposals for a bigger and better VNAF gunship capability. A plan emerged to activate the Vietnamese Air Force's 819th Combat Squadron at Tan Son Nhut AB on September 1, 1971.²³² On that date the 17th SOSq would turn over the AC-119Gs and specified maintenance and supply support equipment. The VNAF would then schedule all AC-119G missions.²³³ The 17th Squadron was charged with VNAF combat crew training in the AC-119G. In Phase I at Clinton County AFB the VNAF pilots were checked out in the C-119. Phase II aircrew training would take place at Phan Rang: three crews to enter training on February 1, 1971; seven, April 3; seven, May 18; and the last seven, June 25.²³⁴ The goal called for the VNAF squadron having twenty-four crews operationally ready by May 1, 1972.²³⁵ Thus as 1971 began, the 17th SOSq got ready to convert from a combat squadron to a training one.

In Southeast Asian combat the AC-119G/K gunships had proven a worthy follow-on for the AC-47. Indeed, the G and K models each had distinct capabilities that assured a far more flexible gunship force. The Shadows could do Spooky's job in South Vietnam and Barrel Roll. Stingers could ably help Spectre interdict enemy supply lines. The AC-119s occupied the middle ground in development and operations between the AC-47 (the "model T" of gunships) and the AC-130E (the ever more sophisticated and potent "Cadillac").

The AC-119s were thrust into the Southeast Asian conflict at a time when the war was moving in new directions. Hostilities had spilled over into Cambodia (a whole new arena for the gunships) and had quickened in the Barrel Roll and Steel Tiger sectors of Laos. AC-119 operations steadily spread over a larger and larger geographic area. Attention fixed more on gunship offensive operations outside South Vietnam than on defensive missions within. These shifts of emphasis forced AC-119 deployment to constantly adjust. In addition, Vietnamization grew in importance, accompanied by the turnover of AC-119Gs to the Vietnamese Air Force and a downturn in U.S. strength. Despite the new operational demands, the AC-119s performed well. They built up their own "Shadow Count," saved Lima Sites from capture, flew cover for troops and convoys, and destroyed enemy trucks and sampans bearing supplies.

The AC-119's road to combat twisted through long-delayed, costly, and difficult development. The aircraft started out in a climate of skepticism and opposition. It endured the higher priority of the AC-130 program. It was overweight. Production of its subsystems lagged, and even when ready for deployment, the AC-119 ran into Southeast Asia "headroom" problems. But despite all the difficulties, the AC-119G/K gunships played a significant and successful role in the war.