

~~SECRET~~

K168.01-85
1965-1970
c.1

THE AIR FORCE IN SOUTHEAST ASIA

FAC OPERATIONS

1965 - 1970

DECLASSIFIED BY:
AFDD IAW E.O. 12958
(AS AMENDED)

APPROVED FOR
PUBLIC RELEASE

DECLASSIFIED ON:
2007 0718

by

Lt. Col. Ralph A. Rowley

OFFICE OF AIR FORCE HISTORY

May 1975

~~SECRET~~

UNCLASSIFIED

PREFACE

In Part I of this two-part study the author traced the development of the role of the forward air controller through the early years of the war in Southeast Asia (1961-1964). The function of the air controller, however, was not unique to this conflict. Air strikes had been directed by American controllers, operating from the ground as early as 1927, when U. S. Marines supported the government of Nicaragua during its civil war. FAC's were again used by both the Axis and Allied powers during World War II, proving extremely effective in directing air strikes for both sides. During the Korean War a new wrinkle was added when the forward air controller moved into the old T-6 pilot trainer aircraft and became airborne. These controllers, known as "Mosquito" FAC's, found it much easier to see the target area from the strike pilot's perspective, thereby improving their control capability. Moreover, the FAC was able to observe enemy activity much better than a ground observer, who was limited by the nature of the terrain.

Following the Korean armistice, the role of the forward air controller fell into disuse, especially during the mid- and late 1950's, when the strategy of "massive nuclear retaliation" was adopted. Thus, when in late 1961 U.S. Army units were sent into South Vietnam, a general re-learning process took place. At first controllers began directing air strikes from the ground. But as enemy activity picked up, it became evident that the FAC could be much more responsive when airborne. Therefore, when the United States Army entered South Vietnam in large numbers in 1965-1966, its units were supported primarily by controllers flying in O-1 liaison aircraft.

The basic elements of forward air control were developed in the pre-1965 era in South Vietnam. Therefore, the problems that faced FAC's subsequently revolved around the enlargement of the FAC force to meet increased demands for their service. The theme, therefore, of this study concerns itself with early improvisation by the FAC force to meet the needs of Allied war effort. Training programs, both in the United States and in South Vietnam, underwent constant enlargement and evaluation in order to maintain a competent product for forward air control in SEA. The O-1, considered inadequate from the beginning, underwent modification and refurbishing in order to provide an air control vehicle until the

UNCLASSIFIED

O-2A and OV-10 arrived on the scene to supplement and eventually replace it. Coordination became smoother as the services worked more closely together to provide the best air support possible. Tactics changed as the enemy threat became more dangerous. And the role of the forward air controller vastly expanded. By the end of the conflict, the FAC's not only controlled air strikes, but flew air cover for convoys and other troop movements, dropped propaganda leaflets, performed aerial reconnaissance sorties, and supported a variety of military operations, including assisting Special Forces clandestine missions. Moreover, before the United States pulled out of Southeast Asia in 1973, the FAC role saw the introduction of jet forward air controllers to operate in high threat areas, the inclusion of C-130's, and C-123's as FAC aircraft for night operations and the development of the armed FAC concept.

The detailing of events included in this study could not have been accomplished without the help of dozens of Air Force officers, who willingly agreed to interviews to fill in gaps where historical records did not cover. In addition, the numerous histories, letters, messages and studies cited all contributed significantly to round out the story. Their contributions are noted in the source citations. Finally, the editorial staff of the Office of Air Force History contributed greatly to this work with their technical assistance.

UNCLASSIFIED

UNCLASSIFIED

CONTENTS

	Page
FOREWORD	iii
PREFACE	iv
LIST OF MAPS	x
LIST OF CHARTS	x
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF ILLUSTRATIONS	xiii
I. BACKGROUND	1
II. UPGRADING THE FAC FORCE	6
Personnel Requirements	6
Joint Army/Air Force Agreement	7
Increasing Manning Capabilities	9
Qualifications	12
Must FAC's Be Fighter Qualified?	12
Realigning FAC Qualifications	13
Pre-FAC Fighter Training	16
FAC/Fighter-Pilot Exchange Program	17
FAC Flight Training	18
O-1 Training	18
O-2A Training	22
OV-10 Training	25
Theater Indoctrination School	27
III. LOGISTIC SUPPORT	30
The Radio-Jeep and Air-Ground Communications	31
O-1 Shortage--Its Drawbacks	33
Advent of the O-2A	34
O-2A in a Night Role	36
The OV-10	38

Testing and Evaluation	40
Other FAC Aircraft	43
Helicopter	43
AC-47 and A-26K	43
C-130	45
C-123	45
AC-119G	45
Single-Engine	47
IV. COORDINATING THE FAC FORCE	47
FAC Units Expand	47
Command and Control	52
Operation of the TACS	54
Army-Air Force Differences Over Centralized Air Control	58
Air Force-Marines Differences Over Centralized	
Air Control	62
Khe Sanh--The Refiner's Fire	65
V. REFINING FAC TACTICS AND TECHNIQUES	70
Rules of Engagement	70
Locating the Enemy	71
Visual Reconnaissance Process	72
Controlling Airstrikes	80
Marking the Target	82
0-1 Marking Techniques	83
0-2A Marking Techniques	86
OV-10 Marking Procedures	89
Holding Patterns	90
Ordnance	94
Bomb Damage Assessment	96
Artillery Adjustment	96
VI. EXPANDING THE FAC MISSION	98
Night Operations	98
Marking	98
Starlight Scope	101
Visual Reconnaissance and Strike Control	104
Interdiction--South Vietnam	109

UNCLASSIFIED

Rocket Watch	116
Should the FAC be Armed?	118
Expanding the Armed FAC Role	122
Role of the Ground FAC	123
VII. FAC SUPPORT OF SPECIAL FORCES	124
Background	124
FAC Support of Special Forces Begins	126
How FAC Support Was Forged and Applied	131
Expanding FAC Support	135
VIII. OUT-COUNTRY OPERATIONS	138
Background	138
Development of the FAC Program in Laos/North Vietnam	140
Airborne Battlefield Command and Control Center	143
Tiger Hound	143
Cricket	146
Tally Ho	148
Rules of Engagement	148
Shaping the FAC Role	149
Day Operations	150
Visual Reconnaissance	150
Strike Control	152
Night Operations	154
Armed Recce/Hunter-Killers	155
C-123 Candlestick FAC's	156
C-130 Blindbats	159
The Raven FAC Program in Laos	164
Recruiting the Raven FAC's	165
Forward Air Guide and Roadwatch Team Support	168
Raven FAC Procedures	169
Turning the Raven Program Over to Lao FAC's	170
USAF Controllers in Cambodia	171
IX. JET FAC's	
Commando Sabre (Misty) FAC Operations	173
Developing Tactics	175
Effectiveness and Expansion	179
Moving into Steel Tiger	180
Experiment in Night Operations	181
Coordinating with Slow Movers	183

UNCLASSIFIED

Enlarging the Commando Sabre FAC Role	184
Search and Rescue	184
Artillery Spotting	184
Weather Reconnaissance	185
FAC Hunter-Killers	185
Photo Reconnaissance	187
Phasing Out Commando Sabre	188
F-4 FAC's	188
Stormy FAC's	189
Wolf FAC's	190
Tiger FAC's	193
Falcon/Laredo--FAC/VR Teams	194
Night Owls	196
Summary	197
X. VNAF ASSUMES FAC OPERATIONS	199
RVNAF Improvement and Modernization Program	203
VNAF FAC Modernization	203
IV Corps	205
I Corps	206
II Corps	207
III Corps	208
Summary	208
EPILOGUE	210
SOURCES AND NOTES	217
Official Records	217
Manuscript Histories	218
Interviews	218
Published Works	219
NOTES	220
GLOSSARY OF TERMS AND ABBREVIATIONS	275
ABSTRACT	297

UNCLASSIFIED

MAPS

1	South Vietnam - Administrative Divisions and Military Regions	112
2	South Vietnam - Road Network	113

CHARTS

1	Special Forces Organization -- 1965	125
2	ALO/FAC Support of Special Forces, 1965-1967	127
3	ALO/FAC Support of Special Forces, 1968-1969	137

TABLES

1	Forward Air Control Requirements	11
2	1966 Tactical Fighter Symposium--Suggested Qualifications for Specific FAC Assignments	15
3	Forward Air Controller Training Loads 1967-1970	23
4	FAC Aircraft Requirements	44
5	VNAF Liaison Squadrons--0-1 and U-17 Aircraft Authorizations	202

UNCLASSIFIED

ILLUSTRATIONS

1	A FAC Directs F-4 Phantom Strikes	147
2	F-100F Misty Over North Vietnam Checking Out a Starlight Scope Preflighting the O-1 C-123 Crewmember Expendes Flares	212
3	O-1 FAC Directing Artillery Fire Ground FAC O-2 Controller--Ready for the Trail TACP Directing Airstrike	213
4	Marking with Smoke Rockets OV-10 Bronco Over Thailand O-1 Bird Dog Performing BDA Bird Dog "Reconning" Jungle Trail	214
5	C-123 Candlestick Flaring F-4 Phantom (Strike and FAC Aircraft) Well-Armed Skyraider Set to Go OV-10 Bronco and A-1E Skyraiders--Search & Rescue	215

I. BACKGROUND

(U) In a previous study,* the origins and introduction of forward air control into South Vietnam were discussed in some detail. The earlier account dealt chiefly with the role of U.S. Air Force forward air controllers (FAC's) during 1962-1964 as they supported and trained South Vietnamese forces engaged in fighting Viet Cong guerrillas.

(S) The Air Force first deployed combat elements to the Republic of Vietnam (RVN) in November 1961. Detachment 2 Alpha (code name Jungle Jim)⁺ arrived at Bien Hoa Air Base on the 16th. It brought 16 aircraft (4 SC-47's, 9 T-28's, and 4 B-26's) for training Vietnamese Air Force (VNAF) personnel in offensive operations, including FAC tactics and techniques.¹

Next, Headquarters Pacific Air Forces (PACAF) ordered a detachment (code name Barn Door) to South Vietnam. Arriving in January 1962, the detachment set about establishing a Tactical Air Control System (TACS). The system would give USAF/VNAF commanders and the Commander, U.S. Military Assistance Command, Vietnam (COMUSMACV), an effective quick-reacting capability for coordinating and controlling close air support. Barn Door would also train Vietnamese personnel to eventually take over the TACS, of which forward air controllers were a vital part.²

(U) South Vietnam's thick jungles and mountains shaped the Tactical Air Control System. A ground forward air controller could not see very far in such terrain. So gradually the airborne FAC evolved, leaving ground FAC's to act as Air Liaison Officers (ALO's), counseling ground commanders on close air support. Tactics for marking targets and controlling airstrikes were similarly tailored. Training programs were organized to prepare the VNAF to carry out close air support for Army of Republic of Vietnam (ARVN) troops.

*Maj Ralph A. Rowley, USAF FAC Operations in Southeast Asia 1961-1965 (S) (Ofc/AF Hist, Jan 1972).

⁺Detachment 2 (later called Farm Gate) was part of the 4400th Combat Crew Training (CCT) Squadron, Eglin Air Force Base (AFB), Fla.

(U) In South Vietnam the enemy was frequently hard to detect for he could blend with the civilians or easily fade into the jungle. Moreover, the country was unstable, the people torn between the contesting forces, and the battlelines blurred. The United States consequently imposed strict rules of engagement * which inhibited Air Force operations but cut civilian casualties and avoided alienating the South Vietnamese people.

(U) During these early years, the U.S. military personnel were advisers. They worked with and through the Vietnamese political/military structure to foil the enemy. However, the language barrier and general American ignorance of Vietnamese society roiled USAF/VNAF relations and often begat problems and misunderstandings. In addition, modern warfare was new to the South Vietnamese and they were slow to grasp its techniques. The Americans were impatient and sometimes found it easier to do the job themselves. This compounded the situation because their ARVN/VNAF counterparts commonly let them shoulder most of the workload.

(U) There were other problems in SEA not linked to political-military-geographic conditions. The United States was simply not prepared for a drawn-out war against an ingenious and determined enemy at home in his jungle environment. The Army and Air Force had to improvise in seeking better methods for support of the ground war. Old equipment--never envisioned for the use it got in SEA--was modified, refurbished, and standardized. By 1964 the differences between the services over centralized air control were diminishing. The USAF and VNAF forward air controllers forged techniques to counter the enemy's efforts to mask his operations. The FAC program had a firm footing with forward air controllers serving as an integral part of the close air support team.

(U) To understand the context in which Air Force forward air controllers flew hundreds of thousands of sorties between 1965 and 1970, a brief summary of the military situation in those peak years of fighting will be helpful. By January 1965 the Republic of

* Rules of engagement are directives issued by competent military authority delineating the circumstances under which U.S. forces will begin and/or continue combat engagement with other forces met.

Vietnam was seriously threatened by increased Viet Cong attacks on the countryside and also by governmental weaknesses in Saigon. At the end of 1964, the enemy held the initiative in South Vietnam. In late December the Viet Cong mounted a division-size attack against the New Life Hamlet of Binh Gia in Phuoc Tuy Province (40 miles south of Saigon [see map]). The attack lasted into the new year and ended with a Viet Cong victory. The lack of effective air support at Binh Gia was a grim reminder that it took air power to help halt enemy advances. There followed a series of forays throughout the country that the ARVN seemed unable to halt.⁴

(U) President Lyndon B. Johnson, who had ordered punitive airstrikes against North Vietnam targets in August 1964 following the Gulf of Tonkin incidents, was faced with the prospect of seeing South Vietnam go under. When on 7 February 1965 Communist terrorists attacked the U.S. airbase at Pleiku, killing 7 Americans and wounding 109, President Johnson ordered new air attacks against North Vietnam. When Hanoi refused to be cowed, he authorized deployment of large U.S. Army and U.S. Marine Corps troop contingents to South Vietnam. Gen. William C. Westmoreland, COMUSMACV, took charge of overall direction of the war. During 1965 he initiated a series of search and sweep operations to drive the enemy from his sanctuaries. B-52's bombed enemy strongholds and the Rolling Thunder air campaign against North Vietnam unfolded. Dak To, a Special Forces (SF) camp north of Kontum City, fought off a concentrated enemy attack.⁵ Other successes included Operation Starlight (an engagement between U.S. Marines and Viet Cong just south of Chu Lai), defense of the SF camp at Plei Me, and the bloody Ia Drang Valley campaign that sent the mauled enemy reeling back into Cambodia.⁶ These victories helped shore up the badly demoralized ARVN and sparked the rebuilding of its crumbling forces.

(U) During 1966 ground operations accelerated as American strength built to over 200,000 men, including a large buildup of air power. The basic strategy was to increase pressure on the enemy by carrying the war to him through more search-and-destroy missions, stopping his advance in the central highlands, and neutralizing his food/manpower sources in the coastal regions. Also, operations were to be conducted on more of an individual corps area basis.⁷ The year witnessed the fall of the SF camp in the A Shau Valley, but not before air power made it possible to extract the survivors ahead of the overrunning enemy. In addition,

UNCLASSIFIED

the allies carried out several major operations that regained control of some of the countryside. Among them were Operations Birmingham, Masher and White Wing, El Paso, Attleboro, Hickory, and Thayer/Irving. Air power, controlled by Air Force FAC's, was vital to success in each instance.

(U) With nearly 480,000 troops in 1967, General Westmoreland saw the time was ripe to seize the offensive and step up pursuit of the enemy. He led off in February with Operation Junction City, a major attack in War Zone C. There followed Operations Paul Revere/Sam Houston, Neutralize, another battle for Dak To, and the unsuccessful effort to save the SF camp at Kham Duc.

(U) 1968 was a fateful year. The war took a major turn with the successful defense of Khe Sanh which the enemy had hoped to make another Dien Bien Phu. Close air support, controlled by Air Force and U.S. Marine FAC's, was a chief factor in beating back the besieging forces. Likewise, the allies blunted one of the enemy's foremost thrust of the war--the Tet Offensive--and inflicted huge casualties upon him.⁸ President Johnson subsequently tried to get peace negotiations moving by halting the bombing of North Vietnam, just a few days before Richard M. Nixon was elected President of the United States.

(U) American troop strength had risen to more than 500,000 before decreasing as President Nixon, after assuming office in January 1969, began "Vietnamization" of the war. In June, September, and December 1969, the President announced cuts of 25,000, 35,000, and 50,000 men, respectively. Meantime, he kept the enemy off balance with incursions into Cambodia (1970) and Laos (1971). The allies increased their control over the countryside in South Vietnam despite further withdrawals of American troops.

(U) The above constituted the background events against which the forward air controller played out his role. The FAC was indispensable not only to successful ground operations in South Vietnam but also to the interdiction campaign in Laos. From a tiny number in 1965, his forces grew to over 800 in 1970. His many duties included: control of close air support for ground troops; visual reconnaissance and control of strike aircraft against interdiction targets; escort and cover missions for convoys; clandestine operations; and advising ground commanders on close air support and the ARVN/VNAF on overall FAC matters. To accomplish his tasks, the forward air controller flew in such

UNCLASSIFIED

~~SECRET~~

5

widely varied aircraft as: slow-moving O-1's, O-2A's, and OV-10's; lumbering AC-47's, AC-123's, and AC-130's; and fast jet F-4's and F-100's. Thus the story of the forward air controller is in reality a history of the development of air power in the Southeast Asian war.

This page is Unclassified)

~~SECRET~~

~~SECRET~~

II. UPGRADING THE FAC FORCE

Personnel Requirements

In January 1965 there were 144 USAF pilot FAC's in Southeast Asia, plus 68 Vietnamese Air Force FAC's.*1 Adequate at the time, this number could not support the rapid buildup of American and free world forces (Australia, New Zealand, Philippines, and the Republic of Korea). The FAC shortage caught the eye of Gen. Earle G. Wheeler, Chairman of the Joint Chiefs of Staff (JCS), during a March 1965 visit to Vietnam. Soon after his return to Washington, the JCS approved 134 additional USAF FAC authorizations and raised tactical air support squadrons (TASSq's) from one to four. The Air Force subsequently activated the 20th, 21st, and 22d TASSq's in June 1965 and had them manned by September.+2 It also stepped up output from the forward air controller school, † ordered into production a modified airborne-FAC version of the OV-10 counterinsurgency aircraft, and refined FAC tactics and techniques to meet the peculiar needs of the jungle-covered terrain of Vietnam.

A problem that emerged during the summer with the arrival of U.S. Army troops involved USAF FAC's coming into South Vietnam with them who still worked from the ground, whereas Air Force FAC's supporting ARVN units operated chiefly from the air. It took experiences like that faced in the Operation Harvest Moon** to hasten the evolution to an almost exclusive airborne FAC role. Early in the week-long action, a 4-man USMC ground-air-controller unit was unable to contact its air support center. Air

*Fifty-two of the 76 USAF FAC's were assigned throughout the 44 provinces of South Vietnam.

+Including the 19th TASSq, the squadrons were at these locations in South Vietnam: Bien Hoa (19th), Da Nang (20th), Pleiku (21st), and Binh Thuy (22d). In September 1966 the 21st TASSq moved from Pleiku to Nha Trang.

†Located at Hurlburt Field (part of the Eglin Air Force Base (AFB), Fla., complex) and operated by the Special Air Warfare Center (SAWC). The SAWC was redesignated Special Operations Force (SOF) on 8 July 1968.

**A combined U.S. Marine Corps (USMC)/ARVN operation conducted in the Song Ly valley 8-15 December 1965.

~~SECRET~~

Force airborne FAC's were called in to help direct air support strikes and to monitor the operation's progress.³ While there were ground-controlled airstrikes after 1965, few (if any) were preplanned before a battle.⁴

(U) But with the move to airborne FAC's, the ground commander still needed a pilot with experience and know-how to tell him how best to apply available air support. Subsequently, air liaison officers were assigned to advise ground commanders. Also, as a member of the tactical air control party, he acted as ground FAC when circumstances dictated.*

Expansion of air power in SEA (including jet aircraft) underlined the need for more precise coordination and control of close air support.⁵ On 15 August 1965 the Air Force enlarged and streamlined the Tactical Air Control System (TACS). Nomenclature of the TACS was changed.⁺ The TACC took over the immediate air request nets for TACP's at battalion level and above. It further assumed responsibility for commitment of aircraft to preplanned requests for airstrikes, freeing the direct air support centers to concentrate on immediate close air support requests. TACP's (with mobile-communications capability) were attached to DASC's for deployment as the situation dictated. Standardization of communications equipment between air and ground units got under way.⁶

Joint Army/Air Force Agreement

In March and April 1965 the Air Force and Army had signed a joint concept/agreement for air-ground coordination which had a direct impact on FAC resources in Southeast Asia.⁷ It specified that TACP's be assigned to Army units (battalion through field army level) deployed in combat.[‡] Unfortunately, the Air Force had not maintained

*The ground FAC's role is discussed in Chapter VI.

⁺The Air Operations Center (AOC) became the Tactical Air Control Center (TACC); Air Support Operations Center (ASOC), the Direct Air Support Center (DASC); and Air Control Party (ACP), the Tactical Air Control Party.[‡]

[‡]Under the agreement, the TACP at battalion level consisted of one ALO, one FAC, vehicles, and communications personnel and equipment. The TACP at brigade, division (and, if required, at corps and field army level) comprised one or more ALO's, vehicles and communications personnel and equipment. [Hereinafter, the term "FAC" will denote a "FAC," "ALO," or "strike control and reconnaissance (SCAR)" pilot. The semantic problem of "FAC" versus "SCAR" is well documented in Maj A. W. Thompson, Strike Control and Reconnaissance (SCAR) in SEA

(HQ PACAF, Project CHECO, 22 Jan 69.]

SECRET

a large enough FAC force to fulfill the letter of this agreement. To do so in SEA would require a doubling of FAC levies.⁸ In addition to U. S. Army units, the Air Force furnished FAC support for Vietnamese Air Force (VNAF) and ARVN units as well as those of the free world forces. FAC's were also solicited for herbicide operations, undercover activity, rocket-watch patrols, and armed reconnaissance. Moreover, an additional workload stemmed from the air interdiction that had just got under way against lines of communication (LOC's) from North Vietnam.

The steady growth of ground units during 1965 fueled a demand for extra FAC's to support them. By 31 December the Air Force had 224 FAC's assigned in SEA and additional temporary duty (TDY) FAC's manning another 49 TACP's.⁹ Tactical Air Command (TAC) furnished and trained the bulk of the forward air controllers. It likewise supplied most of the fighter pilots for the Vietnam War. But with the step-up in the fighting, a pilot shortage emerged. This situation and the USAF requirement that a FAC be an experienced fighter pilot made it difficult to satisfy both the needs of the strike force and FAC units. An obvious solution was to turn out more pilots. However, it took almost 3 years to train a pilot, give him 1-year fighter experience, and put him through FAC training--much too long.¹⁰ Relaxing the fighter-pilot qualification for forward air controllers seemed the ready answer, but it was a step TAC was reluctant to take.*¹¹

To stretch out its meager forward air controller resources, Tactical Air Command had been deploying barely enough FAC's to SEA to permit assignment of one to each U. S. Army battalion deployed in combat. But this violated Air Force's agreement with the Army to furnish two FAC's.¹² After visiting South Vietnam in October-November 1965, an Air Force study group (Project New Focus) advised the Air Staff that one FAC per battalion was generally acceptable to Army and Air Force commanders.¹³ However, shortly thereafter, a JCS Close Air Support Group sent to SEA recommended that the Air Force abide by its agreement to furnish two FAC's per unit. Gen. John P. McConnell, Air Force Chief of Staff--after pondering the two conflicting recommendations--on 7 February 1966 asked his Army counterparts to confirm FAC requirements for each battalion deployed in combat.¹⁴ The Army Chief replied he agreed with the JCS study group recommendation, which in effect required TAC to furnish 90 FAC's for the

*The realignment of forward air controller qualifications is discussed below.

SECRET

45 U. S. Army battalions programmed to be in-country* by 30 April.¹⁵ In May PACAF reported to Headquarters USAF that 500 FAC's would be needed to fill all SEA quotas under the Army/Air Force agreement.¹⁶

(5) Setting a quota for forward air controllers in the theater was one thing, filling it quite another. A shade over 55 percent of the forward air controllers authorized was in place by October 1966 with the Air Force hard-pressed to satisfy minimum FAC needs. Consequently, Seventh Air Force proposed to the Commander in Chief, Pacific Air Forces (CINCPACAF) reducing the requirement from two FAC's per battalion to one. CINCPACAF agreed but TAC reversed its position of the previous year and endorsed the joint agreement. The Air Staff later suggested that Seventh Air Force rethink its proposal and resubmit it if still valid. Receiving no reply, the Air Staff assumed the agreement was being carried out. Not until June 1967 did it discover Seventh had been pooling forward air controllers at brigade level in lieu of using them to form TACP's in the battalions. The Air Staff at once directed CINCPACAF to carry out the agreement.¹⁷ CINCPACAF explained that insofar as possible TACP's were being attached to Army battalion (and cavalry squadron) level.¹⁸ Be that as it may, the need for more FAC's inched upward while the number available to support the 119 U. S. Army and free world battalions slipped backward. Thus, in March 1968 only 593 of the 677 FAC positions in South Vietnam were manned.¹⁹

Despite the joint agreement, scarcity forced some pooling of forward air controllers at brigade level for deployments to battalions when and where they were most needed. Pooling had its advocates in the field. An air liaison officer with 3d Brigade, 9th Infantry Division, deemed pooling far better than parceling out FAC's piecemeal to the battalions. He saw it as easing the shortage strain and giving the FAC force more flexibility as well.²⁰

Increasing Manning Capabilities

Between 8 October-8 November 1968, another survey team was sent from PACAF to Southeast Asia to determine manning requirements for forward air controllers. It looked at both in- and out-country commitments, finding that 835 FAC-qualified pilots would be needed through February 1969. The team decided the requirement

*"In-country" is that part of the Southeast Asian conflict within South Vietnam; "out-country," that part outside South Vietnam, i. e., Laos and North Vietnam.

could be cut to 736 through better utilization of the 612 FAC's on hand (as of November 1968).²¹ Even so, there would still be a shortage of 124 assigned FAC's. (See Table 1.)

A bright spot in the survey team's report concerned use of navigators in the forward air controller role. The 23d Tactical Air Support Squadron had received its first navigators in early 1967 and trained them to "fly" the back seat of the OV-10 aircraft as observers. Navigators became most useful in base defense and in the strike control and reconnaissance of the out-country war. They performed visual reconnaissance, target-spotting, and navigation while the pilot flew the plane and controlled airstrikes. Navigators alone in the FAC force enjoyed over 100 percent manning (45 functioning against 40 authorized). The PACAF team suggested that navigator assignments be upped to 69 so FAC requirements could be further pared to manageable levels.²²

Two key events abetted PACAF efforts to ease the FAC shortage--the November 1968 bombing halt and President Nixon's later scaling down of American participation in the war. The 504th Tactical Air Support Group (TASGp)* hoped for a fully manned forward air controller force by March 1969,²³ an outlook that proved premature. For one thing, the bombing halt applied solely to North Vietnam where just a tiny part of the total FAC force operated. Moreover, the halt canceled out few sorties. Air activity in fact expanded in South Vietnam and Laos, creating a corresponding need for additional forward air controllers. The demand tapered off around midyear as some U.S. ground troops prepared to pull out of SEA, relaxing a little the taut strain on manning requirements.²⁴ In June the 504th TASGp attained 83.4 percent manning with 660 of the 791 FAC's authorized carrying out their duties. This was well ahead of the 70 percent manning average for the past 4 years.²⁵

In August 1969 CINCPACAF forecast a need for 831 forward air controllers through June 1970.²⁶ In December it decreased this to 761 due to the accelerated withdrawal of U.S. troops. That same month the 504th Tactical Air Support Group realized 100 percent manning for the first time.²⁷

*Activated in December 1966, the 504th TASGp provided administrative, maintenance, and supply support for the forward air controller program.

TABLE 1

FORWARD AIR CONTROLLER REQUIREMENTS

<u>Forces</u>	<u>FAC's Assigned</u> (Nov 1968)	<u>FAC Authorization</u> (Through Feb 1969)	<u>Recommended</u> <u>FAC Authorization</u> (Through Feb 1969)
	<u>Operating In-Country</u>		
U.S. Army	188	268	218
U.S. Army Special Forces*	1	0	2
U.S. Marines	1	14	0
Free World Forces*	35	81	52
Army of Republic of Vietnam	184	220	210
Vietnamese Special Forces	10	13	22
Base Defense	13	36	30
Staff Support	37	33	33
Theater Indoctrination School*	21	14	20
Total	490	679	587
	<u>Operating Out-Country</u>		
Steel Tiger (Commando Hunt)*	59	62	78
Tiger Hound/Tally Ho*	48	63	53
Prairie Fire/Daniel Boone*	15	31	18
Total	122	156	149
Grand Total	612	835	736

*See Glossary.

SOURCE: Team Report on Requirements for ALO/FAC/SCAR/Navigators and Aircraft in SEA (S), PACAF, 22 Nov 68, p 15.

~~SECRET~~QualificationsMust FAC's Be Fighter Qualified?

(U) We have seen how the USAF requirement of 1-year fighter-pilot experience for forward air controllers* hindered FAC manning. Some advocates nonetheless deemed such experience desirable to control airstrikes. The fighter-pilot FAC knew strike-aircraft capabilities intimately and the effects of different types of ordnance on any given target. Hence he was well-equipped to advise the Army ground commander. Yet, others insisted a forward air controller could do just as good a job without fighter experience. They suggested dropping or relaxing the fighter-pilot requirement so as to turn out more FAC's for support of Army units in SEA. Debate along these lines continued throughout 1965-1970.

(C) The supporters of fighter experience for forward air controllers were adamant in their position. On 20 January 1967 Maj. Gen. Thomas G. Corbin, SAWC Commander, informed Gen. Gabriel P. Disosway, TAC Commander, that assignment of inexperienced pilots to FAC duty could be detrimental and dangerous to the air war. He said it could lead to errors in judgment, needless casualties, and a loss in overall effectiveness.²⁸ Maj. Lawrence L. Reed, a FAC with over 1,100 combat hours, thought nonfighter pilots required more training and time to match the FAC skill of experienced fighter pilots. Also, a nonfighter pilot could not speak with "complete authority based on personal experience" to those he would be advising.²⁹ The Deputy Director/DASC Alpha⁺ declared in December 1967 that a FAC without fighter experience could not be completely confident in counseling ground commanders on fighter tactics. He warned that poor advice would erode the forward air controller's status and in addition weaken the Air Force position on close air support.³⁰

(C) On the other hand, there were those who strongly believed "performance of non-fighter trained personnel. . . had reportedly met the demands of the SEA operation and has been comparative to those with fighter qualifications."³¹ Maj Kenneth A. Kirkpatrick, Chief/Air Operations, 504th TASGp in 1968, said fighter experience gave a forward air controller deeper insight into weapons effects and some

*Air Force Regulation (AFR) 55-33 specifies criteria for forward air controllers.

⁺Alpha Zone is north of latitude 20°N. in the Republic of Vietnam.

~~SECRET~~

techniques of aircraft control. Nevertheless, it was the pilot's personal qualifications that really counted. In 3 months a FAC without such experience could become a competent and well-qualified air controller. Views of other forward air controllers sounded a like theme: a controller could spend years as a fighter pilot and be no more skilled in controlling aircraft than a nonfighter pilot; fighter experience was helpful for the first month or two then it was of no great advantage--more time spent in FAC aircraft would probably have been more beneficial;³² fighter experience was a luxury "we cannot afford," the requirement being levied to give the Army more confidence in USAF close air support.*³³ Additionally, the available evidence at Headquarters USAF disclosed no great difference between the performance of forward air controllers with fighter backgrounds and those without.³⁴ Gen. Albert P. Clark, TAC Vice Commander, summed the matter up neatly. He said leadership qualities were in the long run more important than background. Competence could be acquired through time and experience.³⁵

Realigning FAC Qualifications

As early as October 1965, Headquarters USAF had recognized something had to be done to shore up the FAC force. It accordingly asked TAC, PACAF, and United States Air Force in Europe (USAFE) about relaxing the requirement for tactical fighter experience. The three commands hesitated to remove it entirely. PACAF did agree to use previously qualified fighter pilots as forward air controllers until currently qualified ones arrived. On 12 October, after considering the commands' misgivings, Air Force Headquarters waived the 1-year operational-experience requirement and approved assignment of combat crew training course graduates directly to FAC duty. The Air Staff assured TAC that forward air controller positions would be filled with operationally experienced fighter pilots to the "maximum extent possible."³⁶

The waiver lifted the burden at first but the swell of U.S. ground forces in SEA during 1966 forced a search for more forward air controllers. In March the Commander in Chief, U.S. Strike Command, recommended to the JCS that Army officers be trained to act as FAC's in an emergency or when the Air Force could not

* It was mentioned at an ALO/FAC training conference that one reason for the fighter-experience requirement was to keep the Army out of the airborne forward air control program. For after a FAC gained experience, the requirement did not make that much difference. [PACAF ALO/FAC Training Conference Report (S), 3 Sep 68, Atch 2, pp 2-3.]

~~SECRET~~

provide them. The proposal was referred to the Army and Air Force Chiefs of Staff for study. In November, Seventh Air Force began to train Army O-1 pilots as target spotters but did not check them out for FAC work at that time.³⁷

During 15-18 March 1966, a worldwide tactical fighter symposium developed workable criteria for assigning FAC's to SEA units according to their experience-level and training. The conferees believed waiver of the fighter-experience qualification hinged on the type of duty performed. If, for example, the forward air controller acted as an air liaison officer, fighter-cockpit experience would better fit him for advising U.S. Army/ARVN commanders on the use of air power. Then too, the Army and Air Force wanted fighter-qualified FAC's for American units since the main job was controlling strike aircraft near to friendly ground troops. In contrast, USAF forward air controllers with ARVN spent much time on visual reconnaissance and liaison but little on controlling airstrikes. VNAF air controllers seldom had a fighter background, being actually observers rather than pilots. The symposium therefore suggested the Air Force assign some nonfighter pilots to forward air controller duty with ARVN, VNAF, and in the out-country war.³⁸

Forward air controllers performing SCAR and interdiction in the out-country war operated in areas of few friendly troops and civilians. Consequently, FAC's without fighter experience could be used.³⁹ By mid-1967 FAC operations were in full swing as the effort quickened to choke off the flow of men and supplies along the Ho Chi Minh Trail. To ease the shortage of forward air controllers that followed, PACAF requisitioned pilots for direct entry into O-1 training. It also agreed to accept nonfighter pilots for assignment against up to 50 percent of its total FAC authorization.⁴⁰

To ensure that nonfighter forward air controllers were not assigned to U.S. Army units, Air Force Specialty Code (AFSC) 1444A designated FAC's with tactical fighter experience, AFSC 1444B those without.⁴¹ The "B" FAC's, restricted to non-U.S. units and the out-country war, felt relegated to a secondary role. Their flights were often more trying than those of FAC's with U.S. Army units. Hence, they resented being tagged as not fully qualified solely on the basis of no fighter experience.⁴² This problem smoldered beneath the surface as the war went on.

On 18 May 1968 the 504th Tactical Air Support Group proposed that nonfighter-qualified forward air controllers be considered

~~SECRET~~

TABLE 2

1966 TACTICAL FIGHTER SYMPOSIUM

SUGGESTED QUALIFICATIONS FOR SPECIFIC FAC ASSIGNMENTS

	<u>ALO</u> (US/ARVN)	<u>FAC</u> (US)	<u>FAC</u> (ARVN)	<u>TASSQ</u> <u>Pilot</u>
Pilot	X	X	X	X
Fighter experience	X	X		
Operational ready in fighter aircraft	X	X		
Qualified in O-1 aircraft	X	X	X	X
Operations Staff Officer Course	X	X		
Air-Ground Operations School (Academic)	X	X	X	X
Munitions training (Academic)	X	X	X	
Language			X	

SOURCE: Hist (S), TAC, Jan-Jun 1966, I, 457.

~~SECRET~~

fully qualified after 3 months of duty in the field.⁴³ Seventh Air Force concurred on 22 June and authorized assignment of experienced out-country SCAR pilots to U.S. Army units in-country until fighter-qualified FAC's were available.⁴⁴ A few of these FAC's went to Army units during the summer. The waiver was nonetheless discontinued in early 1969 to avoid potential problems with the Army.⁴⁵

Between 1963 and 1966, the quality of pilots sent to Southeast Asia as forward air controllers had been outstanding. In mid-1966, however, their quality in terms of experience and background began to fall off. More and more pilots arrived with under 500 hours of flying time, requiring additional training and experience before assuming FAC duty. In November 1968 PACAF specified that all forward air controllers have at least 750 flying hours (some pilots accruing the extra hours after arrival). For FAC's performing SCAR duties, PACAF required 1 year of flight experience in any type of operational flying unit. For FAC's working with U.S. Army units, PACAF prescribed 1 year of fighter experience as called for in AFR 55-33.⁴⁶ These modifications of the FAC program applied only to the Southeast Asian war. Once the war was over, the basic criteria in AFR 55-33 would apply but with greater flexibility.⁴⁷

Pre-FAC Fighter Training

The buildup of ground forces in SEA during 1966 led to a speedup in pre-FAC fighter training of pilots. As an expedient, Headquarters USAF ordered Tactical Air Command to create a T-33 combat crew training school "to train those officers who could not be trained in a prime weapon system for FAC/ALO duty, staff officer assignments, and other non-cockpit positions in SEA."⁴⁸ PACAF supported the plan but TAC asked Air Force Headquarters to defer it. TAC's chief objections were: the T-33 aircraft would not provide pilots instruction in a current weapon system; other than fighter-qualified instructor pilots might teach in the school, posing potential "flying safety" problems; and manning the course would slight other priority SEA commitments.* The Air Staff approved the deferment on condition that TAC submit a plan of operations and recommendations for the school by 19 April 1966.⁴⁹ On 11 May--after receiving PACAF's estimate of fighter-pilot needs--the Air Staff decided that effective January 1967 all ALO/FAC's and selected personnel would attend the F-100, F-105, and F-4 training programs. In the interim, FAC's with

*TAC's 1966 commitments to fighter-pilot slots totaled over 900-- a heavy burden at that time. [Hist (S), TAC, Jan-Jun 1966, I, 444.]

~~SECRET~~

Air Ground Operations School (AGOS)* and O-1 school backgrounds would man the tactical air support squadrons. This method of training FAC's in fighter aircraft would be used until TAC could set up a shortened AT-33 course for ALO/FAC trainees.⁵⁰

In December 1967 PACAF requested 333 fighter-qualified forward air controllers to support U. S. Army units.⁺⁵¹ Because of this, TAC shut down a regular F-4 aircrew training course in January 1968 and opened up a shortened version for FAC's. Four classes graduated before the press for more fighter pilots in combat operations forced the course's closure.⁵² TAC next turned to the F-100 school but it was overtaxed, mainly in training replacements for Air National Guard F-100 pilots due to return from SEA. The F-105 and other programs were also glutted and could not be used.⁵³

When the F-4 fighter school ceased training forward air controllers on 1 August 1968, TAC's AT-33 course was ready to take over. The school trained two classes of 26 FAC's each at Davis-Monthan before moving to less-crowded facilities at Cannon AFB, N.M. There, it offered 2-phase flying training--30 hours in the AT-33 and 41 in the F-86H. TAC and its Twelfth Air Force (which monitored the training) were not happy about the reduction in hours in each aircraft, believing it would jeopardize flying safety.⁵⁴ Hours in the AT-33 could be lengthened with little trouble but not so in the old-out-of-production F-86H. Hence about 3 weeks before the 1 October opening class at Cannon, Twelfth requested TAC to confine flying training to the AT-33. TAC agreed and prescribed a course length of 63 flying hours and a yearly quota of 325 students.⁵⁵ The AT-33 gradually acquired an air of permanence rather than that of a "temporary expedient." At the end of 1970, it was still turning out "instant fighter pilots."

FAC/Fighter-Pilot Exchange Program

An untapped source of additional forward air controllers were the fighter pilots in Southeast Asia for they knew close air support first hand. In July 1966 Headquarters USAF had sounded out PACAF and TAC on a temporary in-country program that would exchange FAC's for F-100 pilots about midpoint in their respective tours of duty.⁵⁶ PACAF thought it would take too long to cross-train

*Located at Hurlburt Field (part of the Eglin AFB complex) and operated by the Special Air Warfare Center. The AGOS furnished academic instructions to FAC's prior to their training in the O-1 or other FAC aircraft.

+The Army actually needed 297 fighter-qualified FAC's and another 33 for attrition.

~~SECRET~~

the crewmembers involved. It also underscored the morale factor-- fighter pilots looked upon FAC duty as more hazardous as well as a waste of their previous training. TAC favored the program. As to morale, TAC emphasized that forward air controllers are

kept almost continually with units committed to action and are not always relieved when the Army unit they support is withdrawn; rather they may be rotated to the relieving Army unit and kept in action. This can introduce [a] morale factor equal to or greater than that faced by [a] pilot completing a cockpit tour and going to ... [FAC] duty.⁵⁸

The Air Staff approved the exchange plan and the 504th Tactical Air Support Group of Seventh Air Force developed it. In September 1966 the first five F-100 pilots from 3d Tactical Fighter Wing (TFWg) at Bien Hoa and the 35th at Phan Rang underwent FAC training at Binh Thuy.* Six FAC's with tactical experience were in turn transferred to fighter units.⁵⁹

By March 1967 the 504th TASGp had moved 52 forward air controllers to fighter cockpits and had boosted the exchange rate to 2 per week.⁶⁰ In light of this, PACAF extended the exchange program in July 1967. The bright picture nevertheless dimmed and the program folded in March 1968. Between September 1966 and March 1968, the 504th had received just 132 FAC's while losing 162 to fighter cockpits, casualties, and rotation back to the United States. PACAF reopened the program on a small scale in the latter half of 1968 but closed it again in 1969.⁶¹

FAC Flight Training

O-1 Training

In 1962 the USAF forward air controllers in Southeast Asia had recognized the need for and recommended a better FAC training program. The academic/ground training then given by the Air-Ground Operations School at Eglin AFB could not produce sufficient FAC's for SEA. Nor was the training's scope adapted to the peculiar combat needs of the guerrilla war being waged there.⁶² On this account, the

*To qualify as forward air controllers, the pilots had to attend the Theater Indoctrination School. They generally adjusted well to the new duty and used their fighter experience to great advantage.

~~SECRET~~

Air Force instituted the O-1 forward air controller school in 1963 at the Special Air Warfare Center, Hurlburt Field (part of the Eglin AFB complex).⁶³ The school trained just 22 FAC's during 1963 but the situation changed sharply in 1964 after the Gulf of Tonkin incidents. The United States started to build up its forces and take a direct part in the war. In December Headquarters USAF authorized the O-1 school 40 people and 11 O-1 aircraft in order to train an anticipated 125 forward air controllers per year.⁶⁴

(U) To get training moving, the first O-1 syllabus in 1965 drew heavily on the combat experiences and recommendations of seven veterans of the 19th TASSq, TDY to the school as instructors. The syllabus became "really an OJT Program" to check out other instructor pilots.⁶⁵ (As more officers from the war zone joined the staff, the syllabus was updated to reflect their experiences.) The initial syllabus specified a five-mission transition phase including: instrument flying, navigation, takeoffs and landings from dirt strips/short fields, forward air controller techniques, visual reconnaissance, and one night-familiarization flight. On the night mission, the O-1's usually took off and flew in trail formation to the tactical range. There, a flareship lighted up the sky, dropped a target marker, and the strike-control exercise followed.⁶⁶

~~SECRET~~ Besides O-1 flight training, the student received in 1965 academic/ground training at the Air-Ground Operations School (AGOS). This training accented the Tactical Air Control System and its relationship to the Army as well as FAC techniques within the system.⁶⁷ Additionally, the student attended the Special Air Warfare Indoctrination Course (SAWIC)*⁶⁸ and the Combat Operations Specialist Course (COSC).⁺⁶⁹

*The course dealt with: insurgency and its application to guerrilla warfare; combating the insurgency threat; physical training; organization, mission, and techniques of special warfare forces; and specialized training for FAC duty. [Hist (S), SAWC, Jul-Dec 1965, I, 33-34.]

+The COSC familiarized forward air controllers with Army/Navy organization and direction of operational forces and integration of USAF tactical forces into the overall battlefield plan. It also covered: coordination of close air/logistical support, the FAC's own duties, air control systems, and other new developments. In 1965, after reconsidering FAC qualification requirements, the Air Force defined a forward air controller as a qualified fighter pilot who had attended AGOS, the SAWC, the O-1 FAC school, and survival training. (Moreover, it was not unusual to find him checked out as a parachutist.) [Hist (S), TAC, Jan-Dec 1965.]

~~SECRET~~

As noted earlier, Air Force Headquarters directed PACAF in March 1965 to activate the 20th, 21st, and 22d Tactical Air Support Squadrons in Southeast Asia. In turn, it boosted the FAC student load to 237 per year, severely straining the O-1 training program which was equipped to handle only 10-15 students per class. Even so, the Air Staff jumped the quota to 300 in early 1966 requiring 25 officers to be squeezed into each class.⁷⁰ With only 15 O-1's available, the school could not handle that many students under the programmed flying schedule. Hence SAWC speeded up the May, June, and July classes. It also trimmed flying hours from 35 to 25 which the instructors (50 percent of them SEA veterans) deemed sufficient for war-zone duty. To assure proficiency, the trainees made 100 takeoffs and landings--45 percent more than the minimum programmed. In spite of these actions, reports from SEA showed accidents there on the rise and inadequate training was a possible factor. SAWC therefore restored flying time to 35 hours and put fresh stress on crosswind and shortfield takeoffs/landings and on night activity. It also made more training available to students requiring it.⁷¹ The expanded program yielded better-qualified forward air controllers but fewer of them.

The sudden growth of O-1 FAC training in 1965 underlined the need to move the airborne portion from crowded Hurlburt Field. The Air Force was fortunate in obtaining use of Holley Field from the Navy, a tiny unimproved airstrip just 12 miles from Hurlburt.⁷² At first the O-1's were ferried from Hurlburt in the morning and returned in the evening. By mid-1966, however, Holley could accommodate the O-1's except for major maintenance.⁷³ During 1965-1970 the field burgeoned into the Air Force's "FAC Factory"--one of the busiest air terminals in the world. In December 1969 Holley Field ranked 13th worldwide in the number of takeoffs and landings-- logging 402 within one 2-hour period.*

* Many a FAC Factory graduate retains pleasant memories of "Holley Hound," a dirty gray mutt who wandered onto the field one day in 1966, caked with dirt and grime. The pilots scrubbed and dubbed him the field's official mascot. The dog reveled in parties at the Officers' Club, "Pawshakes" with such notables as Generals Nazzaro, Momyer, and Disosway, and rides in the blue with O-1 pilots. In June 1970 Holley Hound "retired" from the Air Force on the leash of Lt Col John P. Nichols, Commander, 547th Special Operations Squadron (old 4410th CCT Squadron of which the FAC school was a part), who also retired the same month. [Hist (S), 1st SOWg, Apr-Jun 1970, I, 100-01.]

~~SECRET~~

Expansion of the out-country war in 1966 spawned a demand for more forward air controllers. In April the Air Force activated the 23d Tactical Air Support Squadron at Nakhon Phanom AB, Thailand, to step up SCAR operations in Laos, especially interdiction of the Trail.* This of course triggered a new levy of 672 FAC's per year on the SAWC's training program.⁷⁴ The O-1 school did not have the means at hand to meet the larger quota. Nor could TAC find the extra O-1E/F's--they would have to come from PACAF. That command, however, was short O-1E's⁷⁵ and had earlier considered trading O-1A's for the O-1 school's 4 O-1E's and 11 O-1F's. The Air Force Chief of Staff acceded to PACAF's proposal but Maj Gen Gilbert L. Pritchard, SAWC Commander, emphatically objected. He anchored his argument on the poorer training that would result if conducted in the older less-efficient O-1A's.[†] TAC supported SAWC and PACAF agreed not to touch the school's aircraft.⁷⁶ Instead, it gave the school 10 additional O-1E/F's from its slender resources.⁷⁷

With 25 O-1's, SAWC could now train 36 forward air controllers a month by maintaining 60 flying hours in each aircraft.⁷⁸ Still, 56 FAC's trained monthly were essential to satisfy the yearly quota of 672. To work in the other 20, PACAF suggested a return to the 1965 flying schedule of 25 hours.⁷⁹ General Pritchard disagreed, figuring 35 hours a must to preserve training quality. The general recommended the 20 students accomplish all training except the 6 tactical sorties, which they could complete in SEA.⁸⁰ He said, if 56 forward air controllers a month were insisted upon, it would require at least 32 aircraft and additional instructors.⁸¹ TAC favored a 50-student load and 25 flying hours with tactics training conducted in SEA.⁸² The compromise that finally resulted placed the student load at 55 and flying hours at 25--all training to be completed at the school.^{‡83}

* Chapter 8 covers out-country FAC operations.

† Compared to the O-1E/F: the lighter O-1A had a weaker landing gear without antiground-loop control, and there were also variable-pitch propeller differences. Tactically: the O-1A lacked installed armament systems for marking-rockets, its communications system included solely a "coffee grinder" UHF (ultra high frequency) in contrast to the VHF (very high frequency), UHF, and FM (frequency modulation) in the E and F models.

‡ On 8 August 1967 the Theater Indoctrination School in South Vietnam helped ease the FAC shortage by training officers already in SEA as forward air controllers (see pp).

By mid-1966 the O-1 school had pretty well firmed up its training criteria⁸⁴ and only minor changes were made thereafter. This was a far cry from prior years when fusing programs to war needs posed a real problem. Lt Col Ernest R. McCready, while a FAC instructor in SEA during 1965, felt

people back here [the United States] decided what they needed; we decided what we needed. And although we would converse with each other it was "Oh hell, he doesn't know what he's talking about."... So, we in Vietnam kept training the way we thought it should be done; they, back here, kept training the way they thought it should be done.⁸⁵

Upon becoming an instructor at the O-1 school, Lt Col McCready found the shoe on the other foot. He discovered how hard it was to visualize what was most vital for the war zone.⁸⁶ Nevertheless, by 1966 relations between SEA units and the school were closely knitted and a coordinated curricula emerged.⁸⁷ The influx of SEA veterans as O-1 school instructors had hastened the process.

The O-1 school attained its peak training load of 655 students in 1967 (Table 3) then its quotas were cut. The O-2A aircraft had arrived on the scene and O-1 training--never considered long-term--began to phase out.⁸⁸

O-2A Training

In the fall of 1966, Tactical Air Command implemented a plan for O-2A forward air controller training. The plan specified that the SAWC conduct all O-1 training, instructor-pilot upgrading, and O-2A ground training. O-2A flying training, however, would be carried out in Southeast Asia.⁸⁹ Seventh Air Force selected four O-1 FAC's⁺ to receive O-2A instruction, scheduled to open at Hurlburt on 1 March 1967. Using this training as a base, they would organize an O-2A course at the Theater Indoctrination School in South Vietnam.⁹⁰

*The 1970 phaseout date was not met but the O-1 course handled only about 15 percent of all forward air controllers trained that year.

⁺Majors Richard K. Derridinger and James E. Rose and Captains Clifford R. Crooker and Robert L. Shutte.

TABLE 3

FORWARD AIR CONTROLLER TRAINING LOADS
1967-1970

	<u>O-1</u>	<u>O-2A</u>	<u>OV-10</u>	<u>Total</u>
1967	655	-	-	655
1968	388	311	84	783
1969	188	419	246	853
1970 (To 30 Sep)	105	391	193	689

SOURCE: SAWC histories and reports 1967-1970.

~~SECRET~~

The first O-2A would not reach Hurlburt until April 1967, too late for the 1 March opening of the O-2 course. On account of this, TAC arranged through Air Training Command (ATC) the lease of a Cessna 337 (civilian version of the O-2). Even so, the delay in receiving this plane plus the late deployment of the four controllers from SEA slipped the start of the O-2 course to 10 April.⁹¹

In the O-2A ground school, the forward air controllers learned emergency operations as well as aircraft systems and performance. After learning to fly the aircraft, they took extra training in instrument flying and tactics--including delivery of various types of ordnance.⁹² Chief emphasis centered on shortfield takeoffs and landings, steep approach landings, and climb-and-letdown training in single- and double-engine operations.⁹³ Afterwards, the students visited the Cessna plant at Wichita, Kans., to watch the O-2 on the production line and to suggest minor modifications. Back in Southeast Asia on 26 May 1967, the four FAC's finished up the format of the O-2A course, enrolled a full load of O-1 pilots, and launched the maiden class on 20 July.⁹⁴

The separation of the O-2A ground school from flying training bred coordination problems that distance rendered extremely difficult to surmount. Consequently in December 1967, Air Force Headquarters directed TAC to establish the entire O-2A course at Hurlburt Field by early 1968.⁹⁵ The Theater Indoctrination School was to continue upgrading instructor pilots and preparing for O-2A FAC duty those pilots who had not gone through the school at Hurlburt.⁹⁶ The first complete O-2A course commenced there on 28 March 1968.⁹⁷

(U) Resembling O-1 training, the 10-week O-2A course furnished students academic training, 2 days of aircraft familiarization, and flight instruction at Holley Field.⁹⁸ The 2-phase flight training spread over 16 missions totaling 28-29 flying hours:⁹⁹

Phase I

<u>Missions</u>	<u>Type</u>
4	Transition
1	Instrument indoctrination
1	Night transition
1	Check flight

~~SECRET~~

Phase II

<u>Missions</u>	<u>Type</u>
2	Navigation
1	Navigation/visual reconnaissance
1	Target-marking practice
2	Forward air control
1	Night FAC demonstration
1	Range problem with other O-2's
1	Final check flight

Even with 28 O-2A's, the school couldn't keep up with the student load until the course was shortened and withdrawals of U.S. troops from SEA diminished the demand for forward air controllers.¹⁰⁰

During the first half of 1968, the packed Holley Field facilities became unable to handle both O-1 and O-2A flying training. The 4410th CCT Squadron Commander warned further expansion would "result in inadequate . . . facilities and create a safety hazard." Thus TAC recommended Headquarters USAF approve use of only O-2A/2B aircraft at Holley for SEA training. The Air Staff asked for cost figures on preparing the field to accept O-2's.¹⁰¹ At this point, a cutback in the O-1 training took care of the problem.

Reports from SEA units in late 1968 told the Special Operations Force* that O-2A forward air controllers were being sent over with insufficient preparation. The time lag between the pilot's O-2A checkout and his arrival in-country eroded his proficiency which had to be regained in South Vietnam.⁺ Furthermore, the complex O-2A required more familiarization time than the O-1. The SOF accordingly hiked flying instruction to 35 hours and added a night strike-control demonstration and weapons-effect lecture.¹⁰²

OV-10 Training

North American Rockwell had unveiled the OV-10 all-purpose aircraft to the military services in 1965. The Air Force, however, did not seriously consider the plane for forward air controller duty until 1966. The OV-10 seemed to fill the bill so the Air Force ordered 109 of them.¹⁰³

*The Special Air Warfare Center became the Special Operations Force on 8 July 1968.

⁺New O-2A forward air controllers received at least four familiarization flights upon arrival in Southeast Asia.

~~SECRET~~

In January 1968 the Special Air Warfare Center sent PACAF and Tactical Air Command an OV-10 training syllabus taking in armed and unarmed forward air control concepts. All students would receive Phase I (transition) and Phase II (tactics) training. If the mission in Southeast Asia demanded it, Phase IIA (defense fire) and Phase IIB (dive bombing and low-level delivery techniques) could easily be appended. The SAWC/PACAF/TAC review trimmed the 54-hour flying schedule to 39.5 hours by re-aligning ordnance-delivery training.¹⁰⁵ The schedule nevertheless went back to 54 hours when Seventh Air Force decided not to use the OV-10 in-country but in an out-country armed SCAR role.¹⁰⁶

Minor modifications on the OV-10 at North American Rockwell held up its slated January 1968 arrival at Hurlburt Field. Not before 26 February did the first OV-10 (Number 63155) touch down at Hurlburt with Maj. Gen. Thomas G. Corbin, SAWC Commander, and Capt Gary D. Sheets, an OV-10 instructor,⁺ aboard.¹⁰⁷

The initial OV-10 class commenced on 22 May,¹⁰⁸ taught by six instructors trained at Patuxent Naval Air Station, Md. The class yielded six additional instructors¹⁰⁹ and each succeeding class similarly contained a mix of students earmarked for future instructors or FAC's in SEA. As of December 1968, the course had graduated 35 instructors and 84 forward air controllers.^{†110}

The O-1 and O-2 training courses had ironed out many training problems, smoothing the way of the OV-10 course. Conducted by personnel from the newly organized 4409th CCT Squadron, the course had ample instructors and aircraft to satisfy present and future needs.¹¹¹ The flying schedule through June 1970 comprised 2 phases and 31 missions totaling 42 1/2 hours. Instruction encompassed navigation and reconnaissance, formation flying, ordnance delivery, FAC tactics, and two flights in night orientation and techniques.¹¹²

* A forward air controller with prior fighter experience could take the 39.5 hour course.

⁺The SCAR role dictated that instructors be fully fighter-qualified FAC's with experience in Southeast Asia.

[†]Thirteen of the first FAC's in the course served on the Combat Bronco OV-10 test and evaluation team that went to SEA in July 1968.

~~SECRET~~

Theater Indoctrination School

The worldwide tactical fighter symposium (15-18 March 1966) suggested an O-1 school be set up, possibly at Clark AFB, Philippines. The conferees visualized an in-theater school affording more training to fighter aircrews in: TACS operations, Army organization in SEA, intelligence, munitions application/effectiveness, and artillery adjustment.¹¹³

On 6 August 1966, Gen. William W. Momyer, Seventh Air Force Commander, took up the symposium's suggestion by establishing a Theater Indoctrination School (Detachment 1, 504th Tactical Air Support Group).^{*} Located at Binh Thuy AB, southwest of Saigon, the school enjoyed uncongested facilities, exceptional flying weather, and a varied terrain duplicating most areas of Southeast Asia. The purpose of the school was to: give theater indoctrination to all newly arrived forward air controllers; conduct transition training in FAC aircraft; and administer FAC combat crew training to pilots assigned as forward air controllers from other in-country duties, or to those who had missed FAC training in the United States.¹¹⁴ The TIS in addition helped standardize forward air control procedures, to prepare FAC's for safer combat operations and faster adjustment to tactics changes.¹¹⁵ Lt Col William Johnston, TIS Commander, officially opened the school on 8 August 1966, with six O-1's and six experienced instructors.⁺

(U) Seventh Air Force kept training at the Theater Indoctrination School flexible and the course length dependent on the background of the students. In the O-1 course, for example, fighter pilots (assigned under the FAC/fighter-pilot exchange program) received 22 hours; graduates of the SAWC FAC school, a 5 1/2 hour in-country checkout; and instructor pilots, 5 1/2 hours for upgrading.¹¹⁶ O-2 flying training got under way at the TIS on 20 July 1967,¹¹⁷ and by

^{*}A rationale for the TIS was that the demand for forward air controllers in Southeast Asia outstripped the supply from the Special Air Warfare Center's FAC school--the difference being made up by training pilots already in SEA. Again, the political atmosphere, environment, geography, weather, and hazards (all major factors in FAC tactics and operations)--these could not be experienced by students attending the stateside school.

⁺The tactical air support squadrons had also developed checkout programs for newly arrived USAF forward air controllers.

8 September 1967 the school had 15 permanent and 4 TDY instructors utilizing 7 O-1's and 10 O-2A's.*118 When the Air Staff switched the O-2 basic flying training to the SAWC in 1968, the Theater Indoctrination School was left with refamiliarization of newly arrived forward air controllers, instructor-pilot upgrading, and training of in-country transfers.†

■ In July 1968 the Air Force version of the OV-10 appeared in Southeast Asia, but the TIS did not develop the curricula until later in the year following combat testing.¹¹⁹ The OV-10 training, conducted by combat-experienced FAC's,¹²⁰ offered far more choices than other TIS FAC programs. The five options ranged from instructor-pilot upgrading to the full flying course.¹²¹ Phase II combat readiness training was nevertheless left to the tactical air support squadrons to which the FAC's were assigned. This assured adjustment of the training to conditions peculiar to each squadron's area of operations.¹²²

■ In 1969 the usefulness of the Theater Indoctrination School was questioned. Some forward air controllers felt the school had failed to prepare them for the shifting situations in SEA. They further thought the training duplicated the checkout programs in the tactical air support squadrons. A number of out-country SCAR FAC's believed the TIS should solely train forward air controllers operating in South Vietnam, inasmuch as the training could not simulate the SCAR role.¹²³ The views of Col Abner M. Aust, Jr., 31st Tactical Fighter Wing Commander, mirrored those of several other commanders. He said the TIS should check out FAC's more thoroughly because on "many occasions in the past it has appeared as though the FAC's were not familiar with all aspects of flight tactics." He cited several midair collisions caused by forward air controllers insufficiently versed in control techniques who didn't remain clear of the aircraft they were directing.¹²⁴

(U) The Theater Indoctrination School took note of these criticisms and moved to correct the training gap bared by Colonel Aust.

*The school's alumni at this time stood at 934 forward air controllers--Americans, Australians, Koreans, and Vietnamese.

†(██████████) Seventh Air Force moved the TIS to Da Nang in March 1968 because of stepped-up enemy attacks on Binh Thuy the preceding month. [Hist (S), 504th TASGp, Apr-Jun 1967, pp 3, 25; Overton, FAC Operations in Close Air Support Role in SVN, p 13.]

The TIS prescribed that no forward air controller would direct aircraft until he had (1) a minimum 25 hours of airborne observation on a FAC aircraft and 750 total flying hours, or (2) at least 50 hours of airborne observation if his total flying time was under 750 hours. Additionally, the school scrutinized each student sharply for any evidence of strain or display of erratic flying procedures. If either was singled out, the student was eliminated from the program and assigned to less strenuous duties.¹²⁵

(U) Seventh Air Force discontinued the Theater Indoctrination School in 1969 and passed the training responsibilities to the tactical air support squadrons. This action in no way reflected on the TIS's many achievements.¹²⁶ It signaled instead the winding down of the war to a point where the squadrons could handle the training and modify it to help them fulfill their specific missions.

(This page is Unclassified)

~~SECRET~~

III. LOGISTIC SUPPORT

(U) From 1965 through 1970, the Air Force faced much the same FAC logistic problems in Southeast Asia it had grappled with during 1961-1964.* Inroads on the problems had been made but shortages persisted in: vehicles and aircraft; spare parts for aircraft, radios, and other items; and personal supplies/equipment. Furthermore, the frequencies of the ground radios did not always match those in FAC aircraft, which inhibited air-to-ground communications and thus coordination. All these difficulties had yielded to Air Force efforts by the close of 1970, helped along by waning U.S. involvement in the war.

Joint Army/Air Force doctrine (1957-1965) stipulated the Army furnish vehicles and communications equipment for the tactical air control parties. The Army nonetheless was hard put to supply its own units in SEA, let alone the TACP's. The Air Force accordingly agreed on 1 July 1965 to relieve the Army of this burden.⁺¹

The tactical air support squadrons had their troubles at first in supporting the TACP's, but improvements came with attachment of the squadrons to the 504th TASGp in December 1966.² Getting the supplies and equipment to the scattered hard-to-get-to forward operating locations (FOL's) nevertheless remained a sticking point.^{‡3} Since a number of the small landing strips couldn't accept

* These early problems are discussed in Chapter III of Rowley's USAF FAC Operations in Southeast Asia 1961-1965.

⁺ AFR 55-9/AR525-5, 20 April 1966, prescribed that the Army maintain the TACP's vehicles and communications equipment when specified in agreements between Army and Air Force commanders. This joint regulation also required the Army to provide armored combat and/or special purpose vehicles and crews for the TACP where terrain rendered use of USAF vehicles impractical.

[‡] The experience of Lt Col Frank M. Eichler, ALO with the 3d Brigade of the 1st Infantry Division in 1967, was typical. He said the 19th TASSq managed to supply only critical items such as aircraft parts, lubricants, and survival gear. Beyond that, the TACP depended on the Army for supplies and equipment or else scrounged them.

~~SECRET~~

cargo aircraft, TACP's had to use FAC planes to fly in sorely needed items.*⁴ Improvement of these strips by mid-1968 enabled C-123's and C-130's to deliver supplies and equipment regularly. From then on, TACP logistic support problems diminished.⁵

The Radio-Jeep and Air-Ground Communications

Supplying the tactical air control parties with radio-jeeps and maintaining reliable air-ground communications were carry-over problems from the earlier phase of the war. To help solve them, the Air Force introduced a new radio-jeep package (the AN/MRC-107/108) into South Vietnam in March 1966. Although fitted with FM, UHF, VHF, and HF radios, it had been designed for the type of terrain met with in World War II and Korea. As a result, the constant pounding of South Vietnam's off-road terrain frequently damaged the radios while the dense foliage curtailed their range. More often than not, the TACP's cannibalized the MRC-107/108. They removed the radio pallet, set it up as a fixed station, and used the vehicle for general transportation. Then too, the difficulty in getting the radio-jeep through to forward operating locations led the TACP's to rely more heavily on backpack radios (the AN/PRC-25 for VHF/FM and the AN/PRC-41 for UHF).⁶ Heavy and limited in transmitting frequencies, these radios could not sustain reliable air-ground communications because the jungle terrain decreased their range and the heat sapped their batteries.

Shortcomings likewise existed in the O-1 FAC aircraft's radios. The preset frequencies of the ARC-44 (UHF/FM) and the ARC-45 (UHF) were too few for effective communications during combat operations. It was not unusual, for example, to have several conversations going on at once over the same channel.⁷ In April 1966 Deputy Secretary of Defense Cyrus R. Vance asked about the communications problem during an information-gathering trip to South Vietnam. He was told that equipping the O-1 with tunable ARC-51 (VHF/FM) and ARC-54 (UHF) radios--if available--would ease communications congestion and confusion. Seventh Air Force subsequently submitted Southeast Asia Operational Requirement (SEAOR) 19⁺

*Facilities at the FOL's could not handle major aircraft repairs. The FAC aircraft flew to the main operating bases (MOB's) for periodic overhauls, or continued flying if the malfunctions did not affect flying safety.

⁺A SEAOR is a request for a piece of equipment or modification deemed essential for meeting an operational requirement.

~~SECRET~~

stating the need for the ARC-54* in the O-1 but the aircraft's weight limitations at the time prevented the installation. Later, Air Force Headquarters canceled the SEAOR after deciding to wait for the phase-in of the O-2A's and OV-10's which had tunable radios.⁸

● The O-2A entered the war in 1967, the OV-10 in 1968. Still, Seventh Air Force figured the O-1 would be around for another 2 years and again asked that the aircraft's ARC-45 (UHF) radio be either replaced or modified.⁺ On 22 May 1968 Warner Robins Air Materiel Area (WRAMA), Robins AFB, Ga., informed Seventh Air Force it could furnish 25 tunable ARC-51BX radios[‡] a month to replace the ARC-45's. In August the Air Staff ordered the new set installed in all U.S.-owned O-1's in SEA. Work got under way in January 1969, 50 O-1's had the ARC-51BX by July, and the entire job was wrapped up in 1970.⁹

● In 1965 the question arose whether to equip strike aircraft with a ground-monitoring capability. The airborne forward air controller already performed this duty, relaying artillery warnings (and other information) to strike pilots. However, coordination between FAC and ground artillery units was not always good. A few times, strike pilots ended up squarely in the middle of a "shoot-out." Either the ground unit had not announced the artillery fire or the FAC missed the warning.¹⁰ The JCS position at this time was that the strike pilot had too many radio channels to monitor and saddling him with a VHF/FM radio would compound the confusion.¹¹ Here the matter rested until 1968.

● A study directed by General Momyer, Seventh Air Force Commander, recommended in March 1968 that the strike pilot not be

*Seventh limited its request to the ARC-54 because most strike control was conducted on UHF frequencies.

⁺Seventh Air Force stressed that "the vast majority of FAC controlled airstrikes are performed using UHF frequencies to control the fighters. Whenever the FAC is using UHF, he has no capability of receiving emergency instructions . . . on UHF frequencies, emergency transmissions from fighters he is controlling . . . or emergency instructions from downed aircrews on standard emergency survival radios." The ARC-51BX would correct this condition by supplying a guard (emergency) monitoring capability.

[‡]The ARC-51BX was being installed at this time in the MRC-107/108 radio-jeep. It was simply a matter of redirecting some of the sets from the assembly line.

~~SECRET~~

given a ground-monitoring capability. General Momyer nevertheless believed such capability would deepen the pilot's understanding of his role in specific ground battles and enhance his performance. Accordingly, Seventh Air Force submitted SEAOR 143 in July 1968 to install a VHF/FM set in F-100's and F-4's. PACAF approved the request but changed it to a required operational capability (ROC)* on advice of TAC. A SEAOR review conference canceled the ROC in September as not absolutely essential for combat operations.† So through 1970 the FAC continued to handle coordination between strike aircraft and the ground.¹²

O-1 Shortage--Its Drawbacks

On 1 January 1965 the Air Force owned just 22 O-1's in Southeast Asia. Since each of the four tactical air support squadrons was authorized 30 aircraft, the shortage stood at 98. By July, however, the Army had transferred 49 O-1's to the Air Force and by November had filled the squadrons' quotas.¹³ Meanwhile, the expanding air war generated heavier demands for close air support, creating another critical shortage in FAC aircraft.¹⁴

The O-1's slow speed aggravated the shortage. At an 85-knot cruise speed, it could not react quickly and in concert with the faster/higher-flying A-1's and the jet fighters newly introduced to the war. The O-1 FAC, for example, required at least 30 minutes to reach a ground unit only 45 miles away. To trim response time, FAC's and aircraft were dispersed to forward operating locations, but there were not enough O-1's to man all 53 FOL's. The 2d Air Division at one point authorized use of Army HU-1B helicopters for carrying the FAC and a Province Chief who approved requests for immediate air strikes.¹⁵ Army units also employed at times their own O-1's and pilot-observers for forward air control.¹⁶

Despite the shortage, the O-1's drawbacks discouraged its further production as a first-line FAC aircraft. Slow speed and no armor made the O-1 fair game for enemy gunners, especially during pullup from a marking pass or low-level target-identification run. Though the pullup usually began at 120 knots and a 750-foot-per-minute rate of climb, both airspeed and climb rate deteriorated

*A ROC is a capability recommended as desirable but not absolutely essential for successful completion of a mission.

†Between April-August 1966 the Air Force trained 79 Army O-1 pilots as target spotters for close air support missions.

rapidly. Mountainous terrain similarly threatened the O-1, which didn't have the extra power to counter wind sheers* and down-drafts. Lastly, sparse navigation gear--a low-frequency automatic direction finder (ADF) and marker beacon--rendered the O-1 unsuitable for flying at night and in bad weather.¹⁷

Upon activation of the 23d Tactical Air Support Squadron in 1966, Seventh Air Force reevaluated FAC needs in men and aircraft. In September it came up with a requirement of 245 O-1's which could not be filled.¹⁸ Relief awaited arrival of the O-2A FAC aircraft.

Advent of the O-2A

The Air Force did not anticipate having sufficient OV-10's in Southeast Asia to replace the O-1 before 1968.¹⁹ It therefore chose the O-2A Super Skymaster as an off-the-shelf interim replacement, since it was readily available and required no major modifications. Finally arriving in SEA in 1967, the O-2A wound up supplementing rather than replacing the O-1 due to the great demand for FAC aircraft.

Careful screening preceded the Air Force's selection of the O-2A for FAC duty. The aircraft chosen had to meet certain USAF criteria: Be a 2-engine, passenger-carrying aircraft easily obtainable in large numbers; have an airspeed of at least 200 knots and a desirable loiter speed of 50 knots for visual reconnaissance; possess a rapid acceleration/climb ratio to enhance survivability; be very maneuverable.⁺²⁰ Air Force representatives examined nearly 100 models of civilian off-the-shelf aircraft. They eliminated all but

*Wind sheers result when winds from different directions collide. This usually resulted in turbulence in the air.

+PACAF wanted an aircraft with 400-knot airspeed but a 200-knot one permitted simpler design, ruggedness, and ease of maintenance. [Ltr (C), Brig Gen Robert F. Worley (TAC) to HQ USAF (AFXOP), subj: Concept of Operations for Airborne Forward Air Controllers, 21 Jun 65.]

seven which they tested at the Special Air Warfare Center.*²¹ None of them met all USAF specifications but the Cessna 337 came closest. Headquarters USAF picked the Cessna chiefly because it could be produced in quantity, had two engines, and cost less.²²

On 2 September 1966 Secretary of the Air Force Harold Brown sought permission to buy 145 O-2A's at a cost of \$14.3 million. Defense Secretary Robert S. McNamara granted the request on 14 October.²³ A few months later, Secretary Brown similarly secured 114 more O-2A's to offset high O-1 attrition rates and to take care of burgeoning O-2A needs in the Military Assistance Programs (MAP's) of South Vietnam, Thailand, Laos, and Korea.²⁴

Though not ideal for forward air control, the O-2A's advantages outweighed its disadvantages (See Fig. 1). Following a partial operational test and evaluation (OT&E) in the United States, the aircraft underwent testing in Southeast Asia during the spring and summer of 1967. The tests pointed up the O-2A's poor visibility, underpowered engines, insufficient armorplating, and weak TACAN⁺ response below 1,500 feet.²⁵ Inasmuch as acquisition of a totally new FAC aircraft was out of the question, these weaknesses had to be lived with.²⁶ Moreover, on the plus side, the O-2A featured two engines, adequate tunable radios, navigational and communications equipment for night operations, greater airspeed than the O-1, and a better target-marking capability with a built-in aiming device.²⁷

Phase-in of the O-2 commenced on 1 July 1967 with the 20th TASSq at Da Nang and its forward operating bases at Khe Sanh

*Planes tested comprised the: Turbo-Porter PC-6--utility, single-engine (Pilatus Flugzeugwerke AG, Switzerland); Turbo-Beaver (U-6)--liaison-administrative, high-wing (De Haviland Aircraft of Canada Ltd.); Helio Stallion--high wing, single turboprop engine, 10-passenger (Helio Aircraft Corp.); 206 Super Skywagon--utility, single-engine, similar to the O-1 (built by Cessna) but with more powerful engine (Cessna Aircraft Corp.); B-33 Debonair--single-engine, low-wing, 4-passenger (Beechcraft Aircraft Corp.); PA-32--single-engine (Piper Aircraft Corp.); 337 Skymaster--two in-line engines, 4-passenger, cargo space (Cessna Aircraft Corp.).

⁺TACAN is a tactical air navigation system consisting of short-range UHF radio stations. In the form of a readout on the instrument panel, the pilot continuously receives distance and bearing information from the particular station tuned.

~~SECRET~~

and Dong Ha. By the close of the year, the 23d TASSq at Nakhon Phanom, Thailand, was fully augmented with O-2A's, employing them mainly in the out-country war.²⁸

O-2A in a Night Role

The O-2A far excelled the O-1 in night forward air control. It possessed: TACAN-distance measuring equipment (DME); area direction finder (ADF); identification, friend or foe (IFF),* rotating beacon, and navigation lights. The TACAN-DME teamed with the VOR to tell the pilot distance and direction from a VHF radio range. The ADF gave him a directional radial off a low-frequency radio. Pulses from the IFF helped ground control radars identify and plot the plane's position. Other aircraft recognized the O-2A by its rotating beacon and navigation lights. Since red panel lights commonly used in aircraft caused canopy glare, the O-2A's white panel lights adjusted by rheostat and lit up only the instruments.²⁹

The enemy's expanded night activity in 1967 imposed a greater night FAC load on the O-1's and O-2A's. Because of this, the Air Force in December deployed to SEA an evaluation team and an O-2A fitted with new avionics equipment. For 6 months the team studied how well the O-2A dispensed its flares, detected targets at night with the Eyeglass,⁺ and illuminated and designated targets using a laser device that tied in with the laser-seeker system in strike aircraft.³⁰

Phase I of the evaluation required the O-2A to seek out and acquire a target with the Eyeglass, using flares and marker rockets to illuminate and mark it. Phase II brought into play the aircraft's laser designator/seeker working in total darkness with laser-equipped strike aircraft. Phase III repeated Phase II but added flares. Overall evaluation results revealed night operations feasible under

*The glossary describes these aids which were also found on the Cessna 337, civilian version of the O-2A.

⁺The Eyeglass was a night observation device (NOD)--also called a starlight scope--which intensified images through use of ambient (surrounding) moonlight or starlight to detect targets. The Eyeglass could compensate for the motion of images due, for example, to aircraft vibration.

~~SECRET~~

O-2A ADVANTAGES AND DISADVANTAGES

<u>Advantages</u>	<u>Disadvantages</u>
Two engines	Poor visibility--side-by-side seating forced constant turn to right for view of that side; enemy could predict flight path
Improved zoom and climb rates	
Larger fuel tanks permitted aircraft to remain aloft up to 6 hours	Two engines underpowered--marginal airborne operations on front engine alone
Greater speed--up to 150 knots	
Aiming device for target-marking	Insufficient armorplating--poor protection for lower torso and thighs
Four ordnance stations--carried up to 350 pounds and also minigun pod, rocket launchers, flare dispensers, and optical gunsight	Landing gear too weak for FOL's
Night operations capability with navigation, communications, and identification equipment as required	Foreign object damage high due to front engine throwing objects into rear one
Smoke-generating capability	High gross weight (4,850 pounds) limited FOL operation--needed minimum 2,000-foot runway
KB-18 strike camera	Too little electrical power to run all equipment simultaneously
14 marker rocket	TACAN weak below 1,500 feet
Tunable UHF/VHF radios	

Figure 1 (U)

(This page is Unclassified)

~~SECRET~~

Phases I and II.³¹ With the Eyeglass alone, however, the O-2A could detect and acquire targets only if moonlight or starlight was bright enough. A combination of laser designator/seeker and Eyeglass proved best suited for covert operations. Weight of the avionics gear became a pesky major problem during the tests--the Eyeglass weighing 137 pounds. This overload could be dangerous if the rear (pusher) engine gave out since the front (puller) engine alone couldn't keep the O-2A aloft. Consequently, fuel load, flares, and marking rockets were reduced which weakened night time capability.³² An outgrowth of the evaluation was installation of a lighter Eyeglass in a number of O-2A's. The OV-10 rather than the O-2A later received the laser designator/seeker system.

The OV-10

When the OV-10 Bronco moved off the drawing boards in 1965, Department of Defense (DOD) planners believed the search for an effective and flexible counterinsurgency (COIN) aircraft was over. The OV-10 made its maiden flight on 15 July 1965. A short time later, Gen. John P. McConnell, Air Force Chief of Staff, tentatively requested 383 OV-10's for an armed reconnaissance, close air support, visual reconnaissance, and light cargo role. In December 1965 Secretary of Defense Robert S. McNamara decided the Air Force would begin receiving OV-10's in February 1967. He stipulated that the first 157* replace aging USAF O-1's in SEA--DOD's austerity program having snuffed out Air Force prospects for purely a FAC aircraft.³³

Seventh Air Force preferred these features in a new FAC aircraft: armorplating; over 1,000-foot-per-minute rate of climb; airspeed of 250-300 knots; maximum endurance of 4 hours; high maneuverability; ability to carry a pilot, observer, and 200 pounds of cargo; designed to operate from short airfields and unimproved runways; instrument-flying equipment including TACAN, tunable radios, and two FM sets; two turboprop engines with single-engine capability; limited armament; and self-sealing fuel tanks.³⁴ The OV-10 filled most of these requirements admirably (See Fig. 2).

*The Air Force pared this number to 109 in 1967, freeing the remainder for its worldwide COIN operations. [Hists (S), TAC, Jul-Dec 1966, I, 375 and Jul-Dec 1967, I, 690-91.]

~~SECRET~~

OV-10 CHARACTERISTICS

Armorplating--328 pounds, in the backs of seats and along the bottom	Multitarget marking ability, carrying more rockets and flares than any other FAC aircraft--four LAU-59 rocket launchers (seven rockets each) or four B-37K flare dispensers (eight Mk-24 flares each), or a combination of both
High (400-knot) dive and zoom capability	Increased visibility due to bubble canopy being set well in front of the high wing and engines
Rapid point-to-point cruise speed--150-180 knots	High-altitude rendezvous (10,000 feet)
Two-place, tandem cockpit with zero-zero ejection capability	Effective smoke-generating ability
Cargo capacity of 3,000 pounds	A 150- or 230-gallon fuel tank on a centerline station
Tricycle landing gear designed for operation from rough terrain	Less engine noise than the O-2A, making it harder to detect
Night/all-weather instrumentation including TACAN, tunable radios, and two FM sets	Better maneuverability and evasive action than the O-1; could jink while gaining altitude, although it could not turn as sharply as the smaller, slower O-1.
Two turboprop engines with more-than-adequate single-engine capability	
Armament: Four M-60 machineguns with 5 armament stations to carry 3,600 pounds of ordnance; could also expend high-explosive (HE) rockets, napalm, and cluster bomb units (CBU's)	

Figure 2 (U)

(This page is Unclassified)

Testing and Evaluation

The OV-10 Bronco underwent the most complete combat testing of any aircraft since World War II. During 19-21 January 1967, General Disosway, TAC Commander, and his staff flew the test model YOYV-10. Disosway liked the aircraft but wanted a limited evaluation in Southeast Asia to gauge its combat performance. The desired operational test and evaluation did not get under way in 1967, however. Results of an All-Service Evaluation Group test of the OV-10 (in which TAC joined)* led to more work on the aircraft. This delayed its original delivery date--and in turn the OT&E--until early 1968. In the interim, the Air Staff decided all USAF OV-10's would be assigned solely to forward air controller duty.³⁵

The first of the OT&E's two phases kicked off at Eglin on 15 March 1968 and ran a little past the end of June. The 4409th CCT handled this phase which measured the OV-10's operational usefulness and shaped its tactics and techniques. The Bronco flew 219 sorties (281.7 hours) from many types of airfields under severe conditions, simulating FAC functions of the in-country/out-country war.³⁶

Lt Col Stuart E. Kane commanded the team that deployed to SEA on 6 July 1968 to conduct the second (Combat Bronco) phase of the OT&E. The team's task was to find out if the OV-10 as a FAC aircraft could support "PACAF/7AF combat objectives in Southeast Asia."³⁷ The six OV-10's and most of the maintenance/operations personnel moving to SEA with the team were slated to stay in-theater after the test ended--a nucleus for continuing Bronco operations.³⁸

The Combat Bronco team spent the first 15 days at the Lai Khe forward operating location. It used its own TACP to support the 3d Brigade, 1st Division, and to augment the regularly assigned FAC's at brigade headquarters. Next, while attached to the 19th TASSq,

*The test took place at the Navy's Patuxent River Air Test Center in Maryland.

+ These aircraft and personnel were attached to the 19th Tactical Air Support Squadron, 504th Tactical Air Support Group, at Bien Hoa. They were integrated into the FAC operations force under control of the III Direct Air Support Center.

the team supported several U. S. Army units in the III Corps area. It flew out of five FOL's to test the Bronco on short runways, under marginal ground-operating conditions, and in austere maintenance situations.³⁹ The team's daily schedule called for 12 hours of airborne activity in addition to night ground alert. The OV-10 flew night airstrike control, visual reconnaissance, artillery adjustment, bomb damage assessment (BDA), gunship control, as well as escort for convoys and Ranch Hand defoliation/herbicide operations. The Bronco logged more than 1,000 hours in 552 FAC and visual reconnaissance sorties. Since flights were over unfamiliar terrain, the OV-10 almost always carried a 2-man team. One pilot flew the Bronco and made observations, the other performed visual observation and jotted down team findings.⁴⁰

The evaluation underscored the OV-10's target-marking speed. On one mission, for example, the Bronco FAC rendezvoused with the strike aircraft at 10,000 feet, some distance from the target area. The FAC moved in, acquired the target, and then commenced his marking run on a prebriefed strike heading. (The lead fighter meanwhile rolled into position, ready for the first run as soon as marking was completed.) After firing a marker rocket at 5,000 feet, the FAC completed a full 180° climbing turn before the rocket impacted. Upon roll-out, he observed the rocket's smoke and gave necessary corrections and information while visually acquiring the first fighter now on its run-in. Just 20 seconds elapsed between target-marking and ordnance drop.⁴¹

Combat Bronco likewise underlined OV-10 versatility in flare operations. On a typical night mission, the Bronco FAC dropped the initial flare on a TACAN radial and DME fix corresponding with the target coordinates. Light from this one flare enabled the FAC to acquire the target and to join up with the strike aircraft. Follow-on flaredrops permitted successful completion of the strike mission.⁴²

When Combat Bronco ended in October 1968, the evaluation team found the OV-10 overall "quite satisfactory" for its FAC mission. The aircraft got "very good" marks in maneuverability, response, visibility, range, and flexibility. The Bronco could, for example, rendezvous at 10,000 feet and lead strike aircraft to the target with little or no warning to the enemy. (This feat was difficult for the O-2A and well nigh impossible for the O-1.) The OV-10's radio communications equipment afforded the crew constant

~~SECRET~~

contact with the ground and simultaneously with the DASC and strike aircraft. FM homing let the aircraft follow a radial "right into the transmitter"--a help in identifying ground troops. By retransmitting information from the ground, the OV-10 could assist linkup of widely separated units. Its smoke-generating capability rendered the Bronco easier to detect by strike aircraft during rendezvous. But there was a minus side. The OV-10's large canopy let the sun shine mercilessly in, creating a "greenhouse effect." Also, front-seat intercommunications were located on the right panel, which required the pilot either to release the flight controls or switch hands to make radio adjustments. Finally, the Bronco had trouble getting in and out of FOL's safely (it needed a 2,000-foot runway)--hence any mechanical malfunction meant a return to home base.⁴³

The Combat Bronco team rated the three night missions satisfactory but with minor reservations. It considered starlight-scope operation marginal due in part to glare from the front-cockpit panel lights. Although the scope picked up lights and streams when aimed at a 45° angle, when rotated up toward 90° its picture dimmed. To deal with the problem, the team suggested the OV-10 fly a 20° bank and that curtains be hung between the two cockpits. It further recommended a compass for the rear seat to keep the observer oriented while he described a sighting.^{*44}

*OV-10 crewmembers later faulted the aircraft for deficiencies detected during Combat Bronco and these as well: poor ventilation heightened discomfort on hot days (to prevent dehydration, lots of water had to be carried and sortie length curtailed); exterior noise (lower than that of other FAC aircraft) still rose to 125 decibels with canopy closed during flight and could cause hearing loss or failure to hear ground fire; starlight scope proved difficult to operate from rear seat and distortion from propellers hampered its effectiveness; lack of a reliable attitude gyro and other directional instruments in rear seat contributed to the potential of disorientation--especially at night; instructor in rear seat could not monitor front-seat activities during training. Modifications gradually corrected the OV-10's shortcomings except for: canopy glare; too little ventilation; high noise level; and inability to use runways shorter than 2,000 feet.

~~SECRET~~

Integration of OV-10's (as they became available) throughout the 504th Tactical Air Support Group followed hard on the heels of Combat Bronco. The six Broncos used in the evaluation had been airlifted to SEA. The remainder, swathed in plastic styrofoam, were sea-lifted to Cam Ranh Bay for processing and parceling out to 504th units. The first OV-10's went to the 19th TASSq (Bien Hoa), 20th TASSq (Da Nang), 23d TASSq (Nakhon Phanom), and the Theater Indoctrination School (Phan Rang). Of the total 157 OV-10's built for the Air Force, 98 were operating in SEA by October 1970.⁴⁵

Other FAC Aircraft

(U) During 1965-1970 the O-1, O-2, and OV-10 formed the backbone of forward air control operations in Southeast Asia. When the need arose, however, other aircraft performed FAC duty in addition to their primary role.

Helicopter

The dearth of O-1's in late 1965 forced FAC's to fly helicopters in support of the 1st Cavalry Division. In this and similar situations, the helicopter worked well in a pure FAC role--yet it was never widely used. A chief reason lay in the 1966 agreement by which the Air Force entirely surrendered the helicopter to the Army except for specific operations such as search and rescue. An All Commands FAC Conference (24-30 September 1968) discussed the helicopter--especially the Huey Cobra (AH-1G)--as a FAC aircraft. The helicopter could direct aircraft, defend airbases, dispense with runways, and loiter at speeds of 0-160 knots. It could pick up downed pilots quickly, thus avoiding enemy traps rescue helicopters might later run into. With engine dead, it could still autorotate to a safe landing. On the other hand, FAC's had trouble marking targets from the helicopter. Moreover, its low airspeed and hovering operation made it fair game for enemy gunners. In light of these drawbacks and the 1966 agreement, the conference refrained from recommending the helicopter as a FAC aircraft.⁴⁶

AC-47 and A-26K

Seventh Air Force tapped the AC-47 (Spooky) gunship in December 1965 for FAC duty because of the O-1's weaknesses in night operations.* The AC-47 could carry ample flares but proved

*The O-2A would not arrive in SEA until 1967, the OV-10 in 1968.

~~SECRET~~

TABLE 4

FAC AIRCRAFT REQUIREMENTS

	<u>O-1</u>		<u>O-2A/B</u>		<u>OV-10</u>	
	<u>Authorized</u>	<u>Possessed</u>	<u>Authorized</u>	<u>Possessed</u>	<u>Authorized</u>	<u>Possessed</u>
April 1965		18				
July 1965	60	50				
October 1965	120	127				
January 1966	120	118				
April 1966	120	136				
July 1966	150	130				
October 1966	219	167				
January 1967	245	220				
April 1967	242	208				
July 1967	250	202	18	18		
October 1967	250	195	18	76		
January 1968	220	182	48	132		
April 1968	220	165	130	174		
July 1968	170	147	140	162		
October 1968	167	159	143	158		15
January 1969	128	157	159	151	35	27
April 1969	135	151	208	144	91	47
July 1969	131	128	163	162	96	98
October 1969	121	108	203	207	96	118
January 1970	46	91	241	243	94	113
April 1970	66	79	207	261	96	108
July 1970	65	72	198	247	83	103
October 1970	65	61	180	219	96	98
January 1971	57	45	198	204	96	94
April 1971	0	14	187	199	96	92
July 1971	0	0	186	186	93	90

SOURCE: USAF Management Summary for SEA (S) and PACAF Source Status of Forces Report (S) for applicable months.

~~SECRET~~

ill-suited for forward air control. The view from the cockpit was poor. The Spooky also maneuvered too slowly and failed to mark targets accurately.⁴⁷ Even so, the AC-47 did a creditable FAC job over the Ho Chi Minh Trail as well as an excellent one in disrupting enemy supply movements. The Spookies were nevertheless shifted to hamlet defense in July 1966 after enemy anti-aircraft (AA) fire had downed four of them. A few faster, armor-plated A-26K's replaced the AC-47's over the Trail.⁴⁸ They performed little FAC work, being mainly engaged in truck-killing and close air support.

C-130

● The C-130 commenced night surveillance as a flare-ship/forward air controller during the 1967 interdiction campaign. As 24-hour surveillance of the Trail's major road junctions evolved, the O-1 did day duty while the C-130 became the night workhorse. This ponderous aircraft possessed a seemingly unlimited capability to keep an area lighted up with flares. It could also direct airstrikes adequately in lightly defended areas. In the guise of the AC-130 (Spectre) gunship, the C-130 added armed reconnaissance to its flare-ship/FAC roles.⁴⁹

C-123

● When enemy night traffic mounted on the Trail in 1966-67, Seventh Air Force called on the C-123 (Candlestick) for night reconnaissance/FAC duty. Candlestick performance overshadowed that of the O-2A and C-130. From November 1967 to August 1968, C-123 crews handled more than 50 percent of all strike aircraft controlled during night-interdiction campaigns in Southern Laos. The Candlestick's on-station time averaged over 6 hours per mission, allowing better traffic-following and target-development than other FAC aircraft. However, the C-123 was too slow and vulnerable to survive in heavily defended areas.

AC-119G

● The AC-119G (Shadow) gunship rendered FAC service in the 1968-69 interdiction campaign--reconnoitering, flaring, marking targets, and directing airstrikes. The Shadow's performance nevertheless became marginal and dangerous because the gunship had to fly

a continuous orbit to keep strike aircraft and target in view. While in orbit, the AC-119G's size and slow speed invited enemy ground fire. Col. Conrad S. Allman, 14th Special Operations Wing (SOWg) Commander, accordingly recommended in March 1969 that the Shadow no longer do FAC duty.⁵¹

Single-Engine

U-17's, T-28's, and A-1's performed forward air controller duty at times in South Vietnam but more so in Laos. A-1 pilots flew dual missions--they completed their own strikes, then directed other strike aircraft in the target area. By late 1967, jet FAC's operated in the high-threat areas of North Vietnam and Laos. Their superior speed and maneuverability convinced the enemy he could no longer hide behind AA defenses.⁵²

IV. COORDINATING THE FAC FORCE

(U) During 1965-1970 the Air Force worked to improve coordination of its growing FAC force and to centralize control* of all close air support in the theater. Expansion of the force in SEA spawned unit changes and eventual assignment of all FAC's⁺ to the 504th Tactical Air Support Group. Command-relationship problems between the 504th and USAF managers of the Tactical Air Control System cropped up but were ironed out. Establishing centralized control of close air support posed a thornier problem. Both the U. S. Army and Marines were opposed to it, insisting that ground commanders should have the final say on use of tactical air. This issue became the subject of several meetings and many messages moving through the command chain. Notwithstanding the opposition of the Army and Marines, the decisive push toward a centralized control system came after setbacks in battle--the result of poorly coordinated close air support. The system in force by 1970 was not ideal but did go far in coordinating and integrating close air support.

FAC Units Expand

As noted earlier, the March 1965 visit of General Wheeler, Chairman of the JCS prompted the Air Force to augment the 19th Tactical Air Support Squadron by September with the 20th, 21st, and 22d TASSq's. As part of the Tactical Air Control System, each support squadron was collocated with an Air Support Operations Center (later Direct Air Support Center) in a corps area (see Fig. 3). Two main operating bases supported these units: Nha Trang, the 20th and 21st; Binh Thuy, the 19th and 22d. Each squadron provided limited maintenance for aircraft at forward operating locations,¹ the MOB handling major repairs. The 19th, 21st, and 22d Squadrons operated almost entirely in-country while the 20th worked both in South Vietnam and out.

This expanding FAC force similarly triggered organizational changes. Before the buildup, the 34th Tactical Group commanded the

*In this chapter the terms "centralized control" and "single management" are used interchangeably.

⁺The single exception were jet FAC's assigned to fighter wings.

~~SECRET~~

DIRECT AIR SUPPORT CENTERS AND CORPS AREAS WITHIN SOUTH VIETNAM

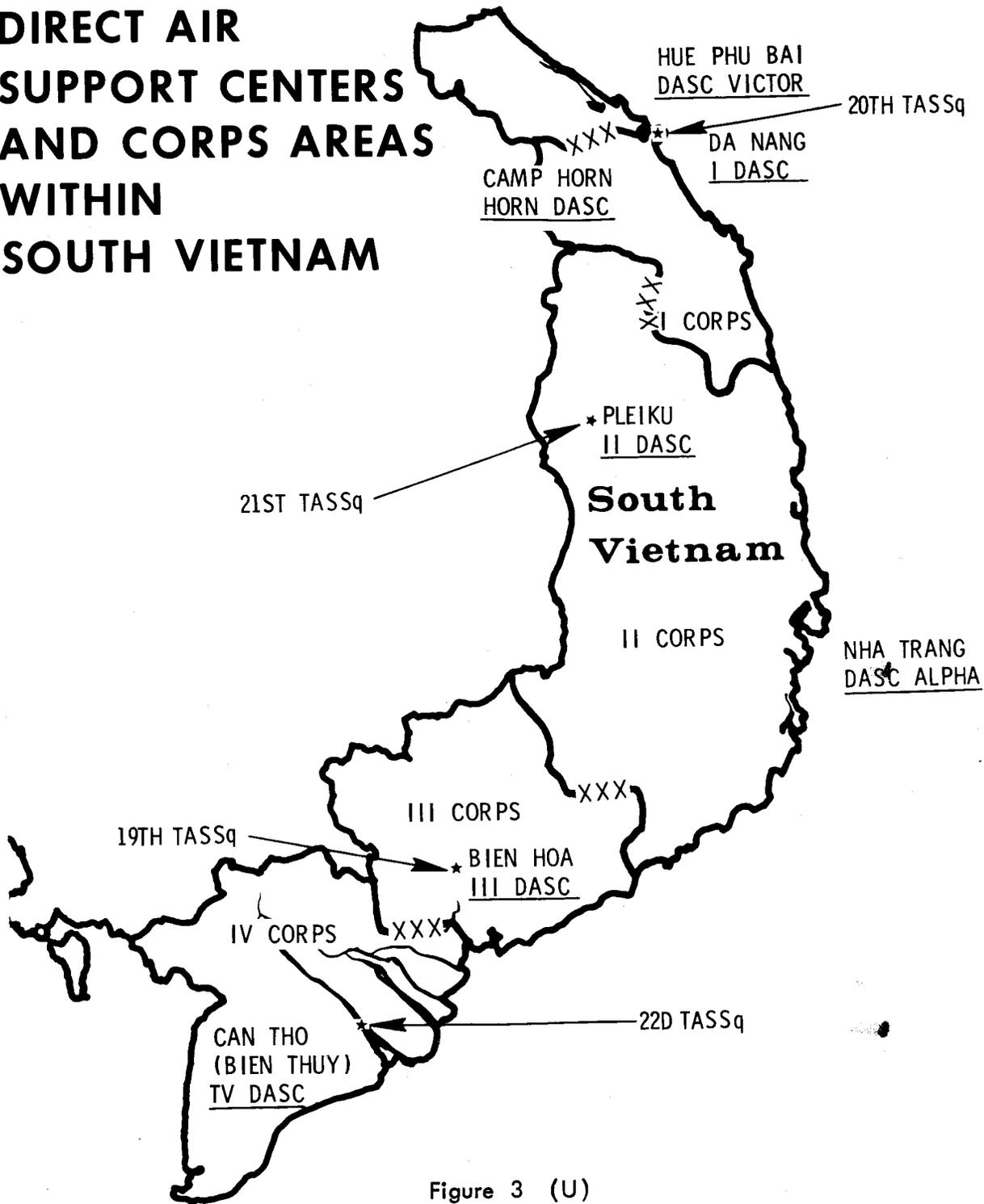


Figure 3 (U)

(This page is Unclassified)

~~SECRET~~

19th Tactical Air Support Squadron, the only FAC unit in SEA. On 1 August 1965, however, the 6250th Tactical Air Support Group (Provisional)* replaced the 34th Group.† The 6250th supervised and supported not only the tactical air support squadrons but the tactical control squadrons (TCSq's)‡ as well. On 8 November 1965, PACAF redesignated the 6250th as the 505th Tactical Control Group (TCGp). The 505th Group's support included squadron operations, supply, personnel, maintenance, administration, and materiel. 2

Organization/support problems of the 505th increased with the expansion of Steel Tiger operations in Southern Laos and North Vietnam. Detachment 1, 505th TCGp--organized on 17 January 1966 at Nakhon Phanom, Thailand--by 1 June had become the 23d Tactical Air Support Squadron. 3 The 505th span of control stretched razor-thin in the effort to support 10 squadrons** whose men and equipment were scattered throughout Southeast Asia. The fact that the functions of the TASSq's and TCSq's were not the same also hindered support. 4

Curbs on command authority likewise impeded the 505th Tactical Control Group. In a normal organization, the 505th would have retained operational control of the tactical air support squadrons. Not so in South Vietnam where such control reposed with the Direct Air Support Centers. This gave rise to some awkward situations. For example, the 505th Group--which was responsible for flying safety--had to explain flying incidents over which it had no control whatsoever. Similarly, preparation of officer effectiveness reports (OER's) became a sore point. As a rule, the immediate supervisor rates his officers,

*A provisional unit temporarily brings together personnel and equipment to achieve a specific mission. Personnel are on TDY from other units--not assigned. The commander has little judicial or administrative authority.

†Establishment of the 6250th Group came with the 1 August implementation of the Southeast Asia Integrated Tactical Air Control System (SEAITACS). Purpose of the SEAITACS was to coordinate for the Seventh Air Force Commander the several in- and out-country tactical air control systems in Southeast Asia.

‡Men and equipment for the aircraft control and warning (ACW) elements of the TACS came from the TCSq's.

**Five tactical air support squadrons, three tactical control squadrons, and two tactical control maintenance squadrons (TCMSq's).

~~SECRET~~

but in Southeast Asia the OER's were often written by officers at the DASC or other operational agencies with little or no first-hand knowledge of the individuals rated. Understandably, many FAC's considered the only valid OER's to be those prepared by their immediate supervisors in the field. The OER problem proved a persistent one.⁵

To resolve some of these problems, 505th Group headquarters proposed in the summer of 1966 that an air division be formed to supervise the tactical control/tactical air support units. Headquarters PACAF favored instead creating a new group to take over the tactical air support squadrons from the 505th. While awaiting approval of its proposal, PACAF on 9 September set up the 6250th Tactical Air Support Group (Provisional)--renumbered "6253d." On 8 December 1966, Headquarters USAF approved activation of the 504th Tactical Air Support Group. It took over from the 505th administrative control of the five tactical air support squadrons together with the 505th and 506th TCMSq's (located at Tan Son Nhut and Udorn AB, Thailand, respectively).⁶ Despite these actions, chain-of-command difficulties continued.*

The 504th Tactical Air Support Group served as the parent unit for all forward air controllers in Southeast Asia until its inactivation in March 1972. The group received an average of 80 new FAC's each month, sent most of them through the Theater Indoctrination School (which it operated), then on to FAC/ALO/SCAR duty. The 504th had its hands full supporting⁺ 70 farflung locations (ranging from squadrons to tactical air control parties) and coordinating with seven direct air support centers. Moreover, the 504th's FAC's in South Vietnam worked with U.S./free world forces in 2 field force headquarters, 10 divisions, 34 brigades, and 119 battalions. They further supported ARVN's 4 corps headquarters, 10 divisions, 43 provinces, and 63 special forces camps. Additionally, FAC's operated over North Vietnam and Laos as well as on special assignments--for example, with MACV's reconnaissance commando (RECONDO) teams.⁷ (See Fig. 4).

*For example, it was possible for a forward air controller assigned to the 5th Special Forces Group to be responsible to four individuals or agencies--his FAC superior, the 5th Special Forces commander, an ARVN commander, and the DASC. He also could receive instructions from MACV.

⁺The group furnished ground communications equipment, standardization programs, personnel manning, and logistic support.

~~SECRET~~

COMMAND, OPERATIONAL CONTROL, AND SUPPORT OF FAC UNITS IN SOUTHEAST ASIA

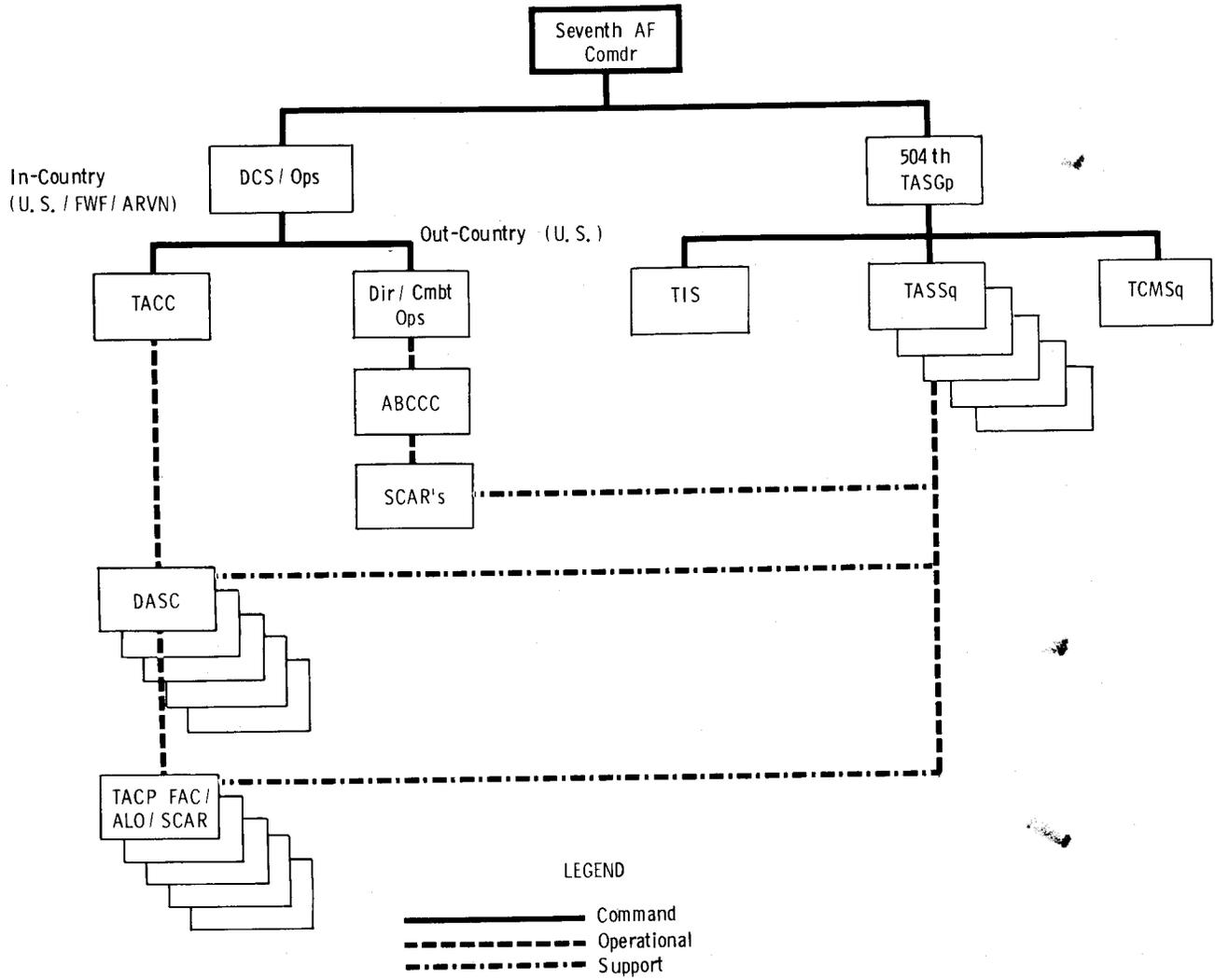


Figure 4 (C)

(This page is Confidential)

~~SECRET~~

Forward air controllers of the 504th TASGp flew a prodigious number of combat missions in Southeast Asia. They accounted for more than one-third of the total combat hours flown by Seventh Air Force pilots from 1967 through 1969. Over a 5-year span, they flew 850,000 sorties and averaged between 25,000-30,000 combat flying hours per month--40 percent of all flying time in Seventh Air Force.* At the same time, the 504th supported 800 forward air controllers and 400 FAC aircraft.⁸

Command and Control[†]

Besides the command-relationship problems between 504th Group and the Tactical Air Control System, the existence of several other systems undercut crisp, coordinated command and control. Things were fairly simple before 1965 with one joint USAF/VNAF system coordinating air/ground activities in South Vietnam. Complications followed expansion of U.S. air power beyond South Vietnam's borders. In Thailand, for example, the Thais had their own control system, while Seventh/Thirteenth Air Force operations came under Seventh's Directorate of Combat Operations. Three tactical air control systems operated in South Vietnam--the Air Force's, the VNAF's, and one run by III Marine Amphibious Force (MAF) out of I Corps. In theory, the Southeast Asia Integrated Tactical Air Control System was supposed to pull the TACS's together. In practice, however, the Marines operated very much on their own.[‡]

In addition, the Army had its own Air-Ground System (AAGS), which processed and coordinated (at every command level) requests for fire support or reconnaissance. Ground commanders used the AAGS to determine helicopter gunship/artillery support availability before requesting Air Force close air support.¹⁰

In a move toward centralized control, in May 1966 (See Fig. 5), MACV organized the Joint Air-Ground Operations System (JAGOS).

*The totals omit the flying hours of crewmembers acting as FAC's in jets, flareships and gunships.

[†]Riley Sunderland gives a brief history of command and control procedures used in close air support in Evolution of Command and Control Doctrine for Close Air Support (U) (Ofc/AF History, Mar 1973).

[‡]U.S. Navy aircraft from carriers in the Gulf of Tonkin were controlled by the Air Force TACS during joint operations.

~~SECRET~~

MILITARY ASSISTANCE COMMAND VIETNAM JOINT AIR-GROUND OPERATIONS SYSTEM (JAGOS)

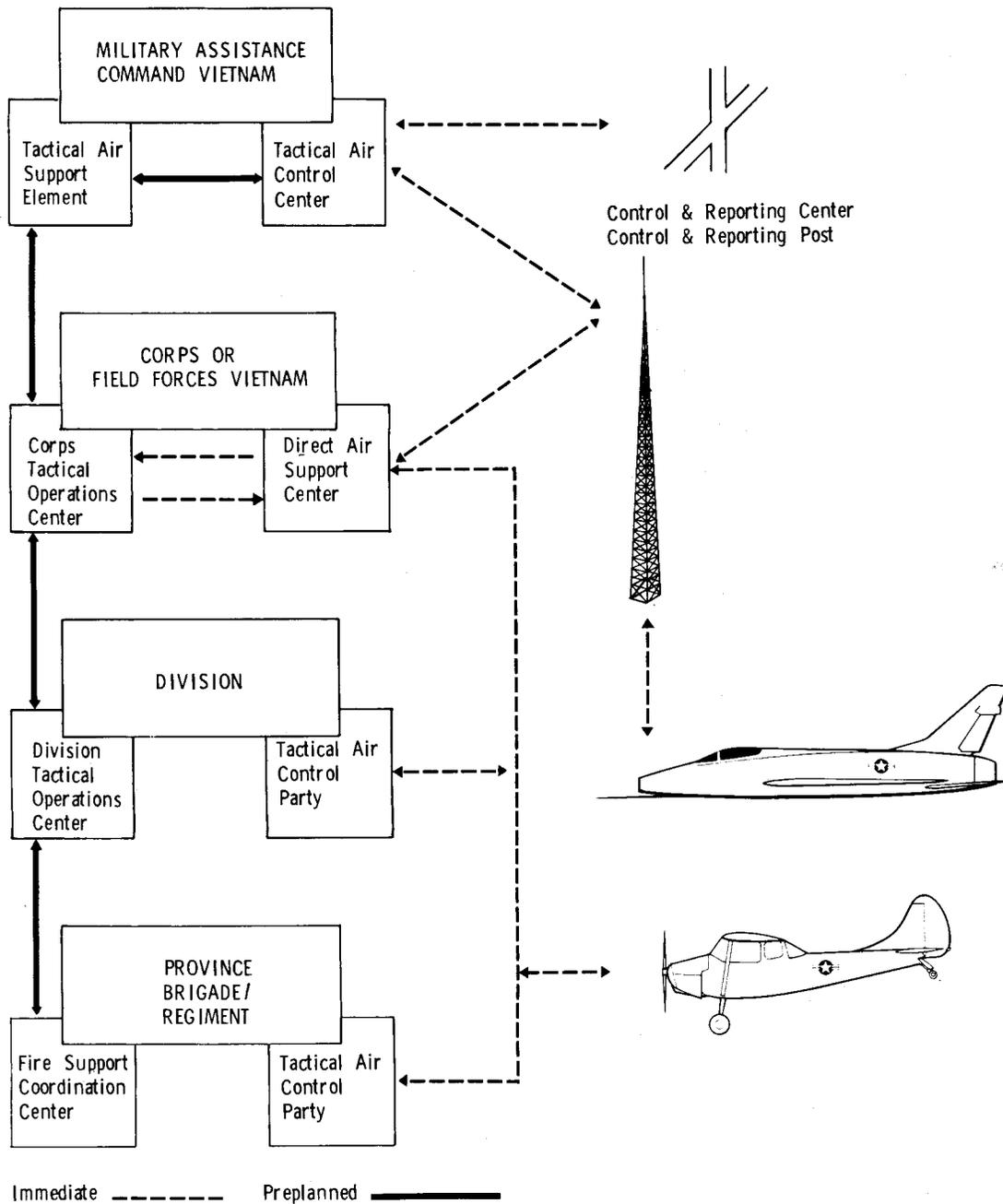


Figure 5 (U)

~~SECRET~~

It aimed at close-knit coordination between the Army and Air Force systems. Under JAGOS, an Army Tactical Air Support Element (TASE) was set up at the MACV Combat Operations Center (COC) right next to the Strike Plans Branch in the Tactical Air Control Center. The Army element chiefly sorted out requests for air support and coordinating with officers in the Air Force center, allocated air sorties to ground commanders as priorities permitted. Further, the Army element assigned Army Ground Liaison Officers (GLO's) to Air Force tactical fighter units to advise them on the combat situation and needs of troops seeking close air support. These Army officers briefed strike pilots before their takeoff on a strike mission and debriefed them after landing. By the same token, the Army G-2/G-3 Air (Intelligence and Operations) at corps and division--S-2/S-3 Air at brigade, regiment, and battalion--teamed up with their Air Force counterparts at Direct Air Support Centers and Tactical Air Control Party levels. As air-ground teams they assisted their respective commanders in coordinating tactical air support with other ground support elements. The goal was improved coordination and response to ground-troop needs.¹¹

Over and above coordinating air support, the Tactical Air Control System prepared the VNAF to eventually take over the program. A VNAF colonel, for example, served as titular director of the TACC with an Air Force officer his deputy. This dual operation extended throughout the system except in DASC's Alpha and Victor. The latter were completely USAF-manned because neither the VNAF nor ARVN operated in their tactical areas of responsibility (TAOR's). Within the TACC itself, the VNAF fragged its own aircraft with assistance from Air Force personnel.¹²

Operation of the TACS

(U) As eyes and ears of the Tactical Air Control System the forward air controllers sought out and acquired targets then directed strike aircraft to hit them. FAC activity actually began in the Tactical Air Control Center which planned and coordinated tactical air and speeded the frag orders. Each Direct Air Support Center, an extension of the TACC, reacted at once to a ground commander's request for close air support. The DASC also coordinated reconnaissance, B-52, herbicide, and psychological (PSYOP) operations.¹³

The system for processing preplanned or immediate requests for air support differed little from that developed in 1964 under

~~SECRET~~

Lt. Gen. Joseph H. Moore, 2d Air Division Commander. * A ground commander sent a preplanned request⁺ for air support through battalion and on up the Army command chain (See Fig. 6). The S-2/S-3 Air (regiment/brigade) and G-2/G-3 Air (division) approved or disapproved the request after coordinating with their ARVN/province counterparts. Air Force ALO's monitored the request's progress and furnished advice as needed. The TASE reviewed all preplanned requests and together with the TACC assigned target priorities and allocated air sorties.¹⁴

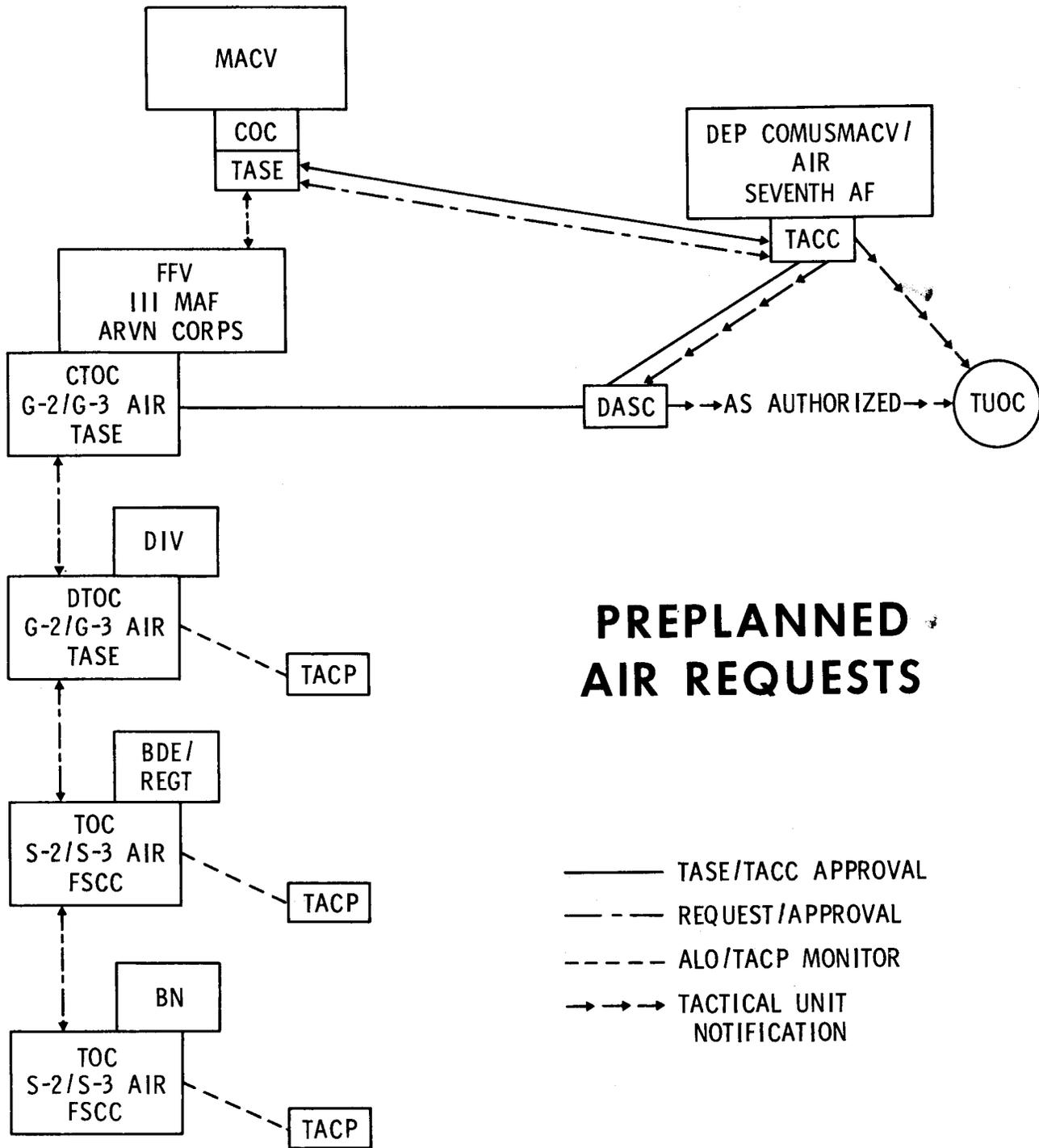
A ground commander's immediate request[†] for air support traveled the much swifter TACS route (See Fig. 7). The battalion TACP radioed the request direct to the Direct Air Support Center which took the first steps in arranging for strike aircraft. The TACP's/tactical operation centers (TOC's) at regiment/brigade and division monitored the immediate request, registering any disapproval within a 5-minute limit. In case of disapproval, the battalion Tactical Air Control Party notified the DASC to cancel the request. Otherwise, the DASC cleared the request with the corps tactical operations center (CTOC). It next either diverted aircraft already airborne to the target or asked the TACC to scramble strike aircraft.¹⁵

Adoption of the Joint Air-Ground Operations System (Fig. 5) in May 1966 had tightened up coordination of tactical air support. It kept MACV and Seventh Air Force posted on all air activity through the TASE at the Combat Operations Center and the TACC at Seventh Air Force headquarters. It also made it easier to adjust airpower allocations to the shifting demands of the war. The TACC at first daily fragged virtually all preplanned sorties to support corps-level operations according to COMUSMACV priorities. Corps commanders

* For a discussion of the 1964 system, see Rowley, USAF FAC Operations in Southeast Asia 1961-1965, pp 70-71.

⁺ A preplanned request was one submitted 3 hours in advance of the time air support was required.

[†] An ARVN commander had to have agreement of his U.S. Army adviser before forwarding an immediate request for air support. In contrast, a U.S. Army commander seldom needed ARVN/province approval of his immediate requests. This was due to the Army's operating chiefly in the more hostile areas commonly free of Vietnamese troops or friendly civilians.



PREPLANNED AIR REQUESTS

Figure 6 (S)

IMMEDIATE AIR REQUESTS

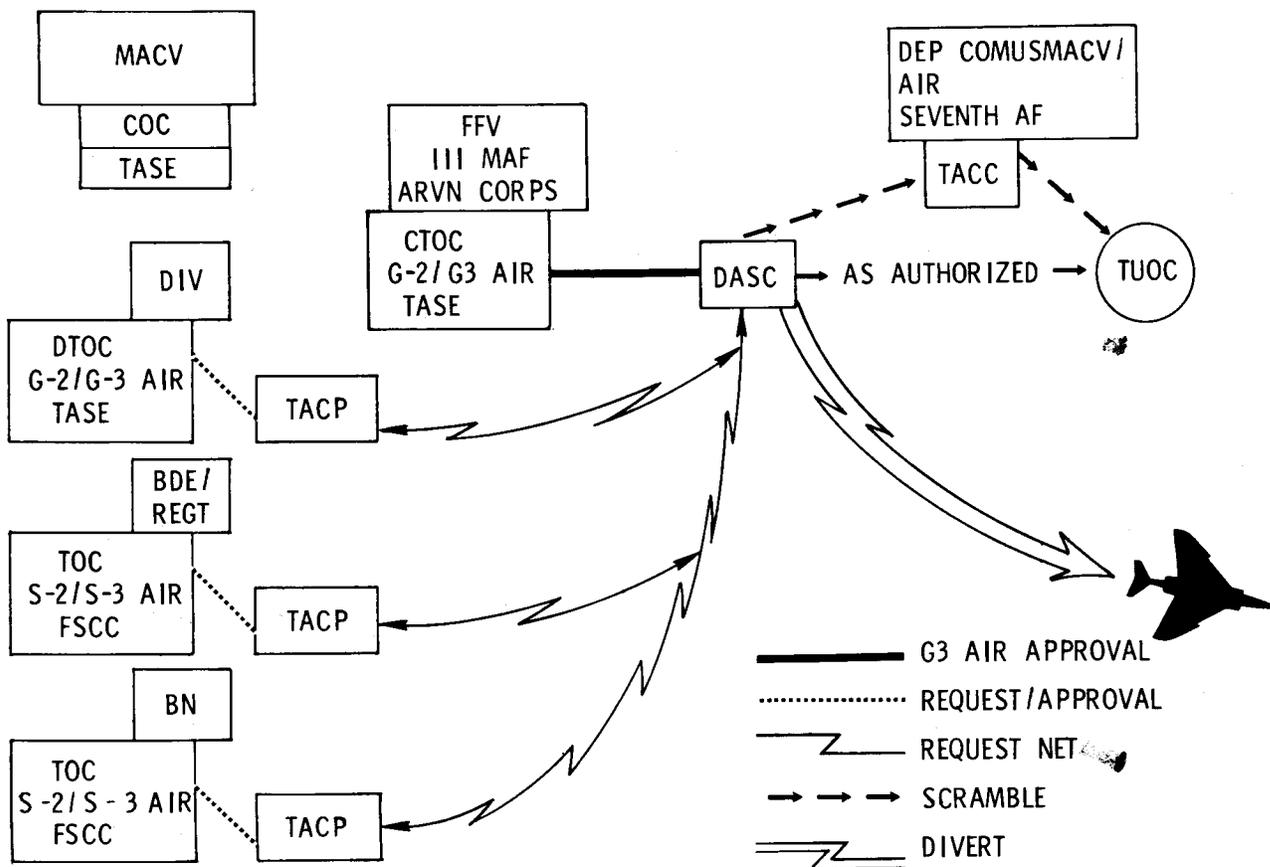


Figure 7 (S)

used the sorties as they saw fit but in line with air support requests of their lower units. From 30 May 1968 on, however, the TACC fragged only 70 percent of all preplanned sorties to corps-level and issued weekly rather than daily frag orders.* This enabled corps commanders to plan air support requirements further in advance. The TACC fragged the remaining 30 percent of preplanned sorties to meet unexpected situations. Consequently, COMUSMACV was able to mass strike aircraft in a threatened area with no need to draw on sorties already allocated to corps level commanders.⁺¹⁶

Army-Air Force Differences Over Centralized
Air Control

(●) In spite of the improvements afforded by the JAGOS and integrated TACS, coordination of tactical air power still didn't run smoothly. The root cause, embedded in Army/Air Force doctrinal differences, was how best to control direct air support. The Air Force believed strongly in centralization, the Army was for decentralization. These disparate views intruded upon Army-Air Force relationships at the higher command levels. On the other hand, field commanders were too wrapped up in immediate combat problems to worry over who set the priorities for or directed air support. What really mattered to them was getting the support when and where needed.¹⁷

(●) The commanders and staffs at higher echelons shared this combat-level view of close air support. They nevertheless had to fit it into the greater goal of extracting the last drop of effectiveness from the limited air power available. The Air Force insisted centralized control was the answer. Air support would be parceled out by

*Sorties were apportioned according to geography, terrain features, friendly forces strength, artillery support available, and mobility of ground units supported.

⁺Before 30 May 1968, preplanned request information included: request number, priority assigned by battalion commander, target coordinates, target description, desired time-over-target (TOT), latest acceptable TOT, desired results, and recommended ordnance. After 30 May, the preplanned request asked solely for: target description or identification of supported operation, number of sorties needed, and time over initial point (IP). [Wade, Seventh Air Force TACC Operations, p 14; Sunderland, Evolution of Command and Control Doctrine for Close Air Support, p 46.]

priority to units needing it so as to achieve better adjustment and use of air reserves and to prevent any overlap of support. The Army argued for decentralized control, preferring a specific allocation of air resources which the ground commander would more directly control. Thus, he would have at hand air support to meet any emergency that couldn't be handled by organic artillery, helicopter gunships, and light surveillance aircraft. Finally, the Army believed decentralization could more easily tie this complete support package together.¹⁸

(U) In South Vietnam the Army did exercise decentralized control over its organic firepower and air support. As a result, however, coordination between the fire support coordination centers (FSCC's) and the TACS suffered. The former, for example, would issue radio warnings to aircraft in the vicinity to stay clear of a given combat action. However, low flying Air Force forward air controllers carrying out visual reconnaissance and directing close air support in neighboring operations did not always hear the warnings.* Mission reports told of many near-misses involving FAC's and Army helicopters/surveillance aircraft and of FAC's straying into artillery firezones. Closer coordination between FSCC's and the TACS could have cured the problem.¹⁹

(S) Army-Air Force coordination weaknesses, highlighted during Operation Hawthorne, underscored the need for centralized control of air/ground fire support. The operation took place from 2 to 21 June 1966 in Kontum Province in the north-central highlands of South Vietnam. Five battalions and two companies⁺ had rushed to aid 42d ARVN Regiment troops locked in combat at Tou Morong with a regimental-size enemy force.²⁰

(S) As Hawthorne unfolded, the ground commander, forward air controller, and Army artillery forward observers neglected to keep constantly in touch. This caused costly lapses in continuous fire support just when it was most needed. FAC's at times requested

*Radio reception was weak at low altitude. Also, the need for the FAC to monitor three radios at the same time was likewise part of the trouble.

⁺Three battalions from the 101st Airborne Division, one each from the 1st Cavalry Division and 42d ARVN Regiment, plus two Civilian Irregular Defense Group (CIDG) companies.

~~SECRET~~

a suspension of artillery fire too soon forcing ground troops to wait on airstrikes. By the same token, loose coordination between forward observers and forward air controllers blunted the effectiveness of artillery fire and airstrikes. On 8 June, for example, a reconnaissance platoon climbing a ridge was hard hit. Close air support was late for some unexplained reason, so Army artillery zeroed-in less than 100 meters from friendly positions. The FAC and ground commander agreed to hold off airstrikes until the artillery barrage lifted. Shortly afterwards, a relief company was pinned down by enemy fire 75 meters from the beleaguered platoon. The enemy cleverly made airstrikes impossible by wedging itself between the two friendly forces. Clearly, Air Force FAC's had to learn more about ground fire-support limitations, ground commanders about tactical air support priorities.²¹

The consequences of Operation Hawthorne led to increased Army-Air Force coordination and an improved Joint Air-Ground Operations System. FAC's now notified artillery forward observers when fighters were penetrating the target area. This signaled the end of artillery fire--the last round being a white phosphorous (WP) rocket to give strike aircraft an excellent reference mark. Furthermore, forward observers accompanied forward air controllers on combat sorties and saw firsthand the problems of coordinating close air support and Army organic fire support. Observers also directed artillery fire from the air.²²

Operation El Paso* (19 May-31 July 1966) featured an upturn in the teamwork of forward air controllers and ground fire-control units. Additionally, FAC's were increasingly brought in to direct and mesh Army helicopter gunship actions with Air Force strikes. This melding of organic firepower and tactical air took heavy toll of the enemy.²³

Well-harmonized Army-Air Force efforts distinguished the May 1968 evacuation of Kham Duc Special Forces camp. To speed the besieged camp's evacuation, a steady stream of tactical aircraft struck nearby enemy fires while fixed-wing and helicopter transports shuttled in and out. All this required extensive coordination by all parties including the I Direct Air Support Center and forward air controllers. The TACP at Americal Division Headquarters at Chu Lai talked continuously with the FAC's at Kham Duc. They in turn kept contact with an orbiting airborne command post, I Corps DASC,

*El Paso was a major operation in III Corps by 1st Infantry Division and ARVN forces. In five major battles, the Air Force flew 347 airstrikes, 225 of them immediate.

~~SECRET~~

the Army CH-47 helicopter command ship, and Americal Division headquarters. Overall coordination came off so well that C-130's were landing on the main runway and onloading troops while helicopters hovered in alongside the runways and fighters carried out airstrikes a few hundred feet away.²⁴

The battle of Duc Lap (August-September 1968) witnessed Army-Air Force cooperation at its finest. For 15 days the enemy assaulted the Duc Lap base, yet failed to take it principally because of superb air-ground coordination. Air Force forward air controllers directed more than 480 tactical air sorties (3,300 strikes), controlled 100 helicopter gunship sorties, adjusted artillery 50 times, and guided fire-suppression strikes that let transports get in and out of the camp. The FAC's flew round-the-clock amid 37-mm, 12.7-mm, and machine-gun fire. They nursed their tiny aircraft through thunderstorms and "landed on unlighted runways at night in the rain with their heads stuck out the windows so they could find the muddy runway, and landed on emergency strips . . . with only mortar flares for lighting."²⁵

Only the forward air controllers and the ALO were able to keep abreast of the quicksilver changes in the Duc Lap situation. Working with up to five ground commanders, they relayed radio messages, cleared the area for B-52 strikes, aided the selection of landing zones, positively identified friendly positions, coordinated run-in headings of strike aircraft with other FAC's, and helped provide cover for downed aircrews. The cooperation and direction of Lt. Gen. William R. Peers, U.S. Army, Commander, I Field Force Vietnam, was a vital link in beating back the enemy. According to one after-action report, General Peers always seemed to be at the right place at the right time to direct the action. He used his battle staff well--particularly the TACP--affording them a freedom of action that brought out their best.²⁶

Many commanders at the time looked upon Duc Lap as the turning point in the war. Certainly the battle did pinpoint the value of tactical air control parties in tying together the many strands of an operation and proved how vital interservice cooperation was to success.²⁷

In spite of vastly tightened Army-Air Force coordination, other hurdles stood in the way of centralized control of tactical air. Inasmuch as B-52 Arc Light* sorties were under MACV headquarters

*Arc Light was the code name for B-52 operations in SEA, initially flown from Andersen AFB, Guam, and Kadena AB, Okinawa; later from Utapao, Thailand.

~~SECRET~~

control, the TACS often didn't get the word on missions in time to pass it along. Consequently, until the problem was licked in 1968, it was not unusual for FAC's to find themselves smack in the middle of a B-52 strike. Air America* aircraft likewise operated outside the TACS and posed a hazard, particularly in the out-country war.²⁸ Yet little could be done because of Air America's clandestine mission. Beyond all this, the most formidable hurdle remained--U.S. Marine Corps opposition to outside control of its tactical air.

Air Force-Marines Differences Over
Centralized Air Control

Even though U.S. Marines had been in South Vietnam since 1962, the 1st Marine Air Wing didn't arrive until 1965. The Marines fought a relatively static landlocked war in I Corps pretty much free of MACV direction. Under the Marine concept of amphibious operations, the ground units carried no organic firepower, relying instead on quick-reacting and closely controlled air support. The 1st MAW's tactical air direction center allocated ground commanders their share of the available air power.²⁹ The Commanding General (CG), 9th Marine Expeditionary Brigade (MEB),[†] shied away from centralized control of air resources, believing it would weaken air support of his units.[‡] Thus, USAF forward air controllers rarely sat in on planning of Marine operations which of necessity they might become involved in. This of course fueled the same kind of frustration FAC's had felt earlier in dealing with the Army. The coordination gap between the Marines and the other services held potential dangers in the rapidly expanding war and repeatedly impeded overall operations.³⁰

To beef up coordination, Adm. Ulysses S. G. Sharp, Jr., CINCPAC, told COMUSMACV on 27 February 1965 that MACV would coordinate the Marine air/ground effort through the CG 9th MEB.

*Air America was a contract airline flying for the Central Intelligence Agency (CIA).

[†]The 9th Marine Expeditionary Brigade became the III Marine Amphibious Force in May 1965.

[‡]The 9th MEB's reluctance to relinquish control of its air units to Seventh Air Force had roots in the Korean War where Fifth Air Force controlled Marine air. Marine pilots in Korea complained their ground units failed to receive flexible air support from the Fifth Air Force TACS. They scored the unwise use of Marine aircraft and slow reaction to immediate air requests. [Jack Shudiman, Draft History, U. S. Marine Corps Operations in the Republic of Vietnam July-December 1965 (S) (HQ USMC, 1971), p 618; Lt Gen Keith B. McCutcheon, "Marine Aviation in Vietnam 1962-1970," Naval Review, 1971, pp 134-35.]

~~SECRET~~

In reply General Westmoreland said he intended to place Marine air under his Deputy for Air, General Moore (also 2d Air Division Commander).^{*} Admiral Sharp disagreed, saying General Moore would act only as a "coordinating authority" for tactical air and air traffic control within COMUSMACV's area of responsibility and have no power to compel agreement.³¹

█ In April 1965 the Commanding General, 9th Marine Expeditionary Brigade, asked COMUSMACV for operational control over all close air support in I Corps. General Westmoreland turned down the request, directing that Marine air support be coordinated with the MACV Deputy for Air through the TACS. Despite this decision, the tug-of-war over centralized management of air support in I Corps went on for 3 more years.³² In the interim, several battles bolstered the Air Force's case for centralization.

█ In Operation Harvest Moon (8-15 December 1965), ARVN and U.S. Marine units assaulted the 1st Viet Cong Regiment in Song Ly Valley, Quang Tin Province, I Corps. (Air Force ALO/FAC's who knew the battle area intimately had not been invited to participate in the operation's planning.) The Marine Ground FAC team dropped out of the battle the first day after losing radio contact with its DASC. Fortunately, Air Force FAC's flying in the area spotted the firefight, contacted a Marine unit, and relayed information between it and the Marine DASC. With no knowledge of the battalion plan, the Air Force FAC's nonetheless took over close air support and controlled 47 USAF/Marine strikes against the Viet Cong. They likewise led two badly battered ARVN Ranger units in a successful retreat.³³ In contrast, the failure of VNAF and Marine DASC's to keep in close touch with one another hampered activities. While considering Harvest Moon a qualified success, the USAF/VNAF after-operation reports were critical of lapses in ARVN-Marine coordination, which had jeopardized operations. Some ARVN commanders complained about delays in Marine air support for their troops. Finally, the reports stated Air Force ALO/FAC's should have sat in on Harvest Moon planning since they were later called upon to help out.³⁴

█ Coordination weaknesses grew more pronounced as the war swelled and Army/Air Force units entered I Corps. Operation Hickory (18-27 May 1967)--the first overt U.S./ARVN attack into

*The 2d Air Division became Seventh Air Force on 1 April 1966.

the demilitarized zone--was a case in point. Marine aircraft were to support III MAF in the multi-pronged Hickory action while the Air Force supported ARVN and directed airstrikes north of the DMZ. However, III MAF kept the plans of the operation so secret its own tactical control center didn't know the time of the Marine amphibious force's landing until the force ran into trouble. Moreover, only upon General Momyer's* insistence did III MAF brief key Air Force officers--just 4 days before Hickory kicked off. 35

The briefing disclosed III MAF intentions to control artillery fire and close air support north of the DMZ as far as Marine field guns could reach (about 30 kilometers). General Momyer objected, citing COMUSMACV instructions restricting Marine control of air power to the northern boundary of the DMZ. North of that point, the TACS took over. Nevertheless, when the Marine field commander needed more air support during Hickory, he instructed Seventh Air Force FAC's to control airstrikes north of the Ben Hai River which coursed through the DMZ. Inasmuch as the request wasn't coordinated through the TACS, the airborne command post ordered the FAC's back north of the DMZ. Furthermore, the failure to inform the 20th TASSq in advance of additional sorties fringed north of the DMZ oversaturated the FAC's during the first day. Deemed a successful operation, Seventh Air Force believed Hickory would have gone far more smoothly had the Marines cooperated during the planning phase. 36

Coordination problems also surfaced in Operation Neutralize (12 September-1 November 1967) which called for sustained airstrikes to silence enemy guns harassing Marine forward positions. The Air Force carried out the operation because the III MAF had too few aircraft to do so. Eying Neutralize as it gathered momentum, Lt. Gen. Robert E. Cushman, Jr., III MAF CG, contended Seventh Air Force was encroaching upon the Marine area of responsibility. He also scored the confusion over who should coordinate both airstrikes and artillery fire. On 16 October the Deputy Director Seventh Air Force TACC, assured Cushman that the Air Force harbored no encroachment ideas whatsoever. While not saying so, Seventh figured III MAF wanted to use the "responsibility" issue as a lever for gaining control of all air power in Tally Ho (that area north of the DMZ up to 17°30'). With Operation Neutralize successfully concluded, a MACV-chaired conference convened at III MAF Headquarters on 6 November 1967.

*Momyer succeeded General Moore as Seventh Air Force Commander on 1 July 1966.

Among the chief topics aired were coordination and control of air-strikes/artillery fire. It was noted during the discussion that General Cushman had once more tried to get control of all air power in Tally Ho but COMUSMACV had turned him down. It was further apparent the Army and Navy backed the Marine position. They believed Seventh Air Force could not adequately coordinate air and artillery operations.³⁷

At the 16 October conference, Seventh Air Force hammered home the need to tack down at the outset the control jurisdiction of all future operations. Seventh's stand pivoted on the suspicion III MAF was seeking to entrench its position at the expense of coordination. This seemed partly borne out when III MAF got ready to launch airstrikes in and north of the DMZ (on or about 10 November) without advising Seventh Air Force about it. Thus, if the Tactical Air Control System could be shown incapable of coming up with good close air support on short notice, there was argument for maintaining a separate system.³⁸

Khe Sanh--the Refiner's Fire

Perhaps more than any other battle of the war, Khe Sanh (Operation Niagara) drove home the compelling need for centralized control of tactical air. From 22 January 1968 through 31 March 1968, the allied forces repeatedly beat back enemy assaults and finally thwarted his try to turn Khe Sanh into another Dien Bien Phu.* In late 1967, the enemy had begun massing troops and equipment in and around Khe Sanh. COMUSMACV had quickly countered with a huge buildup of its own.+ As Operation Niagara commenced, the heavy concentration of allied troops made it almost impossible to allocate airspace in line with each service's needs. Hence, no one service exercised centralized control (single management) over air operations.³⁹

Early in the battle, the 1st Marine Air Wing proved wholly inadequate to satisfy air support needs so Seventh Air Force assumed

* Communist forces overran the French stronghold of Dien Bien Phu in North Vietnam on 8 May 1954.

+ In December 1967 the allied forces stood at 74 maneuver battalions in I Corps Tactical Zone (16 U. S. Army, 21 Marine, 4 FWF, and 33 ARVN). By April 1968 there were 92 battalions (30 U. S. Army, 24 Marine, 4 FWF, and 34 ARVN).

~~SECRET~~

the major support role. Both an Air Force and a Marine tactical air control system operated in the same general area, using separate communications and coordinating little with one another. This sent an uneven flow of strike aircraft into the battlezone. Moreover, units defending Khe Sanh became intermixed, resulting in too many strike aircraft over some targets and too few over others.* Chances of midair collisions climbed. The III MAF commanders repeatedly failed to timely inform Seventh Air Force of ground activity and air support already ordered in. B-52 (Arc Light) and Skyspot-directed⁺ bombing missions arrived at times with no advance notice to the ABCCC or FAC's. Transport aircraft often flew through areas where airstrikes were going on.⁴⁰

To ease this semiconfused situation, General Westmoreland directed his staff of 20 February 1968 to draw up plans integrating the 1st Marine Air Wing into the TACS without destroying Marine air/ground integrity. The desired plans, completed on 3 March 1968, designated the Seventh Air Force Commander as COMUSMACV's single manager for air. General Westmoreland sent the plans to Admiral Sharp, CINCPAC, who approved them on 8 March 1968. They went into effect on 10 March and Seventh Air Force was issuing consolidated frag orders by the 21st. COMUSMACV instructed III MAF to place under direction of the single manager for air all fixed-wing strike and reconnaissance aircraft along with the Marine air control system.⁴¹

When Gen. Leonard F. Chapman, Jr., Commandant of the Marine Corps, got word of COMUSMACV's decision, he appealed to the Joint Chiefs of Staff to stop the centralization of air support. General Chapman argued that stripping General Cushman of control of Marine air resources would sharply impair air support of the troops at Khe Sanh. Handling of urgent air requests would be delayed due to two new links in the request chain--a provisional corps headquarters set up by General Westmoreland and a Saigon tactical air support element. Finally, the new system would be "producer" rather than "consumer" oriented and not flexible enough for III MAF needs.⁴²

If III MAF's needs alone were involved, General Chapman's arguments held considerable weight--but this was not the case. Close

*It was not unusual for some strike aircraft to return to base with unexpended ordnance.

⁺Skyspot consisted of MSQ-77/TPQ-10 ground radars and control used to direct aircraft on bomb runs.

SECRET

air support needs embraced the several services and it required the combined air power of the Air Force, Navy, Marines, and VNAF to meet them. So long as each service operated on its own, overlap and waste would go on--too much air support in some areas, too little in others. True, centralized control would inject two extra steps in the processing of immediate air requests. Notwithstanding, these steps were a must for getting a firm handle on all air support. General Momyer went out of his way to reassure General Cushman the Air Force would not meddle in III MAF internal operations. After all, III MAF would man I DASC jointly with the Air Force and continue to scramble and divert its aircraft without clearing through the TACC in Saigon.⁴³

JCS opinion split over air support control. Gen. Harold K. Johnson, Army Chief of Staff, and Admiral Moorer, Chief of Naval Operations, backed General Chapman's position. General Wheeler, JCS Chairman, and Air Force Chief of Staff General McConnell favored COMUSMACV's view. Wheeler deemed it unsound to tell COMUSMACV how to exercise command control (especially since the JCS couldn't see the situation from his vantage point). The JCS Chairman stressed that single management was purely a temporary expedient peculiar to the current situation in I Corps and would in no way erode the various service roles. Secretary of Defense Clark M. Clifford supported General Wheeler but assured General Chapman the III MAF air control system would be reinstated when the tactical situation permitted.⁴⁴

In May 1968, General Cushman, CG III MAF briefed General Westmoreland and Admiral Sharp on what he felt were the shortcomings in the single management system* and again asked for return of Marine tactical air control. General Westmoreland

*General Cushman couldn't see why the Army retained control of its helicopters while Marine aircraft performing a similar role came under Air Force control. Cushman believed single management diluted the number of sorties available for Marine support. He cited such deficiencies as: the system's lack of responsiveness and undue administrative burden, difficulty in handling frag orders, excessive diversion of preplanned sorties to take care of immediate air requests, no strike aircraft escorts for Marine helicopters, and frequent selection of the wrong ordnance for targets. [MR (S), 7th AF, subj: Single Management for Air Assets, 19 May 68.]

~~SECRET~~

instead shaped the system more to Marine needs. He directed the TACC, beginning 30 May, to frag 70 percent of all preplanned sorties weekly to corps-level commanders (General Cushman in I Corps) for their use.* The TACC would hold back the remaining 30 percent of the sorties to meet unexpected situations. This in a sense decentralized air support but kept overall control in the hands of the MACV Deputy for Air.⁴⁵

(S) The growing workload under single management touched off changes in the Tactical Air Control System. In July 1968 the Air Force turned over I DASC to VNAF which had taken over the greater share of ARVN's close air support in I Corps Tactical Zone. A separate Direct Air Support Center was then set up at Camp Horn as the senior DASC in I CTZ to handle U.S./FW air support needs-- a Marine liaison officer coordinating III MAF air activity.⁴⁶

(S) General Wheeler, Chairman of the JCS, told Secretary of Defense Clifford on 16 September 1968 that centralized control of air support had bolstered SEA operations, and

although the mechanics of the single management system are still not such as to provide the Marines with the responsiveness to which they are accustomed in their organic control system. I consider that air support of Marine forces has been equitable under the circumstances existing in I Corps and its responsiveness consistent with the broadened responsibility of CG, III MAF.⁴⁷

Similarly, Gen. Creighton W. Abrams, Jr., who succeeded General Westmoreland as COMUSMACV, said single management had attained the overall aims of centralized supervision of close air support. Thus, single management continued intact until 1970 when COMUSMACV returned control of Marine air to III MAF. Use of Marine air, however, had to be coordinated with the MACV Deputy for Air (single manager). The latter also reserved the right to call on III MAF as required for daily/weekly air support missions.⁴⁸

(U) In reality, single management never deprived the Commanding General, III Amphibious Force, of control over his air resources. Consequently, the high-level concern in the Marine

*III MAF, for example, could now pare response time to immediate air requests by holding some preplanned sorties in reserve.

~~SECRET~~

Corps that this might happen proved unfounded. The upshot of centralizing air control was that MACV as a whole received more effective air support, III MAF units continued to get responsive air support, and Seventh Air Force benefited from improved coordination in the employment of air power.⁴⁹

(This page is Unclassified)

~~SECRET~~

V. REFINING FAC TACTICS AND TECHNIQUES

Rules of Engagement^{*1}

(U) Before 1965 the rules of engagement allowed VNAF observer/FAC's to control airstrikes while limiting the USAF FAC to advice only. These rules were later relaxed somewhat to keep pace with the expanding U.S. troop commitment but they still required the FAC/strike team to avoid injuring noncombatants.

(●) In 1966 there was a major revision of the rules of engagement which remained in force with but slight changes through 1970. It specified that all targets selected for attack first had to be approved by the Vietnamese province chief or higher authority. The single exception to the above related to MACV-designated areas declared free of friendly forces and civilians. The rules in addition confined control of USAF airstrikes in support of U.S. Army forces to Air Force forward air controllers.⁺ If no USAF FAC was available, however, a VNAF FAC or Skyspot ground control radar could be called upon. In the absence of these, a ground commander or U.S. pilot supporting the operation could designate the targets. Furthermore, only an Air Force controller (or VNAF controller supporting ARVN troops) had authority to direct airstrikes against a village or hamlet where the enemy had taken refuge. Before calling in fighters, the FAC obtained the province chief's approval to attack and made certain all inhabitants of the village/hamlet were given ample warning to get out. Such tight restrictions on airstrikes against known or suspected enemy targets in populous areas reflected the deep concern of U.S. officials to protect noncombatant civilians and their property.

Similarly, the controller and ground commander tried to mesh their efforts to prevent accidental attacks on friendly forces. The FAC needed to know intimately the action going on below and

* Rules of engagement governing out-country operations differed somewhat and are discussed below.

⁺The U.S. Army insisted that only USAF FAC's control airstrikes for its troops because most VNAF observers/FAC's lacked fighter-pilot experience.

~~SECRET~~

secure the ground commander's go-ahead before clearing strike aircraft onto the target. Ground troops marked their own positions as often as necessary for each flight of strike aircraft. The ground commander checked the FAC's target-marking. If inaccurate, the target was marked again.

The rules of engagement stipulated that a VNAF observer/FAC accompany the Air Force controller whenever USAF aircraft supported ARVN troops. The VNAF FAC could break off an air-strike any time the situation warranted. As a further safeguard, the rules required the forward air controller to keep the target or target-marker constantly in view and know at all times where the friendly troops were.

Locating the Enemy

The forward air controller's effectiveness lay in his ability to direct airstrikes and to inhibit enemy movement. But first the FAC had to find Charlie.* To do this he needed to know his habits, how he traveled and subsisted, and his tactics. Some of this information stemmed from spies and contacts. A lot of it, however, came from aerial reconnaissance which accounted for up to 60 percent of a controller's flying time.²

During 1962-1965 the poorly organized visual reconnaissance in SEA had seemed at times haphazard. It was user-oriented, often unscheduled, and largely done at the local commander's request. The Air Force's shortage of O-1's, radio gear, and FAC's shifted most of the VR burden to U.S. Army pilots and inexperienced VNAF observers. This resulted in frequently missing good potential targets because Charlie covered his tracks well.³

After taking over as COMUSMACV, General Westmoreland sensed a need for organized visual reconnaissance geared to the expanding war. On 2 June 1965 he directed that a program for repeated VR of all corps areas be established. Subsequently, each corps area was split into sectors,[†] any one of which an O-1 could (in theory) cover within 2 hours. Each corps commander worked

* A nickname for the Viet Cong commonly used by military personnel.

[†] From 214 sectors at the program's start, the number rose to 225. Sector size ranged from as big as a province (open terrain) to only a few miles square (densely populated or jungle areas).

~~SECRET~~

with his ALO to obtain daily VR of topographical features and problem areas peculiar to his corps. One O-1 operated in every sector and more than one in sectors requiring minute coverage. Scanning the same sector day after day, the O-1 crew could detect at once anything different or unusual.⁴ The visual reconnaissance program operated jointly because no single service could muster sufficient O-1's to do the whole job on its own. There were 376 O-1's at the program's start--152 Army, 110 Air Force, and 114 VNAF. Army O-1's, however, were less available and not so widely dispersed as those of the Air Force. This reflected the Army's widespread use of O-1's for battlefield reconnaissance and artillery adjustment. Moreover, VNAF O-1's covered mainly the Saigon area. Hence the brunt of the VR load fell to USAF forward air controllers.⁵

The widely dispersed FAC's were in excellent position to gather countrywide VR information.⁶ Notwithstanding, the shortage of O-1's and controllers ruled out any complete coverage of South Vietnam. Some areas received little or no coverage, others too much.* Also, the FAC's of each service filed VR results with their own units, delaying collation and dissemination. By 1968, however, the shortage of aircraft and controllers had been mostly overcome and single management of air support established. From then on, single management assured more balanced visual reconnaissance, coverage of South Vietnam and speedier collation/dissemination of VR results.⁷

Visual Reconnaissance Process

South Vietnam challenged the forward air controller with several kinds of topography, ranging from a seemingly unbroken jungle stretching for miles to plains, mountains, and cleared farmland. Once the jungle vegetation bloomed, the double-and-triple canopied foliage prevented the FAC from seeing the ground at all from a normal altitude of 1,500 AGL. He either had to dip lower--endangering himself and the aircraft--or "recon" the jungle areas cursorily and concentrate on the open areas.⁺ The enemy, however, shunned open areas to hide in the jungle or in the marshes of the Delta.⁸

*A 1966 Rand study showed only 65 percent of VR sectors were covered daily. [J.I. Edelman, et al, Airborne Visual Reconnaissance in South Vietnam (C) (Rand Corp, RM-5049-ARPA, Sep 1966), pp 2-4.]

⁺Defoliants and seasonal changes did aid jungle reconnaissance.

~~SECRET~~

If the forward air controller gleaned the basics of reconnaissance in FAC school he arrived at real expertise through field experience. It took him at least a month to master VR techniques and learn his assigned sector thoroughly. Even then, he had to have quite a few missions behind him before he could spot an object below with the naked eye from 1,500 feet--unless the object moved.* To counter Viet Cong infiltration, the controller needed to know when the villagers ate and slept, their work schedules and habits, how they traveled to and from work, and how many there were in any given location. He likewise required information on the latest locations of friendly and enemy troops. Since he couldn't trust the maps completely, he memorized all landmarks⁺ such as roads, trails, streams, villages, and structures.⁹

Seventh Air Force set up priorities to help the overburdened FAC's satisfy visual reconnaissance needs. Top priority went to VR requests from ground commanders. These--channeled like preplanned or immediate air requests--consumed a great deal of controller time. FAC's spent any remaining time controlling airstrikes or flying area reconnaissance. They covered vital coast regions a minimum of twice a day and other critical areas[‡] at least once. Noncritical areas got attention about every 3 days.¹⁰

Before going on a reconnaissance mission, forward air controllers reviewed available intelligence. They studied the currently posted wall map in the TACP to pinpoint reported or suspected enemy positions. This was essential since Special Forces teams and Army long-range patrols often worked in enemy-controlled areas and the slightest mistake in identification could spell disaster. Controllers memorized strikezone boundaries, location of friendlies and their planned moves, call signs, and radio frequencies. They talked over sortie objectives with the supported unit's intelligence and operations officers, picked up final instructions, and filed a flight plan that included check-in points for flight-following.¹¹

*A former FAC said a man could stand motionless under a tree in full view of the aircraft and go unseen.

⁺Plied with information from all sources, a controller couldn't possibly cover all fresh details on a specific area in a preflight briefing unless he already knew the area well.

[‡]These included Vietcong/North Vietnamese concentrations, Special Forces camps, and national boundaries.

~~SECRET~~

Because the enemy liked to move under the cloak of darkness, most reconnaissance sorties took place at dawn or dusk when the FAC had a better chance of coming upon him as he was breaking/making camp or preparing a meal.¹²

Once airborne, the forward air controller kept radio contact with the TACP and ground units in the surveillance area to pick up new information or instructions. The controller usually commenced reconnaissance from the point of reported enemy activity (or items of interest requested from the ground) and fanned out from there. He flew an irregular pattern to make certain the enemy couldn't predict his route. The complete sector search commonly consumed more than the theoretical 2 hours. Maj. John F. Campbell, 22d TASSq,* said a thorough search of his sector took from 6 to 8 hours, several 0-1's being used if available.¹³

Flying below 1,500 feet speeded up sector coverage but there were drawbacks. Men and small objects could be picked out from lower altitudes but at the expense of a shortened overall view. More important, the chances of being shot down multiplied. Hence, forward air controllers refrained from flying under 1,500 feet except when ground fire was unlikely or in an emergency. To support troops in contact with the enemy, they would fly at treetop level.¹⁴

Binoculars were often used as a substitute for low-level visual reconnaissance. However, they narrowed the forward air controller's field of vision and fostered disorientation. Switching back and forth between them and the naked eye brought on severe eyestrain, headaches, dizziness, and upset stomach. It also gave the user a sensation of rapidly changing airspeed. To sidestep these ills, the FAC grew adept at staying with the binoculars and at the same time guiding the aircraft almost entirely with the rudder pedals. Opinions on the value of binoculars differed. Some controllers considered them indispensable to successful operations. Others complained they couldn't see any better with them in jungle areas. All agreed binoculars were invaluable in picking out tiny details in open terrain.¹⁵

In forested mountain areas, the controller spent scant time surveying the sides or tops of mountains unless seeking for caches or specific targets. He focused instead on valleys, roads, known

* Major Campbell was an ALO/FAC during 1969 with ARVN in Kien Phong Province, IV Corps.

([REDACTED])

~~SECRET~~

trails, waterways, and villages. Forests were generally indistinguishable, forcing the FAC to relate precise knowledge of reference points to his reconnaissance, --perhaps a sharp bend in a river, a tall hill, or an open field dotted with odd formations.¹⁶

Trails served as the enemy's transportation/supply lifeline especially in mountainous regions. With 90 percent of all trails invisible from the air, the FAC concentrated on those he could see and tried to predict where they might lead. Before takeoff he marked latest trail locations on his maps. During the mission he secured fresh information on the trail network from Army reconnaissance patrols.

(P) While on patrol the FAC looked for tiny telltale signs along the trails that could be clues to recent use--foliage beaten down and trampled, trees and shrubs powdered with dust. After a rain, he looked for fresh tracks of men and trucks. Newly turned earth signified roadbuilding, tunnels, foxholes, or caves. Where a stream crossed a trail, soaked earth told the story--the direction of travel disclosed by the damp ground's position from the water. Large cracks in the trail or water running across it argued against any recent use. The enemy stayed conveniently close to main trails, using side trails for camping and caching supplies/equipment. The controller spotted these caches by flying parallel to the trails and peering under the trees with binoculars.

The enemy often tried to escape detection by using shallow streams as trails. When the water was clear, however, the tracks were easily seen from the air. Moreover, exceptionally dirty or muddy water in areas where it commonly ran clear immediately became suspect. Although the FAC had trouble spotting waterways through overhanging trees, he could fly off at an angle and catch the water's reflection through the branches. He combed waterways carefully because the enemy built underwater fords, laid submerged planks for easier travel, and put up "swing-away" bridges for night use. A common sight was large quantities of supplies floating down the larger streams, particularly in Laos as interdiction against the Ho Chi Minh Trail intensified. Coming upon any new location of watercraft alerted the forward air controller to possible Viet Cong troops or supply caches close by. He searched for marks along the banks that could indicate hidden sampans and explored the trails leading away from streams for likely storage areas.

Viet Cong/North Vietnam Army (NVA) troops seldom traveled trails or streams by day. Thus, when the controller

detected people, he couldn't definitely identify them as unfriendly unless they wore uniforms, carried arms, and started firing on the aircraft. If he saw a group of coolies hauling supplies, however, it was a safe bet they worked with the enemy. People who ran or tried to hide excited suspicion but couldn't on that account be summarily written off as hostile. They might be completely innocent natives who feared being taken for the enemy. Experience dictated the wise practice of keeping such sightings under surveillance a while to see what developed.

The enemy was a master at camouflaging his activities from the forward air controller's prying eyes.* When troops moved by day, they usually wore foliage-covered backpacks. If an aircraft flew over, they crouched or lay prone to simulate a hedgerow. Failure to keep the foliage fresh, however, let it wilt and change color--a dead giveaway from the air. Furthermore, an experienced FAC could readily detect "hedgerows" springing up where none grew before. Enemy "sucker traps" now and then fooled controllers. These false camps, set up some distance from a heavily camouflaged main camp, were meant to be seen from the air. Small numbers of men occasionally occupied the camps and fired on aircraft to draw airstrikes away from the real camp. Small triangular wood forts/defensive positions--another enemy ruse--worked well because the FAC couldn't afford to overlook anything that might be useful to the enemy. Still, if the controller had done his homework and knew his area, he could sort out the mockup from the real thing. In addition, the enemy drove spikes in the ground to counter helicopter troop landings. Almost impossible to see from the air, these spikes put many a helicopter out of commission.

The Communist troops tried to hide their cooking fires by scooping out a hole in the ground just big enough for a pot to sit in over burning coals. Smoke was diffused by angling hollow bamboo flutes away from the fire for several feet and siphoning off the smoke in small amounts. Flying early in the morning and at dusk, the forward air controller could make out the smoke clustering just above the trees. If unable to pinpoint the bivouac area, he would call upon any available Army LOH-6 (Loach) helicopter to do so.†

*The enemy's improved methods of camouflage forced the Air Force to seek better ways for acquiring, marking, and destroying targets. This in turn led to new equipment and faster, less vulnerable FAC aircraft to meet stouter enemy defenses.

†This practice prevailed principally in II and III Corps.

Working in tandem with a Huey Cobra helicopter gunship, the Loach would drop right down into the trees. When low enough to spot the target, it dropped a can of smoke then popped straight up to escape the ground fire. The Huey instantly opened fire while the FAC marked the target from the smoke and prepped strike aircraft for attack.

Working within general guidelines, each controller suited visual reconnaissance to the geographical and other features of his area. All FAC's wanted to catch the enemy off guard, since once spied he tried to get out of sight at once. If there were villages around, he immediately attempted to melt in with them. If caught in the open, he crouched and froze or took cover in the bushes or under trees. To counter this, controllers found it best to "recon" at a distance if possible.

Upon perceiving something suspicious, the FAC usually flew by to entice the enemy from hiding and encourage his movement. Meantime, the controller peered back through binoculars to catch such movement--fairly easy to detect in flat country. Having determined the target, he kept from tipping his hand by shunning the vicinity until strike aircraft arrived.

Once cornered, the enemy bent every effort to shoot down the FAC aircraft. This actually helped identification. If the forward air controller flew with windows open, he could figure out the size of the weapons and the intensity of fire. Normal ground fire resembled yellow strobes; tracers, red streaks. Small-arms fire sounded like the click or pop of a dry stick snapping, a cigarette lighter flipping shut, popcorn popping, or an engine back-firing. The .50-caliber guns uttered loud woofing or a decisive crack. Weapons of 20 millimeters or more gave out a distinct deep-throated pom. If the FAC could determine the direction of the ground fire, he stood a better chance of avoiding it. Likewise, with the sun low on the horizon, he could keep it at his back and in the guncrew's eyes.

The value of visual reconnaissance intelligence reports obviously depended on the controller's experience and the area surveyed. In the thick jungles of II Corps (the central highlands of South Vietnam) targets were hard to find so the FAC's chief value was harassment. The enemy never knew if he had been seen or not, which forced him to stay hidden and sapped his effectiveness. In contrast, the controller could easily monitor enemy movements in the open areas of IV Corps (Delta region of southern South Vietnam). Furthermore, Seventh Air Force cautioned that value judgments

~~SECRET~~

should be kept out of intelligence reports. The overall picture pieced from bits of intelligence might portray an entirely different perspective than that presented by any single sighting. For example, if a FAC spotted six men wearing black pajamas walking through the field that didn't prove they were Viet Cong. After all, Special Forces reconnaissance teams often donned like garb when on intelligence missions.

Several methods validated forward air controller findings--agents planted in the area, long-range reconnaissance patrols, and follow-on visual reconnaissance. Army photointelligence personnel at times went on patrols and airborne photoreconnaissance took pictures. A final safeguard required province chief approval of a VR sighting before it could be hit. All these steps ate up time--a doubly precious commodity when the sightings were fleeting or critical to troops in combat. On the other hand, verification did much to prevent attacks on the wrong targets, for fewer than one out of four intelligence sightings turned out to be the enemy.

This problem stemmed from the short life of most VR intelligence. Then too, geographical features in Vietnam frequently made it hard to relocate a sighting unless prominent landmarks stood close by. Moreover, controllers at times mistook what they saw. After one 1968 mission, for example, an ALO in I Corps reported a boat had beached at a certain spot. He described the boat's imprint in the sand and footprints leading around it. Later reconnaissance revealed the true story--a sea turtle had crawled onto the beach to lay its eggs. By the same token, a FAC flying at 1,500 feet or higher couldn't tell new bunkers and structures from older abandoned ones. The single clue was that new ones were seldom visible--even to ground observers. These sightings nevertheless needed checking out since there was no telling when the enemy might occupy the older bunkers/structures again.

Visual reconnaissance intelligence reports had to be filed instantly after landing. If the information was hot and fleeting, the controller radioed it in (usually coded) for quick response. Oral reports excelled written ones. Sitting across from the local intelligence or operations officer, the FAC could embroider his account with rich detail and clear up any cloudy points as he went along. Wanting this flexibility, written reports were prone to misinterpretation.

Laboratory and field research came up with new ways to locate the enemy but none were completely successful: side-looking

~~SECRET~~

airborne radar (SLAR), infrared radar/optics, lasers, "people sniffers,"* and photointelligence by tactical reconnaissance aircraft. Further, some forward air controllers took along their own cameras on recon sorties as an aid in remembering and translating findings. Despite film-processing delays,⁺ Seventh Air Force set up a small, experimental, hand-camera program in April 1967. It sought to evaluate the FAC's ability to acquire intelligence data with the 35-mm camera.[‡] Pleased with initial results, the Commander, Seventh Air Force, on 18 July ordered more emphasis be put on the program. At the same time he directed that use of the camera be made part of the Theater Indoctrination School course at Binh Thuy.¹⁷

The 504th Tactical Air Support Group procured sixty 35-mm Pentax Spotmatic cameras to bolster the test program. Delays in developing the film nevertheless persisted and the 504th suggested use of polaroid cameras having self-processing film. Eleven of these cameras arrived on 16 August 1967 and were tested by controllers from Da Nang, Pleiku, and Phu Cat. The tests proved the polaroid camera superior to the Pentax so the 240-mm Polaroid Model 9 was tentatively selected. However, the special handling involved in finishing polaroid film boosted the camera's operating cost above that of the Pentax. This and improved service from the 600th Photo Squadron prompted selection of the Pentax. Headquarters PACAF therefore approved a December 1967 request from the Seventh Air Force Director of Intelligence for 225 Asahi Pentax cameras, equipped with pistol-grip handles and 200-mm lenses. The use of these cameras in- and out-country more than doubled the visual reconnaissance output.¹⁸

The 600th Photo Squadron's film-processing service sufficed for shots of stationary targets but not of fleeting ones. Immediately

*The "people sniffer"--airborne personnel detector (APD)--detected human waste by processing air samples chemically.

⁺In 1967 only one USAF film-processing center (the 600th Photo Squadron) served South Vietnam and it was initially omitted from the PACAF budget.

[‡]Arguments for the test program stressed that a forward air controller using a hand-held camera enjoyed certain advantages over normal preplanned photoreconnaissance. Beside securing faster results, the FAC could: pinpoint interdiction strike/restrike points, enhance accuracy of bomb damage assessment, zero-in on features surrounding target areas, fly underneath much bad weather, and exploit targets of opportunity.

~~SECRET~~

after landing, the FAC turned over his film to the intelligence section for forwarding to the 600th Squadron. Notwithstanding, it took 24 hours or more to get the developed film into the user's hands. Controllers consequently turned to the Army divisions for film-finishing whenever possible, since it was convenient and the service was faster.*¹⁹ This reliance on the Army tapered off after 1968 as the Air Force expanded its film-processing facilities in SEA.

From 1968 on, the intensive USAF visual reconnaissance effort forced the enemy to cease nearly all daytime movement except in areas hidden from the air. Even then, he seldom escaped the surveillance of Army patrols and Special Forces units.⁺ As enemy activity accelerated, the Air Force extended reconnaissance to the hours of darkness.[‡] The O-1 was of little practical worth in night reconnaissance except for harassment. On the other hand, the later combination of the O-2A, OV-10, and FAC-carrying flareships did an excellent job. As for the total visual reconnaissance effort, it accounted for over 60 percent of all targets generated in South Vietnam.²⁰

Controlling Airstrikes

Once validated and approved, a target was ready for exploitation. Whether the airstrike request was preplanned or

* Capt. David I. Shields, a former Special Forces FAC, pronounced Army film-finishing excellent, the completed product frequently reaching the user within 3 hours.

⁺It must be acknowledged that the best airborne/ground reconnaissance available could not spot and check enemy activity in an area unless friendly ground troops completely controlled the area.

[‡]Night operations are covered in the next chapter.

~~SECRET~~

immediate hinged on the tactical situation.* If preplanned, the Tactical Air Control Center put a priority on the request and routed it to the proper Direct Air Support Center. From there it passed to an air liaison officer at brigade level, arriving the night before the airstrike date. The forward air controller, chosen by the ALO to handle the strike, went over the latest intelligence. If collocated with a fighter squadron, he also reviewed procedures with the pilots at the preflight briefing. He next made a last-minute check with the air liaison officer and the intelligence section, then got ready to take off.⁺²¹

After takeoff, the controller told his tactical air control party he was enroute to the target area. Planning to arrive there 15-30 minutes before time-over-target, he got in touch with the TACP serving the requesting commander to find out any changes in TOT, target coordinates, and weather. Upon penetrating the target area, the FAC reviewed with the requesting commander the TOT and what could be expected from the type of aircraft and ordnance coming in. He advised the commander how far back from the target his troops should stay and asked him to prepare for marking friendly positions with smoke. He further furnished brigade and division headquarters the exact target coordinates and secured clearance for the strike. Likewise, if other friendly units were within 2-3 kilometers of the target, he coordinated with their commanders.²²

Meantime, fighters had been scrambled or diverted to carry out the strike. After furnishing a specific TACAN distance and radial for rendezvous with the forward air controller, the TACC or DASC turned over the fighters to the Control and Reporting Center (CRC). Using mainly TACAN, the CRC kept the aircraft on course and eventually passed them to the division TACP for latest weather, altimeter, and bombing information. Then, contacting the FAC by

*Page 65 gives details on processing preplanned/immediate air requests.

[†]An immediate request ruled out such advance preparation. Already airborne, the forward air controller was likely the one who relayed the ground commander's strike request to the DASC. After the Corps Tactical Operations Center approved the request, the Direct Air Support Center diverted or scrambled fighters and let the controller know the planes were on their way. Meanwhile, the FAC picked up on-the-spot intelligence by visual reconnaissance and discussion with the ground unit.

~~SECRET~~

UHF radio, the fighters got a thorough rundown on the target, location of friendly troops and their position relative to the target and enemy troops, points of probable enemy ground fire, bombing tactics, and the sequence of ordnance delivery. If the strike aircraft had trouble rendezvousing, the controller talked them to the join-up point by describing landmarks or generating smoke from the FAC aircraft (not possible in the 0-1).²³

Marking the Target

Following join-up, the strike team moved to the target, the fighters in attack pattern. Friendly troops near the target area marked their position with a prearranged color of smoke grenade. If no smoke was on hand, they used colored signal panels, tracer crossfire, signal mirrors, or artillery/mortar rounds. The enemy at times marked his own positions to palm them off as friendly. Hence, when friendlies were close-in to the enemy, the FAC asked the ground units to fire a smoke grenade and he identified the color to them.

Forward air controllers commonly marked targets with the 2.75-inch white phosphorous ("Willy Pete") rocket. How well it worked depended on the time of day or night, weather, and terrain. In wind the rocket's smoke drifted rapidly off the target. Moreover, to mark in swampy areas, the controller had to release ordnance from a shallow dive or the rocket would bury itself in the mud. To counter these conditions--but as a last resort--fighters or the FAC could mark with tracers. However, since the tracer flashes vanished instantly, the controller needed to select a reference point and guide the strike aircraft onto the target, for example, "Target

* Capt. Gary D. Sheets recalled a 1966 airstrike around Binh Thuy in support of the ARVN. The enemy had overrun an ARVN camp and captured many supplies including smoke grenades. In an unusually tight situation, the FAC and ARVN commander decided the ground positions needed marking with smoke. Knowing he was not to acknowledge the smoke's color before the forward air controller identified it to him, the ARVN commander said over the radio, "I am going to mark my position with yellow smoke." The controller shouted, "No, no don't do that. Don't do that." Shortly thereafter, three small puffs of yellow smoke drifted through the trees. The ARVN commander asked if the FAC had the smoke in sight. When the controller said he had, the commander said, "O.K. I didn't use smoke. That VC, that yellow smoke."

~~SECRET~~

is halfway between tracer impact and that clump of trees." The FAC could fire a 2.75-inch rocket with an explosive (rather than white phosphorous) warhead, but the impact of the warhead in jungle areas was easily missed. Smoke canisters tossed from the FAC aircraft at 1,500 feet were seldom used because they were for the most part inaccurate. All in all, Willy Pete proved the most reliable means of target-marking.²⁵

Throughout the marking run, the controller kept an eye on the strike aircraft, being sure they observed the marker impact and knew its distance from the target. If any doubt arose on this score, the target was re-marked. Every second's delay afforded the alerted enemy more opportunity to pack up and get out. Thus, if possible, the run-in heading for marking corresponded to (or was the reciprocal of) the strike aircraft's attack heading.* In addition, the FAC furnished the fighter pilots any adjustment of the ordnance release point as they maneuvered for their passes.²⁶

The controller set up the strike so ordnance fell toward the enemy, avoiding any chance of bombs skipping off the ground into our own troops. When terrain or other conditions prevented this type drop, the best alternate was to drop parallel to the friendly troops. Only an extreme emergency justified a drop toward them, and here the FAC's judgment and experience became crucial. By the same sign, if the target and the marker fell within the minimum safe distance, the ground commander had to decide whether or not the strike would go on. Two markers were generally used when striking close to friendlies, bracketing the strikezone if possible.²⁷

0-1 Marking Techniques

(U) The 0-1 FAC needed to mark the target quickly, for the aircraft became more vulnerable during the marking phase than either the 0-2A or OV-10. Against a lightly defended position, he could mark from any direction using the steep and close-in delivery (Fig. 8). To recover at 1,500 feet AGL (above ground level), the controller started delivery at 2,000-2,200 feet AGL. He first closed the throttle and pulled the nose up. As the KIAS (knots indicated air speed) dipped to 50, he kicked the rudder hard right or left. This pushed the nose down and through the horizon, the

*This further gave strike crews a chance to see the target from the FAC's perspective.

~~SECRET~~

aircraft pivoting rapidly toward the target. (A variation involved a simple wingover, the aircraft's nose falling down and through as the angle of bank increased.) Next, the FAC brought the wings level with, and pointed the nose slightly beneath, the target. Pulling the "sight" up to it, he triggered off a rocket.* Turning out of the marking pass, the controller used airspeed from the dive to regain altitude--keeping the target area and the marker's impact point constantly in view.²⁸

STEEP AND CLOSE-IN DELIVERY

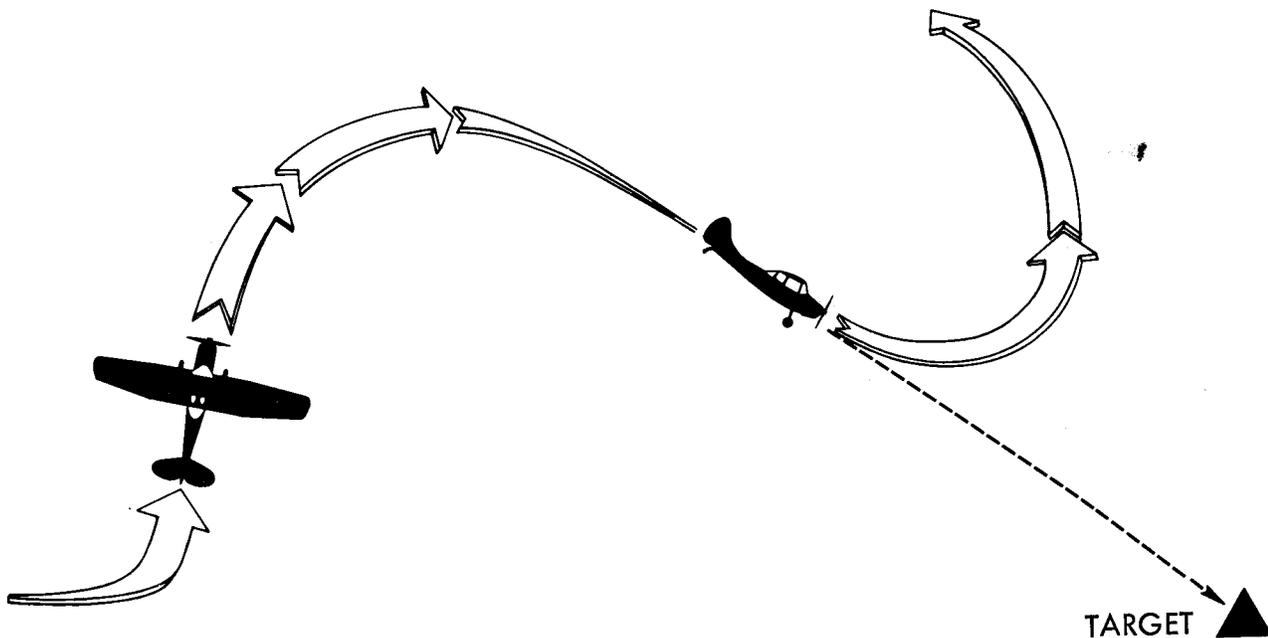


FIGURE 8 (U)

*Having no sight or similar device on which to line up on a firing pass, the 0-1 FAC pilot substituted a grease pencil mark on the windshield. The technique was to fly the aircraft in an attitude where the rocket pods were level with the horizon. Then, looking straight ahead, the pilot marked the windshield where the horizon crossed the center post. The mark usually fell halfway between the second and third bolt of the center windshield support." [Maj Victor B. Anthony, The Air Force in Southeast Asia, Tactics and Techniques of Night Operations 1961-1970 (S) (Ofc/AF Hist, Mar 1973), p 69.]

(This page is Unclassified)

~~SECRET~~

(U) The FAC normally opted for the turning delivery (Fig. 9) when he met with small-arms fire. Instead of rolling wings level, he lined up on the target picture and pulled through it. Rocket-firing usually took place in the turn and the G-force bent the rocket's trajectory. The controller compensated by shooting either above or slightly late and long on the target. Attaining accuracy in this type marking demanded practice.²⁹

TURNING DELIVERY

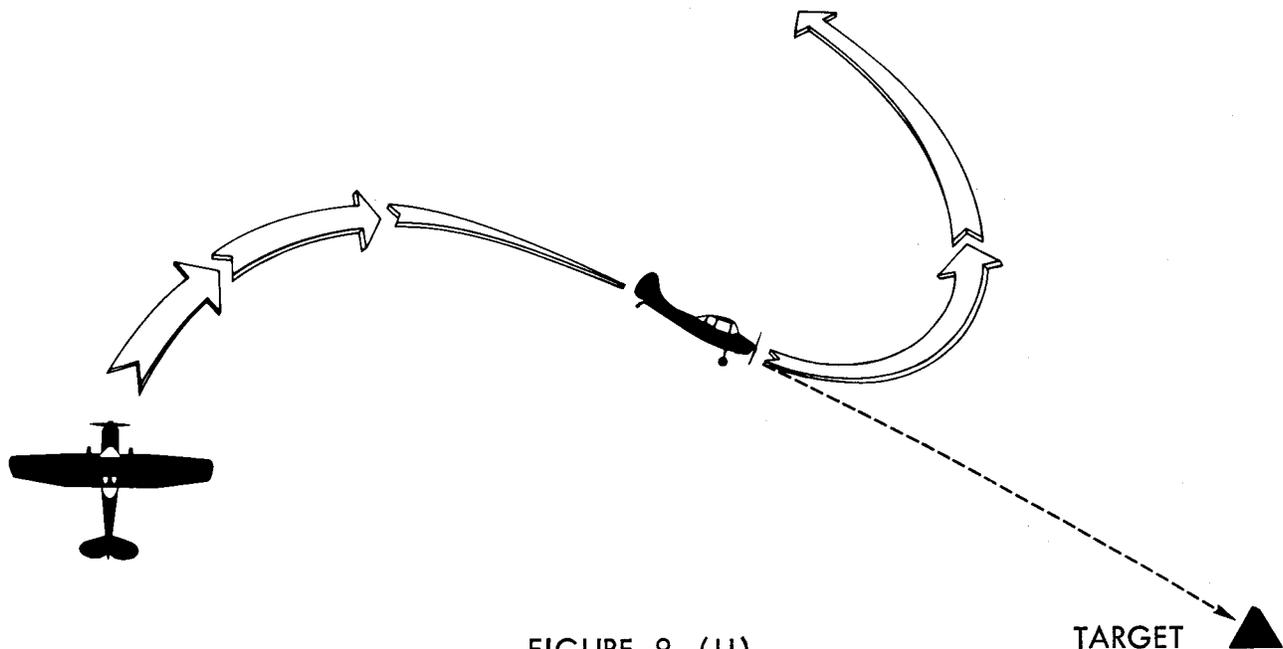


FIGURE 9 (U)

(U) Strong enemy defenses often compelled the forward air controller to choose the standoff delivery (Fig. 10)--a method calculated, mechanically aimed, and least accurate. At a 2/3-mile standoff distance, the controller set his basic sight picture close to the center of the O-1's windshield. If forced out to 3 miles, he held a nose-high attitude and visualized the sight picture by lining up the engine cowling on the target. The sight pattern for intermediate distances fell somewhere in between these two positions.

UNCLASSIFIED

The FAC most always had to hold an altitude of 6,500 feet AGL to clear the effective range of most automatic/AA fire in South Vietnam.³⁰

STANDOFF DELIVERY

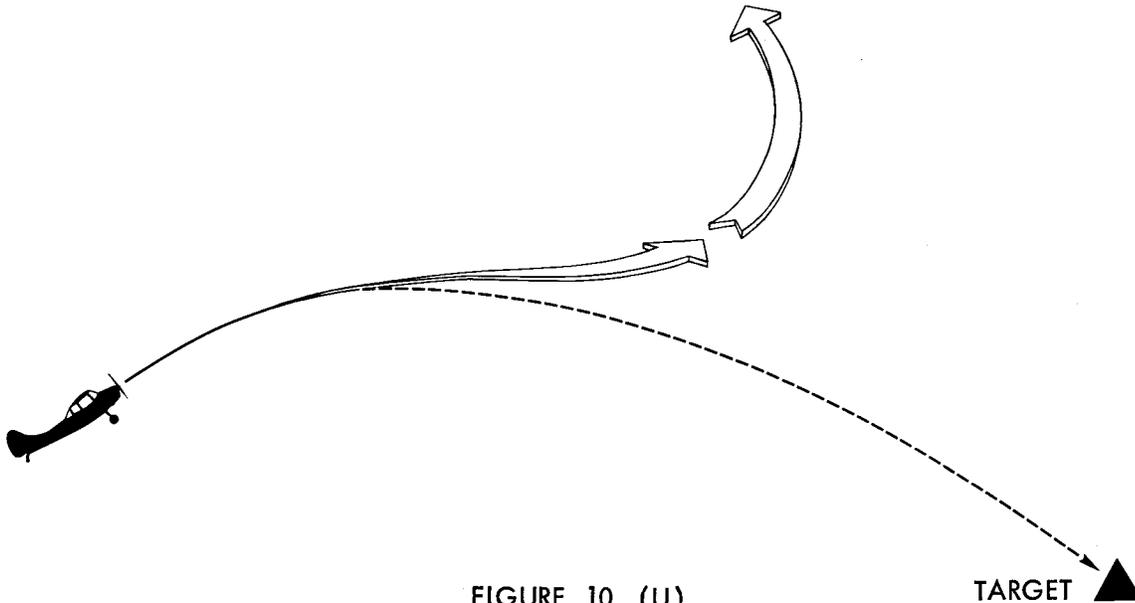


FIGURE 10 (U)

0-2A Marking Techniques

(U) More stable for target-marking than the 0-1, the 0-2A also carried a highly accurate aiming device.* In all types of delivery, the FAC set props at 2,600 revolutions per minute and adjusted throttles at normal cruise speed. He approached the target area at 800-1,000 feet above the desired release altitude, offset from the target far enough to allow correct delivery.³¹

(U) When danger from ground fire was slight, the forward air controller found the power-off delivery (Fig. 11) best for accuracy.

*The time needed to adjust the device partly discounted its advantages in marking. The FAC had to know the type of delivery, release altitude, and dive angle. He made the first mil setting while flying straight and level at 140 KIAS.

UNCLASSIFIED

As the target came into his 3 or 9 o'clock position,* the FAC retarded throttle and lifted the nose slightly to drain off airspeed to around 100 KIAS. He rolled in on the target-heading, foot heavy on the rudder to speed the rate of roll. As the nose swung toward the target, he made sure the armament circuit breakers were "in" and the master arming switch "on." He applied aileron and rudder to roll out, with the aiming device's piper⁺ below the target. As release altitude approached, he brought the piper up to the target, raised the nose to center the piper in the reticle,[‡] and fired the rocket. Advancing throttle, the controller pulled up quickly by climbing and rolling into a banking turn (keeping target area and marker in view). Turning 60°-80° from his run-in heading and allowing adequate distance from the target, he pulled up into a lazy-8 delivery pattern--poised to mark again.

POWER-OFF/POWER-ON DELIVERY

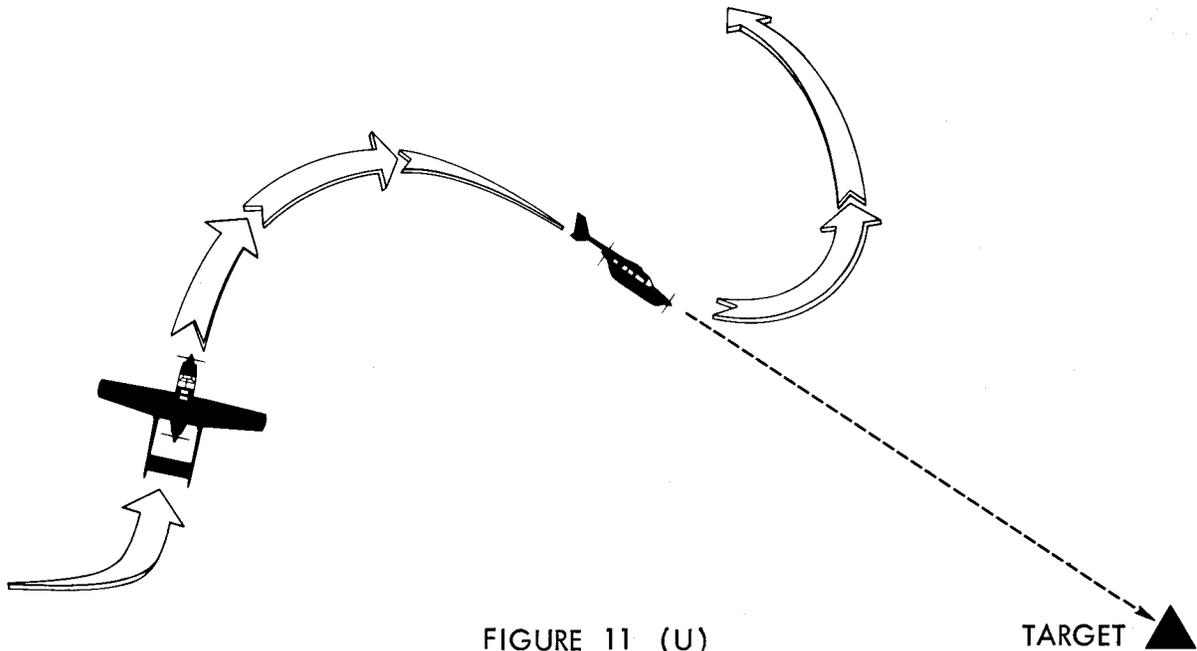


FIGURE 11 (U)

*In clock code the dead-ahead position of the 0-2A was 12 o'clock.

⁺The center or bead of a gunsight.

[‡]A system of lines, dots, crosshairs, or wires in the focus of an optical instrument.

UNCLASSIFIED

(U) The FAC favored the power-on delivery over the power-off even though it was not as accurate. Both shared a common tactic (Fig. 11). The power-on approach nevertheless started at higher altitude, giving the O-2A more airspeed and mobility to escape ground fire. In addition, the controller cut airspeed to 80 KIAS* and applied full rudder as he began roll-in to the target. This set up the final approach with the aircraft's nose below the horizon.

(U) The turning rocket delivery (Fig. 12), commonly preferred for high-threat areas, used the same maneuver entry as the power-off approach. Then, the controller reduced power as he went into a continuous descending turn. He either took time to put a correction into the aiming device or kept the target eyeballed above the O-2A's cowling, releasing the rocket shortly after the aircraft's centerline passed through the desired impact point.

TURNING ROCKET DELIVERY

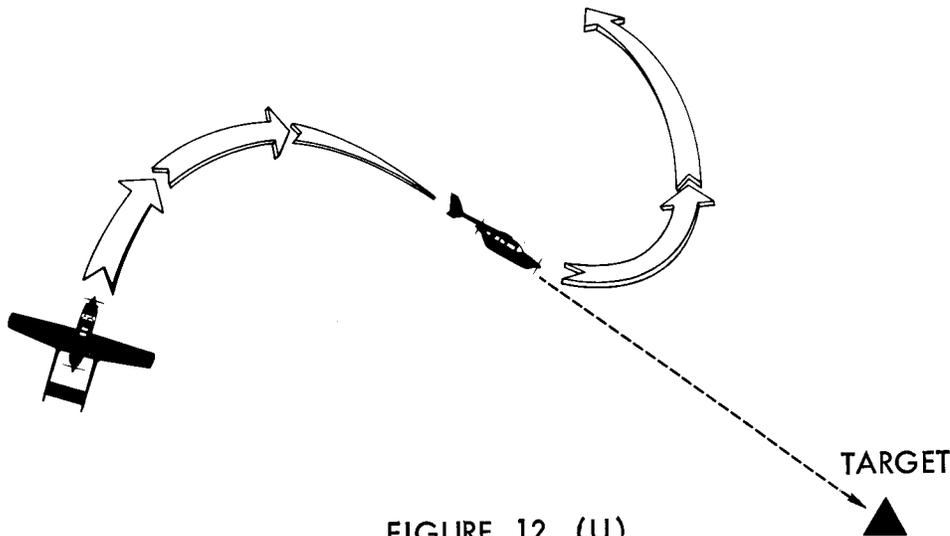


FIGURE 12 (U)

*The FAC started roll-in at 80 KIAS (as opposed to 100 KIAS for Power-Off Delivery) because with power-on the aircraft more rapidly reached the desired 140 KIAS delivery speed.

UNCLASSIFIED

(U) A number of controllers (mostly out-country) adopted the semi-standoff delivery (Fig. 13) to mark targets in areas of hot ground fire. This method protected the O-2A by stretching slant range* beyond the usual 2 miles but accuracy slipped sharply. The FAC used the gunsight to align the aircraft's centerline on the target area. He kept rocket releases consistent by maintaining the same altitude and target distance on each pass unless adjustments⁺ were necessary.

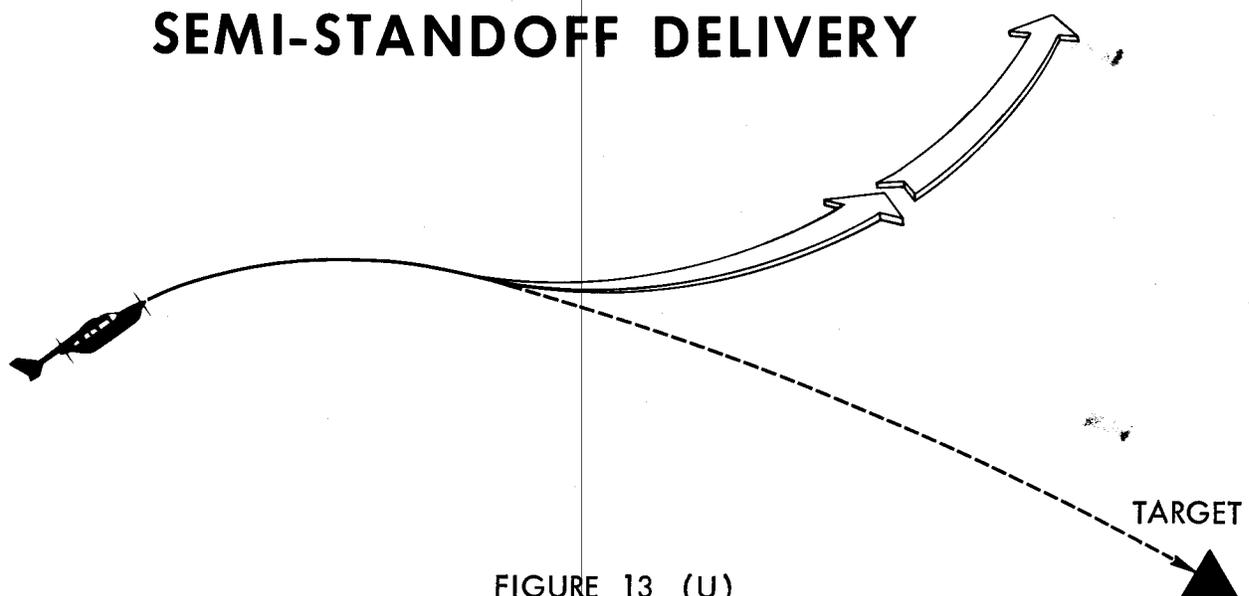


FIGURE 13 (U)

OV-10 Marking Procedures

(U) The OV-10 boasted superior speed and probably the best target-marking system. Besides employing O-2A delivery techniques, the OV-10 controller could fly on the wing of certain strike aircraft, give instructions, mark the target, and furnish last-minute adjustments before the first fighter's final run-in. By looping back over,

*Line-of-sight distance between two points not at the same elevation.

⁺In all target-marking, the controller contended with wind direction/velocity. If the wind blew from the right, he sighted or tracked left of the target; if from the left, he reversed the procedure. He released the rocket late in headwinds and early in tailwinds.

(This page is Unclassified)

~~CONFIDENTIAL~~

the controller met the next fighter coming in and again supplied corrections. *32

(U) To adjust the gunsight for marking, the OV-10 FAC first computed wind, dive angle, ordnance type, and release altitude.⁺ This in theory enabled him to score a shack on the target every time. But actually he often had to adjust and modify the marking technique to fit the actual situation at hand.³³

Holding Patterns

Having marked the target, the forward air controller took a position where he could always see the fighters and target area. He could thereby keep the strike aircraft lined up on the target, help them avoid midair collisions, adjust ordnance release points, observe enemy reactions, and spot changes in ground-fire patterns. The FAC's position likewise rested on the type of attack (high or low), terrain, and friendly/enemy troop dispositions. Furthermore, if the fighters dropped slicks,[‡] the controller held high. If the ordnance was drags,[@] napalm, or BLU's,[#] he held at lower altitude. An outside or overhead pattern was used, with variations.³⁴

The outside holding pattern (Fig. 14) proved suitable for high-angle, steep-delivery passes and low-altitude attacks. In one variation the forward air controller flew a racetrack pattern, holding to the attack side of the target and short of the ordnance release point. This put him in position to watch the fighters drop ordnance and yet be clear of their pullup. The figure eight pattern (Fig. 15), a second variation, afforded the controller a wider view of the target area because he was more frequently pointed toward it. When strike took place on a hillside or with troops-in-contact, the FAC preferred a

*This expedited the airstrike and let the controller direct it from the perspective of the strike pilot. Even so, while looping back over for the next run-in, the FAC lost sight of the target situation and spent precious seconds re-acquiring it.

⁺The OV-10 gunsight resembled that of the F-5 aircraft. With proper mil adjustment based on good computations, the sight was very accurate.

[‡] Low-drag or free-fall ordnance.

[@] Drag--drogue-retarded or parachute-dropped ordnance.

[#] BLU-(bomb, live unit)--various ordnance, for example, the bomblets dropped from dispensers or from special purpose bombs.

~~CONFIDENTIAL~~

OUTSIDE HOLDING PATTERN

- HIGH ANGLE - HIGH RELEASE
- 1,500 - 2,500 FEET ALTITUDE
- WORK STRIKE AIRCRAFT PARALLEL TO FRIENDLY POSITIONS

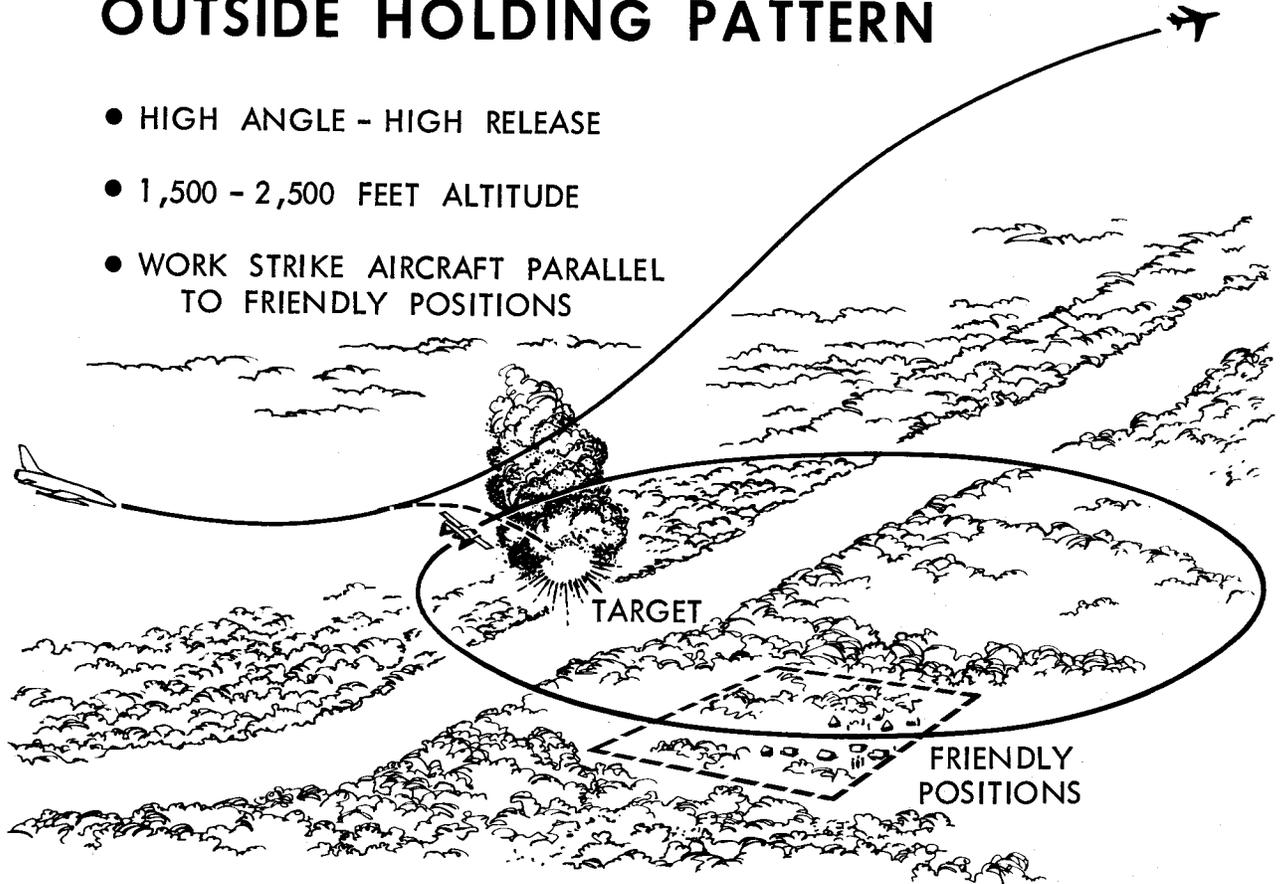


FIGURE 14 (U)

UNCLASSIFIED

FIGURE EIGHT PATTERN

STRIKE AIRCRAFT AND TARGET CAN BE
KEPT IN SIGHT AT ALL TIMES

- 1,500 - 2,500 FEET ALTITUDE AGL
- 120 - 150 KNOTS
- WORK STRIKE AIRCRAFT PARALLEL
TO LONG AXIS

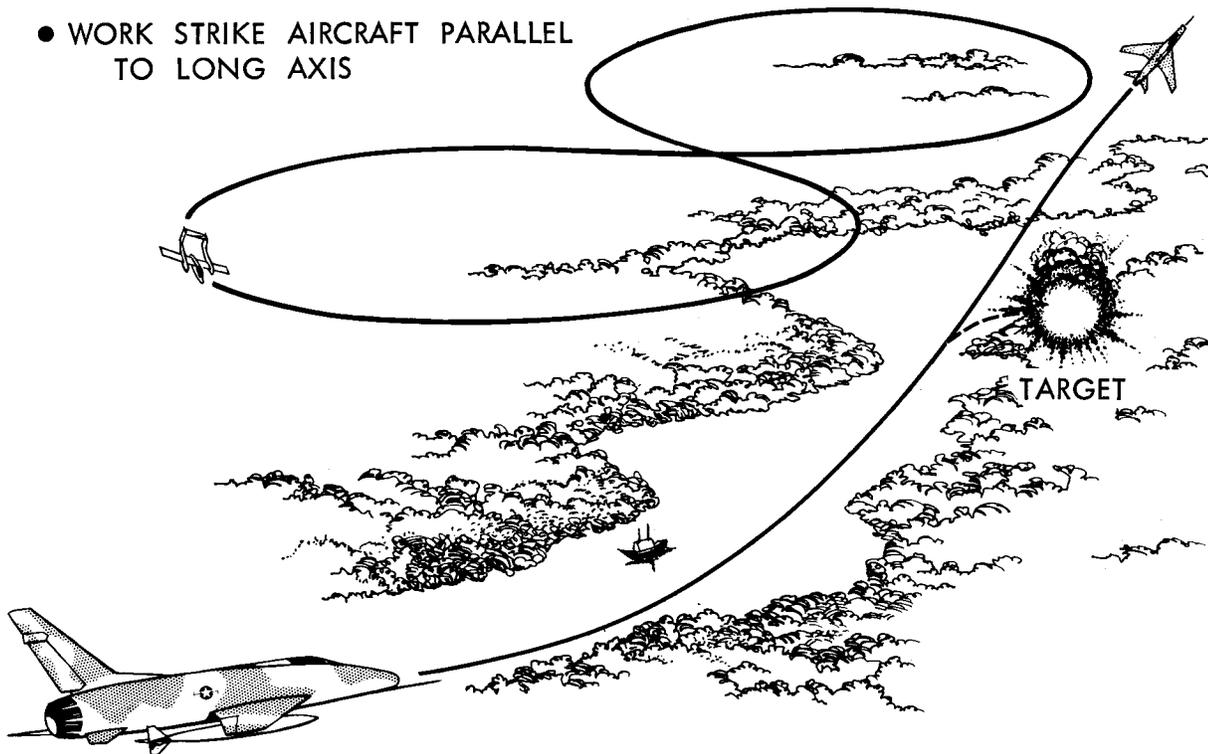


FIGURE 15 (U)

UNCLASSIFIED

OVERHEAD HOLDING PATTERN

ALWAYS BE IN A POSITION TO SEE THE STRIKE
AIRCRAFT AND THE TARGET

- 2,000-3,000 FEET DIRECTLY OVER TARGET
- WORK STRIKE AIRCRAFT DIRECTLY
UNDER YOU
- STRIKE AIRCRAFT CAN VARY
ATTACK HEADING

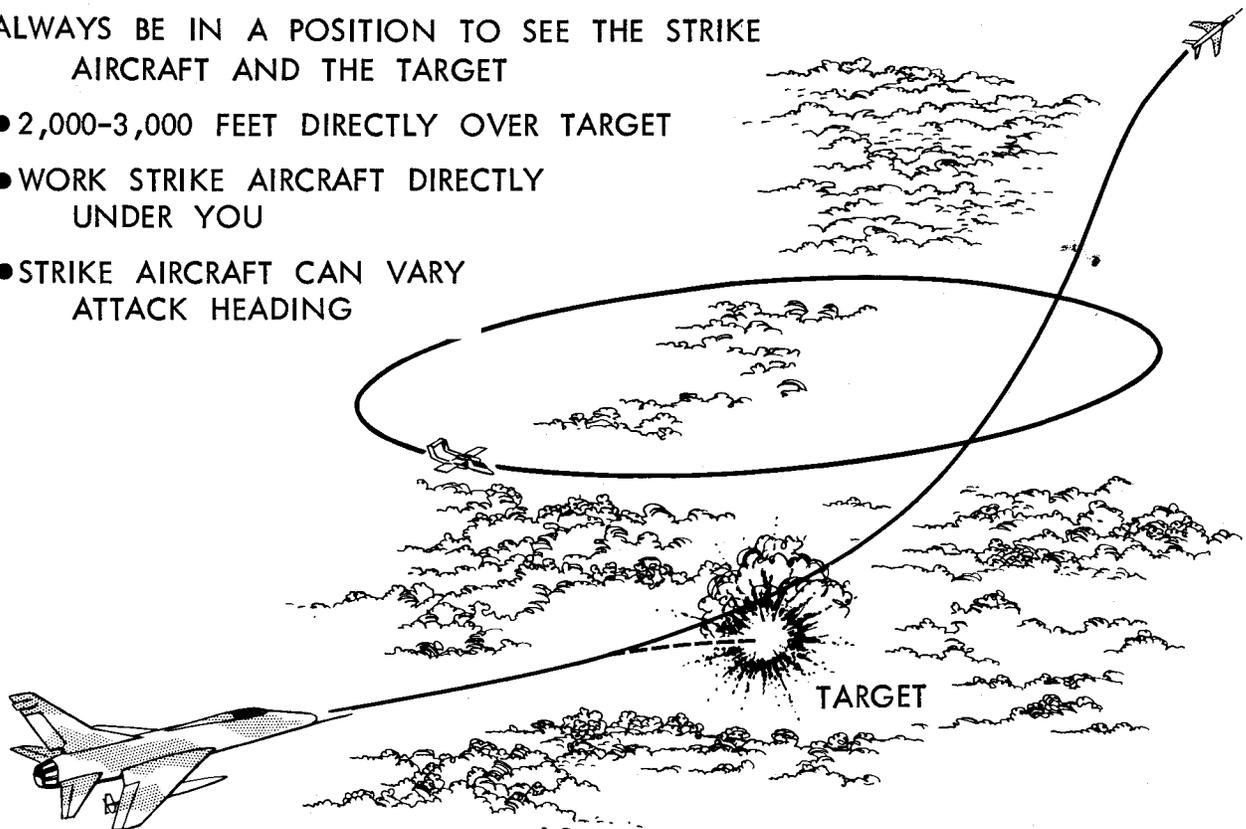


FIGURE 16 (U)

(This page is Unclassified)

~~SECRET~~

racetrack pattern inside the strike aircraft orbit--immediately over the friendly troops if possible. This assured that friendlies were not mistaken for the enemy. 35

In the overhead holding pattern (Fig. 16), the FAC circled above the target at 2,000-3,000 feet AGL as strike aircraft flew under him at low altitude. He could give the fighters more precise instructions for successive bomb runs from this position since he had no slant range to bother with. Dangerous if the enemy put up AA fire, the overhead pattern worked best when strike aircraft made their run-in down a valley or to support troops-in-contact. 36

Ordnance

The type of ordnance fixed the order of the strike aircraft's run-in--general purpose bombs followed in turn by cluster bomb units (CBU's) and napalm (Fig. 17). Whenever tactical conditions permitted, the fighters made a dry pass* to pinpoint the target for the hot pass+ that followed. The FAC had authority to skip the dry pass and send the aircraft in "hot." However, if he felt they might hit the wrong target or imperil themselves or friendly troops, he sent them in "dry" or pulled them off the target. By the same token, the fighter pilot called off his drop if he saw danger developing. During the remainder of the strike, the controller adjusted each pass as necessary, often using ordnance impact as a point of reference. To confuse the enemy, he let the fighters use random headings in high-threat areas. 37

(U) In preparing a preplanned air request, the ground commander looked to the FAC for advice on what ordnance to ask for (Fig. 17). The controller considered CBU's worthless against bunkers, tunnels, and underground areas. Hence, he recommended general purpose bombs for high-explosive penetrating power. To destroy huts or storage areas above ground, he planked first for napalm then white phosphorous, CBU's/WP's, GP, and (as a last resort) strafing. To kill troops in the open, the controller gave the nod to CBU's followed by strafing, GP, and napalm. He favored strafing and fragmentation clusters to sink small boats, GP and landmines to interdict supply routes/trails. Against targets such as camps or headquarters areas, he recommended a combination of weaponry. 38

*An orientation pass with no ordnance drop.

+A run-in pass with ordnance armed.

~~SECRET~~

ORDNANCE SELECTION

WEAPON	DESCRIPTION	DESIGNATION	MIN ACFT ALTITUDE	DELIVERY METHOD
General Purpose Bombs	GP bombs produce blast and fragmentation effect - frag effect having the greatest range. Selective delay fuzing is available up to .25 sec. Instant detonation is best for soft targets and delayed fuzing most effective against bunkers and tunnels. GP bombs have hi-drag and slick configuration	Mk-81 250# Mk-82 500# Mk-117 750# Mk-84 2000#	1,200' 1,900' 2,300' 3,000'	Level to 60°. Slick bombs are usually delivered at 30°/45° Hi-drags level to 15°
Napalm	Finned and unfinned cannisters containing incendiary. Finned nape will penetrate jungle canopy but bury in rice paddies. Unfinned will give better dispersal pattern on open targets but will go off in the tops of trees	BLU-32 500# BLU-1/27 750#	500' 500'	Shallow to level delivery for unfinned nape. Level to 45° angle for finned nape
Cluster Bomb Units	CBU come in a variety of bomblets but main effect is wide area coverage against soft targets	Classified	2000'	Level to 60° depending on dispenser
Guns	Ammo includes high-explosive incendiary, and armor-piercing	20-MM 7.62-MM	500' 500'	Level to 60°
Rockets	Warheads include high-explosive, armor-piercing frag, flechette and WP.	2.75" FF	1,900'	Level to 60°

FIGURE 17 (U)

(This page is Unclassified)

~~SECRET~~

(S) The forward air controller had no say at all about types of ordnance carried by strike aircraft responding to immediate air requests. He therefore needed to know the characteristics of each type. Antipersonnel cluster bomb units proved best for immediate strikes since the enemy was commonly in compacted positions. Nevertheless, the FAC many times had to make do with other weapons. Lt. Col. Norman G. Smith, who flew more than 500 combat sorties in the F-100, recalled being turned back only once because of the wrong ordnance. Even so, he believed it responsible for many ineffective airstrikes.³⁹

Bomb Damage Assessment

(S) In the course of the airstrike, the forward air controller measured results and adjusted fighter headings. After the last aircraft had pulled off the target, he dropped to treetop level, cut airspeed to 60-70 KIAS, and began bomb damage assessment.* (Strike aircraft stood by to supply suppressive fire.) The controller couldn't take everything in despite the low speed, and at times heavy foliage, hovering smoke, and bad weather impeded his efforts. Despite all this, he most always came up with a fair idea of air support quality. He sent a short BDA report to the strike pilots and a longer one to the TACC through the TACP supporting the unit involved.⁴⁰

Artillery Adjustment

(S) Forward air controllers often did jobs other than visual reconnaissance and strike control. For example, Army forward observers (FO's) usually handled artillery adjustment. But if a firefight erupted and no FO was to be had, the ground commander turned to the controller. Then too, the FAC now and then requested artillery fire against targets in closed, narrow valleys the fighters couldn't get into and for targets not meriting bombing. Artillery fire as well as airstrikes harassed the enemy, so the wise FAC kept current on artillery adjustment.⁴¹

(S) The controller picked up artillery jargon by day-to-day association with Army troops. So upon receipt of a request for

*Reconnaissance patrols were an additional source of reliable BDA in areas under control of Americans or South Vietnamese. In areas not so controlled, the BDA fell to the FAC, strike crews, and photoreconnaissance.

~~SECRET~~

artillery support, he relayed it to the fire direction center (FDC). Coordination before firing included: agreement on fire warning order, FAC identification, nature and location of target, and conduct of fire control. The FAC furnished corrections to the FDC during firing.⁴²

In the successful defense of Tan Son Nhut on 31 January 1968, controllers kept the enemy off balance by directing both artillery fire and airstrikes. Between 23-28 August 1968, FAC's flew around the clock to defend the Duc Lap Special Forces camp in III Corps. They adjusted artillery fire over 50 times, controlled 480 strikes, and relayed countless radio messages.⁴³

It was not uncommon for a FAC to coordinate airstrikes, artillery support and helicopter assaults--all on the same target at about the same time. Strike aircraft were interspersed between artillery bursts and helicopter attacks. Hence controller, fire direction center, and ground/helicopter commanders had to work as one. This type operation limited the attack/breakaway headings the forward air controller could give the fighters.⁴⁴

VI. EXPANDING THE FAC MISSION

(U) As has been noted, during the peak years of the war (1965-1970), the controller's responsibilities steadily expanded. Night operations, for example, triggered a search for new ways to find, mark, and strike enemy targets. It eventually spawned the starlight scope, lasers, new flare techniques, and tighter FAC-gunship relations. Mounting enemy aggressiveness sparked an upturn of in-country interdiction. Controllers flew rocket watch to counter standoff enemy hit-and-run mortar assaults on South Vietnamese cities. To strike the fleeting Communist troops before fighters could arrive, the Air Force also armed the forward air controller, adding a new dimension to his operations.

Night Operations

The step-up in enemy night activity, starting in 1965, stimulated Air Force development of new tactics and equipment. Night air operations were difficult under the best of conditions, but decidedly worse in bad weather and over jungle/mountainous terrain. Darkness held other drawbacks: vertigo and spatial disorientation of crewmembers;* difficulty of rendezvous between FAC aircraft and fighters; danger of midair collision in the crowded target areas; and--most crucial--the problem of marking targets accurately so as to separate friendly from enemy troops.¹

Marking

The enemy took full advantage of the forward air controller's difficulty in identifying friendly positions at night. Ingenuity early came to the rescue, however. During an Ia Drang Valley operation in 1965, one FAC suggested the ground commander fill empty 105-mm howitzer casings with sand-soaked JP-4. Then when the enemy attacked, these improvised torches would be put at the four corners of the perimeter and lit. The ground commander said, "Gee, then they'll know where we are." The controller replied, "When they hit you they [already] know where you are. Give us the chance to

*Crewmembers suffered vertigo when flying in and out of flare-light; the absence of a visible horizon was the main cause of spatial disorientation.

find out where you are too." The torches turned out to be an excellent reference, enabling fighters to drop ordnance as close as 50 yards to the perimeter.² A like method had 50-gallon drums cut in half and filled with jellied gasoline mixed with sand. Tripflares were attached so the enemy would invariably trigger them and light up the drum torches. Furthermore, fighters dropped napalm and the controller gave strike headings from the ensuing fires. Also, U.S. Army troops picked up the Vietnamese trick of pointing flaming arrows* toward enemy positions.³

(U) Frequently, a ground commander lacked the means and time to mark his perimeter with torches--thus hampering air support except under a full moon and cloudless sky. Starting in 1965, the wide use of flareships in-country overcame this drawback.⁺⁴ In fact, the dropping of the first flare commonly deterred the enemy from contact or caused him to break off an ongoing attack. Hence, the tactic evolved of expending one flare instead of two or three. Seventh Air Force additionally tried putting a FAC on each flareship but the cargo aircraft's poor visibility forced the controller to rush "from window to window." Not having control of the flareship also impaired his effectiveness.⁵

(S) Flare operations contained certain inherent deficiencies. The initial flash blinded aircrews and blotted out the target during final run-in. Swinging beneath its parachute, the flare intensified ground glare and created an effect of moving shadows--causing crew disorientation and loss of target. This and the milkbowl effect[‡] aircrews had to live with. What's more, flares dropped below an overcast let enemy gunners track aircraft more easily. Timing of flaredrops was equally critical. Dropped too high, the flares burned out before reaching the ground; too low, they gave off little light. Inaccurate flaring caused questionable ordnance drops, with precious moments spent in re-flaring and reacquiring the target.⁶ Despite these shortcomings, flare operations in support of ground troops were a definite asset.

*These fire arrows could be made of many materials; metal gas cans filled with gasoline-soaked sand were often used; ignited it was easy to see at night.

⁺In 1963 VNAF C-47's and USAF C-123's had begun to fly 5-hour flare missions over South Vietnamese hamlets and ARVN forces. By 1965 they operated extensively in-country, joined by C-130 flareships.

[‡]Particles in the air picked up rays of flarelight and reflected them back, giving crewmembers the feeling of being in an inverted milkbowl.

Marking targets under flarelight was at best a tricky business. The 2.75-inch WP marker rocket--a mainstay for day-time FAC operations--worked poorly at night, especially against moving targets. The rocket's smoke lasted only 2-3 minutes and easily drifted off the target. The controller couldn't divert his attention an instant or he would miss the rocket's short impact flash and have to mark again. The ideal marker would be a long-burning, high-intensity flare, fired as a rocket and capable of illuminating a target even in bad weather.⁷ No such marker existed in 1965.

To iron out night target-marking problems, the Air Force ushered in ground marker logs.* Although an excellent reference for directing airstrikes, the markers at times couldn't be seen in mountainous or heavily forested areas. Moreover, the enemy created confusion by setting ground fires of his own, leading the FAC to counter with brighter, longer-burning, red/green logs. From above 12,000 feet AGL, a few ground markers could be detected. Those that could often weren't bright enough to light up smaller targets, so FAC and strike pilot dropped lower for positive identification. Accurate delivery of the logs posed a problem, what with no aiming device and the need to consider wind, airspeed, altitude, and angle/direction of approach.⁺ To cap it off, the controller frequently met with ground fire even in South Vietnam and therefore dropped the markers from above optimum altitude.⁸ Finally, FAC and strike pilot were hard put to accurately estimate the range between log and target.

(U) In 1966 the Air Force tried the Mk-24 flare as a ground marker log. The flare's 20- to 30-minute burn-time was ample but the parachute trip down eroded its accuracy.⁹ A modified Mk-24 (the Mod-4)--also parachute-dropped--fared no better, even though its 30-minute red flame stood out distinctly among other ground fires.¹⁰ The free-dropped Mk-6 (Mod-3) ground marker log[‡] burned brightly 40 to 60 minutes but shared the Mk-24's inaccuracy. Hence, the FAC used it solely as a general target reference for the strike pilots.¹¹

*As opposed to air-blossoming flares, the ground marker logs (often converted flares) ignited after reaching the ground.

⁺Logs were released without parachute (free drop) from either the cockpit or the pylon under the FAC aircraft's wing.

[‡]Wrapped in a rectangular wooden casing, the Mod-3 was usually released from the aircraft pylon, the 90-second-delay fuse being triggered by an attached lanyard.

(U) The M-151 white phosphorous air-ground rocket came into service in 1968. A cut above the 2.75-inch rocket, the M-151 nonetheless had a short burn-time and was hard to see from the air.¹² Air Force testing for an improved marker rocket accordingly went on through 1970 but with marginal success.

Starlight Scope

(U) Flarelight alerted the enemy, curbed his movements, and canceled out the element of surprise. To sidestep these shortcomings and still pick out targets in the darkness, the Air Force experimented with various infrared sensing devices, low-light-level television (LLLTV), and other light-intensifying instruments. Already in the van of similar research, the U.S. Army had developed several items for night detection. Of these, the Air Force selected the starlight scope* for testing in 1965.¹³

The starlight scope consisted of an objective lens, a 3-stage, image-intensifier assembly, and an eyepiece. Run by a 6.5-volt battery, the scope collected available starlight/moonlight and amplified it up to 40,000 times by passing it through several lenses to the operator's eye. With the starlight scope, the forward air controller could see objects invisible to the naked eye, for example: people moving about, canal/tree lines, buildings, roads, trucks, and sampans plying waterways. There was one hitch--all this vanished when clouds obscured the moon and stars.¹⁴

The 1965 starlight scope testing started off in the O-1 Bird Dog. The O-1's small rear cockpit, however, cramped the scope operator and curbed good coverage. Having no suitable mount, the operator held the scope in his hands, the aircraft vibration defying steadiness. Peering through the cockpit window (unopened due to the slipstream) also distorted the scope picture.¹⁵ Despite these snags, controllers found the starlight scope helpful in night visual reconnaissance.

In January 1966 Col. James P. Hagerstrom, Director of the TACC in Thailand, got word of the starlight scope tests in South Vietnam. Deciding to evaluate the scope during out-country operations, Colonel Hagerstrom selected the AC-47 Spooky gunship for the test because it offered space and stability. Maj. George W. Jensen and crew tried out the starlight scope for VR of jungle roads

*The Army put the scope on its M-16 rifle and machineguns.

~~SECRET~~

east of Nakhon Phanom. Delighted with results, Major Jensen reported that the scope showed a great deal of promise--how much became evident at the battle of Attopeu.¹⁶

A strategic city in the Laotian panhandle, Attopeu, straddled a major junction of the Ho Chi Minh Trail. Early in March 1966, after the North Vietnamese had overrun the towns of Muong Cau and Fangdeng to the east, they encircled Attopeu and its airfield. The enemy looked on the city's 1,600 demoralized defenders as a pushover, taking the whole operation lightly and poking fun at the small show of air power mustered by Laotian T-28's. Dead certain the Communist attack would kick off at night, Gen. Thao Ma, RLAFA Commander, sought USAF support for the 4th of March. Second Air Division Headquarters responded with a sanitized Spooky (stripped of all USAF markings). Commanded by Major Jensen, the AC-47 out of Udorn AB touched down at Attopeu early in the evening. Following a briefing on friendly/enemy troop positions, the Spooky took off at 2005. It carried a starlight scope, jury-rigged in the open main cargo door in the rear. The navigator operating the scope sat in the doorway, a rope around his waist to keep him from falling out.¹⁷

The gunship first struck a preplanned target on the road to Attopeu then orbited the besieged area. Two forward air controllers already patrolling had seen no trace of the enemy. Suddenly, the Spooky scope operator spotted 150-200 Communist troops wedged between two known friendly positions in the rice paddies. No flare-drop was needed because the scope detailed the scene clearly under the bright moon. So, after the Laotian officer on board had confirmed the sightings with his counterpart on the ground, the gunship opened fire on the overconfident enemy. The yeoman work of the starlight scope and the Spooky crew was largely responsible for blunting the enemy's main thrust and successfully defending Attopeu. The official enemy body count was 100.¹⁸

(U) Heartened, the Air Force in May 1966 placed a \$1 million request with the Army for 198 scopes. Hard put to fill its own needs, the Army slashed the order deeply,¹⁹ forcing the Air Force to scrounge and to begin starlight scope development on its own.

Also on the heels of the Attopeu operation, C-123 Candlestick and C-130 Blindbat aircraft were equipped with the Army scope. Nonetheless, under dim moonlight/starlight, the instrument failed to detect trucks running without lights or discern the outlines of roads. This prompted the substitution of the Air Force's 6-pound AN/AVG-3 starlight scope that arrived in time for the 1967-68 dry season. Solidly mounted, the AVG-3 proved more stable, easier to handle, and better for picking out ground targets.²⁰

~~SECRET~~

Earmarked as the 0-1's successor, the 0-2A Super Skymaster began flying combat missions in 1967. Evaluation of the aircraft extended from late in the year to the spring of 1968. One of the aims of the test was to find the right starlight scope for the 0-2A. The Air Force's new Eyeglass (Super Starlight Scope), an early front-runner, gave a superb view under bright moonlight/starlight. From 400 to 4,000 feet AGL, the scope detected truck and boat traffic. Up to 1,500 feet AGL, it picked out people.²¹

The evaluation did disclose deficiencies. The 0-2A featured side-by-side seating. To get the scope into the aircraft and clamp it to the seat rails, the right front seat and door had to be permanently removed. The observer squeezed around the scope to get in and out--a safety hazard. Rain at times pelted through the open doorway, splattering the Eyeglass and electronic equipment. The instrument's 137 pounds plus those of the operator overloaded the aircraft. Hence, the pilot constantly compensated for a list to one side--very hard to do when in a turn and still keep an eye on the target. The scope's bulk confined its use to the right side, forcing the operator to direct the pilot through most maneuvers to keep the Eyeglass fixed on the target. The instrument's size shut off the operator's view during marking passes. What's more, the 0-2A with the Eyeglass alone could detect and acquire targets solely under strong moonlight/starlight. The Air Force weighed these findings and selected the smaller and lighter AN/AVG-3 starlight scope for the 0-2A.^{*22}

The OV-10 joined the 0-2A in Southeast Asia in 1968. Equipped with a smaller version of the Eyeglass scope, the Bronco was no match for the Super Skymaster in night operations. The OV-10's tandem cockpit and twin-boom design afforded the pilot an almost unlimited view. In contrast, the scope operator in the rear had just a 55°- 60° field of vision compared with 120° in the 0-2A. Similarly, he could see nearly straight down in the 0-2A but lacked 15°- 20° of doing so in the Bronco. Thus, the latter aircraft needed to offset farther to cover an area. In addition, canopy glare from the OV-10's front-cockpit lights distorted the scope picture. To correct this, a light-shield bellows was wrapped around the scope and pressed against the canopy during viewing. From 29 October to 15 December 1969, the 23d TASSq at Nakhon Phanom tested a modified AN/AVG-3 starlight scope, fitted with a binocular viewer and mounted in the Bronco's camera port. Although the test turned out well, steep

*The Eyeglass worked effectively in the C-130 Blindbat

modification costs prompted the Air Force to put Pave Spot* in the OV-10's instead.²³

Visual Reconnaissance and Strike Control

(U) Seeking out and striking the enemy formed the core of successful night operations. Day VR methods bent to the needs of darkness and the target-finding instruments at hand. To avoid mid-air collision, strike pilots and forward air controllers kept navigation lights on, stuck to preset altitudes, and meshed their moves throughout the mission. Targets starkly clear by day dissolved in darkness, so the controller found the starlight scope a welcome friend. The FAC combed the roads and waterways below for an enemy that had begun to stir--confident he would not be detected.²⁴

(U) Keeping oriented was a must in searching for the enemy at night. The forward air controller had to know every road, canal, stream, verified friendly/enemy position, and prominent landmark in his area. He kept to a preplanned schedule because darkness carried many a trick up its sleeve. He learned early to trust the plane's instruments over his senses. He might think, for example, he was flying straight-and-level when the instruments showed him exactly in an inverted dive. Yet, on the darkest nights, the seasoned controller could orient on some landmark below. If his aircraft carried TACAN, he took a bearing and DME reading from a known checkpoint then returned to that point for reorientation.²⁵

(U) The controller flew at 2,500 feet or higher to his assigned area. The first order of business upon arrival was a fast VR of highways and waterways to pick up opportune targets. The FAC flew the aircraft, his map a constant companion. The navigator manned the starlight scope,⁺ hoping the enemy would tip his hand--perhaps by campfires in an "unoccupied" area or by a flash of gunfire. The enemy, however, had become cagey with the advent of the starlight scope and other night-detection equipment. He knew darkness no

*A night observation device with boresighted laser target designator (LTD). (The LTD used a laser to direct a light beam onto the target so the proper sensors could track or home on the reflected energy.)

⁺Both a pilot and navigator were essential, since prolonged use of the starlight scope impaired night vision.

longer spelled safety, that the sound of FAC aircraft engines could mean an airstrike if he were seen. Hence at dusk he adopted night tactics.²⁶

(C) After completion of this general coverage, recce of specific areas commenced. The scope operator indirectly controlled the aircraft by passing agreed-upon direction to the pilot such as: "easy right" (10°-15° of bank), "right turn" (15°-30° of bank), "hard right" (45° or more of bank), and "roll out." The pilot acknowledged each signal, changed the heading, and made certain the operator knew the new direction.²⁷

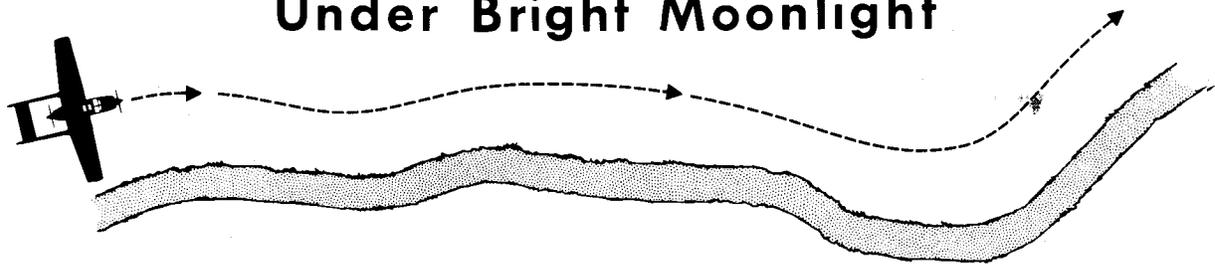
(S) Under bright moonlight, the FAC maneuvered at higher altitude and farther from the target area so as not to alert the enemy. This opened up the view, provided the distance didn't overrun the range of the starlight scope. On dark nights, however, the forward air controller had to move in to see what was going on. During road reconnaissance,* the greater distance/altitude let the scope operator see a bigger segment at a time. It also undercut the chances of the aircraft being detected by the road's users and aided selection of airstrike locations. Given a bright moon, the controller stayed to the left of, and parallel to, the road. Under dim moonlight, he flew a spiral pattern with brief turns over the road from time to time.⁺²⁸ (See Figure 18 on the next page.)

*Most road interdiction took place in the Laotian panhandle.

+C-130 Blindbats, C-123 Candlesticks, and gunships also flew the spiral pattern in the out-country war.

NIGHT ROAD RECONNAISSANCE STARLIGHT SCOPE

Under Bright Moonlight



Under Dim Moonlight

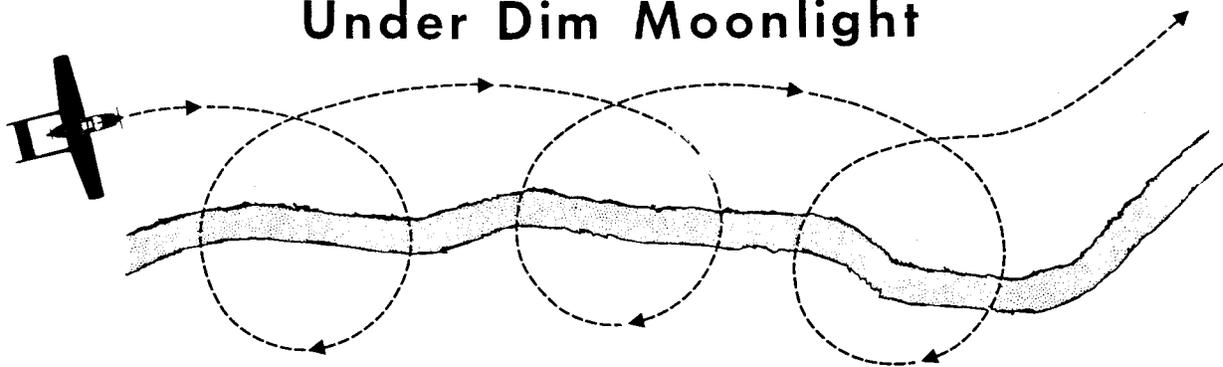


FIGURE 18 (U)

(This page is Unclassified)

Flaredrops shored up starlight scope coverage of high-priority areas where surprise was not a must. Properly placed artillery-/mortar-fired flares likewise enhanced scope operations. On the other hand, flarelight shining or reflecting into the scope caused a "whiteout" or--in the newer instruments--an automatic shutdown. Too much light ruined the scope or crippled it by burning spots on the lens. Flaring to one side of an area stayed off this scope damage. So did close-in flaredrops with the FAC staying some distance away in the darkness.²⁹

After the controller spotted and identified the target, he moved away from it to await the strike aircraft. If the target were troops, he looked for hiding places, open areas, and road/trail escape routes--pondering the best angle of attack. For an airstrike on vehicles, he pinpointed in addition the pulloff points and sharp turns.³⁰

Night rendezvous methods matched day operations except that the forward air controller and strike pilots had more trouble finding one another. The 0-2A/OV-10 FAC normally furnished the fighters a TACAN distance and radial to the rendezvous point. The 0-1 controller, having no TACAN, channeled rendezvous coordinates to the strike aircraft by way of the TACP and DASC.* (Then, if need be, the 0-1 FAC requested flight-following from the CRC.) In the rendezvous area, the fighters held above the controller's altitude. Join-up usually entailed a showing of wing lights or rotating beacons⁺ ("Go Christmas Tree!"). Upon spotting the strike aircraft, the FAC completed the join-up by clock code, for example, "I'm in your 9 o'clock position, low."³¹

The controller and strike pilots headed for the target after rendezvous. While en route, they discussed the local terrain, weather, expected enemy reaction, type of ordnance carried, sequence of weapon drops, and other essentials.[‡] The FAC usually set the stage upon arrival by dispensing a flare far enough upwind to drift

*Rendezvous could be done in other ways. The strike aircraft, for example, could home in on the controller's UHF transmission. Again, if the FAC aircraft carried a MSQ-77 transponder, radar rendezvous could be achieved.

⁺Rarely did aircraft in South Vietnam run with external lights off.

[‡]Altimeter settings, target elevation, highest point of terrain, locations of friendly troops/aircraft, holding position of fighters, controller's altitude, and desired run-in headings.

~~SECRET~~

across the target at half-burn point.* (A marker log was normally dropped on this same pass.) To bolster the strike pilot's judgment of distance--distorted by darkness--the controller commonly bracketed the target with markers. The airstrike immediately followed so as to attain the best results.³²

At night the strike aircraft dropped ordnance from higher altitudes and at shallower dive angles. Consequently, the FAC team (pilot and scope operator) found that an outside holding pattern over friendly troops gave the clearest view of the fighters, target, and enemy activity (see Fig. 14). Throughout the attack, the team passed instructions to and aligned the strike aircraft on target, and adjusted ordnance release points. The team also kept the orbit of the fighters close to friendly bailout areas and helped in avoiding midair collision, hostile fire, and dangerous terrain.³³

(U) If flareships joined the FAC and strike aircraft, spacing took on special importance. The forward air controller therefore stacked and offset the aircraft at separate altitudes (see Fig. 19). As a rule, the flareship flew a tight pattern on the side of the target opposite to the controller and 1,000 feet above⁺. It dispensed flares every 2 1/2-3 minutes on a heading reciprocal to the strike aircraft's. (For a continuous view of the fighters, the flareship set a heading 90° to theirs.) From a perch[‡] above and outside the FAC and flareship, the strike aircraft dove between their orbits during run-ins on the target.³⁴

(U) When the gunship linked up with the FAC and fighters, it commonly flew a circular pattern--firing at enemy guns while dispensing flares (Figure 20). It ceased activity during airstrikes because on roll-in the fighters passed 500-1,000 feet below. After pulloff, the strike pilot had to stay clear of the bigger slower gunship as he climbed through its altitude. Danger of collision diminished in the offset pattern (Figure 20) which put the gunship

*If the target was a turn in the road, the FAC dropped the flares perpendicular to the turn and they floated over it.

⁺Opposite in direction. Said of a bearing, course, vector, or the like. For example, a reciprocal bearing is the one taken plus or minus 180°.

[‡]An airborne position assumed by a fighter/bomber aircraft in preparation for or anticipation of an air-to-ground maneuver.

~~SECRET~~

on the opposite side of the target from the FAC. This pattern also expanded the controller's view of the entire operation. ³⁵

NIGHT AIRSTRIKE CONTROL WITH FLAESHIP

- FLAESHIP SELECTS INBOUND HEADING
- STACK TO PROVIDE 1,000 FEET SEPARATION BETWEEN FAC, FLAESHIP AND STRIKE AIRCRAFT
- AVOID BEING SILHOUETTED BY FLARE
- DUD FLARES AND EMPTY FLARE CANISTERS CAN BE HAZARD
- FAC HOLDS INSIDE STRIKE AIRCRAFT PATTERN

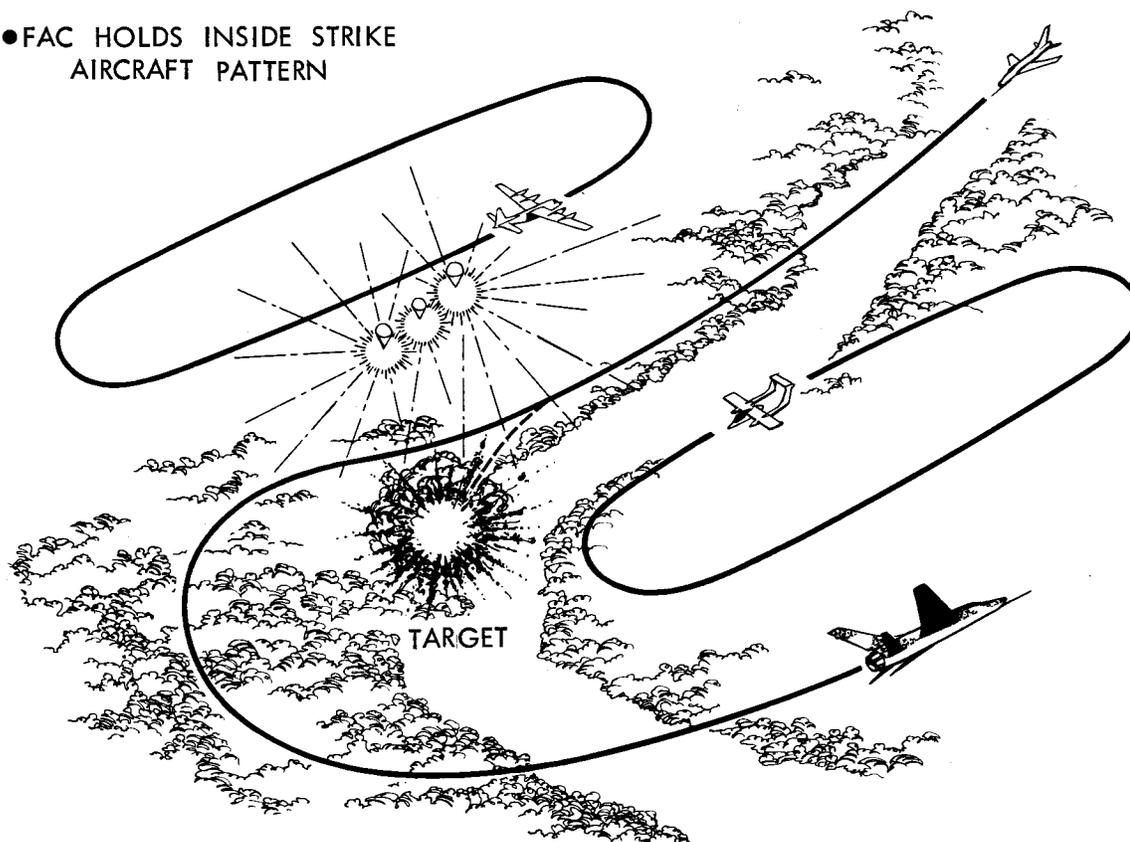


FIGURE 19 (U)

Interdiction--South Vietnam

~~(S)~~ In 1965 the Air Force launched interdiction operations against the complex lacing of roads, rivers, trails, and passes known as the Ho Chi Minh Trail. The bulk of the airstrikes took place out-country but some hammered enemy supply routes in central South Vietnam. There, throughout the 1960's, Viet Cong and North Vietnamese Army forces received supplies over roads that sliced across the Cambodian and Laotian borders. The foe

FAC/GUNSHIP/STRIKE AIRCRAFT PATTERN

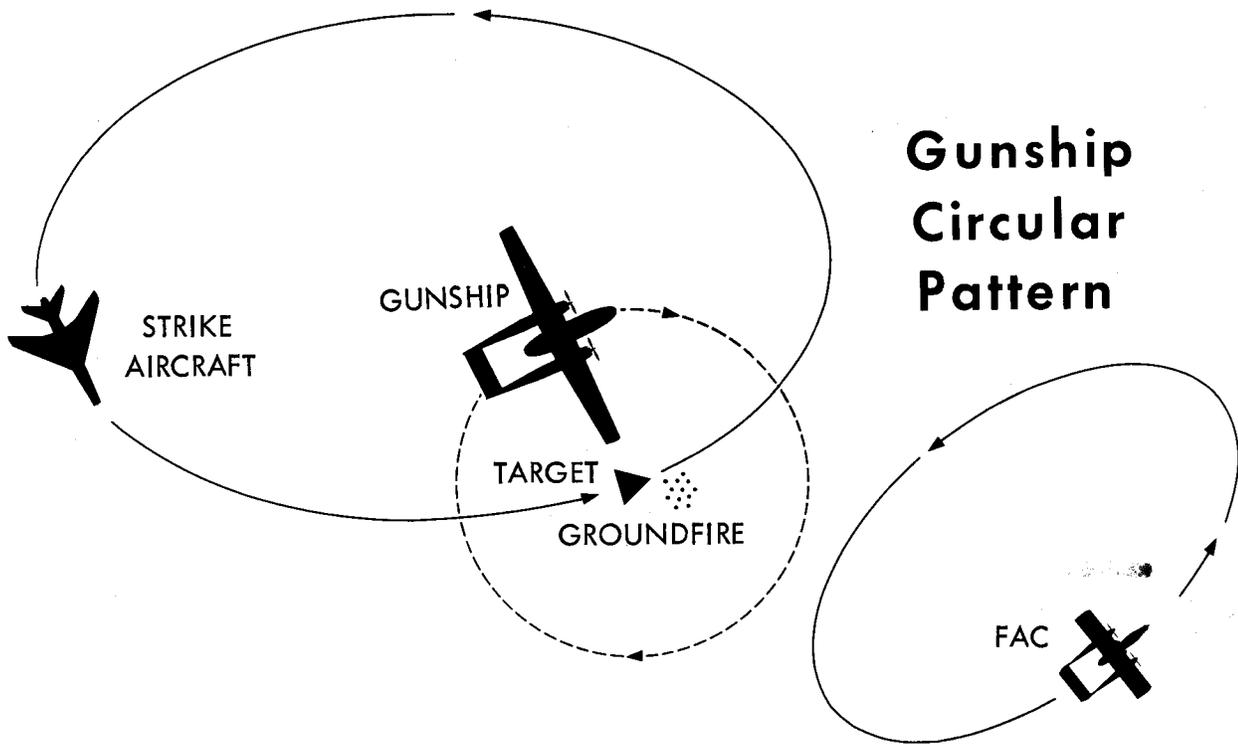
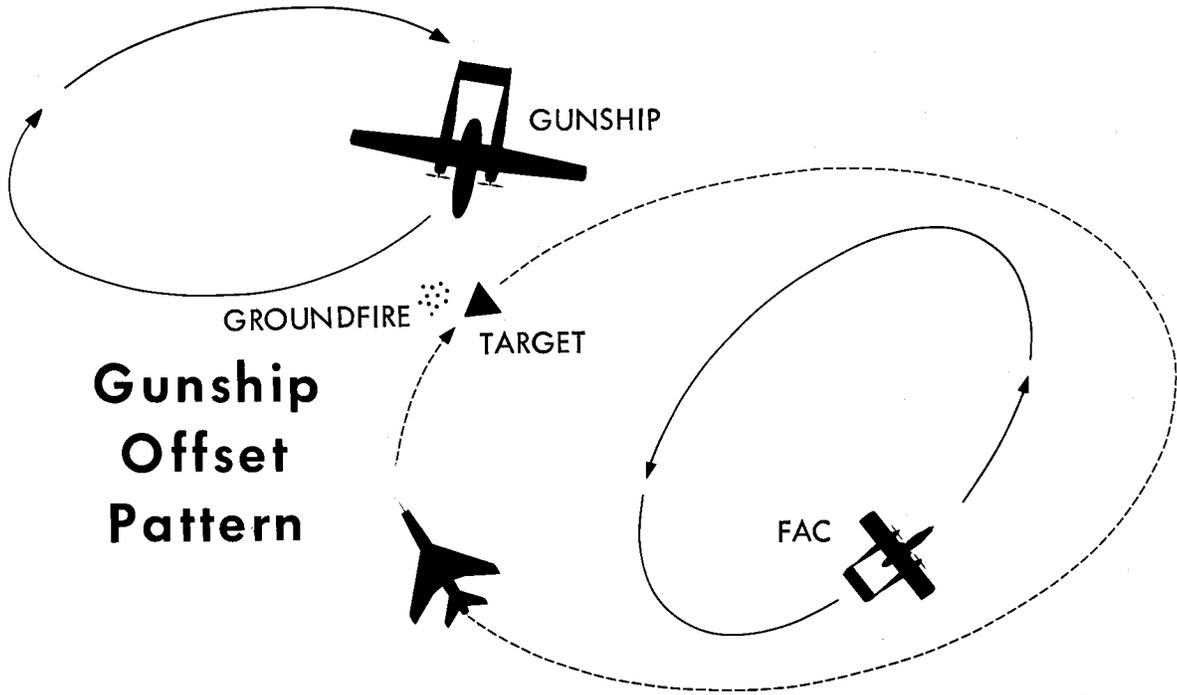


FIGURE 20 (U)

speeded support by linking old French road networks in Tay Ninh and Binh Long Provinces with those in Cambodia. This enabled him to launch operations into central South Vietnam, then swiftly withdraw into his border sanctuaries. In contrast, the primitive road system in southern Laos seldom merged with the Vietnamese network except for Route 9 below the Demilitarized Zone (see Maps 1 and 2). Yet, by late 1967, the enemy had mounted a major effort to fuse its roads with those of the South Vietnamese highway system.³⁶

Impeding the flow of men and materiel down these arteries posed a thorny problem--one the Air Force seemed especially suited to deal with. Getting an air interdiction program started proved hard at first because South Vietnam was splintered into numerous operational areas. Then too, local ground commanders viewed tactical air purely from the angle of close air support needs. Deeply immersed in day-to-day operations, they paid little heed to interdiction. Circumstances building in 1967, however, called for an interdiction campaign in South Vietnam.³⁷

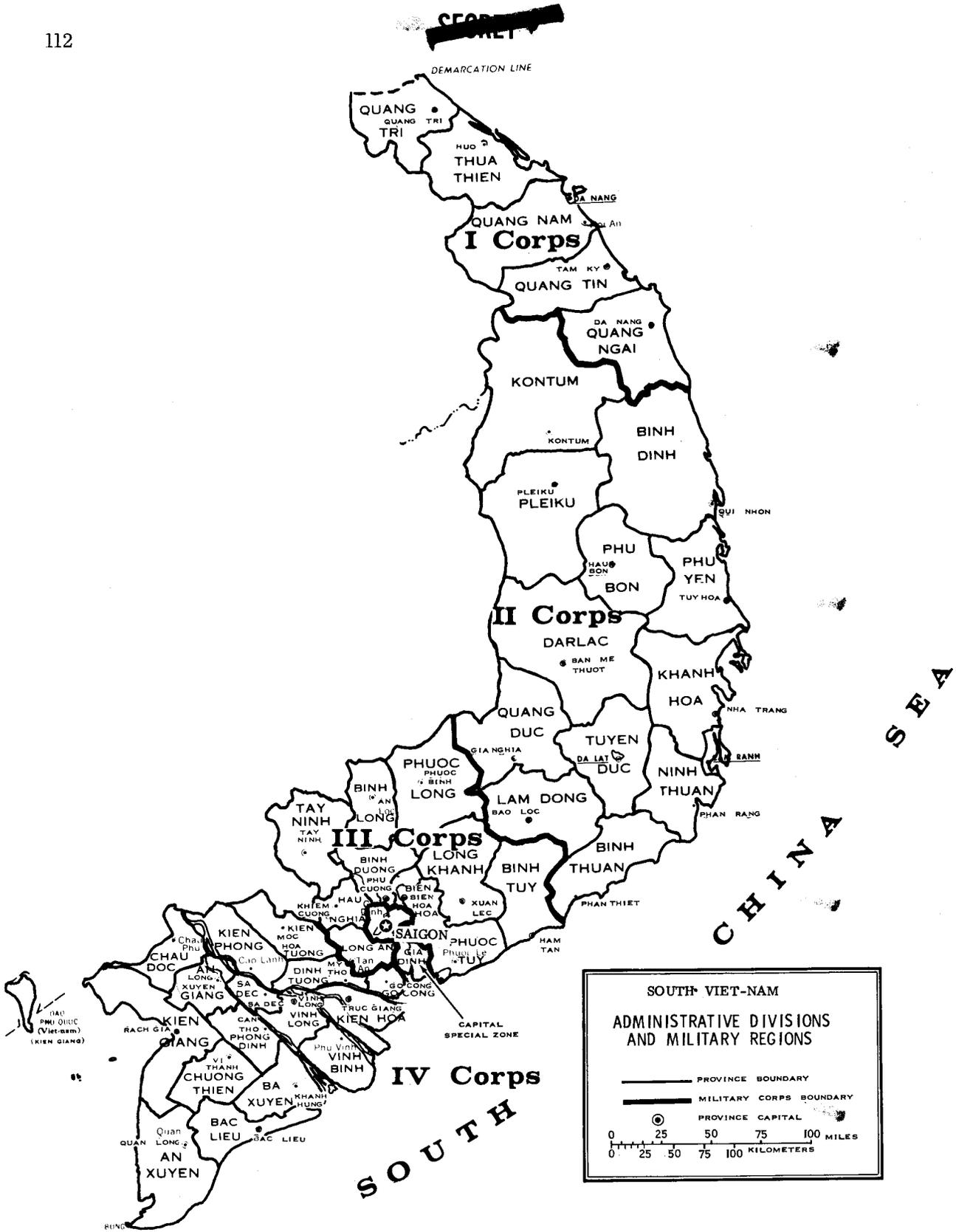
In the spring of 1967, I Field Force Vietnam set up specified strike zones (SSZ's) along the borders of I, II, and III Corps. Artillery and airstrikes could now pound enemy sanctuaries in these areas. During 24-30 April, I FFV interdicted Kylo Valley situated southwest of Qui Nhon. Although not strictly a campaign against LOC's, the operations in Kylo Valley marked the beginning of in-country interdiction. As 1967 waned, a Seventh Air Force study fingered 15 infiltration routes from Cambodia and Laos for possible interdiction. Despite these steps, it took the siege of Khe Sanh (January-March 1968) and later discovery of concerted enemy road-building in I and II Corps to spur in-country interdiction.³⁸

NVA road-building equipment rumbled onto Laotian Route 966 in September 1967, bent on expanding the roadnet. Under cover of the rainy season, the North Vietnamese pushed that highway steadily ahead, crossing into South Vietnam during January 1968. Upon reaching the Se San River, its main trunk would join improved highways leading to Pleiku. Branches would fork north to Dak To and Ben Het as well as to a Special Forces camp northwest of Kontum.*³⁹

In December 1967 the NVA also commenced construction of Route 110. This road was to lead from Laos through part of

*A captured enemy soldier said the confident NVA expected by March 1968 to have a road far enough along to take trucks and tanks right into Hue.

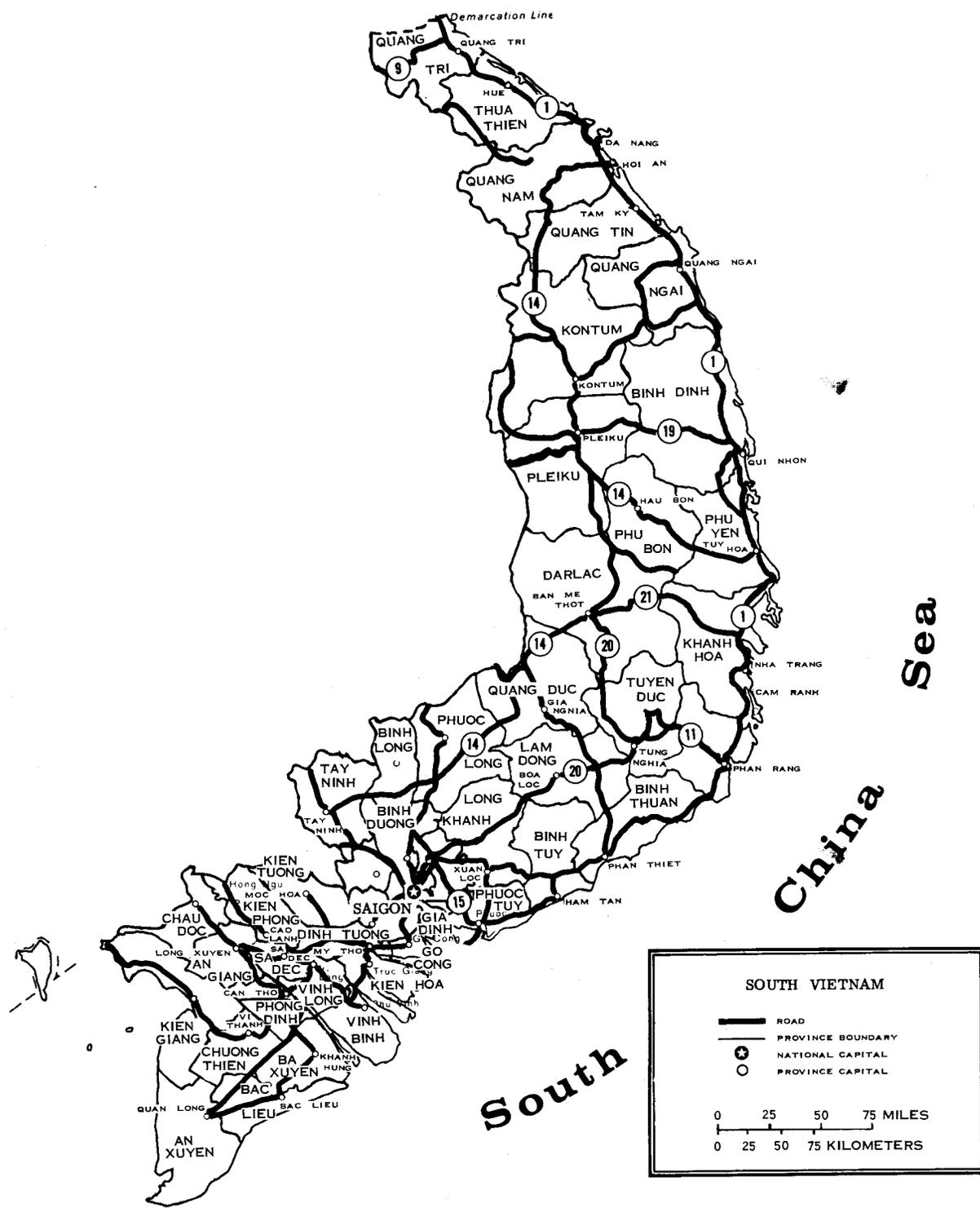
~~SECRET~~



Map 1 (U)

(This page is Unclassified)

~~SECRET~~



Map 2 (U)

(This page is Unclassified)

~~SECRET~~

Cambodia into South Vietnam and threaten the Plei Trap Valley and the key cities of the Western Highlands--Kontum and Pleiku. Forward air controllers serving the 4th Infantry Division in II Corps first spied the new road-building in the Tri-Border Area.* Hence, when the wet weather broke, a Project Delta⁺ SF reconnaissance team penetrated the area and found a road extending to within 2 miles of a U. S. Marine one leading to forward artillery posts. Captain Shields, the team's FAC, spotted trucks whereupon a company of troops (dropped from helicopters) ambushed the lead vehicle. Air-strikes finished off the convoy and destroyed a cache of 30,000 rounds of ammunition.⁴⁰

Discovery of Route 110 raised scarcely a ripple at higher headquarters where attention was focused on the siege of Khe Sanh and the enemy's Tet Offensive throughout South Vietnam. But by March 1968, reports of the network's inroads stirred deep concern. SF long-range patrols were therefore dispatched to monitor enemy movements. On 9 March controllers detected trucks on parts of the roadnet. By the end of the month, FAC's and helicopters supporting recon patrols were drawing 37-mm AA fire. On 7 April, with Khe Sanh and Tet largely over, the U. S. Army's Operation Truscott White swung into action. It sought to deny the enemy unrestricted use of the road network by destroying installations, personnel, and equipment. B-52's added tremendous firepower throughout the operation, forming the nucleus of eight strikes that cut Route 110 where it left Cambodia. Airstrikes next zeroed-in on completed road construction in South Vietnam. The final phase was mainly mopping-up. Truscott White ended on 29 June after effectively stopping enemy traffic.⁴¹

Meanwhile, reconnaissance bared other roads being built toward A Chau Valley and in III Corps. Seventh Air Force interdicted these areas, dropping sensors to monitor enemy movement. It asked III Marine Amphibious Force on 23 March 1968 to designate certain infiltration areas where FAC's could freely call in airstrikes without prior clearance. While awaiting III MAF's reply, Seventh got the go-ahead from MACV on 30 March to interdict the Tri-Border Area. Projects Athens, Grand Canyon, and Buffalo resulted (see Glossary). On 26 April Seventh Air Force again asked III MAF to

*The area west of Dak To at the convergence of the Cambodia, Laos, and South Vietnam borders.

⁺Delta consisted of U. S. Special Forces and indigenous forces who conducted long-range reconnaissance and interdiction missions. They acted as hunter-killer teams in small search-and-destroy operations.

~~SECRET~~

declare as SSZ's specific routes running into and through A Shau Valley from Laos then on down through South Vietnam.* Finally, on 31 May, III MAF set up SSZ Victor embracing A Shau Valley and surrounding mountains. At the same time, it gave Seventh Air Force blanket clearance to conduct airstrikes within this SSZ.⁴²

During this stepped-up interdiction, excellent teamwork between forward air controllers and long-range reconnaissance teams ferreted out LOC's and destroyed them. Best results came in the mountains where, once a road was closed, enemy movement ground to a halt. Not so in open regions like the A Shau Valley. There, the enemy simply switched to other roads and trails, many of them invisible from the air.⁴³

Overriding demands of Khe Sanh and Tet had sapped air/ground resources from other parts of South Vietnam. This left the door ajar for the enemy to stretch roadnets farther toward Saigon and III Corps. For example, he widened a road in northern III Corps to carry 5-ton trucks, the 101st Airborne Division having left the area to help defend Hue.⁴⁴ It took designation of this region as SSZ Song Be on 18 May 1968 and close-knit efforts of controllers and ground troops to drive the roadbuilders out.⁴⁵

Specified Strike Zone Tango was also set up in May. Situated just south of the A Shau Valley, it straddled Route 614 (Yellow Brick Road) that snaked toward the eastern coastal plain of Da Nang. Poundings by FAC-controlled fighters pinched off this road in August.⁴⁶ Thus, persistent interdiction went far in thwarting 1968 enemy offensives.

During January-June 1969 a special 0-2A night operation shifted from Bien Hoa to Binh Thuy to control interdiction strikes in the Can Tho area. The 0-2A's scanned with the starlight scope for sampans, trucks, or troops on foot. After a target was acquired, identified, and approved for immediate strike, the FAC called in fighters and directed the attack under flarelight. This campaign markedly slowed enemy movement on roads, trails, and waterways.⁴⁷

*These included: the southern extension of Route 548 from A Shau through Da Nang, Route 110 between Laos and Ben Het/Dak To Special Forces camps, roads in the Plei Trap Valley threatening Kontum and Pleiku, Route 165 from Laos southwest toward Kham Duc, the Song Be Road in III Corps, and the Seven Mountains region in IV Corps.

~~SECRET~~

(S) Seventh Air Force sustained interdiction throughout 1969 and 1970 but couldn't tie neatly together the in- and out-country campaigns. Even so, interdiction achieved considerable overall success. While his movements were not entirely checked, the enemy was kept off balance. This let South Vietnamese air/ground forces shake off the shock of the Tet Offensive, bounce back, and stride steadily toward Vietnamization.⁴⁸

Rocket Watch

By 1965 the enemy had put aside most old guerrilla methods and taken up those of modern warfare. Daring matched modernization as he probed for weak points, then minutely planned* and carried out standoff hit-and-run attacks on outposts, airbases, and urban centers.⁴⁹ The attackers favored mortars and rocket launchers since both could be easily assembled and dismantled. So, unless surprised in the act of firing, the guerrillas could be packed up and gone long before located. In fact, finding them from the ground was well nigh impossible due to the dense foliage and darkness. Airbases such as Da Nang proved particularly vulnerable because they lacked overhead revetments to protect the parked planes. On 15 July 1967 the enemy rained rockets on that base from as far away as 6-7 miles--killing eight Air Force personnel and doing \$1.5 million damage/destruction to 43 USAF and Marine aircraft. What's more, he had time to reload launchers and fire several more volleys before slipping away. These hit-and-run mortar/rocket attacks peaked throughout South Vietnam just before the Tet Offensive commenced on 30 January 1968.⁵⁰

To weed out enemy rocket sites around Da Nang, MACV organized a night watch in February 1968 using forward air controllers. During the first week, FAC's found and directed airstrikes/ground sweeps against 32 rocket positions.⁵¹

In March 1968 a round-the-clock rocket watch of the Saigon area⁺ began. It provided for: normal FAC visual reconnaissance in the daytime; two O-1's airborne at all times during the hours of darkness; two A-1E's on strip alert--ready for takeoff at an instant's notice; and two AC-47 Spooky gunships on night airborne alert. The

*Planning at times included sand tables that depicted the attack terrain with building mockups set in exact locations.

⁺The area included Saigon, Bien Hoa, and Tan Son Nhut.

~~SECRET~~

19th Tactical Air Support Squadron supplied the 0-1 forward air controllers.* To do so required pulling FAC's off VR duties in the rural and border areas.⁵²

A series of successful 107-/122-mm rocket attacks on the Saigon area (5 May-21 June) underscored the need to buttress the rocket watch. MACV therefore organized the Capital Military Advisory (Assistance) Command (CMAC) in June to coordinate the area's overall defense. At the same time, it split the area into four corridors corresponding to the cardinal points of the compass. Army helicopters monitored the east, south, and west corridors. 0-1 forward air controllers covered the north corridor, augmented (and soon replaced) by 0-2A FAC's that arrived from Bien Hoa on 21 June.⁺ Coordination of the rocket watch program with the new command fell to the helicopter gunship duty officer.⁵³

Two 0-1's worked the north corridor from 1900-2300. Two 0-2A's then took over until 0700. A Spooky flew airborne alert from 1900-0630. To stay clear of artillery fire, the controllers dropped no lower than 3,000 feet AGL. Bottom altitude for the AC-47 was 3,700 feet AGL. Beginning 22 July 1968, a single 0-2A monitored the north corridor, freeing the others for local area reconnaissance. Nevertheless, when the east corridor was also assigned to the Air Force in August, two 0-2A's again flew rocket watch.⁵⁴

The rocket watch coupled with frequent ground sweeps kept rocket attacks on the Saigon area in check. The sweeps netted large caches of enemy rockets and mortars. Intelligence reports told of more and more sites found unmanned. Frequently before fleeing, the enemy imbedded two sticks in the ground to aim the rockets and set a timer to touch them off later.⁵⁵

Preventing rocket attacks--at least the first volley--proved virtually impossible. In any case, the watch crimped the enemy's freedom of movement. It also cut down the element of surprise by concentrating on routes the enemy might take enroute to the city. Additionally, Spookies and helicopter gunships of the watch supplied a useful spinoff--responding to requests for support on roads, trails, and waterways heading into the Saigon area.⁵⁶

*Call sign of these FAC's was Sleepy Time.

⁺The majority of these 0-2A FAC's were staff officers and not fighter-qualified. They controlled airstrikes purely against rocket sites--directing close air support strikes solely in an emergency.

~~SECRET~~

A root problem was precise plotting of rocket/mortar site locations. First, the forward air controller needed to know his area well--prominent landmarks, known friendly positions, villages, and streams. This prepped him to pinpoint his own location quickly and in turn that of the launch site. However, when the FAC caught the rocket's flash, he found it hard to fix his position and still keep an eye on the rocket site. (Use of flares helped but was stopped due to the expense.) Lt. Col. Joe F. Bosworth, an ALO, said the controller could surmount the problem by keeping his position positively fixed at all times.⁵⁷

To furnish controllers experience in pinpointing and marking rocket sites, Army artillery units fired no-notice "flash tests" nightly to simulate rocket/mortar launches. In addition, they put up white phosphorous airburst rounds on preset coordinates. Watchers (airborne and on watchtowers) recorded and tried to fix each flash, translate it to a ground position, and call in the location. Early erratic results vanished as practice worked out the kinks. The watchers pinpointed bursts to within 330 yards of actual positions and slashed to 45 seconds the time demanded to sight, plot, and call in a flash.⁵⁸

(S) The method of reporting rocket/mortar attacks and securing clearance to strike the launch sites was about the same as for normal airstrikes. The FAC spying the rocket launch informed the Saigon Artillery Center immediately. He next passed to the controlling helicopter gunship 6-digit coordinates (if the site was pinpointed) and asked for permission to strike. The gunship got the clearance for the controller, Spookies, light fire teams,* and artillery. Firing on the rocket/mortar site could now begin.⁵⁹

(S) By the end of August 1968, the intensity of rocket/mortar attacks had declined sharply so the rocket watch was trimmed down. The enemy went on harassing military installations with sporadic attacks. Nonetheless, he lobbed two-thirds fewer shells into the Saigon area during 1969 than in 1968.⁶⁰ This tapering off continued throughout 1970.

Should the FAC be Armed?

(S) The forward air controller daily came upon enemy targets he could destroy or damage--if he were armed. Quite a few were fleeting targets such as small bands of Viet Cong enroute to an

*These were the ground elements assaulting the rocket/mortar site. The controller watched their movements closely and also kept an eye out for incoming artillery rounds.

~~SECRET~~

assembly area or fleeing from a skirmish, or friendlies being mauled by the enemy. For full exploitation these targets had to be hit quickly. Time eaten up in getting strike clearance often scrubbed any advantage. What's more, the reaction time of immediate airstrikes in some cases was too slow. Then too, a lightly armed aircraft could take care of small fleeting targets with no danger of overkill. Little wonder, then, the question arose "Should the FAC be armed?" The fluid nature of the war seemed to support an answer of yes. After all, the enemy well knew it took several minutes after he was seen for fighters to arrive--time enough for him to melt into the countryside. On the other hand, an armed FAC could imperil his chances to escape. ⁶¹

(U) Forward air controllers often used what firepower they had to contain the enemy. The feats of Capt. Hilliard A. Wilbanks on 24 February 1967 in the Di Linh area (100 miles northeast of Saigon) were an outstanding example. That afternoon, two companies of the Vietnamese 23d Ranger Battalion with American advisers were patrolling a tea plantation area just west of Di Linh. As these men threaded through waist-high tea bushes, they had no idea a larger Viet Cong force had dug in nearby and waited in ambush. Captain Wilbanks was flying VR out in front of the friendlies. Scanning the slope of a hill, he spied the enemy trap and flashed a radio warning to the ground commander. The enemy (overhearing) opened up with machineguns, mortars, and automatic rifles--pinning down the 23d troops. ⁶²

(U) Captain Wilbanks directed two Army helicopter gunships that poured fire into the enemy emplacements. Return fire crippled one gunship and it left the field escorted by the other. No longer pinned down, the enemy troops climbed out of foxholes and attacked. Wilbanks knew the 23d would be overrun before tac air could get there. He put the 0-1 into a dive and launched a rocket marker at the oncoming troops who answered with withering fire. When all rockets were gone, he grabbed his M-16 rifle and continued firing--the aircraft weaving, turning, climbing, and diving again and again at the enemy. On the third "rifle" pass, the 0-1 was hit and Wilbanks died of injuries received upon crashlanding. The two companies of the 23d Ranger Battalion were saved. Captain Wilbanks received the Medal of Honor posthumously. ⁶³

(U) Capt. Donald R. Hawley--another dedicated 0-1 FAC also killed in action--devised his own brand of Molotov cocktail. Nicknamed "Hawley's cocktail," it consisted of a grenade (with pin pulled) stuffed inside an empty peanut butter jar. The sides of the

~~SECRET~~

jar held the grenade's release handle down. Captain Hawley dropped his cocktails over the side of the aircraft during tight close air support situations. Some other controllers jury-rigged grenade launchers and machineguns to the wing struts of their O-1's.⁶⁴

b) In early 1967, Seventh Air Force weighed the pros and cons of arming forward air controllers. An armed FAC could hit small fleeting targets without calling in strike aircraft. He could instantly aid friendly troops in critical situations, holding off the enemy until fighters arrived. If he used good judgment and stayed clear of strong targets, he wouldn't be shot down. On the other hand, an armed controller would be tempted to forget his main job of VR and strike control and "play fighter pilot" instead. This could be fatal to him and the troops supported as well. After sifting these arguments, Seventh took the stand that forward air controllers should not be armed.^{*65}

b) Nevertheless, Air Force Headquarters directed Tactical Air Command in May 1968 to test the effectiveness of the armed forward air controller in responding to calls for immediate help. Designated Phased-Response (codename Combat Cover), the test married the armed FAC aircraft and the fixed-wing gunship to supply limited firepower for hard-pressed ground troops until strike aircraft arrived. The armed controller was to give immediate support to the requesting Army unit pending the gunship's arrival.⁺⁶⁶

The O-1 clearly couldn't measure up to the Combat Cover test aircraft's role and the weight of the extra armament overtaxed the O-2A. The OV-10 best filled the bill, having been designed with the armed concept in mind. It had four forward-firing M-60 (7.62-mm) machineguns and five armament stations that could carry 3,600 pounds of ordnance. Despite these assets, TAC cautioned that during Combat Cover the OV-10 shouldn't be looked upon as a "fighter or attack aircraft" and advised care in limiting its ordnance and the type of target it would be used against.⁶⁷

*Seventh's position rested in part on World War II experience of tactical reconnaissance crews. Flying armed P-51's/P-38's, these crews often fought air battles in lieu of taking pictures. Once aircraft armament was removed, however, the reconnaissance results perked up.

+A USAF/U.S. Army Tactical Air Support Analysis team had suggested the phased-response concept in November 1966.

~~SECRET~~

The first of Combat Cover's three phases selected the best armed FAC/gunship combination, outlined command and control procedures, and firmed up tactics. The OV-10 and AC-119G became the team that carried out the next phase at the TAWC, Eglin AFB, from 5 August to 7 September 1968. The 40 missions of this second phase evaluated combat tactics and procedures to be used during Phase III in SEA. The armed FAC's response time to immediate requests averaged 2.9 minutes--from the moment of the request's transmission to time of ordnance on target. The gunship did equally well, taking just 5 minutes to get to the target area and 3.4 minutes more to swing into firing position.⁶⁸

At the same time, Phase II showed that the OV-10's high noise level compromised the element of surprise, making it easier for the enemy to locate and fire on the Bronco. It further revealed the AC-119G's vulnerability to ground fire larger than .30-caliber and the hazard of its rather slow (140 KIAS) left-bank turn. In light of these findings, TAC (backed by Seventh Air Force) recommended cancellation of Combat Cover's last phase. However, following a further TAC/PACAF/USAFE review, the Air Staff directed completion of the project. Seventh Air Force accordingly merged Phase III into the OV-10's scheduled SEA combat test and evaluation--codeword Misty Bronco.⁶⁹

The test took place in III Corps from 4 April to 13 June 1969. For the evaluation, Seventh Air Force assigned six OV-10's and nine FAC's to the TACP of the 25th Infantry Division's 2d Brigade at Cu Chi. These armed controllers carried out VR, strike control, and emergency support of ground troops. They flew a total 508 sorties--an average of 7 per day. Only a handful of the missions were night ones. It was found that the OV-10's firepower could as a rule destroy or neutralize troops in the open but only harass those dug-in.^{*70}

The OV-10 forward air controllers scored resounding success during the test period. For example, they responded to 98 immediate requests--handling 78 of them strictly on their own. Bronco response times outstripped those of strike aircraft. The fighters required a shade less than 40 minutes to respond when scrambled from ground alert. Even if diverted while airborne, they

*The OV-10 was limited to 2,000 rounds of 7.62-mm ammunition (500 rounds per gun), 14 rocket markers (2.75-inch), and 14 high-explosive rockets.

~~SECRET~~

couldn't shave the time below 10 minutes.* In contrast, the armed FAC (commonly flying in the immediate area) responded and fired within 5.1 minutes of the initial air support request. He needed 8.7 minutes for fleeting targets, the extra time being taken up with identifying the enemy. The OV-10 controller's response time for all targets was 7.3 minutes.⁷¹

The 25th Infantry Division Commander praised the work of the Misty Bronco armed FAC's. Also pleased, the Seventh Air Force Commander on 5 June 1969 ordered the arming of all USAF OV-10's in South Vietnam. Work began on 14 June with fitting high-explosive rockets on the Broncos. The next and final step called for adding M-60 machineguns by 15 September. However, a shortage of armament specialists, guns, and parts shoved completion of the work into 1970.⁷²

Expanding the Armed FAC Role

Seventh Air Force directed the 504th Tactical Air Support Group to take over the job of arming forward air controllers. The first armed OV-10's went to the 19th and 20th Tactical Air Support Squadrons. The 20th spent nearly half its time in the Steel Tiger and Barrel Roll areas of Laos. Yet, it was not allowed to use the armed Bronco's out-country because the heavy ground fire forced them too high to get best effect from their weapons.⁺⁷³

The armed FAC fitted Special Forces operations neatly. SF camps dotting the South Vietnam countryside protected the people and pestered the enemy. Teams also did long-range reconnaissance in- and out-country. If these patrols brushed with the enemy, instant fire support and evacuation were a must. In South Vietnam, the armed controller could be on tap to help out. Not so out-country. This spurred the 504th Group in February 1970 to ask Seventh Air Force permission to arm OV-10's of the 23d TASSq that supported SF missions in Laos. Seventh approval in April limited OV-10 armament to high-explosive rockets only. It did the same in August for the 20th TASSq.⁷⁴

*Up to 5 of the 10 minutes could be consumed by the FAC's briefing and target-marking.

⁺4,500 feet AGL in medium-threat areas, 6,500 feet in high-threat ones.

~~SECRET~~

Seventh Air Force saw a like advantage in arming USAF forward air controllers within Cambodia to cover Special Forces reconnaissance there. The 1-hour lag for strike aircraft to arrive from South Vietnam could prove fatal. But an armed FAC could lay down fire for a SF team (or downed flier) while awaiting the fighters. So, in September 1970, Seventh armed the OV-10's flying into Cambodia but confined their fire support to legitimate search and rescue operations. (Any exception had to be cleared in advance with Seventh's TACC.) Moving further, Seventh Air Force had by December 1970 stretched the armed controller role in Laos to take in fire support of search and rescue. Seventh ordered use of two FAC's, one to direct the other's fire.⁷⁵

Role of the Ground FAC

Control of airstrikes by ground forward air controllers declined sharply after 1965 but at times still proved vital. Throughout 1965 and the first quarter of 1966, the TACP's gave U.S. Army units dual coverage. That is, the ground FAC moved with the maneuver battalion and advised the commander on the use of air power, while the airborne FAC directed the strikes. On 1 April 1966 the Air Liaison Officer function absorbed the ground controller's duties.⁷⁶ Nevertheless, the ground control of airstrikes continued to be taught at the Air-Ground Operations School.⁷⁷

The evacuation of Kham Duc SF camp on 12 May 1968--in which Capt. Philip R. Smotherman, an O-2A FAC, had a key role--spotlighted the value of ground controller training. Air Force C-130's shuttled in and out of Kham Duc and O-2A's directed a steady stream of strikes on the advancing enemy. Suddenly, an airburst ripped Captain Smotherman's plane forcing him to land on Kham Duc airstrip. To say his landing was opportune would be an understatement--no one was left at the TACP to man the radios and coordinate the evacuation. Smotherman immediately radioed I DASC at Da Nang for instructions and was told General Momyer wanted him to stay put. So, sweating 4 hours at an FM radio, he kept in touch with the fighters and directed their strikes. He further relayed information on troop pickup points back and forth between the ground commander and Da Nang. Finally, at 1600 on the 12th, Captain Smotherman got orders to clear out. He smashed the radios then boarded one of the last transports.⁷⁸

(U) Ground control of airstrikes in emergencies went on through 1970. For the most part, however, airborne forward air controller proved far superior.

~~SECRET~~

VII. FAC SUPPORT OF SPECIAL FORCES

(U) An unheralded facet of the forward air controller story in Southeast Asia was support of Special Forces. Small SF teams slipped into enemy territory and ferreted out intelligence for upcoming operations. Often disguised as the enemy, these men faced certain death if captured. Moreover, the vulnerable locations of their camps invited attack. Even so, the rich dividends--especially if people in the hamlets could be weaned from the Viet Cong--outweighed all danger. Since the Special Forces teams/camps lacked heavy firepower, they looked upon the Air Force FAC as a lifeline to strike aircraft and gunships. The required support had to be timely and accurate--directed by seasoned controllers who could brave the worst of weather and take the steepest risks.

Background

U.S. Army Special Forces teams entered South Vietnam in 1958 along with Military Assistance personnel. Their first job was to help prepare Vietnamese armed forces to fend off Communist aggression. However, the surge of enemy covert operations during the early 1960's dictated a counterinsurgency* program. Special Forces advisers began working with local people in isolated and insecure areas that were highly susceptible to enemy exploitation.¹ Project Leaping Lena (set up in May 1964 and redesignated Delta in December) shored up this effort by sending special reconnaissance teams deep within Viet Cong territory to gather intelligence.²

For tighter control, MACV redesignated U.S. Army Special Forces--Vietnam as 5th Special Forces Group (5th SFGp) in October 1964 (see Chart 1). The 5th SFGp put a small cadre (C Detachment) at each corps headquarters to advise the ARVN staff and coordinate activities of one or more B detachments within the corps area. Every B detachment supervised several A detachments located at SF camps and monitored Civilian Irregular Defense Group⁺ operations.³ Each A detachment worked directly with Vietnamese Special Forces.

*Those military, paramilitary, political, economic, psychological, and civic actions taken by a government to defeat subversive insurgency.

⁺The CIDG concept involved the hiring of local irregular forces under contract to defend SF camps and the surrounding population. Accompanied by U.S. Army Special Forces advisers, CIDG members visited nearby hamlets to provide arms and teach defense techniques. They also trained local irregulars in reconnaissance activities. [Lt Col Bert B. Aton and Kenneth Sams, USAF Support of Special Forces in SEA (S) (HQ PACAF, Project CHECO, 10 Mar 69), pp 1-2.]

~~SECRET~~

SPECIAL FORCES ORGANIZATION - 1965

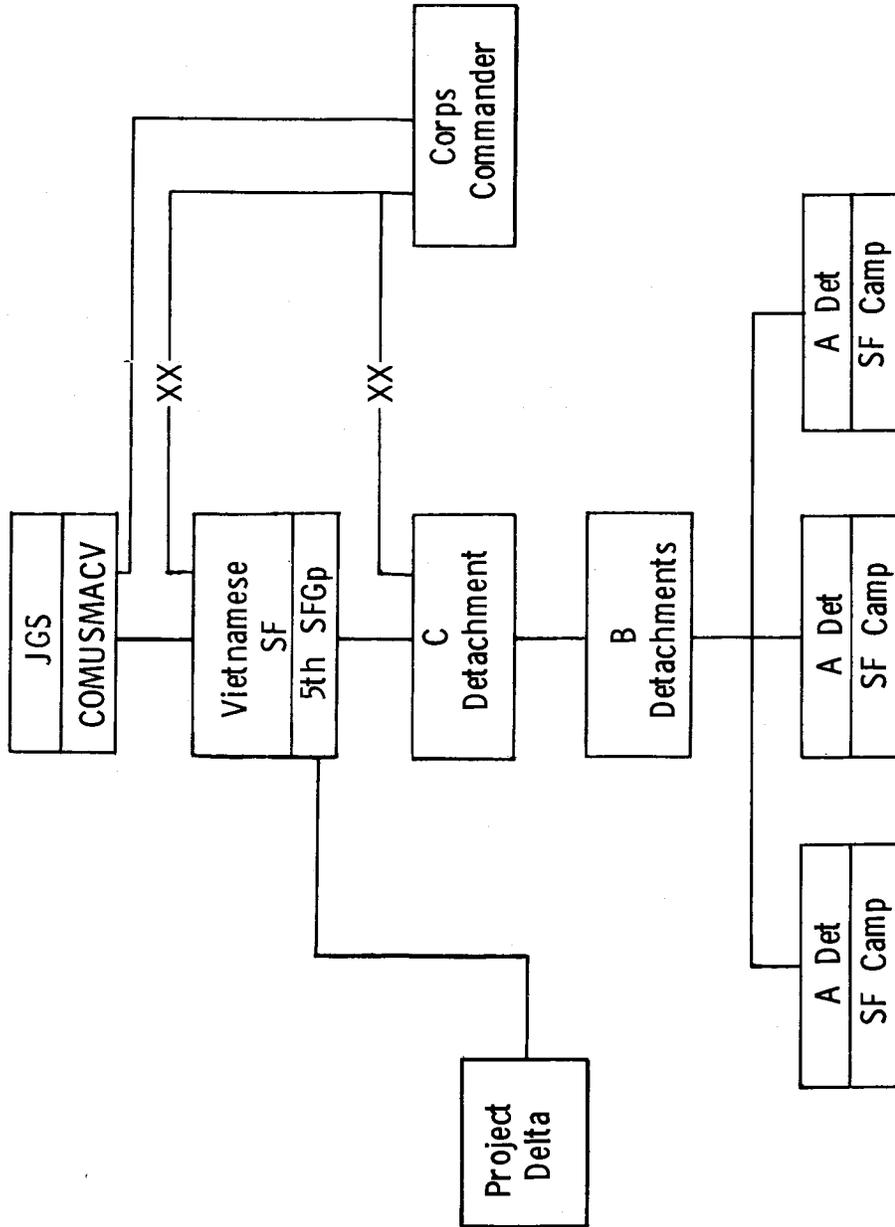


Chart 1 (C)

— COMMAND
 —XXX— SUPPORT AND COORDINATION

Chart 1

~~SECRET~~

~~SECRET~~

Considered vital to the pacification and defense program, Special Forces camps were situated in strategic spots. Camp strike force teams secured and enlarged their perimeters, drawing in local people to "safety." Scouting missions and patrols fanned out to reconnoiter nearby trail systems and pinpoint Viet Cong/NVA troop concentrations. Camp forces further organized mobile/guerilla units and taught hamlet militias how to defend themselves and harass the enemy.⁴ As the war expanded, border surveillance camps were added to keep tab on enemy movements into and out of South Vietnam. These camps served as jumping-off points for Operation Shining Brass teams in October 1965.* During the operation, helicopters dropped 12-man teams (each with 3 American SF advisers) into the Laotian border regions where they formed roadwatch⁺ listening posts. These South Vietnamese/American intrusions disrupted the enemy's covert operations and led him to retaliate with attacks on Special Forces camps.⁵

FAC Support of Special Forces Begins

Most Special Forces camps were designed for just a few troops. They were defended best with light artillery and perimeters protected by barbed wire, claymore antipersonnel mines, and a few other explosive traps. To help offset this, compartments within the camps could be sealed off should the enemy breach the perimeters. Since their locations invited attacks, the Special Forces relied heavily on Army helicopter gunships and USAF tactical air for their survival.⁶

Beginning in 1965, Air Force forward air controllers assigned to ARVN units supported the SF camps (see Chart 2). They obtained current information on each camp's layout and status by frequent flyovers and personal visits. Nevertheless, there were too few controllers for full-time support of Special Forces without slighting ARVN commitments.⁷

Project Delta

However, there was one project which received special consideration for FAC support. Known as Project Delta, it involved

*Shining Brass became Prairie Fire after 1 March 1967. Daniel Boone, a companion operation in Cambodia, carried no Americans on its teams.

⁺Effectiveness of roadwatch teams in Laos forced the North Vietnamese to divert seasoned troops from South Vietnam against them.

~~SECRET~~

~~SECRET~~

the use of small reconnaissance teams which often pushed deep into areas of South Vietnam teeming with Viet Cong.* When they got in trouble and called for help, it was already too late. Seventh Air Force accordingly assigned forward air controllers permanently to Delta in December 1965.† The controllers were able to keep constant watch over areas where the teams were, relay their radio messages, and aid them at once.⁸

(b) Captains Kenneth L. Kerr and James N. Ahmann--the first FAC's to join the 5th Special Forces Group--received a run-down on Project Delta in December 1965 at Nha Trang. They next went with SF teams on ground patrol to get a firsthand view of problems. The two officers did their first Delta controller duty during Operation Mallet (8-17 January 1966).⁹

(b) The U. S. Army's 1st Infantry Division ran Mallet which aimed to clear Highway 15 from Bien Hoa to Vung Tau. Helicopters dropped nine Delta teams into the surrounding area to scout out enemy units and line up targets. Throughout the operation, Captains Kerr and Ahmann took turns as forward air controller. Kerr's work on 9 January was typical. Flying a borrowed O-1 (his had engine trouble), Kerr controlled airstrikes in support of Delta teams--saving the lives of eight men. Early in the morning, two Viet Cong platoons had ambushed a team. Within 15 minutes Captain Kerr had A-1's hammering the enemy as helicopters lifted out the team's survivors. Later in the day, a Delta team crept up on a Viet Cong class in session. The infiltrators ducked behind two giant anthills while Kerr directed the fighters in wiping out the students. Finally, the enemy struck a team that was withdrawing. Strike aircraft barreled in--right after the team's remnants had broken off fighting and were heli-lifted to safety.¹⁰

*Delta at first had six reconnaissance/hunter-killer teams (eight Vietnamese and six U.S.). It also had three companies of the 91st Airborne Ranger Battalion as a reaction force. By 1967 there were 16 recce teams, 8 all-native roadrunner teams (dressed in enemy uniforms for spying and infiltration), and 6 companies for a quick-reaction force. [Paul S. Ello, and others, U.S. Army Special Forces and Similar Internal Defense Advisory Operations in Mainland Southeast Asia, 1962-1967 (S) (Research Analysis Corp, McLean, Va., Jun 1969), pp 1, 2.]

†FAC's in Laos were already working with Shining Brass.

~~SECRET~~

Hard on the heels of Mallet, 5th Special Forces Group, FAC's moved into action with Operation Masher on 27 January. The 1st Cavalry Division, supported by the 9th Marine Regiment from I Corps, spearheaded this 41-day drive against the Viet Cong in the An Loa Valley and Bong Song Plains areas. Three Delta teams pushed ahead of the troops to spy out Communist units and positions. The controllers covered the infiltrators during daylight hours and contacted them at prearranged times--reacting quickly to their needs. On the 28th, for example, bad weather was closing in at noon when Team 1 called for help. Fearing imminent destruction of the team, the controller risked the blinding rain, eventually spotted it, and brought in helicopters. On 29 January the enemy ambushed Team 2, killing two men and wounding four. Accurate artillery fire from the 1st Cavalry Division--directed by the forward air controller--allowed the survivors to be plucked to safety. Team 3 lost its radios during an ambush the same day and had to lay out marking panels.* The FAC detected the panel code⁺ and called in helicopters. The yeoman work of the forward air controllers in Operations Mallet and Masher underscored the value of having them accompany recce teams.¹¹

During Masher the 1st Cavalry Division had called for two airstrikes into the areas where attempts to rescue Delta teams were in progress. Not only did these strikes hinder the rescues, but the Delta FAC's had no idea the fighters were coming. This poor coordination led to a MACV policy putting areas of Delta operations off limits to all other air/ground units unless cleared to enter by 5th Special Forces Group. The policy's main intent was to make sure Delta team members were not mistaken for the enemy.¹²

(S) Other tasks for Project Delta came quickly. On 1 March 1966, 5th SFGp directed a survey of enemy activities in Darlac, Pleiku, and Phu Bon provinces. At dawn on 7 March, after "reconning" the areas for infiltration points, FAC's coordinated the drop of three roadrunner teams (composed of natives in enemy garb). These teams stole along predefined routes, picked up information, then at dusk on the same day were whisked from a landing zone.¹³

* Sheets of material displayed for visual communications, usually between friendly units.

⁺A prearranged code for visual communications (usually between friendly units) by use of marking panels.

~~SECRET~~

On 10 March Delta got orders to support the embattled A Shau SF camp. It fell, however, before the two teams arrived and they went instead to Hue Phu Bai to take part in 1st Cavalry Division operations. The first two recce thrusts turned up no Viet Cong. Nevertheless, on the 23d and 24th, they received gun fire during night missions and so called in airstrikes for the following day. Helicopters lifted one team out on 26 March but bad weather prevented recovery of the other. Early the next morning, a forward air controller again took up the search. When ground fire shattered his aircraft's windshield, the FAC suffered minor cuts and lacerations. He nonetheless pushed on, eventually finding the team and directing its rescue.¹⁴

The above operations accented the quick-reaction of Project Delta teams--moving swiftly on short notice to any point in South Vietnam. The infiltrators accordingly kept current files of communication procedures peculiar to each of the corps areas. Furthermore, in light of the unreliable/insecure landlines,* they ironed out most operational details with air/ground units before swinging into action.¹⁵

Lt. Col. Orville O. Scroggins, ALO for II Corps, deemed use of forward air controllers in Special Forces operations a signal achievement during 1966. With a Delta controller close by, recce teams knew strike aircraft could arrive in moments. Thus, they felt easy about moving deeper into enemy-held areas to sniff out targets or flush Viet Cong from hiding. The FAC from his vantage point monitored Communist and friendly positions, warning the infiltrators of any upcoming ambush and giving them a running account of the action. Team commanders realized the controller could better coordinate air and ground operations and often turned over the control of battle actions to him. He commonly ended up directing helicopter gunships as well as fighters.¹⁶

Projects Omega and Sigma⁺ augmented Delta in the latter part of 1966. By July 1967 the 5th Special Forces Group had

*Communications cable on or under the ground.

⁺Omega and Sigma operated much like Delta but didn't fall directly under COMUSMACV and the JGS. Rather, Omega worked in I and II Corps under supervision of the I Field Force Vietnam Commander. Sigma covered III Corps and took its orders from the II Field Force Vietnam Commander. Both Omega and Sigma had eight 4-man indigenous roadrunner teams and eight 6-man recce teams (each including two American advisers).

~~SECRET~~

10 forward air controllers permanently assigned, the bulk of them working with Delta teams.¹⁷ Thereafter, the number of FAC's mirrored the rise in SF operations that peaked at the 1968 Tet Offensive then tapered off in 1969 and 1970 as Vietnamization grabbed hold.

How FAC Support Was Forged and Applied

Special Forces accepted only seasoned forward air controllers with fighter pilot experience. They required an ability to direct strike aircraft in support of recce teams nose-to-nose with the enemy. The Army Recondo School* briefed the new arrivals on SF reconnaissance operations and related missions then veteran controllers checked them out.¹⁸

The new FAC's next joined Projects Delta, Sigma, or Omega, living at the forward operating locations from which their teams worked. Although attached to the 21st TASSq for administrative/logistic support, the controllers found it a lot easier to draw clothing and supplies from SF supply sections. Ammunition--mainly marker rockets and ammunition for hand-carried weapons--came from the Army (or Marines in I Corps). The 504th Tactical Air Support Group furnished aircraft maintenance through its 21st Squadron. The FOL's ground maintenance men, however, made minor repairs other than periodic aircraft checks. If a plane broke down in an isolated spot, the crewchief was flown out to bring back the parts. Forward air controllers also grew adept at fixing their aircraft.¹⁹

The clandestine nature of Delta operations permitted scant information to seep out. The 5th Special Forces Group ALO, for example, dealt directly with the ALO of the Direct Air Support Center of the area(s) where the teams were. Still the DASC ALO seldom learned all the details because the fewer people who knew what the reconnaissance patrols were doing, the less likelihood of plans being leaked. Consequently, the SF controllers worked in relative isolation and were more self-directed than FAC's of other units. This bred a decentralized setup that hampered coordination of close air support.²⁰

*The school trained commandos for long-range reconnaissance patrols in South Vietnam.

~~SECRET~~

As a Delta mission got under way, the corps commander sealed off the tactical area of responsibility from other ground troops and aircraft. Special Forces controllers warned away any planes straying into the area, driving them off if need be. The DASC granted the TAOR blanket clearance for all support needed--no questions asked. To secure it without delay, the FAC's used special call signs.²¹

A Delta operation unfolded in steps. Assignment of the mission flowed from MACV (or the JGS) down through the 5th SFGp and VNSF Commanders.²² They touched base with the corps commander while the 5th SFGp ALO coordinated with the DASC. Formation of teams and a tactical air control party followed. The team's forward support element and TACP pitched camp as close to the operating areas as possible--often at an A Detachment. If the camp had no runway, one was built. All that was needed was a 1,000-foot-long dirt strip, a little wider than a road, with a slight crown. To hurry things along, the FAC's would visit the nearest Army construction outfit and borrow a bulldozer crew.²³

The Special Forces FAC next flew over the operational area. If Army recce aircraft or ARVN controllers lent a hand, the coverage was split up. In every case, however, the SF controller "reconned" the areas to be infiltrated by Delta teams.^{*24} He followed up this general sweep with a detailed one to select potential helicopter landing zones. He briefed the operation's ground commander and together they went out by helicopter to look over the sites. Their final selection hinged on the size of the operation. A team of 6 or 8 men could get by with a zone only big enough for 1 helicopter, but a recon party of 50 would need one that could handle from 6 to 8. It sometimes became necessary to blast out a landing site with airstrikes.⁺²⁵

*Once the teams commenced operations, reconnaissance gave way to close air support.

[†]The Special Forces forward air controller found the hand-held camera valuable. First tried by Capt. Allen R. Groth in early 1967, a controller could snap potential landing zones from some distance away and not arouse suspicion. The Army processed the film and furnished prints within hours. Delta eventually got its own lab and trimmed photoprocessing time further.

~~SECRET~~

(S) Action to insert the Delta team now commenced.²⁶ This entailed 1 forward air controller, 1 helicopter to carry the team and 1 for command and control, plus from 4 to 10 helicopter gunships. To keep from tipping its hand, the formation set a flight pattern that carried it directly over the landing site. At that point, the other helicopters tuned the pitch of their rotor blades to blend in with the noise of the craft carrying the team. The latter ship dropped like a stone, unloaded in seconds, then shot skyward to rejoin the others and move a little way off. The FAC stayed 1,000 feet above the formation, scanning the operation as well as the surrounding area.²⁷

(S) After scrambling out of the helicopter, the Delta team members dug in not far from the landing zone. The team commander made his first contact with the forward air controller, whispering to avoid being overhead. If not detected by the enemy, the team moved out. The helicopters returned to home base but the FAC lingered a while to watch over the team's progress.²⁸

(S) A small patrol commonly remained out for a week or less; a larger one, a month or more. The team and forward air controller contacted one another daily--at dawn and at dusk. Location of the patrol at any given time had been firmed up before infiltration began. Consequently, the controller could leave base camp slightly before daybreak, "recce" the area, and get in touch at the appointed time. If the team was safe, he returned to home base until time for the dusk check-in.* Although seldom with the patrol during the day, the FAC could respond instantly to a call for help.²⁹

(S) When the team ran into trouble,⁺ it radioed directly to the camp command post for air support. If contact couldn't be made, the patrol routed the request through Army radio-relay aircraft or any forward air controller close by. Help almost always arrived within 10-15 minutes. If the Delta controller was not already airborne, he took off from base camp accompanied by helicopter gunships. The

*The forward air controller did most of his reconnaissance while flying to and from the patrol's position.

⁺"Trouble" meant (1) the team had come upon the enemy without being detected, or (2) the enemy had spotted the team and was searching for it, or (3) the enemy knew the team's location and was closing in.

~~SECRET~~

FAC called the DASC for strike aircraft while flying to the team's area. The Army gunships reacted fastest to teams in trouble, keeping the enemy off-balance until the heavier tac air got there.³⁰

To escape detection of a searching enemy, the team spoke in whispers to the forward air controller. If the Communists came so close as to rule out whispering, the patrol set up a marking panel* (visible solely from the air), used a signal mirror, or released balloons to rise through the trees.⁺ Strobe lights worked well at night as did hand-held flareguns (penguns). Another method had the controller overfly the position, the team leader whispering "Now" as the plane passed directly overhead. If this couldn't be done, the FAC flew a second pass to zero-in on the team's location.³¹

The controller attempted to point out the Communist position to the strike pilots without marking it. Generally, however, he ended up using WP marker rockets.³² Next, the fighters needed to pin down the enemy or force him to break off so the helicopters could pop in and pluck out the patrol. This demanded utmost FAC skill because in most every case the team and the Communists were nose-to-nose and airstrikes would be almost on top of the friendlies. Before dropping napalm, the forward air controller had to know the extent to which foliage and trees might dissipate it away from the patrol. Again, the fighters' ordnance might be too heavy for the job--say, 500-pound GP bombs. This demanded a split-second decision. If withholding the bombs spelled loss of the team, the ground commander opted for the drop. He and his men dug in behind logs or anything else available.[‡]

A case in point was the 15 August 1967 attack on a recce company near Base Camp 607, I Corps (along the Laotian border). Maj. Marvin C. Patton, 5th SFGp ALO, and Capt. Allan R. Groth rushed to the patrol's aid and at the same time called for fighter

*The panel was spread on the ground, held and waved, or opened and shut like an accordion.

+The FAC (but not the enemy) could see the balloons more clearly than rising smoke.

‡Capt. David L. Shields, a SF FAC, said heavy ordnance usually deafened the team members temporarily. He described the FAC's sinking feeling after a heavy close-in strike when silence answered efforts at radio contact. A flood of relief followed as the team commander eventually whispered everything was alright.

~~SECRET~~

support. The men had clambered onto the crossbar of a barren H-shaped ridge at the end of a valley to prepare for heli-lift out the next day. Unwisely, however, they stayed put too long and a North Vietnamese patrol trapped them. Amid exploding mortar rounds and withering small-arms fire, the men crouched in old bomb craters on the ridge. 34

● Captain Groth, first on the scene, brought in airstrikes. He directed rescue helicopters to speed down the valley toward the ridge but raking ground fire compelled them to withdraw. Meantime, Major Patton took charge after Groth's plane ran low on gas and his marker rockets were gone. Patton guided napalm drops and 20-mm cannon fire to within 30 feet of the team. All rockets expended, he flew in on the deck and dropped smoke rockets by hand. The enemy was driven back and survivors lifted out by sundown. 35

● Special Forces controllers often watched over several recce patrols simultaneously. When two teams wanted support at the same time, the FAC took care of the one hurting most, telling the other to "go groundhog" (dig in). On 17 August 1967, for example, a small patrol in Happy Valley (west of Da Nang) came under 37-mm and machinegun fire. Major Patton flew to its aid, leaving groundhog the other two teams he was supporting. Even though the patrol commander didn't want to pop smoke, Patton eventually pinpointed the Communists and got their guns silenced. By then, however, it was too dark to lift out the team. Helicopters picked it up the following morning along with a rescue unit that had dropped in a couple of hundred yards down the valley. 36

Expanding FAC Support

● The fixed Special Forces camps and operations launched out of them were not provided the type of FAC support given to Project Delta and other key missions. USAF controllers working with ARVN kept tabs on camps in their sectors but couldn't satisfy all air support demands. Moreover, the friendly guerrilla forces at the camps were too small to adequately defend themselves. Hence, when the Communists did attack a camp, the C detachment at corps headquarters had to rush mobile strike forces. These often arrived too late to stave off disaster. 37

● To shore up their defenses, Seventh Air Force in September 1967 assigned specific camps to tactical fighter squadrons in South Vietnam. These strike units kept up-to-date folders on "their camps"

~~SECRET~~

showing characteristics, defense plans, radio frequencies, and other specifics. The pilots overflew the camps repeatedly to memorize the layout of each and to find out by radio how things were going. They also made periodic visits to the camp's commander to talk over tactics and the current situation.³⁸

~~(S)~~ Air Force forward air controllers with ARVN soon adopted this policy of constant surveillance, passing any changes in the status of SF camps to other FAC's. Thus, in most cases a controller (if airborne) could be over a camp in trouble within 5 minutes.³⁹ Nevertheless, this heightened support dwindled during the 1968 Tet Offensive as FAC's were diverted to support the many small recce teams that help blunt the Communist attacks. After Tet had run its course, Seventh Air Force put ALO's at each C detachment to work directly under the corps ALO and to consolidate controller requirements with the 5th SFGp ALO (see Chart 3).⁴⁰ More controllers became available to Special Forces as the war wound down in 1969 and 1970. Finally, the inactivation of Project Delta in June 1970 funneled sufficient FAC's to SF units to take care of all their needs.⁴¹

~~(S)~~ Throughout the war, forward air controller support of Special Forces was marked by outstanding air-ground coordination. Even though the SF camps didn't receive all the support required, what they did receive was top drawer. The dedication of handpicked controllers repeatedly paid off in camps and teams saved. Lt. Col. Maurice C. Williams, 5th SFGp adviser, summed it up neatly:

When our patrols are out, they don't operate the way other people do. They're working under cover, probing. They're not out there to overrun anybody. Sometimes these teams find a few people and ambush them, but they're looking for the big place and they're looking for trouble and when they find it, they don't have the organic artillery to back them up. The air has to come in.⁴²

~~SECRET~~

~~SECRET~~

VIII. OUT-COUNTRY OPERATIONS

Background

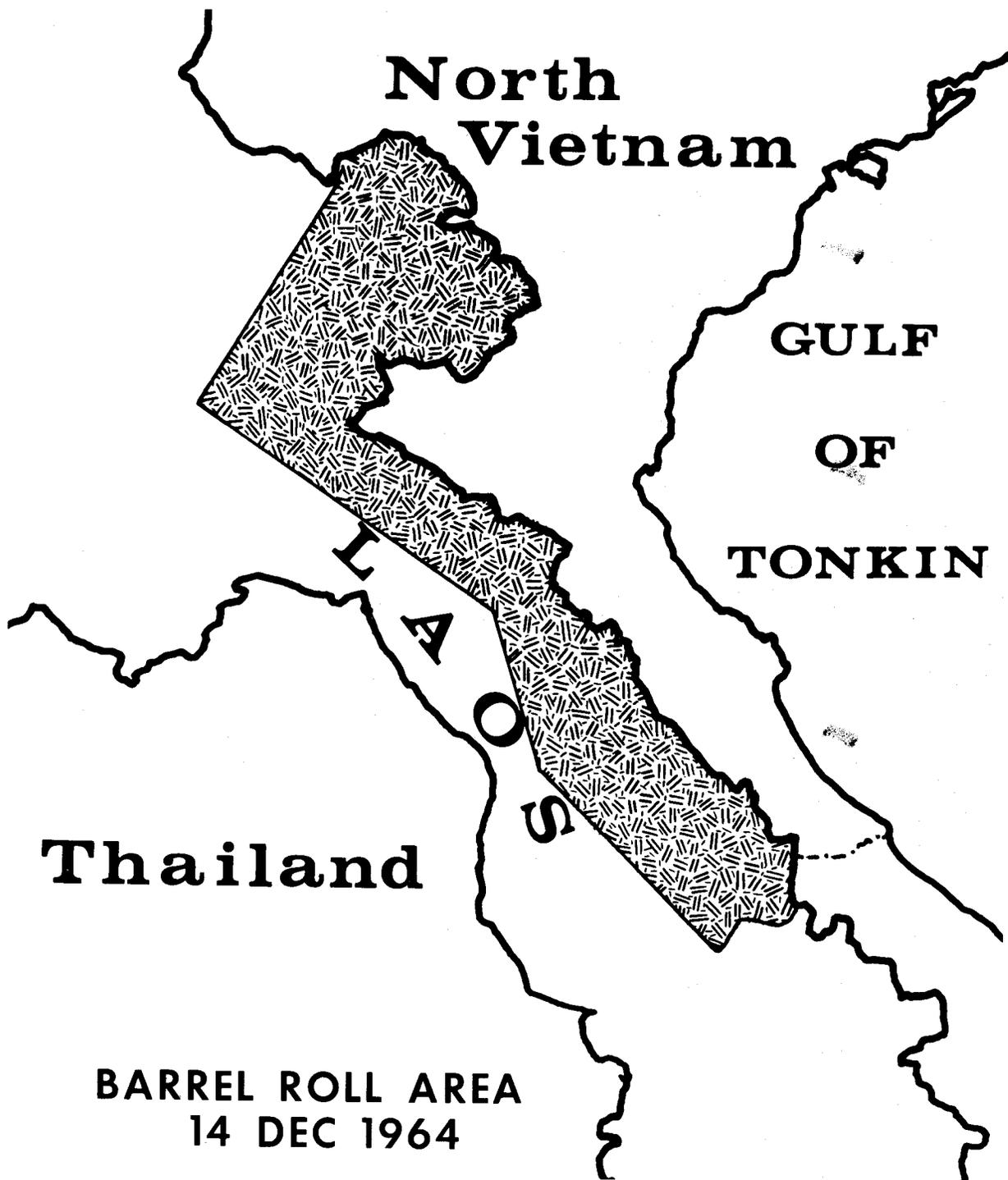
(U) Out-country forward air controller operations received far less publicity than those in South Vietnam. Even so, Air Force FAC's were widely used in Laos along the Ho Chi Minh Trail and to some extent for support of Laotian ground troops. They also saw service over North Vietnam, mostly in its southern panhandle near the demilitarized zone.

(U) From 1958 on, the United States had advisers in Laos but didn't set up a Military Advisory Assistance Group (MAAG) until April 1961. The 1954 Geneva agreements had intended a neutral Laos. However, sharp differences among neutralist, rightwing, and Communist factions created political chaos and armed conflict. The fighting increased after 1960, fueled by Soviet arms and North Vietnamese troops. The latter supported Communist Pathet Lao attacks on rightwing and neutralist forces in the northern third of the country. The 1962 Geneva agreements cooled the fighting by guaranteeing the neutrality and independence of Laos. The warring factions formed a coalition government with the neutralist Prince Souvanna Phouma as Premier. However, North Vietnam ignored the agreements and kept 6,000 men in Laos. Moreover, the Pathet Lao pulled out of the coalition and in April 1963 tried to drive the government forces (mostly Meo tribesmen) from the Plain of Jars. At this point, the United States responded to a Laotian request for aid by delivering T-28 fighter-bombers to the Royal Laotian Air Force (RLAF).¹

(U) The steady flow of North Vietnamese troops over the Ho Chi Minh Trail into South Vietnam spurred the United States to secure Souvanna Phouma's approval for USAF reconnaissance flights over Laos. These operations commenced on 19 May 1964. Although one jet was shot down on the 6th of June and an escort plane on the 7th, these flights continued and revealed a continuing enemy buildup. The Royal Laotian Government (RLG) then authorized an interdiction program in northern and southern Laos. The first of these Air Force strike operations (Barrel Roll) took place on 14 December 1964.²

~~(S)~~ Barrel Roll initially covered most of Laos (see Fig. 21) but by April 1965 had shrunk to the area surrounding the Plain of Jars. At the same time, the Steel Tiger campaign got under way

~~SECRET~~



**BARREL ROLL AREA
14 DEC 1964**

Figure 21 (S)

~~SECRET~~

along the Trail in the Laotian panhandle (see Fig. 22). Air Force involvement now gathered momentum. Within 2 years, operations such as Tiger Hound, Cricket, and Tally Ho became household words to the growing number of forward air controllers working out-country.³

Development of the FAC Program in Laos/North Vietnam

The initial MAAG advisers in Laos assisted the Royal Laotian Air Force.* Air Force forward air guides (FAG's)⁺ entered the picture in 1964 to aid close air support of the Laotian Army. In 1965 they began training indigenous Laotians as FAG's. They further "flew right seat" in Air America aircraft from time to time, helping the RLAF strike pilots find and hit enemy targets in support of ground troops.⁴

There were nevertheless too few forward air guides and Air America pilots to adequately assist the expanding RLAF.⁵ Moreover, the FAG's couldn't control USAF strike aircraft. In February 1965 the SAWC therefore sent four 2-man teams on temporary duty for 6 months to Udorn for operations in northern Laos. Each team consisted of an ALO/FAC and an enlisted communications man (both "jump qualified"). The teams (call sign Butterfly) worked directly for the U. S. Air Attache at Vientiane.⁶

A team normally operated from a forward operating base. While the airman stayed on the ground to handle communications for the Laotian troop commander, the FAC either borrowed an O-1 or flew with an Air America pilot. A Lao crewmember commonly went along. He interpreted (as need be) the controller's conversations with the ground commander and with the strike pilots (if RLAF fighters were being controlled).⁷

*Nearly all these early advisers worked for Air America, a civilian contract air operation. A USAF special air warfare unit (Detachment 6, 1st Commando Wing) deployed to Udorn, Thailand, in December 1962. It comprised 41 men and 4 T-28's. The men flew with Lao pilots and taught them counterinsurgency tactics. In addition, Detachment 6 could help out the RLAF in an emergency by covert action or furnishing aircraft.

⁺These airmen, graduates of the Special Air Warfare Center's FAG School, operated in Laos until 1967.

~~SECRET~~

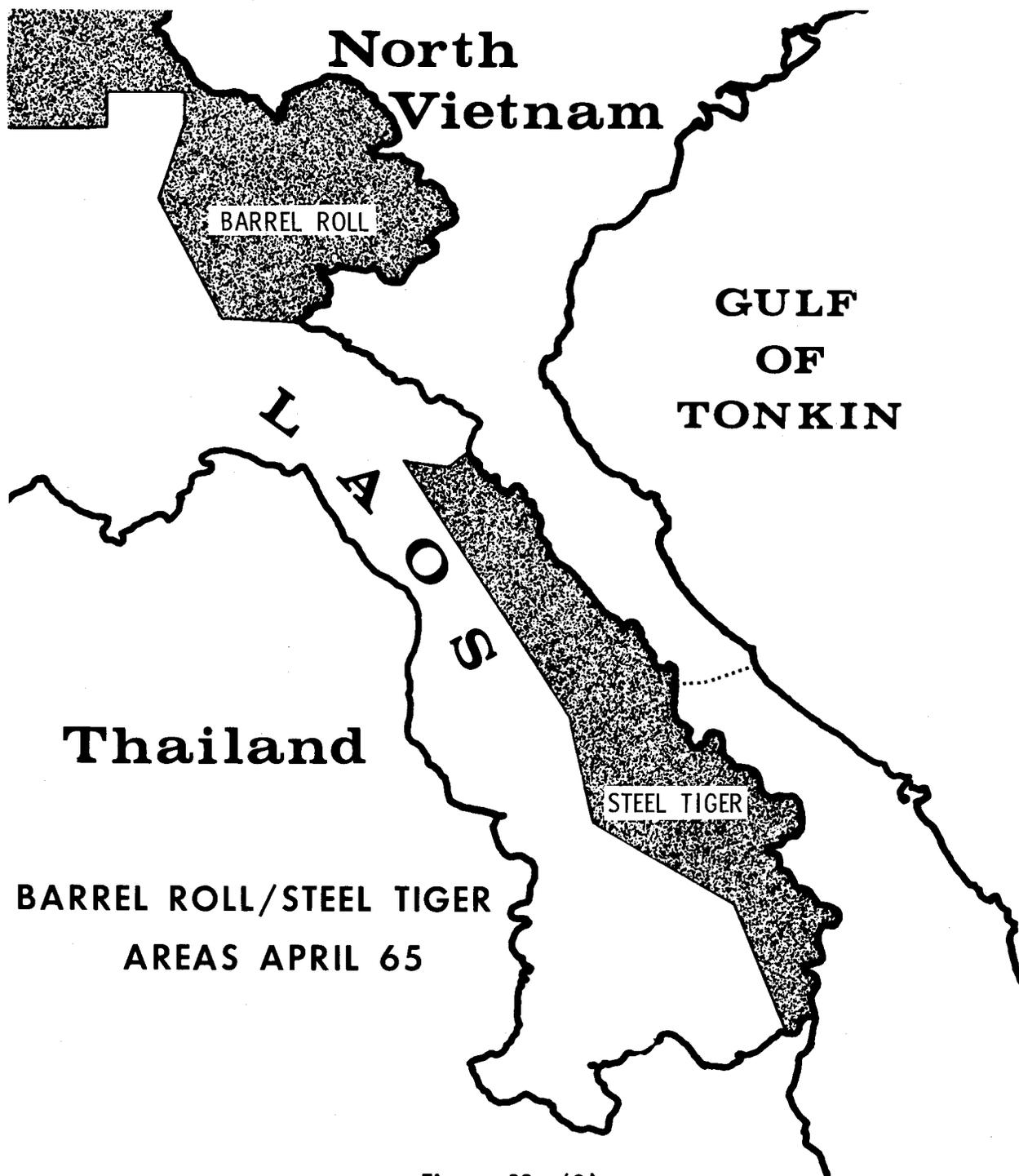


Figure 22 (S)

~~SECRET~~



Figure 23 (S)

~~SECRET~~

(S) Forward air controllers flying out of bases in South Vietnam directed Air Force interdiction airstrikes in Laos. They became part of each air operation as it unfolded.

Airborne Battlefield Command and Control Center

(S) Unable to control out-country tac air through DASC's, in January 1964, the Air Force turned to airborne command and control centers. The first, an RC-47 (call sign Dogpatch), started working Barrel Roll pending arrival of a "true" ABCCC. In the fall of 1965, an EC-130 ABCCC (Hillsboro) deployed to Da Nang for testing. It assisted strike operations over the southern Steel Tiger area during daylight hours.*⁸

(S) The Hillsboro EC-130 came under 2d Air Division (later Seventh Air Force)⁺ supervision. Carrying a Lao officer for swift approval of strike requests, the ABCCC coordinated air activity so successfully that a second EC-130 (Cricket) was pressed into service during early 1966. Cricket orbited northern Steel Tiger, handling tac air in Barrel Roll and the panhandle of North Vietnam. This freed the Dogpatch RC-47 for radio relay duty.⁹

(S) However, night operations quickened in late 1966 and the RC-47 (now call sign Alleycat) took up ABCCC duty opposite the DMZ. Until replaced by an EC-130 in June 1967, it worked airstrikes in North Vietnam and Laos. In February 1968 Seventh Air Force split Alleycat's area of operations, the EC-130 (Moonbeam) taking over the Steel Tiger area. Day-and-night ABCCC coverage was now complete.¹⁰ Thus, the airborne battlefield command and control center became a mainstay of the war--its numbers attuned to the rise and fall of tac air operations.

Tiger Hound

(S) Enemy traffic picked up substantially by December 1965, forcing the Air Force to review the Steel Tiger interdiction campaign. A decision followed to split Steel Tiger and mount a separate Tiger Hound operation in its southern half (see Fig. 23). On 1 December at

*The EC-130's roles encompassed "mission coordinator, air coordinator, communications relay, search and rescue coordination, and weather reconnaissance." [Hist, (S) TAC, Jul-Dec 1966, I, 721-22.]

⁺The 2d Air Division became Seventh Air Force on 1 April 1966.

~~SECRET~~

Udon, the USMACV and 2d Air Division commanders briefed the Ambassador to Laos, William H. Sullivan, on Tiger Hound. This new operation would bring together Air Force FAC's, ABCCC's, Army OV-1 Mohawks (equipped with side-looking acquisition/infrared radar), flareships, and defoliation aircraft.¹¹ The combined effort sought to impede the flow of men and supplies down the Trail and river complex--80 percent of which moved at night. Ambassador Sullivan had no objections to the campaign so long as the rules of engagement were strictly adhered to. Tiger Hound accordingly kicked off on 6 December.¹²

(S) Tiger Hound operations were coordinated from its headquarters at Tan Son Nhut, through the forward operating base at Da Nang. The FAC aircraft staged from SF camp airstrips near the Laotian border--Dong Ha, Khe Sanh, Kham Duc, and Kontum. The Tiger Hound controllers (call sign Hound Dog) were not restricted to lines of communications as was the case in Steel Tiger. They could search for targets wherever there were suspected enemy positions. Furthermore, two RLAFF officers flew in the ABCCC's, evaluating targets on-the-spot and approving valid strike requests. They easily resolved any doubts by radioing RLAFF headquarters.¹³

(S) Flying O-1's the Tiger Hound controllers at first worked by day. They were out "reconning" at dawn, ready to control preplanned/immediate airstrikes handed over by the ABCCC. (The ABCCC senior duty officer had authority to divert fighters from lower priority missions and to begin or break off strikes.) Two months passed and Tiger Hound had little to show for its daytime efforts. Shunning the trail by day,* the Communists holed up in hard-to-find truck parks until dark.¹⁴

(S) Night interdiction got going in late January 1966. Army OV-1's used SLAR and infrared radar to pick out the enemy along roads and trails. C-130's lumbered alongside the Mohawks and dropped flares when told of a potential target. O-1 forward air controllers next moved in to mark it and request strike aircraft from the ABCCC. When bad weather grounded the O-1, an AC-47 with a FAC aboard took over.⁺ The Spooky marked targets with minigun tracer fire.¹⁵

*The FAC's nonetheless saw tire prints along roads and heavy dust on trees.

⁺AC-47 pilots were also checked out as "target identifier" FAC's. They could take fighters from the ABCCC and bring them into the target area.

~~SECRET~~

CRICKET OPERATIONAL AREA

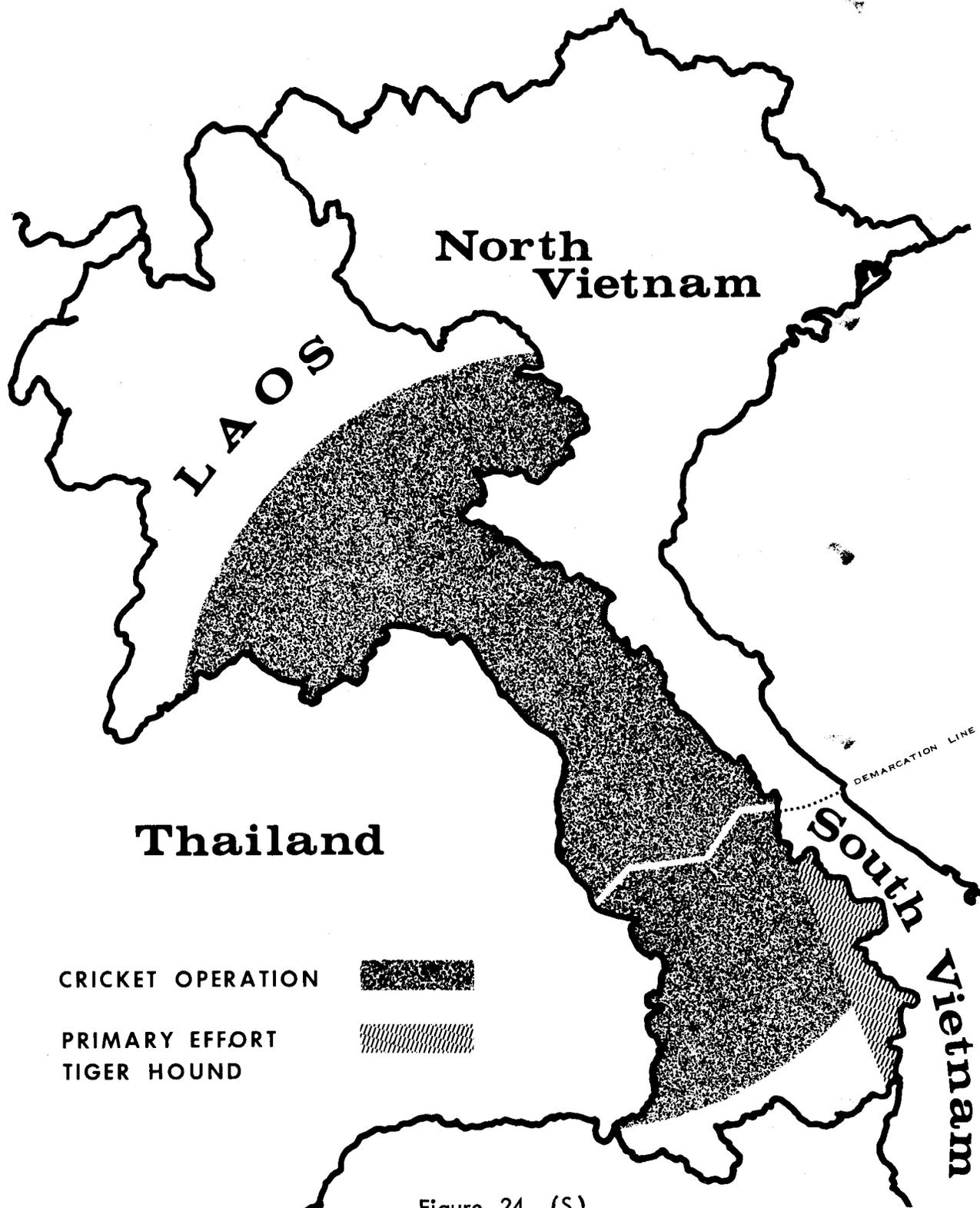


Figure 24 (S)

~~SECRET~~

The dense jungle cover over much of the Ho Chi Minh Trail proved the major drawback to finding targets at night. Despite all its sophisticated equipment, the OV-1 still couldn't see through the trees. Hence, USAF officials turned to the Ranch Hand defoliation program to denude the vegetation and deny the enemy cover. The C-123's, however, needed to fly very slow on these missions, which made them sitting ducks for enemy AA gunners. Restrictions followed that steered the defoliation flights away from heavily defended stretches of the Trail.¹⁶

Cricket

Launched in January 1966, the Cricket campaign covered the area between southern Tiger Hound and Nape Pass to the north (see Fig. 24). It centered on the North Vietnam border where the Trail entered Laos. Cricket forward air controllers, with Lao observers aboard, flew out of Nakhon Phanom AB, Thailand.* They performed visual reconnaissance, controlled interdiction airstrikes, and in the lower panhandle of Laos directed fighters in support of Laotian ground troops.⁺¹⁷

Missions started on 21 January. The Cricket controllers flew in pairs--one high, the other low. Teamwork of the FAC's and ground observers exceeded expectations. In 2 weeks Cricket chalked up 250 enemy killed by air, 56 trucks destroyed, 19 gun emplacements wiped out, 2 bridges damaged, 38 secondary explosions, and 13 buildings demolished. Enemy daytime traffic virtually ceased.^{‡18}

As Cricket FAC/ground teams zeroed-in on routes spilling out of the Nape and Mu Gia passes, the Viet Cong/NVA speeded up night traffic. Cricket countered in the latter part of February with the AC-47 (a combination gunship, flareship, and strike controller). Enemy ground fire grew hotter, however, and the less vulnerable A-26 replaced the AC-47.¹⁹

*Detachment 1, 505th Tactical Control Group, was organized at Nakhon Phanom AB on 17 January 1966--starting off with six FAC's on TDY from South Vietnam. In April the detachment became the 23d Tactical Air Support Squadron.

⁺Other forces helped out in Cricket. Laotian ground FAC's (call sign Elephant) supported their own ground troops. Roadwatch teams and Shining Brass elements worked the border areas. Controlled American Sources (CAS)--a CIA-supported program--assisted too.

[‡]The other operations in Laos soon adopted the Cricket air/ground concept.

~~SECRET~~



A FAC Directs F-4 Phantom Strikes

(This page is UNCLASSIFIED)

~~SECRET~~

Tally Ho

(S) Even though most of the out-country FAC effort centered in Laos, Tally Ho took place in the panhandle of North Vietnam. (Fig. 23). The campaign commenced in July 1966 following North Vietnamese invasion of Quang Tri Province. Flying O-1's out of Tiger Hound forward airstrips,²⁰ the Tally Ho controllers worked in pairs but failed to match Cricket successes. The answer lay in stout enemy defenses in the coastal areas that forced FAC's too high for best VR. Moreover, enemy gunners massed their fire when the forward air controller was on his target-marking pass. This led to a rise in minimum altitude to 2,500 feet and a drop in FAC accuracy. By the end of the year, A-1 controllers replaced the O-1's who moved to the less dangerous mountain areas. The A-1's in turn gave way to F-100 jet FAC's.*²¹

Rules of Engagement

(S) The onset of American air operations in Laos spawned restrictions for protecting friendly or neutral targets. Rules governing airstrikes assumed even greater importance because the enemy could melt more easily into the local populations.²² The checkout and validation of targets from the ground were also harder. The few native ground FAG's and roadwatch teams were able to do little more than monitor overall enemy activity.²³

(S) Personal control of air support in Laos therefore rested with Ambassador Sullivan, with the U. S. Air Attache (AIRA) a key link. The latter sifted intelligence, discussed preplanned targets with Laotian military officials, and passed his recommendations to Mr. Sullivan at the daily meeting of the Country Team.⁺ Strike requests approved by Sullivan went to COMUSMACV and Seventh Air Force for further coordination and fragging.²⁴

(S) By 1966 the rules of engagement were squared away. Nearly all airstrikes required FAC control. However, armed recce in designated areas ‡ needed neither controllers nor the approval of

*Jet forward air controllers are discussed in the next chapter.

⁺The Country Team included representatives from the office of the Ambassador, Army and Air Force attaches, and Laotian military and civilian officials.

[‡]These areas were under enemy control with no friendly population for example, the eastern part of Tiger Hound bordering South Vietnam.

~~SECRET~~

Ambassador Sullivan (and the Royal Laotian Government (RLG)) at Vientiane. Targets of opportunity in these areas had to be outside villages and towns and within 200 yards of motorable roads and trails. Strikes beyond this limit called for Vientiane permission and forward air controllers--except when the target opened fire. Other fixed or fleeting targets had to have validation and approval from Vientiane (or from a Lao observer with validation authority, aboard the FAC aircraft). A controller was a must for close air support, when called for by Mr. Sullivan, when striking within 3 miles of the Cambodian border, and for night strikes on fixed targets--unless the fighters were under ground radar control (MSQ).²⁵

The rules buttoned down other details. Only boats and barges positively identified as military transports could be hit. The Ambassador alone approved napalm strikes and all had to be under FAC control.²⁶ No airstrikes could be carried out within a 25-mile radius of Vientiane and Luang Prabang. A 10-mile limit applied to Savanahket, Saravane, Thakhet, Pakse, and Attopeu.²⁷ From 1966 on, the rules were modified to keep pace with the shifts of the Laotian air war but the basic system was unchanged.

Shaping the FAC Role

Tiger Hound received 0-1 forward air controllers from the 20th TASSq at Da Nang. Steel Tiger and Cricket got theirs from the 23d TASSq at Nakhon Phanom. At first the vulnerable little Bird Dog roamed the skies with relative freedom, then enemy defenses stiffened and curtailed the areas where it could fly in safety. The coming of the 0-2A and OV-10 opened up operations a little.* Even so, these aircraft were but a notch above the 0-1 in withstanding ground fire.²⁸

(S) On 10 March 1967, Seventh Air Force designated the A-1E, A-26, T-28, C-47, C-123, and C-130A as substitute FAC aircraft. Specific guidelines governed their use. T-28's and A-1E's, for example, flew in pairs and acted as FAC for one another. If they flew singly, both crewmen needed to be FAC-qualified before directing their own strikes. The A-26 was allowed to furnish its own controller support if a navigator was in the crew. The C-type aircraft carried a forward air controller with them. Before certifying him

*The 0-2A did fine work in night operations, 30 being assigned to the 23d TASSq as replacements for the 0-1. OV-10's augmented the 0-2A's in 1968 and worked well in day operations.

~~SECRET~~

for FAC duty, the commander made sure the crewmember knew the area of operations, rules of engagement, and control procedures-- and was ready to take responsibility for results of airstrikes he controlled.²⁹

(S) Qualifications of out-country and in-country forward air controllers differed. In South Vietnam only fighter-qualified controllers supported U S. Army troops. This requirement (though desirable) wasn't mandatory out-country since FAC's seldom supported ground troops.* Forward air controllers flying the O-1, O-2A, and OV-10 were graduates of the FAC school at Hurlburt. Those using other aircraft received controller training in unit programs.³⁰ The 602d Air Commando Squadron (ACSq), for example, conducted a rather informal A-1E FAC program. It put the potential controller through 25 missions in the wing position to let him study the lead pilot's strike control tactics. After a checkout he was cleared to control strikes from the lead spot.⁺³¹

(S) The C-123 Candlestick/C-130 Blindbat training programs afforded another case in point. The 606th Special Operations Squadron set up a 3-week course at Ubon AB, Thailand, to train C-123 navigators and pilots in ground/flying FAC procedures. It required students to pass a check ride before controlling airstrikes.³² The C-130's at first took a forward air controller along on flare missions. By 1968, however, Blindbat crews were undergoing FAC training at Ubon so they could control airstrikes.³³

Day Operations

Visual Reconnaissance

(S) The out-country forward air controller used virtually the same tactics as in South Vietnam to find targets and control airstrikes (see Chapter V). On the other hand, he faced far heavier ground fire.

*Many out-country SCAR forward air controllers were either fresh out of pilot school or older experienced MAC and SAC pilots. New arrivals underwent at least 100 hours of supervised flying in SEA before controlling airstrikes solo.

+The 602d A-1E's used call sign Firefly during FAC missions and call sign Sandy when engaged in search and rescue (SAR).

~~SECRET~~

(S) Intelligence-gathering was the heart of good strike operations, and the FAC could quickly secure information on enemy movements. Commitments to strike control, however, left little time for the controller to "recon." Moreover, when he did, enemy AA fire forced him too high for best results. In 1968, for example, he seldom operated below 3,000 feet in low- and medium-threat areas, or under 6,000 feet in high-threat ones.³⁴

(S) The FAC consequently relied a great deal on binoculars. To keep enemy gunners from anticipating his flight path, he rarely flew the same pattern twice in a row. In heavily defended areas, he jinked so the gunners couldn't track him. He usually flew with side windows open to pinpoint the ground fire.³⁵ Knowing every inch of his area, the FAC instantly spotted anything suspicious, rechecked it, then radioed the ABCCC for strike clearance and attack aircraft.³⁶ At the poststrike briefing, he reported any requests denied by the ABCCC.

(S) Much activity nonetheless escaped the airborne FAC's prying eyes because the Communists became masters at hiding their tracks. As in South Vietnam, they shaped defensive and evasive tactics to the terrain. When daytime travel grew too risky, they shunted part of the shipments to the Se Kong River and major streams. The controller soon considered anything floating on the water suspect. The enemy lashed large groups of sampans together for free-floating downstream. He banded together barrels of fuel oil and cut them loose in the water. When interdiction strikes took their toll, he floated the barrels singly. This made the price of destruction too high-- a strike aircraft against one barrel.³⁷

(S) Information on enemy movements flowed largely from native forward air guides, roadwatch teams, and long-range recce patrols in the border areas. In addition, specially radio-equipped aircraft dropped sensors in strategic areas. Orbiting radio-equipped planes picked up the sensor reports and sent them to the infiltration surveillance center, Dutch Mill (later Task Force Alpha), at Nakhon Phanom. There, reports were processed and passed to forward air controllers for checking out.⁺³⁸

*Dutch Mill became part of Task Force Alpha at Nakhon Phanom in 1967.

+In May 1969 the Air Force borrowed two Black Crow sensors from the Navy and operated them from a C-130 Blindbat flying out of Naha, Okinawa. These ignition system detection sensors could detect trucks 5 to 6 miles away and enemy base camps through the jungle canopy (a feat airborne FAC's couldn't duplicate). Black Crow's chief drawback was the inability to tell friend from foe.

~~SECRET~~

Correlation of out-country intelligence information posed a thorny problem. Seventh Air Force/MACV assembled, sorted, and pieced together bits of information from an array of sources. By way of the regular stream arrived reports of FAC, A-1, C-123, and C-130 units; Shining Brass/Prairie Fire long-range recce patrols; and defector/prisoner interrogations. For other bits and pieces, Seventh/MACV had to reach out. Findings of the Raven FAC's* went to the Air Attache Laos; roadwatch team results, to Controlled American Sources; and reports of forward air guides, to Laotian ground commanders. On top of this, the intelligence picture often had to be cleared with Lao, Thai, and South Vietnamese officials. All this consumed time and slowed action. Several days sometimes passed before a forward air controller could check out a potential target--by then it might no longer exist. 39

Strike Control

After approval and fragging of a preplanned airstrike, mission preparation got under way. The frag order told the forward air controller what type ordnance and strike aircraft he would be working. Drawing on knowledge of the area and enemy defenses, he planned the attack, giving special care to the fighters' passes and pulloffs. The following day, the controller arrived in the area well ahead of the strike aircraft. He "reconned" for target changes and adjusted accordingly. + Securing the final okay for the strike from the ABCCC, he prepared to rendezvous. 40

Procedures for rendezvous were similar to those in South Vietnam (Chapter V). FAC and fighter pilots headed for the pre-arranged join-up point, making the proper radio transmissions/checks en route. They navigated by TACAN/DME or, if necessary, by a vector (in grid coordinates) from a CRC. Completing visual contact and linkup, they flew to the target area, and on the way talked over target information and last-minute changes. Before marking the target, the controller set up the fighters in a holding pattern. 41

If flying the O-1, O-2A, or OV-10, the controller rolled in at 5,000-6,000 feet to mark the target. This kept him clear of

*The work of Raven FAC's in special operations is covered later in this chapter.

+From this point on, procedures for either a preplanned or immediate airstrike were practically the same.

~~SECRET~~

the deadly AA fire in Laos and North Vietnam. For the same reason, he favored stand-off marking (Fig. 10), lobbing the marker rocket in from several miles out. This method's shaky accuracy, however, led to the rocket impacts being used chiefly as reference points. The controller relied on prominent landmarks to locate the target for the strike pilots. He monitored the bomb runs from a holding orbit usually opposite the strike orbit.⁴²

A-1E Fireflies and T-28 Zorros could venture into areas too dangerous for the O-1's and O-2A's. They employed normal FAC tactics but had a gunsight that refined target marking. The A-1E, used more frequently than the T-28,^{*} could carry an ordnance load in addition to marker rockets. Thus, it could conduct forward air control and airstrikes as well if two FAC-qualified pilots were aboard.⁴³

The A-1E controller liked to use stand-off marking in areas of hot AA fire. He pointed the aircraft toward the target at 6,000-7,000 feet, raised the nose about 20° above the horizon, and "ripple-fired" three or four rockets. The marker hitting nearest the target became the reference point for the strike. An alternate delivery had the A-1E FAC dive in low, pop up, and lob the rocket into the target area.⁴⁴

In less hostile areas, the A-1E forward air controller rolled from a left turn into a 30°-40° dive toward the target. He released the rocket at 4,500 feet--just prior to pullup. First making sure the fighter pilots knew where the target was, he swung into a racetrack holding pattern to the side of, and parallel to, the strike aircraft's approach.⁴⁵

The A-1E's large ordnance capacity, long loiter time, and speed to survive in moderately hostile areas made it ideal for armed recce.⁺ Upon seeing a target, the lead Firefly controller secured strike clearance from the ABCCC. He dropped ordnance first then controlled the other A-1E's.⁴⁶

A further aid to strike operations, adopted in 1967, was the SCAR FAC team concept. It sought to break down the language

^{*}The A-1E was faster and less vulnerable than the T-28. In 1967 both planes gave way in the more hostile areas to the speedier jet FAC's.

⁺The A-1E was the first true armed FAC aircraft to operate out-country (1966).

~~SECRET~~

barrier between USAF forward air controllers, RLAFF T-28 strike pilots, and ground commanders. Employed for the most part in northeast Laos, the team consisted of an Air Force FAC to handle American aircraft, a Thai controller to direct RLAFF T-28's, a Meo tribesman steeped in the area, a Lao speaking Meo and Thai, a Controlled American Sources pilot, and an interpreter having English and Laotian (or Thai). All team members didn't fly at the same time but remained on tap until needed.⁴⁷

Night Operations

The United States early realized that daytime missions alone couldn't stanch the flow of men and supplies down the Ho Chi Minh Trail. Hence, with Laotian approval, night strike missions commenced on 22 January 1965. The slight successes of the first year⁴⁸ contrasted sharply with the spectacular debut of the starlight scope at Attopeu in March 1966.⁴⁹ There followed a gradual ushering in of new detection equipment* that pumped new life into night operations.

Forward air controllers figured in nearly all night operations. The O-2A was better suited for night duty than the O-1 and OV-10,⁵¹ but Communist ploys for disrupting recce along the Trail worked to the disadvantage of all three. The enemy, for example, put plenty of space between truck parks and hid them under the jungle overhang. He also spaced out the trucks in his convoys so strike aircraft would have a hard time hitting them all at once.⁵² The smaller FAC aircraft lacked room for the infrared radar necessary to "see" under the trees. Nor could they carry ample flares to light up the entire area long enough for fighters to destroy the stretched-out convoys.

In 1965 the AC-47 became the first non-FAC aircraft to control night strikes. Its flare-carrying capacity was a decided plus but the Spooky was unable to survive in medium- and high-threat areas. It accordingly gave way to planes with a greater chance of doing so--the A-26A,⁺ C-123, and C-130.⁵³

The strike control procedures were fairly clean-cut. Day-time rendezvous methods prevailed but with even greater care to

*Included were low-light-level television, forward-looking infrared (FLIR), Black Crow, and the airborne moving target indicator (AMTI).

⁺A-26A's did their first FAC duty in July 1966. Operating out of Nakhon Phanom, they controlled their own strikes in Steel Tiger, usually supported by a C-47 flareship.

~~SECRET~~

ward off collisions. Flares at times aided the linkup. The steps for target marking and directing airstrikes paralleled those used at night in South Vietnam (Chapter VI), though geared to the heavier out-country AA fire. Throughout the mission, the FAC aircraft kept in constant touch with the flareship and fighters. If communications between the flareship and strike aircraft went out, the controller put off or scrubbed the attack until contact was restored.⁵⁴

Armed Recce/Hunter-Killers

Armed recce was a key way to find and hit targets at night. As a rule, it teamed two fighters with a flareship (having a FAC aboard). The three aircraft rendezvoused over a predesignated point at 6,000 feet or higher--the fighters 2,000 feet above the flareship. Without disturbing this separation, the planes descended to the pre-briefed altitude, accelerated to a common airspeed (usually 250 KIAS), and set out for the target area. The flareship doused anticollision lights and the navigator called out heading changes to the pilot who relayed them to the strike lead.⁺ Upon sighting the target, the flareship pilot informed the fighters. He further furnished the highest elevation on each side of the target and the location (in clock code) of the highest terrain within a 5-mile radius. After dispensing flares, the controller directed the fighter runs on the target.⁵⁵

The hunter-killer concept,[‡] closely related to armed reconnaissance, proved potent against the enemy. In the beginning, it teamed the O-1 (and later the O-2) with the T-28 Zorro. While the controller scanned for targets with the starlight scope, the T-28 flew 500-1,000 feet above and behind, following the FAC's lights and maneuvering in slow "S" turns. After picking up the target, the forward air controller secured strike clearance, dropped flares, and marked. He next offset to one side and orbited as the Zorro closed straight and fast on the target. The element of surprise often

* A-26A's did their first FAC duty in July 1966. Operating out of Nakhon Phanom, they controlled their own strikes in Steel Tiger, usually supported by a C-47 flareship.

⁺ Head of the fighter formation.

[‡] Originally conceived for day operations, an O-1 and T-28 flew the first hunter-killer mission in January 1967. Shortly thereafter, the hunter-killers switched to night missions to take advantage of the greater enemy movement.

~~SECRET~~

trapped enemy trucks before they could pull off the road. *56

When AA fire heated up, the A-26 Nimrod joined the hunter-killer team to silence the guns. The Nimrod held to one side until the controller completed his marking pass and the Zorro started the bomb run. Then, as ground defenses awakened, the A-26 streaked in with guns blazing. The T-28 could similarly support the Nimrod. 57

During 1967 the C-123 Candlestick paired with the T-28, Zorro as hunter-killers. + Carrying many flares, the C-123 could loiter for hours and work with several Zorros in rotation. Starlight scope operators scanned the ground from the flareship's side doors and forward floor-hatch. When a target was detected, the pilot alerted his T-28 counterpart to prepare for the strike. The Zorro attacked a few seconds after the flares ignited at 1,850 AGL. Seventh Air Force was so impressed with C-123/T-28 results that it adopted hunter-killer operations permanently, expanding them later to include jet tactical fighters. 58

C-123 Candlestick FAC's

The C-123 (like the C-130) was an ideal hunter FAC aircraft. In addition to long loiter time, it had plenty of room for extra crewmembers, flares, † and detection equipment. The small starlight scope--the type used on the Army's M-16 rifle--equipped the first Candlesticks. Under dim moonlight/starlight, however, this instrument couldn't see trucks running without lights nor trace the outlines of roads. In August 1968 the Air Force AN/AVG-3 starlight scope (already installed in the C-130's) replaced the Army scope. The firmly mounted AVG-3 proved steadier, easier to operate, and far better for picking out ground targets. 59

*After checkout by forward air controllers in FAC/recce procedures, T-28 Zorro pilots assisted in armed reconnaissance. The hunter-killer team could split up in a precisely defined target area--the T-28 pilot and FAC "reconning" from opposite ends, hoping to catch truck traffic in between. The aircraft kept close enough together to support each other on short notice.

+Thus was born the Candlestick FAC operation using the starlight scope.

‡The C-123 carried more than 200 flares.

~~SECRET~~

In 1968 the Candlesticks focused on road reconnaissance in Steel Tiger but found time to validate some sensor findings. The 606th SOSq fraged four C-123 sorties nightly into Steel Tiger, a number that soon rose to eight--with a ninth in Barrel Roll.⁶⁰ During missions two of the aircraft's navigators manned starlight scopes while the third took care of regular navigation. To space out the air traffic, the C-123's stayed below 10,000 feet. Except during airstrikes, jet fighters remained above 35,000; nonjets, at 10,500 or 11,000. The ABCCC's kept between 12,000 and 35,000.⁶¹

On the way to the reconnaissance area, the Candlestick navigators firmed up last-minute details. One scope operator sat in the left front entrance door, scanning to the left of the aircraft. Another lay prone on a GI mattress (3/4-inch armorplate beneath), pointing the scope out the forward emergency bailout hatch.* Once across the bomblines--about 50 miles east of Nakhon Phanom--flare dispensers were placed in the partly open cargo ramps and loaded. Additionally, ground marker logs were readied for dispersal. Before seeking out designated targets, the C-123 reconnoitered the entire assigned area. When a target was detected, the pilot flew past it, made a tight 180° turn, and gave the scope navigators the new position and heading. Upon the belly scope operator's command, three Mk-6 ground markers were dropped (at 3-5 second intervals) and Mk-24 flares dispensed. The operators determined in the flarelight the truck positions on the road. Using ground markers as reference points, they fed strike instructions to the pilot. He passed the information to the "killer" aircraft attacking under the glow of the descending flares.⁶²

If not doing hunter-killer duty, the C-123 kept in close touch with the ABCCC so as to get the strike aircraft standing by. When trucks or other targets were seen, the Candlestick copilot asked at once for the fighters and set up a rendezvous location. The crew held off dropping ground marker logs and flares (if needed) until the strike aircraft arrived. At this time, the logs were dropped (three in a line) down the road from the trucks.⁺ These aligned markers (fuzes set for 3-minute delay) served as points with which the fighter pilots lined up on the targets. The pilots had to be dead certain they

*The scope was mounted on a traverse rod for easy movement, the operator scanning a square mile at a time.

⁺If the enemy retaliated by kindling his own fires, fresh marker logs of a different color could be dropped.

~~SECRET~~

saw the Candlestick before the attack began. (The C-123's top-mounted rotating beacon helped in the identification.) The Candlestick pilot next set a left-hand tracking orbit similar to a gunship's.

C-123 ORBIT PATTERN

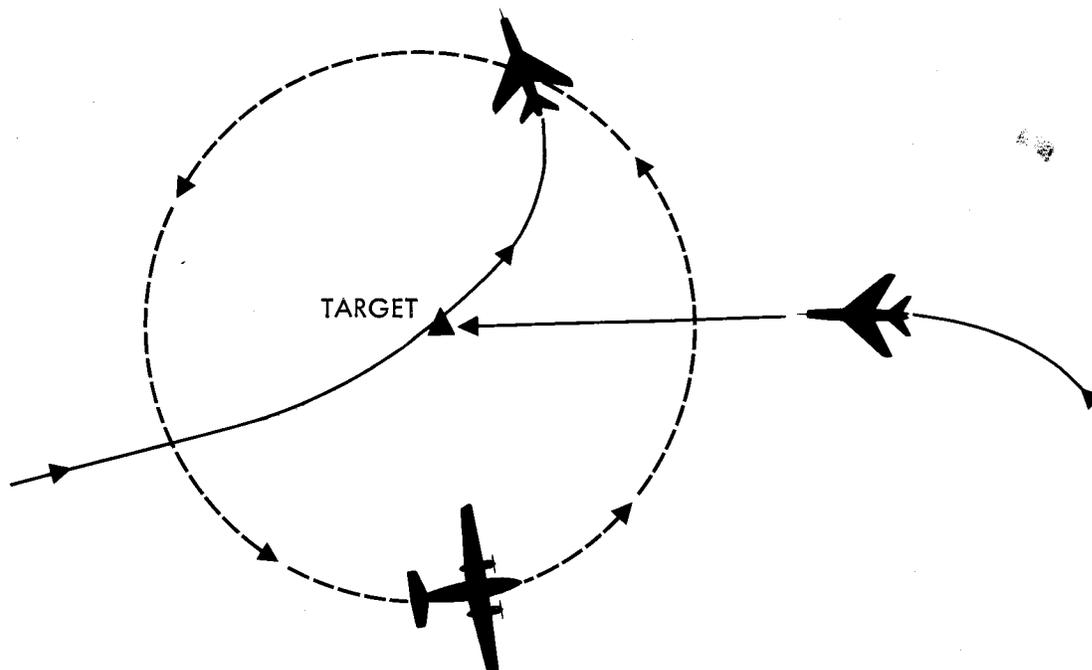


FIGURE 25 (U)

The fighters started their passes from a perch altitude* of about 4,000 feet above the C-123. To direct the run-ins, the FAC used short precise ground-reference terms in lieu of distances, for example, "See where my last two markers are closest together. Bomb between them."⁶³

(S) Each strike aircraft in turn rolled in, passed down and under the C-123, then up and out the other side. Meantime, the Candlestick pilot held the tight left-hand orbit that extended a continuous view of the strike to the scope operators. Since the orbit also allowed enemy gunners to predict the aircraft's flightpath, the

* An airborne position assumed by a fighter-bomber in preparation for or anticipation of an air-to-ground maneuver.

~~SECRET~~

crew kept a sharp lookout for AA fire. If spotted, the call "break right" or "break left" over the interphone warned the pilot to sharply change course. The ground fire usually converged on the fighters during their passes, but turned back on the FAC after the bomb run was completed. This was the signal for the Candlestick to move out of range as quickly as possible.⁶⁴

By the end of 1969, the C-123's could no longer survive the stiff AA fire along the Trail in Laos. Seventh Air Force therefore shifted them to less hostile areas which undercut their usefulness. On 30 June 1971, the 606th Special Operations Squadron was inactivated and modified AC-130 gunships--equipped with FLIR, LLLTV, SLAR, and advanced starlight scopes--replaced the Candlesticks.⁶⁵

(U) For 4 years the C-123 Candlestick FAC's had done yeoman work, helping hold the line against enemy night infiltration. In the words of one Vietnam War veteran, "Along with the O-2 Nails, [the] C-123's were the first reliable night hunters employed along the Ho Chi Minh Trail. Yet the whole operation was no more than an improvisation--the mating of the starlight scope with the old Fairchild Provider."⁶⁶

C-130 Blindbats

The real workhorse of Air Force operations in Southeast Asia turned out to be the C-130 Hercules. Besides being the backbone of the logistic and tactical airlift, it served as an ABCCC, gunship, flareship, and Blindbat FAC aircraft.

The C-130 first entered the picture in SEA during April 1965, 8 months following the Gulf of Tonkin incidents. Its initial airlift role expanded in June to embrace flare support of ground operations in South Vietnam. In July an evaluation (Night Owl) took place to determine if the Hercules and fighters could be successfully teamed for Laotian operations. During the test, the C-130 rendezvoused with the strike aircraft (at 15,000 feet AGL and 230 KIAS).^{*} The Hercules descended to 6,500 feet AGL, the fighters 2,000 feet above, and

^{*}Rendezvous occurred 35-40 miles back from the target area. It was aided by the C-130's anticollision lights (shielded from the ground), located on top of its vertical stabilizer.

~~SECRET~~

together they flew to the target area. Once the enemy was detected and the strike lead alerted, the C-130 dropped to 6,000 feet AGL and flared. After the flares ignited (about halfway down), the aircraft assumed a right-hand orbit while the fighters prepared to come in on their passes.*67

(S) Success of the Night Owl test induced Seventh Air Force to expand C-130/fighter operations into Laos at once.⁺ The Blindbats and crews were based at Da Nang, being TDY from Naha AB, Okinawa.[‡] In March 1966 the detachment moved to Ubon AB, Thailand, and the number of C-130's rose to six.⁶⁸ The Blindbat mission called for strike control and reconnaissance plus night interdiction flare support. The transition in late 1966 and early 1967 to night forward air control duty went without a hitch. After completing a brief FAC course at Ubon AB, C-130 navigators and pilots were cleared to direct interdiction strikes.⁶⁹

(S) The C-130/FAC flareship commonly carried a crew of two pilots, two navigators, one flight engineer, one loadmaster, and two flare kickers. A night observation device was flexibly mounted in the Blindbat's right paratroop door or in its right escape hatch. (A Black Crow detector and Paveway laser target designator were added later.) For self-protection the aircraft had armorplate in the floor, radar-warning equipment, and (from February 1968 on) an ECM device for jamming enemy radar.⁷⁰

(S) A Blindbat FAC/flare mission usually began with the pre-flight briefing during which target information and enemy defenses were discussed. The C-130 took off, climbed to 10,000 feet AGL, and reached the target area in advance of the fragged time-over-target.

* As a rule, the strike aircraft were on the downwind leg when the flares blossomed. The C-130 stayed to the right of the flares, the fighters to the left. (The Hercules could carry up to 250 Mk-24 flares and 30 Mk-6 ground markers.)

⁺ The C-130's working in southern Laos were nicknamed Blindbat; those in northern Laos, Lamplighter. Later, all C-130 flare-- and FAC--operations became known as Blindbat.

[‡] This TDY status was eventually switched to permanent change of station (PCS).

~~SECRET~~

C-130 FAC/FLAESHIP

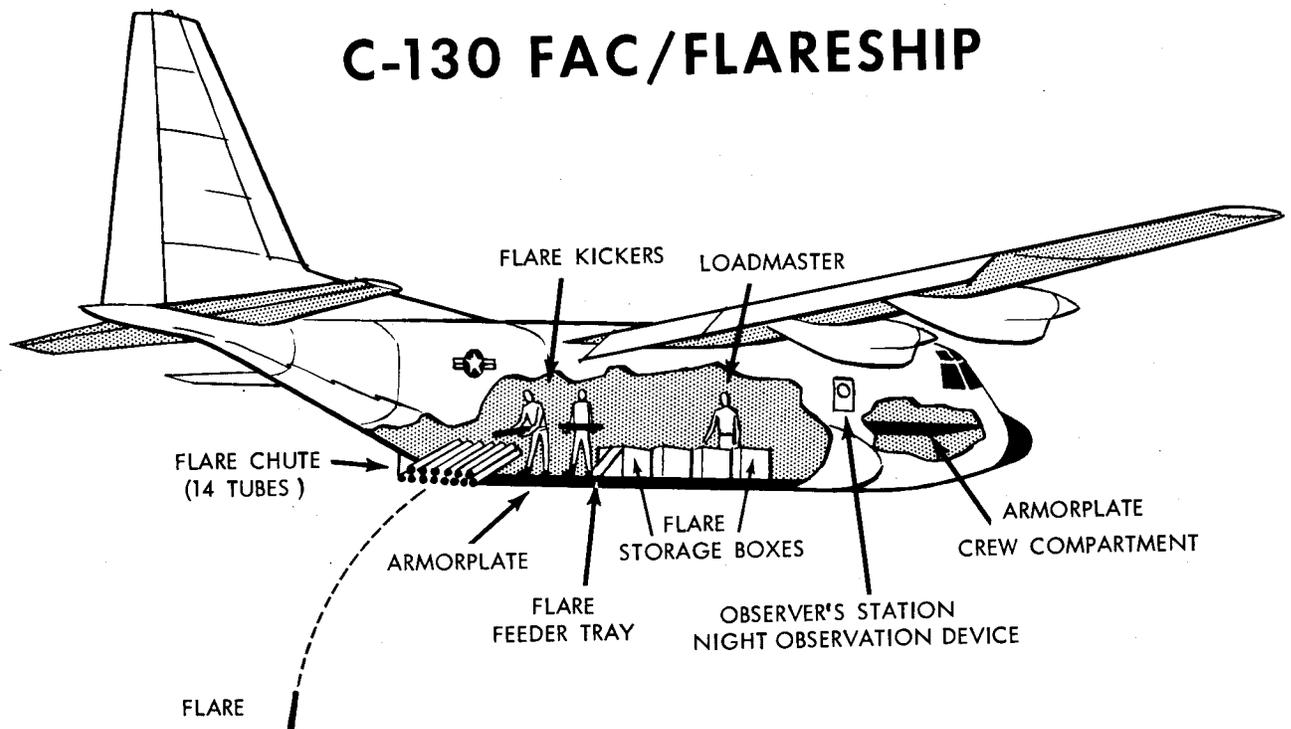


Figure 26 (U)

The FAC pilot descended to flare/recce altitude of 5,000-7,000 feet AGL* and depressurized the aircraft. If there were no pre-planned targets, he asked the ABCCC for last-minute information before setting up in a reconnaissance search pattern. The C-130 flew at about 150 KIAS, offset 2 1/2-3 miles from and parallel to the roads and trails. Upon seeing trucks, the scope operator alerted the pilot who requested fighters and strike clearance from the ABCCC.⁷¹

Blindbat marking methods were a lot like the C-123 Candlestick's (see Fig. 27). The flaeship crew preferred to drop ground marker logs at a strategic point off the road and in advance of the oncoming trucks. (This helped hide the fires from the enemy.) When the vehicles were running with lights, Blindbat directed the attack with marker logs if possible. If flares had to be added, the crew held off illuminating the trucks until the fighters were set to begin the bomb runs. All reference calls were given in clock positions, relative to the fighter's base or attack heading of "12 o'clock."

*Stepped up AA fire in 1968 required altitudes up to 11,000 feet AGL.

~~SECRET~~

giving the gunships specific reconnaissance areas, not interfering with other FAC aircraft. The AC-130's remained close enough to help out the Blindbats when called upon.⁷⁶

As the 1969-1970 dry season in Laos drew to a close, the Air Force decided to replace the Blindbat operation with Tropic Moon III. The B-57G's of the new program, equipped with LLLTV, FLIR, and forward-looking radar (FLR) with moving target indicator (MTI), were better able to "see" the enemy at night and keep tab on his movements. The C-130's flew their last missions in June 1970 and for all practical purposes the FAC/flaeship era in Laos was over.⁷⁷ Born of innovation, the Blindbats (like the Candlesticks) had served their stint and passed from the scene as modern technology took over.

The Raven FAC Program in Laos

(U)
(S) In 1966 Ambassador Sullivan told the State Department he needed more people to assist in the Lao Government's war against the Communist Pathet Lao and North Vietnamese. The United States, however, didn't want to draw attention by formally adding more advisers to the U.S. Embassy in Laos. Consequently, JCS Project 404 became the instrument in early 1966 for adding 117 officer and enlisted spaces to Army/Air Force Attache staffs in Vientiane. They were assigned for administration to the Deputy Chief, Joint United States Military Advisory Group (JUSMAG), Thailand, with duty stations in Laos. Personnel filling the extra 42 USAF slots performed operational, intelligence, and administrative duties. Three forward air controllers* assisted Butterfly⁺ FAC teams in controlling airstrikes for Laotian ground forces.⁷⁸

(U)
(S) Borrowing aircraft wherever they could, the three controllers (using call sign Butterfly) commenced flying cover for Lao forces in Barrel Roll and Steel Tiger. By December 1966 they had the go-ahead to put radios and marker rocket tubes in a Royal Laotian Air Force (RLAF) 0-1. This plane, flying out of the airfield

*Officers occupied these FAC positions on 90-day TDY tours.

⁺The Butterfly call sign identified different but related FAC activities--ALO/FAC teams, intelligence officers flying recce out of the Air Attache office, and Cricket controllers in Barrel Roll (Enlisted forward air guides were phased out in the spring of 1967.)

~~SECRET~~
Declass by Rich DAVIS 2 MAR 84

at Savannakhet, supported special Lao Army operations. A little later, the controllers secured two single-engine aircraft on loan through the Air Attache office--a U-6 and a Continental Air Services Helio-Porter. 79

(U)
(S) Three more TDY FAC's were on board as of August 1967. Since the Air Attache office had no position vacancies for them, they were attached to Detachment 1, 606th Air Commando Squadron (later the 56th SOWg) at Udorn, Thailand. From there these new arrivals operated covertly in Laos, alongside the three Project 404 controllers. 80

(U)
(S) The use of borrowed aircraft for FAC work proved unsatisfactory. The Air Attache therefore asked Seventh/Thirteenth Air Force to furnish unmarked O-1E/F's. Also, to stop the experience drain of temporary duty tours, he requested the status of the six forward air controllers be switched to permanent change of station. First action and hint of an expanded program came in September with the change of the FAC call sign to Raven. Then in October, three aircraft arrived. The number of temporary duty Raven FAC's was boosted to eight in November, and the requested change to PCS status was granted in December. 81

Recruiting the Raven FAC's

(U)
(S) To qualify for the Raven FAC program, a pilot needed a minimum of 4 months combat duty--at least 60 days of it as a forward air controller in Southeast Asia. He further required 100 hours as a controller or fighter pilot and no fewer than 750 total flying hours. He also had to have from 6 to 8 months left on his SEA duty tour. 82

The keen applicant interest in the Raven program let highly skilled forward air controllers be picked.* The new FAC, assigned to the 56th Special Operation Wing's Detachment 1 at Udorn, received a rundown on the Raven mission. He was then placed on TDY with the Air Attache office at Vientiane, ostensibly as a member of the U. S. Agency for International Development (USAID). Furnished Embassy identification and a Laotian driver's license, the Raven wore civilian clothes on FAC missions, but took along his military identification card (ID) and cap (with grade insignia).+ As a cover story--if shot

*In South Vietnam the program was known as Steve Canyon.

+The Raven stored all military uniforms and personal effects at Detachment 1. He kept his ID at the forward operating location when not carrying it during a mission.

~~SECRET~~

down--he was on a "rescue mission out of Thailand."*83

The Ravens staged out of five forward operating locations, one in each of the five military regions (MR's)--Luang Prabang (MR I), Long Tieng (MR II), Savannakhet (MR III), Pakse (MR IV), and Wattay Airfield at Vientiane (MR V). (See Figure 28). The commander of the air operations center at each location reported to the Air Attache and coordinated operations with his ALO and Daddy Raven--the senior Raven ALO, stationed at Vientiane.⁸⁴

The quickening tempo of Laotian ground combat imposed greater demands on the Raven forward air controllers.⁺ Their number gradually grew from 12 in November 1968 to 15 in March 1969.[‡] On the other hand, the program had only eight O-1's as of December 1968, due to FAC aircraft demands in other parts of SEA. This impelled Ambassador Sullivan to point out to CINCPAC that 12 working O-1's were necessary, plus another 4 to permit proper maintenance and to take care of attrition. Thus, in a few weeks, the Ravens received 6 aircraft which expanded the total O-1 force to 14.⁸⁵

At first the Raven program put no mechanics in the field. All aircraft went back to Udorn for periodic maintenance checks. Since on-the-spot repairs fell to the pilots or untrained Lao mechanics, maintenance malfunctions soared. Following a record 14 engine failures during September-December 1968, all O-1's rotated to Udorn to have their fuel tanks removed and cleaned. (Some had gone 18 years without it.) Mud and sludge from the dirt airfields encrusted most tanks. Moreover, the O-1's higher power setting--a must for takeoff from short strips--helped shorten engine life to 400 hours.⁸⁶ In December the Embassy requested that TDY mechanics (one for each two O-1's) be brought in and by May 1969 they were on the job. Air America mechanics had bridged the gap between September and May.⁸⁷

*Cover stories ceased in October 1970, after the United States admitted there were military personnel at the Embassy in Laos.

⁺The bulk of the Ravens worked out of Long Tieng (MR II) and supported Gen. Vang Pao's Meo tribesmen in and around the strategic Plain of Jars.

[‡]There was never a dearth of applications. Raven duty appealed to "the young flamboyant officer" willing to take chances to prove his capabilities. [Intvw (S), author with Lt Col Robert E. Drawbaugh, Dir/Ops, Proj 404 (Chief Raven, Jun 1970-Jan 1971, 1 Jun 72.)

~~SECRET~~

RAVEN FAC OPERATING LOCATIONS & MILITARY REGIONS OF LAOS



Figure 28 (S)

~~SECRET~~

As sharper, more frequent Communist thrusts strained Raven support, the Air Attache in July 1969 secured six additional FAC spaces. Plenty of pilots applied for the extra slots but some of them failed to muster the required flying hours. Those coming nearest to doing so were selected. To provide ample aircraft for the bigger Raven force, the 56th SOWg chose some FAC's for check-out in the T-28. However, out-and-out necessity governed use of this plane in combat.⁸⁸

Forward Air Guide and Roadwatch Team Support

Dovetailed with Raven air support was the network of native forward air guides and the CAS-supported roadwatch teams. The FAG's, trained by Detachment 1, 56th SOWg* operated around the clock reporting enemy movements by radio to ABCCC's, Raven FAC's, or to Gen. Vang Pao's headquarters.⁸⁹

Lao observers picked for the FAG program were the cream of the crop. All held the grade of company commander or higher and could speak and read English. The new FAG's underwent an intensive 4-day (30-hour) course at Udorn to master the elements of map and compass reading, FAG methods, basic fighter strike tactics, as well as the rudiments of aircraft ordnance and radio procedures. They further took two helicopter rides, flew on two T-28 sorties, and went as passengers on an AC-47 mission to observe air-ground tactics. They also learned how to identify/mark targets and to report bomb damage assessment.⁹⁰

An excellent intelligence source, the forward air guides frequently snapped pictures of enemy targets. Moreover, they approved the targets to be hit. However, due to their working chiefly with Vang Pao's troops in MR II, the FAG's were not as far-ranging as the roadwatch teams.⁹¹

Controlled American Sources deployed more than 200 10-man roadwatch teams in areas where the members had grown up. Most activity happened to be in southern Laos with Cricket and Raven forward air controllers. Sticking close to roads and trails the roadwatch team would relay findings instantly to the FAC.⁺ If the latter

*The first FAG's were trained by Detachment 1 in 1964.

⁺The team could use a "keyed" radio to encode the information.

~~SECRET~~

could spot the team's position, airstrikes on nearby targets came within minutes.⁹²

The men of the roadwatch teams were a special breed. Constant operation in enemy-controlled areas where discovery meant certain death steeled their courage and loyalty. Often within earshot of trail users, they moved softly and surely to gather much-needed information.⁹³

Raven FAC Procedures

(S) Raven techniques for visual reconnaissance, target marking, and strike control resembled those used by other forward air controllers. Conditions did dictate minor variations. The Raven, for example, carried a Lao or Meo observer in the backseat who knew the operational area and assured the right targets were struck. Again, strike control demands left little time for VR, so the Raven turned to the roadwatch teams and forward air guides for the latest intelligence.⁹⁴

Each new Raven took orientation/reorientation training (Phases I/II) at Wattay airport outside Vientiane. He got the rest of his training at the forward operating location. It included no fewer than 12 extra hours of supervised flying that stressed home base traffic patterns, takeoffs and landings at forward staging areas, and specifics on known enemy positions and defenses.⁹⁵

The Raven drew his daily assignment the day before or early on the morning of the mission. After preflight briefing, he went over current situation maps and studied the latest ABCCC log. Airborne usually by 0600, the controller contacted friendly ground troops for fresh information. He touched down at the forward staging area to pick up his Lao/Meo observer who furnished him intelligence gleaned from FAG's and roadwatch teams. The Raven and observer were sometimes briefed by the staging area commander before continuing on their way.^{*96}

To enhance rescue chances should a Raven be downed, flight-following was mandatory for all missions.⁺ After takeoff from

*At times the observer boarded the aircraft at home base (the FOL). If so, the Raven stopped at the staging area for a briefing.

⁺The Command Operations Center in South Vietnam also kept track of each Raven's position.

~~SECRET~~

home base, the Raven checked in with the ABCCC and gave point of departure and time, intended working area, and radio frequencies. From then on, he contacted the ABCCC every 20 minutes, each time he changed operating areas, or when going in or out of an airfield. If he had to land at an alternate strip, he called in and explained. The missing of a single call triggered search procedures.⁹⁷

In November 1969, 11 of the 21 Ravens in Laos worked in MR II, engaged almost entirely in close air support of Vang Pao's troops. These FAC's consequently developed a close rapport with the General, dining with him and receiving firsthand intelligence. He and his roadwatch teams similarly briefed the Meo/Lao observers. A general coordination meeting took place each evening at 2030.⁹⁸

Raven operations varied slightly in the other regions. In MR I the FAC's kept busy controlling USAF/RLAF strikes against enemy insurgents moving toward the Plain of Jars. The controllers and FAG's of MR III supported the Lao Army, using tac air as an extension of artillery. MR IV's Ravens handled mostly interdiction--their instructions flowing from CAS/USAF intelligence sources. Only the Chief Raven at Vientiane operated in MR V, the activity there being more political than military.⁹⁹

Many times the FAC's flew two sorties a day. When without specific strike instructions, they were free to carry out VR in their areas. If "reconning" for Vang Pao, they commonly worked a box area whose size varied with the deployment of the friendlies and the extent of the operation.¹⁰⁰ Search procedures were a lot like those of the Cricket FAC's in the Laotian panhandle. The Ravens never flew the same path twice and stuck closely to set strike control guidelines.

(S) A mission now and then demanded four crewmembers--the contract pilot of a larger aircraft, Raven FAC, Thai translator, and Lao observer. Strike instructions funneled from the controller through the translator and observer to the RLAF fighter pilot.¹⁰¹

Turning the Raven Program Over to Lao FAC's

(S) During 1970 the number of Raven controller spaces stood at 24.* Qualifications needed to be relaxed, however, in light of

*The number peaked at 27 in 1971 then dwindled.

~~SECRET~~

inexperienced volunteers coming to Southeast Asia. It also grew harder to get seasoned 0-1 FAC's because of the Bird Dog's withdrawal from the USAF SEA inventory. Hence, training courses were set up to qualify the volunteers as 0-1 Raven forward air controllers.¹⁰²

The RLAFF FAC training program got under way in November 1971 with two students. They and later volunteers were lead-qualified T-28 pilots having over 3,000 combat flying hours.* With six RLAFF controllers doing Raven duty by May 1972, the USAF program began to fold up.¹⁰³

The Raven forward air controllers were one of the success stories of the war. They built a legend of efficiency and daring in their control of RLAFF and USAF strikes in support of Laotian ground units. Additionally, they helped solidify the backing of the Lao Government by sometimes skeptical natives.

USAF Controllers in Cambodia

Even though USAF controllers monitored incursions of Daniel Boone recon teams into Cambodia, they seldom crossed the boundary themselves. An exception took place in April 1970, when the United States and South Vietnam mounted a campaign into Cambodia against North Vietnamese positions. Seventh Air Force firmed up plans on 27 April covering close air support for this operation. During the evening of the 28th, the TACC alerted the DASC's and fighter wings. Assigned to specific ground units, the FAC's would adhere to normal rules of engagement. They would operate in aircraft as well as in radio jeeps. Deployment of tactical air support squadrons had the 19th backing up operations in southern Cambodia; 20th, the northeast; 22d, the eastern portion; and 23d, the northwest.¹⁰⁴

To best safeguard the lives and property of noncombatants, FAC's controlled all airstrikes. In addition, a special task force (with an ALO and TACP attached) helped coordinate air support. An 0-2A forward air controller (call sign Head Beagle) flew out of Di An, climbed to about 8,000 feet, and circled south of the Fish-hook area,⁺ just inside the South Vietnam border. Head Beagle

*VNAF controllers couldn't boast such background.

⁺The protrusion of Cambodia into MR III.

~~SECRET~~

took fighter handoffs from the DASC and passed them on to other controllers. He harmonized all close air support in Cambodia, shifting strikes quickly to points needing them most. Nevertheless, by September 1970 the air support load had overwhelmed the O-2A FAC, and EC-121's were brought in to function as ABCCC's.¹⁰⁵

The language barrier in Cambodia became nettlesome to the forward air controllers. Members of the incursion force spoke a conglomerate of five languages--English, Thai, Vietnamese, French, and Khmer (Cambodian). Wider use of interpreters smoothed out this problem. Another drawback lay in the controllers having to work through three air request nets. Funneling all strike requests through an Air Operations Coordination Center (AOCC) put this matter to rest.¹⁰⁶ In spite of these and other difficulties, the close air support throughout the campaign was exceptional--mirroring the many years of Air Force FAC experience in Southeast Asia.

~~SECRET~~

IX. JET FAC'S

Commando Sabre (Misty) FAC Operations

Stiffening enemy defenses in the panhandle of North Vietnam and southern Laos made it extremely dangerous for the "slow mover"* FAC's to do their job. In light of this, the Seventh Air Force Commander on 17 May 1967 approved Operation Commando Sabre--a test of the ability of the F-100F to fly armed reconnaissance and forward air control missions.¹ Several features favored the F-100F. Good speed and quick maneuver would help it survive in high-threat areas. The jet was equipped with two LAU-59 B/A rocket launchers for target marking and a 20-mm cannon that was also well-suited for armed recce. External fuel tanks (and inflight refueling) would stretch air operations time. Finally, the view from both the front and back seats was fairly good.²

The Commando Sabre mission (call sign Misty) was assigned to Detachment 1 of the 416th Tactical Fighter Squadron, 37th Tactical Fighter Wing at Phu Cat on 28 June 1967. Seventh Air Force furnished the detachment liberal guidelines and authority to freely experiment.³ Misty FAC volunteers had to be of flight leader caliber, with at least 100 strike missions in SEA and 1,000 flying hours. The initial duty tour was 120 days or 75 missions, whichever came first. Twelve of the first 16 volunteers, from F-100 units in South Vietnam, lacked controller experience. The remaining four, fighter-qualified controllers from the 504th Tactical Air Support Group, would instruct the others. To get training under way the fledgling unit borrowed F-100F's from in-country fighter squadrons.⁴

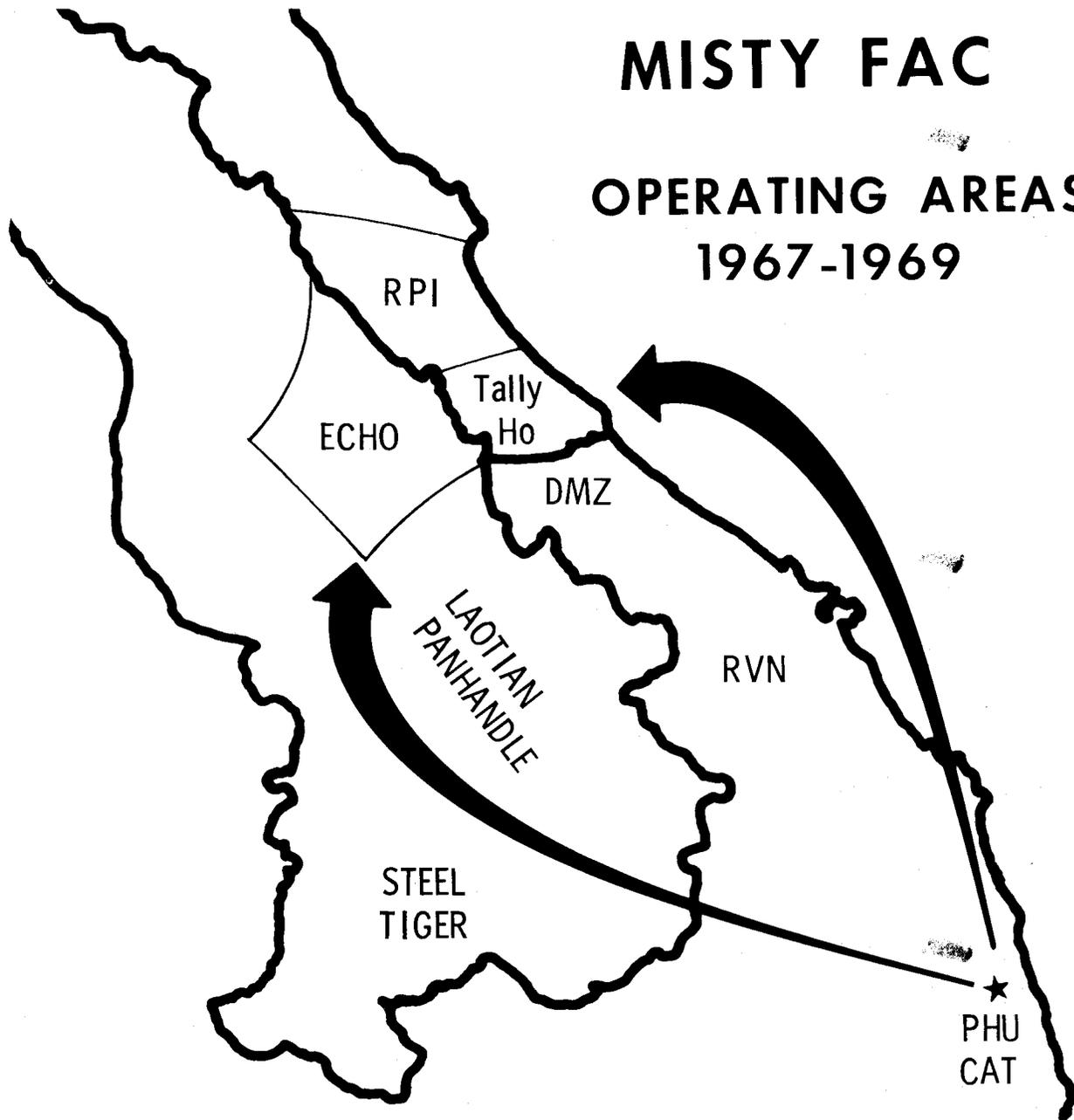
Initially, the Misty volunteers practiced air refueling and tried out various airspeeds and altitudes.⁵ Next in their training, they learned what to look for in order to locate gun emplacements, bunkers, camouflaged trucks, and trails. Instruction in FAC communications, VR procedures, and strike control followed. The

*The terms "slow mover" and "fast mover" categorized FAC and strike aircraft (other than gunships) as to loiter time, airspeed, and maneuverability. Propeller aircraft were slow movers; jets, fast movers.

~~SECRET~~

MISTY FAC

OPERATING AREAS 1967-1969



OPERATING AREA - NUN

Figure 29 

~~SECRET~~

Misty controller discovered that the F-100F's greater speed dictated adjustments. That is, he didn't have as much time to spot a target as the slow mover. He had to do in seconds what the 0-2A FAC would take a minute to complete.⁶

6) The 2 days of ground training treated rules of engagement, escape and evasion, mapreading, tactics, and enemy order of battle. The Misty volunteer next flew six missions* as an observer in the backseat, while the instructor went through FAC procedures. The student alternated between the front and rear seats until the 12th mission, when he received his flight check. However, he didn't attain full qualification until after 20 sorties.⁷

Developing Tactics

7) Except for deviations dictated by greater speed, jet recce and strike control tactics were basically those of the slow mover FAC. The Misty forward air controller kept to the set minimum of 4,500 feet AGL in high-threat areas, descending lower solely to check out suspicious targets.⁸ He preferred to fly at 450 KIAS⁺ or above--seldom under 400. Whenever cloud cover fell below 7,000 feet, he broke off VR and strike control because his silhouette against the clouds aided enemy gunners. Unless absolutely necessary the controller never made more than a single pass over a potential target in high-threat areas. Nor did he go in immediately after a strike to perform BDA. He returned later for that purpose.⁹

8) As the only FAC's who could survive in hostile areas, the Misty stressed VR over strike control. However, they found it difficult to spot jungle roads and trails from 4,500 feet and so secured permission to "recon" at 1,500 feet. In rare instances, they also flew below hilltop level and down valleys to identify targets.¹⁰

9) In reconnoitering enemy roads and trails, the forward air controller generally flew a series of "S" maneuvers back and forth across the road--never presenting a predictable pattern (see Fig. 30). Upon spotting something suspicious, he continued on. But once out of range, he turned in a wide circle, dropped as low as possible, and "screamed" back on a course at right angles to the road.¹¹

*Later five missions.

⁺To maintain even 450 KIAS during jinking, he often had to cut in the afterburner.

~~SECRET~~

MISTY FAC ROAD RECONNAISSANCE

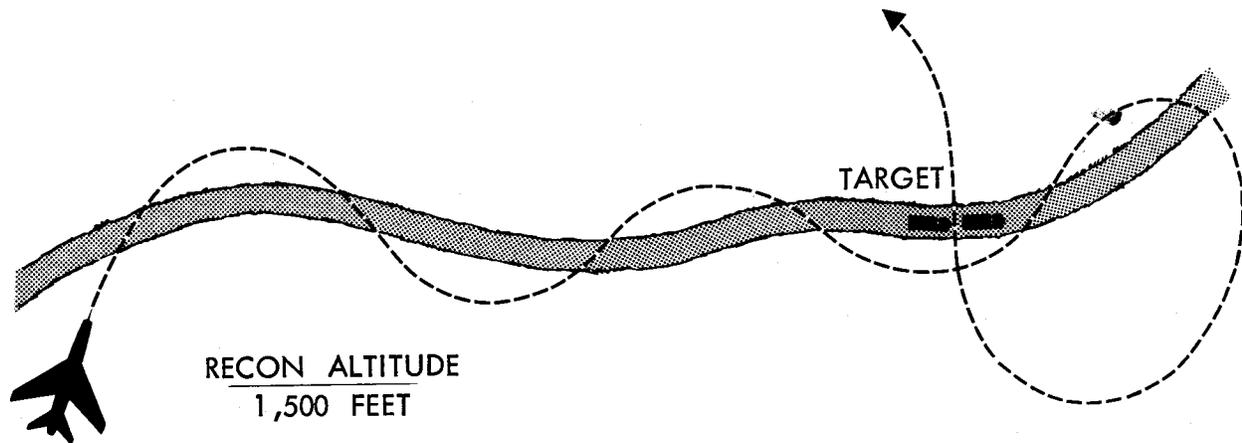


FIGURE 30 (U)

Even when flying low, the controller had trouble spotting well-camouflaged trucks. The Trail contained numerous pulloff points where vehicles could hide under the trees. In fact a truck could move down the entire length of the Trail and never be detected unless something went wrong--a breakdown in an open area, poor camouflage, or traveling too late in the morning or too early in the evening.¹²

Once the Misty FAC pinpointed the target, he called the ABCCC for a slow mover controller to come in and check it out. If enemy defense was too strong, the Misty prepared at once to control the airstrike. In setting up for the attack, he first determined wind direction and planned his marking pass to the upwind side of the target. He next looked for good reference points--a curve in a road or river, the coastline, or a karst.* It was all to the good if the reference was on a cardinal[†] heading from the target.¹³

*A karst is a limestone region marked by sinks and interspersed with abrupt ridges, irregular protuberant rocks, caverns, and underground streams.

[†]North, south, east, or west.

~~SECRET~~

(a) The forward air controller got in touch with the fighters and furnished them the rendezvous point, usually a TACAN bearing. Join-up took place at strike aircraft altitude (generally above 20,000 feet). After talking over target information and tactics, the FAC helped the fighter pilots find the target--if possible without using markers. He then marked the target to assure no mistake, firing an extra rocket at each end of the target area. Since the Misty seldom had time for computing mil settings in the gunsight, he eyeballed the marking.¹⁴

The FAC generally rolled in on the desired strike heading to mark from 8,500 feet. While in a 45° dive, he released the rocket at about 5,500 feet and instantly pulled up (see Fig. 31).^{*} If bad weather demanded several marks, he commenced each successive pass at a lower altitude to cut distance and conserve fuel.¹⁵

MISTY FAC TARGET MARKING PASS

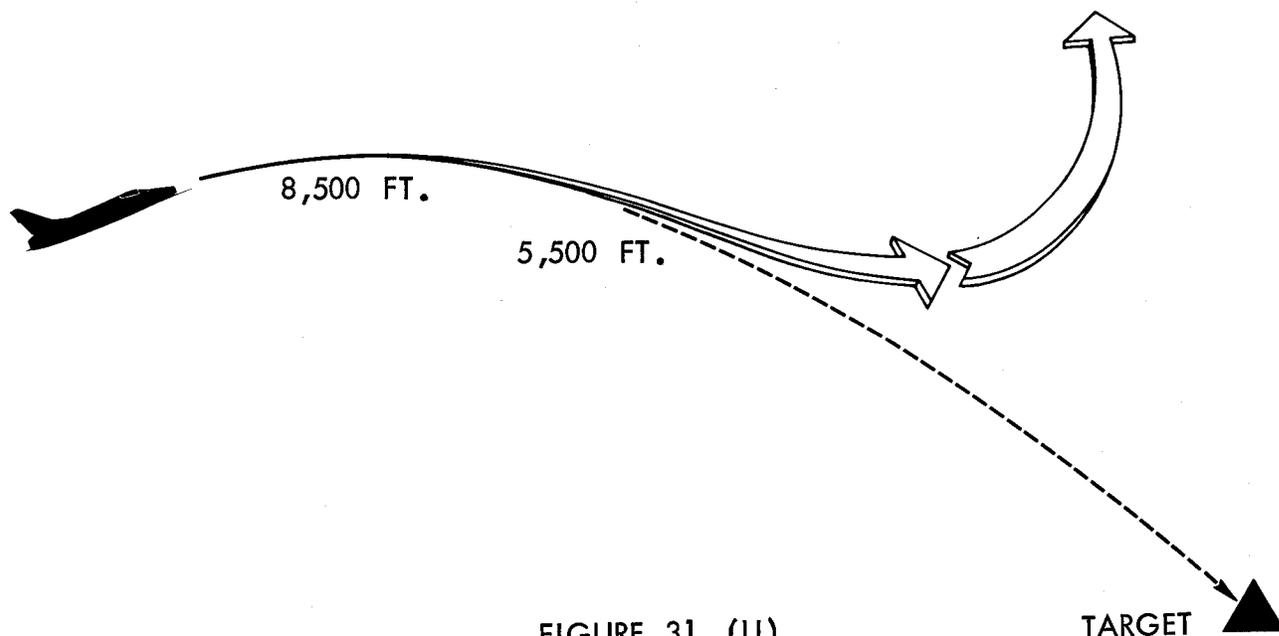


FIGURE 31 (U)

^{*}The dive angle steepened as rocket release altitude rose.

~~SECRET~~

The differing performance of marker-rocket motors and sudden shifts in F-100F airspeed affected marking accuracy. Hence, the Misty often launched several rockets at a time, using the one closest to the target as the reference in directing airstrikes. If the controller lost sight of the fighters or marker impact, he had to mark the target anew.¹⁶

Following release of the rockets, the Misty FAC broke away in a steep climbing turn (4 G's or more) so he could monitor the impacts. He normally ended up in an orbit at 10,000 feet, off to one side of the target but inside the strike pattern (see Fig. 32). When the fighters had completed their passes, the controller let the

MISTY FAC STRIKE CONTROL ORBIT PATTERN INSIDE HOLDING PATTERN 10,000-Foot Orbit Altitude To One Side Inside Strike Pattern

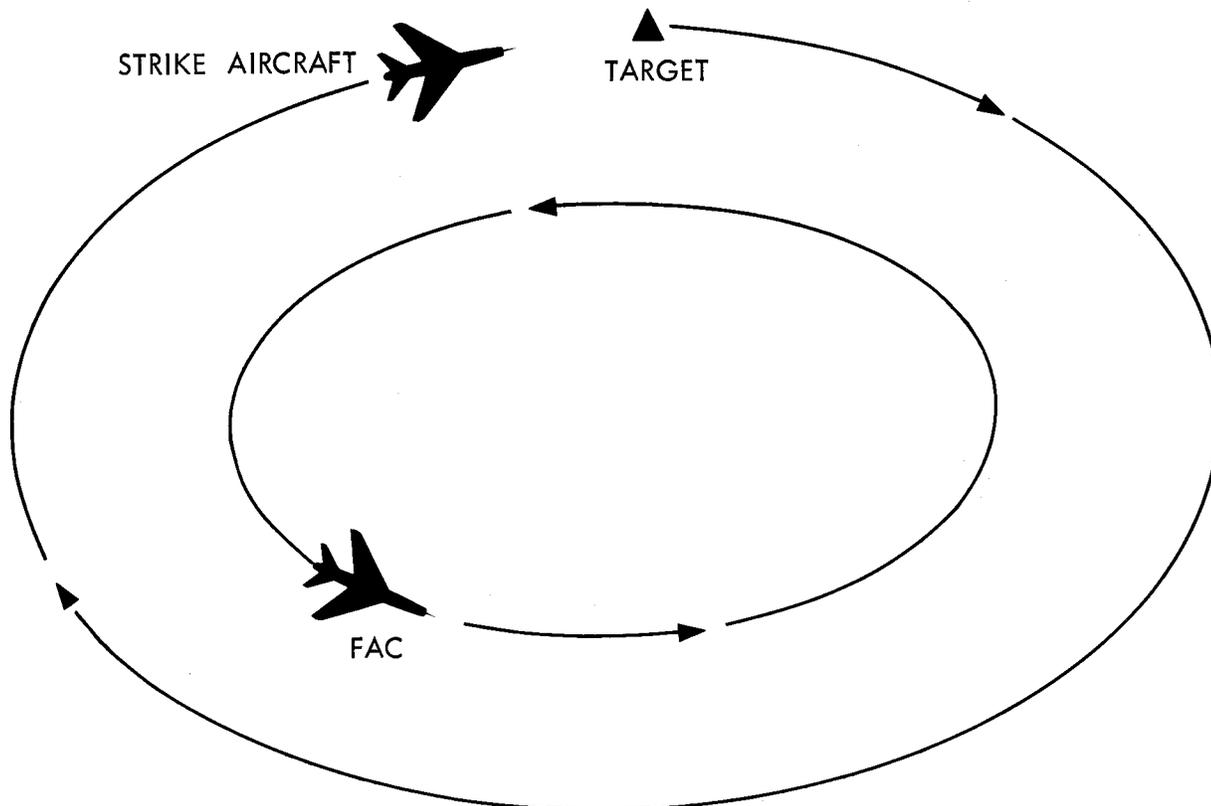


FIGURE 32 (U)

~~SECRET~~

area "cool off" for a while before going in at low altitude for bomb damage assessment.*17

Effectiveness and Expansion

The Misty aircraft met with scarcely any opposition during their first weeks of operation. However, this "honeymoon" ended abruptly on 5 July 1967. A FAC drew heavy automatic weapons fire while directing a flight of F-105's against truck traffic in the North Vietnamese panhandle near Quang Khe (close to the coast in RP I). AA fire became common from then on.¹⁸

Nevertheless, the Misty controllers fared better than expected. In July alone they flew 82 missions, directing 126 strikes on targets that stemmed almost exclusively from their own VR. That month also marked the discovery of 150 truck parks, bridges, fords, and spots suitable for road interdiction.¹⁹ This activity took place in hostile areas where most other FAC aircraft couldn't go. Moreover, the results grew steadily more impressive as the Misty sharpened its ability to pick out targets in the jungle.

Commando Sabre forward air controllers first tasted large-scale action in September and October 1967. All through the summer, the North Vietnamese had pounded positions at Con Thien, Gia Linh, Camp Carroll, and Dong Ha with artillery barrages from across the DMZ. To blunt the attacks, Operation Neutralize (a 6-week air/ground campaign) kicked off on 12 September.²⁰ O-2A FAC's controlled airstrikes south of the DMZ, the Misties aircraft worked north.²¹

Saturated from the start with fragged sorties, the Misty focused attention on priority targets furnished by Seventh Air Force and other targets they discovered. Nearly all the targets were

*The pilot and pilot-observer of the F-100F learned to work well together. The rear-seat observer did most of the searching during VR, plotting and recording the targets sighted. Using the hand-held camera, he also snapped pictures of permanent and semi-permanent targets such as truck parks and bridges. After both crewmembers verified potential targets, the rear-seater requested strike aircraft from the ABCCC. The pilot handled the rendezvous, marked the target, and controlled the strike. Meanwhile, the pilot-observer monitored. One man could do the entire job but two made it a great deal easier.

SECRET

artillery positions, so small it took a direct hit to destroy them. The FAC found it very hard to pinpoint and mark these AA sites, since he wasn't allowed below 4,500 feet and had to jink frequently. Despite these drawbacks, Operation Neutralize statistics showed that strikes flown by fighters under Misty control were twice as effective as those carried out on their own.²² General Momyer, Seventh Air Force Commander, was deeply impressed with the Commando Sabre operation. On 13 November 1967, he extended it into the Echo area of Steel Tiger (see Fig. 29), which was too deadly for the slow movers.²³

Seventh Air Force concluded that Commando Sabre could adequately cover Echo with 12 F-100F's flying 8 sorties per day. This entailed coming up with four additional aircraft that couldn't be squeezed out of in-country fighter training programs. Whereupon, PACAF asked Air Force Headquarters to get the planes from TAC. The Air Staff turned down the request, stressing that the loss of even four F-100F's would trigger a cutback of nearly 50 students a year in TAC's jet training and upgrading programs. With the ball back in PACAF's court, Seventh Air Force pondered other approaches. One was to set up an F-100F tactical air coordinator detachment at Phu Cat, whose crews would lead other fighter aircraft to the targets and control their strikes. When the same F-100F shortage shelved this plan, Seventh considered use of the A-37 Combat Dragon as an alternate aircraft. However, its speed was too slow for survival in the hostile areas of Laos and North Vietnam. Finally--after almost 1 year--the four F-100F's were pried from in-country training programs.*²⁴

Getting pilots for the program was easier. The number of young volunteers outstripped demand, but the older fighter hands were harder to come by. They normally held responsible jobs in their own units and didn't volunteer as readily for one of greater hazard. But enough of them signed on, to fill the needs.²⁵

Moving into Steel Tiger

When General Momyer ordered Commando Sabre into Echo of Steel Tiger, his staff weighed the pros and cons of moving the

*Because of the fighter-training-requirement drain, the number of F-100F's available to Commando Sabre fluctuated throughout the remainder of 1967 and most of 1968.

SECRET

Misty detachment from Phu Cat to Da Nang. Flying out of Da Nang would increase the operational time of the Misties in their assigned area by 45-50 minutes. In addition, they would receive up-to-date intelligence on out-country operations from the 366th Tactical Fighter Wing located there. This contrasted with the stale intelligence (some 36-hours-old) at Phu Cat that impelled the Misties to lean heavily on their own findings.* Moreover, Misty FAC's could coordinate more easily with the fighter crews at Da Nang who flew out-country strikes. In spite of these advantages, Seventh Air Force took no action at this time. In May 1969 it did move the detachment--but to Tuy Hoa, not Da Nang.+26

In Echo the Misty forward air controllers found the AA fire lighter than in Tally Ho. They therefore "reconned" at 1,500 feet, going down to 500 feet in some areas. Echo, adjacent to the North Vietnamese border, contained the Ho Chi Minh Trail's two major passes--Mu Gia and Ben Karai. The Misties zeroed-in on the roads leading away from the passes.27

The Misty controllers alternated between Echo and Tally Ho as weather permitted. Starting 1 July 1968, they engaged in Operation Thor, a 1-week rerun of Neutralize. Then, on the 14th, they joined in a 30-day purely U.S. effort to shut off supplies flowing down the roads in RP I. The Misties concentrated the fighter strikes against road chokepoints, which if plugged would be hard for the enemy to move supplies around. Misty reconnaissance and strike control amid heavy AA fire proved vital in slowing the day-time truck traffic in RP I to a trickle. The enemy, however, worked furiously at night to get the roads open by the next day. Hence the chokepoints had to be hit time and again.28

Experiment in Night Operations

While planning the above two operations, Seventh Air Force decided to evaluate the F-100F in a night role. On 11 June 1968 it selected two veteran Commando Sabre pilots from the 3d TFWg to conduct the test out of Bien Hoa--Capt. Donald W. Sheppard and Capt. James E. Risinger. These crewmen flew one night mission in

*Seventh Air Force sent classified intelligence to the Misties by telegram because of insecure telephone communications.

+One reason was that the 366th TFWg had set up its own F-4 FAC detachment (the Stormies) at Da Nang.

~~SECRET~~

III and IV Corps on 13 June and another on the 14th, using the starlight scope and standard FAC techniques. Impressed with the aircraft's potential for night reconnaissance, they recommended further testing. Seventh accordingly firmed up plans to operate at night in RP I. To help give light, the SUU-25 flare dispenser (eight flares) was fitted to the F-100F.²⁹

The F-100F's flew 46 night sorties in RP I between 12 July and 18 August. From the test the Misty forward air controllers discovered the night pattern of the enemy. He liked to travel during moonless nights and bad weather. Massed in hidden parks along the highways, his trucks didn't move out until after dark (usually around 1930). They would push through RP I the first night and converge at staging areas capable of holding more than 200 vehicles. There, they would spread out under the thick jungle overhang and try to make it on into Laos the second night. To counter the heavy attacks on chokepoints, the Communists waited until a major movement was ready, then worked to open up only essential roads.³⁰

Misty night controllers likewise discovered the mystery of the missing bridge. Route 101 crossed the Song Troc River at Phoung Choy, a major bottleneck 21 miles northwest of Dong Hoi. Day reconnaissance showed no bridge spanning the river at this point, yet trucks were seen rolling on down the highway. The puzzle was solved one night, when a Misty FAC saw the North Vietnamese float a huge pontoon bridge from a cave several thousand yards away and place it across the stream. The Misties also learned that from above 5,000 feet they could scarcely make out the soft-glowing blue headlights used on the enemy trucks. In addition, they observed truck drivers speeding up after a flare blossomed, seeking to escape the light before the fighters came in.³¹

Seventh Air Force halted jet night FAC activity in RP I on 16 October 1968 after problems began to outweigh achievements. Even under flarelight, it was extremely difficult during strike control to detect the smoke of the marker rockets. Only if the strike pilot saw the rocket impact point could he be sure of the target's general location. Moreover, flares made poor markers--they couldn't be aimed for accuracy and their light eliminated the element of surprise. What's more, the too few flares carried by the F-100F hindered night operations. Its TACAN and ADF for getting fixes also proved unreliable below 10,000 feet mean sea level (MSL)* in Laos and North Vietnam. Hence, the forward air controller

*The average height of the surface of the sea for all stages of the tide. Used as a reference for elevations.

~~SECRET~~

frequently had to fall back on pilotage* for orientation, rendezvous, and target location.³²

Other elements figured in the decision to discontinue jet night FAC activity. During darkness the chances of midair collision increased, and the Misty controller had to clear the strike aircraft into the target area one at a time. He also needed to fly higher for safety, so the quality of his VR suffered. What's more, the starlight scope (praised earlier) proved too bulky and unwieldy for the rear seat of the F-100F. The scope's operation was disturbed by the cockpit lighting and its narrow field of vision disoriented the operator.³³ A final factor contributing to the decision was that the use of F-100F's for night FAC duty limited their day activity.⁺³⁴

On 30 November 1968, Seventh Air Force opened up the Golf sector of Steel Tiger to Commando Sabre operations. It decided at the time to begin Misty night operations over Laos, due again to the compelling need for around-the-clock coverage of the enemy road network. The Misties commenced night missions in December under set restrictions. They would fly only when the ground fire grew too hot for the slower FAC aircraft and few planes were in the target area. Along with ABCCC control and radar flight-following, they required an approved working altitude, ranging from ground level to 12,000 feet.³⁵

Unable to meet all these conditions, the Misties flew on waivers. By 19 February 1969 their operation in Laos had become a twilight-hour affair. The first of two sorties lifted off 1 hour before sunrise; the second, 1 hour after sunset. Keeping to the minimum altitude of 3,000 feet AGL,[‡] the Misty FAC held an airspeed of 350-400 knots and jinked as necessary. He released flares from 4,000-4,500 feet and flew a 20° bank to draw best results from the starlight scope.³⁶ Twilight operations ended in December 1969, owing largely to the shortage of jet aircraft.³⁷

Coordinating with Slow Movers

Jet and slow mover forward air controllers dovetailed their efforts because they often worked in the same areas. Each kept tabs

* Navigation by reference to checkpoints.

⁺ Night ground fire downed one Misty aircraft on 16 August and another on the 17th. These losses influenced the decision to discontinue night operations.

[‡] Under special circumstances he went down to 1,000 feet blacked out.

~~SECRET~~

on the other by constant radio contact. Since the speed of the jet controller gave but a swift glance of a suspected target, he turned to the slow mover for a closer inspection. Similarly, when the slow mover found the AA fire too hot, he called in the "fast FAC" 38

Enlarging the Commando Sabre FAC Role

Once in full swing, Commando Sabre lent itself easily to auxiliary roles--search and rescue, artillery spotting, weather reconnaissance, hunter-killer, and photo reconnaissance.

Search and Rescue

About 25 percent of the first 93 Misty forward air controllers were shot down at one time or another--most were recovered. Commando Sabre's efforts to aid downed jet FAC's led to a deeper involvement in search and rescue. For example, upon receiving word of a lost aircraft, the ABCCC put out a general radio call for Misty help. Responding, the Misty controller took up the search for the missing crewmembers. After locating them,* he tried to pin down the enemy with machinegun and rocket fire, while the rescue helicopter swooped in and plucked out the airmen. If the Communist troops attacked, the Misty effectively directed strikes against them.† He stayed on the scene until the rescue was wrapped up, returning to base solely to take on more fuel. On occasion he might fly until nightfall then resume rescue duties at dawn. 39

Artillery Spotting

Previous to 1967, slow mover FAC's in South Vietnam had done quite a bit of artillery spotting and fire control for the Army and a little for the Navy. From 1967 on, however, a step-up in Navy offshore shelling of coastal targets in North Vietnam fueled the need for artillery adjustment. This job fell to the Misties since the area was too dangerous for the slow movers. Hence, a few days before Sea Dragon began on 1 June 1968, several Commando Sabre pilots visited the cruiser SS Saint Paul to talk over their support role. 40

As Sea Dragon unfolded, Air Force-Navy coordination (conducted through the ABCCC) went very well. Misty controllers

*The Misty FAC many times acted as on-the-scene commander until the A-1 Sandy rescue controller arrived.

†He employed the same close support methods used for friendly troops.

~~SECRET~~

adjusted artillery fire with accuracy. The single chief drawback was the chance FAC's might be hit by the incoming rounds or enemy ground fire. When one Misty narrowly missed being shot down, airstrikes regularly took place against Communist AA batteries. Their Sea Dragon exploits behind them, Misty forward air controllers found themselves much in demand by the Navy for artillery spotting.⁴¹

Weather Reconnaissance

Weather played a key part in the success of tactical air operations. When a target was socked in, the strike aircraft aborted unless they had all-weather equipment or were under control of Combat Skyspot ground radar. To refine strike planning, Seventh Air Force required forward air controllers to keep an almost continual watch over weather conditions in the target areas. The Misties proved very adept at weather reconnaissance. This was largely due to their high speed that let them experience the weather in the target area just as the fighters would later. After landing, the Misty controller filed the weather report routinely along with his mission report. If faster action was dictated, he called in the report while en route to home base.⁴²

FAC Hunter-Killers

The Air Force had first tried the hunter-killer concept in the Korean War. Its debut in SEA linked a slow mover FAC with a fighter, but greater exploitation came with the jet forward air controller. For example, F-4 (Tiger) jets out of Korat, Thailand, teamed successfully with F-4 strike aircraft. Then, during 19-29 April 1969, hunter-killer teams of Misties and F-100 fighter-bombers from Phu Cat flew test missions in the Laotian panhandle. The results of the fifteen 2-ship flights outran expectations.⁴³

Hunter-killers operated only with Seventh Air Force and Lao Government approval and in areas free of friendly troops. During a typical mission, the Misty hunter rendezvoused with the strike aircraft before dusk and they flew to the recon area. The killer jet trailed 3 miles behind and 5,000-7,000 feet above the FAC, who moved down the road or trail (see Fig. 33). The controller kept up a running commentary on his position in relation to prominent landmarks. If the strike aircraft lost him, he flipped on his lights or lit the afterburner for an instant. The mere presence of a Misty

~~SECRET~~

at twilight invited ground fire when the trucks were running, which of course gave the enemy's position away. Once the hunter had pinpointed the truck or other target, he pulled up and maneuvered into position for the marking run, all the while describing it to the killer. *44 He flew the marking pass on the desired strike heading, after which the fighter pilot attacked using standard procedures.

MISTY HUNTER-KILLER TACTIC

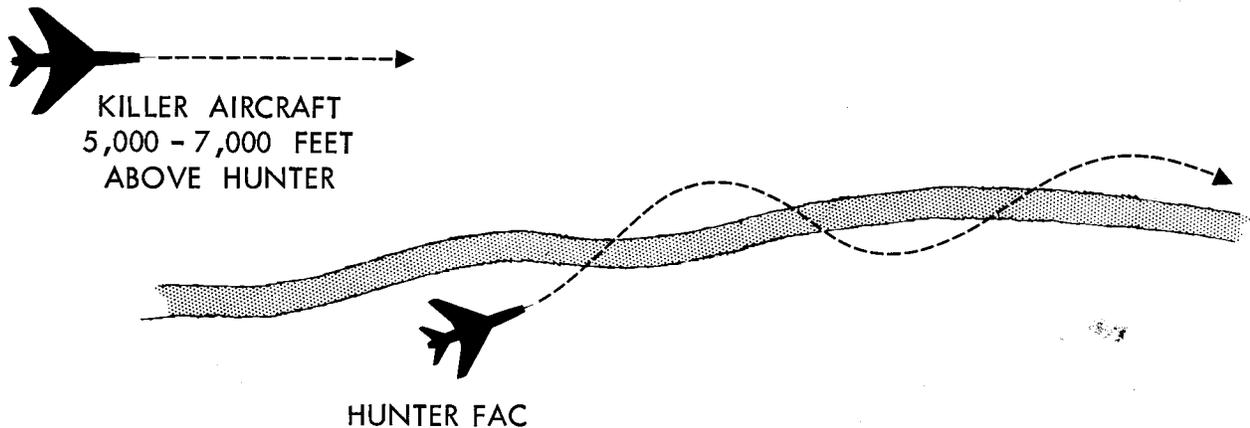


FIGURE 33 (U)

*The FAC sometimes had to flare the area.

~~SECRET~~

● The hunter-killer team seemed to work best when the strike pilot was a former jet FAC. He already knew Misty tactics, the area, and the pet names given to points of reference.⁴⁵

● A common problem of the hunter-killers was the struggle of the ordnance-laden strike aircraft to keep pace with the Misty. To do so, the killer pilot flew at higher altitudes where the thinner air permitted greater airspeed. Looking down, however, he had a hard time seeing the hunter aircraft whose camouflage blended with the landscape beneath. Bad weather and the hunter's constant jinking to confuse the enemy compounded the identification problem.⁴⁶ Nevertheless, Seventh Air Force enthusiastically endorsed the hunter-killer as one of the best means for catching the enemy by surprise.

Photo Reconnaissance

● Photo reconnaissance crept into Misty operations when the rear-seat pilot commenced snapping pictures of selected targets with a hand-held camera. However, the cramped cockpit made it hard to maneuver it for good coverage.⁴⁷

● Then in the summer of 1969, the Misties engaged in a photo experiment with RF-4C's (call sign Yo-Yo) of the 460th Tactical Reconnaissance Wing at Tan Son Nhut. The Misty FAC ferreted out the items of interest. The RF-4C photographed them and rushed the film back to home base for processing. This experiment didn't work out as had been hoped, chiefly because the Misty and Yo-Yo units were located on separate bases and which precluded effective coordination. Furthermore, the photo results filtered through three distinct intelligence channels before winding up at Seventh Air Force Headquarters for analysis and use in strike preparation.⁴⁸

● Meanwhile, the Misties had modified a specially built camera (the same type as used on one of the F-100F's pylons to obtain BDA). Specifically, the camera was fitted with a pistol grip and a plug for the cockpit electrical outlet. This let the rear-seat pilot take pictures of a quality superior to that of the Ashai Pentax in general use. In fact, this "armpit" camera secured the first clear photos of the water route over which the enemy floated POL-filled* pigskins, from the DMZ to Tchepone.⁴⁹ All in all, Misty photo reconnaissance contributed much valuable intelligence information.

*POL-petroleum, oil, and lubricants.

Phasing Out Commando Sabre

At the time Commando Sabre got rolling into 1967, plans were already afoot to phase out the F-100 in 1970. In light of this, Seventh Air Force framed plans early in 1968 for a F-4 fast-FAC program.⁵⁰ Several problems had dogged Misty operations. The F-100F lacked the radar for detecting imminent SAM or AA attacks and the ECM pods to counter them. The Misty FAC therefore sensed no danger until alerted by the ABCCC, ground radar, or other aircraft. Even then, he was in no position to direct strikes against the SAM/AA sites unless he could pick them out with the naked eye.⁵¹ In addition, the underpowered F-100F proved vulnerable to ground fire during evasive maneuvers.⁵² Perhaps the greatest hindrance, however, was never having sufficient aircraft at hand to take care of strike needs. The Misties scarcely knew from day to day how many F-100F's they could muster, the number varying with the ups and downs of fighter training demands.⁵³

Despite these drawbacks, Commando Sabre underlined the worth of the jet FAC and forged the basic tactics carried over to F-4 FAC operations. On 14 May 1970, when the last Misty missions flew, the F-4 program was well underway.⁵⁴

F-4 FAC's

On 1 January 1968, Seventh Air Force received CINCPACAF authorization to try the F-4 in a FAC role. The 12th Tactical Fighter Wing readied an F-4D by 9 March for testing in Steel Tiger and Route Package I. The test aircraft carried two 370-gallon external fuel tanks, two LAU-59 rocket launchers, and a SUU-16 gun pod. A Misty FAC rode the rear seat. Ten missions, flown with a Commando Sabre flight, were completed by 20 March. Though impressed with overall F-4D performance, the Misty FAC's noted several shortcomings. The engine intakes obstructed the view from the backseat, requiring a 60° bank to restore it. More air refueling was needed to stay on station as long as the F-100F. Maneuverability and turn radius left something to be desired. Also, the aircraft afforded enemy gunners a bigger target and a give-away smoke trail.⁵⁵

Still, the pluses of the F-4D outweighed the minuses. Two engines (without afterburner) allowed 400- to 450-knot airspeed during jinking, which reduced chances of being shot down. Navigation aids and radar warning equipment were superior (the radar likewise a help in air refueling linkup). Besides regular FAC armament, the aircraft

could carry a wide variety of ordnance. Lastly, it was located with the F-4 strike aircraft it controlled, at staging bases closer to the areas of operation.⁵⁶

Before settling on the F-4D for controller duty, Seventh Air Force took a look at the F-105F (Wild Weasel) in June 1968. But this aircraft didn't fill the bill. The view from its rear seat was extremely poor, it maneuvered marginally whenever airspeed slipped below 400 knots at low altitude, and it burned too much fuel. Furthermore, the F-105F was a costly and limited resource in SEA, and its increased exposure to ground fire in the FAC role couldn't be justified. General Momyer therefore directed that "a couple of F-4's from the 366th" (at Da Nang) be used to start a program.⁵⁷

Stormy FAC's

The 366th Tactical Fighter Wing and the Misty FAC's had the F-4 controller program set to go by 12 August 1968. Students assigned to it needed to be pilot volunteers of flight-leader caliber, having flown at least 20 combat missions in RP I and not less than 9 months remaining to serve in-theater. Duty tour with the 366th detachment (call sign Stormy) was 90 days or 50 missions--later rising to 125 days or 75 missions. The first two volunteers were F-4 aircraft commanders. Each flew five sorties out of Phu Cat in the rear seat of the F-100F. Returning to Da Nang, he then occupied the front cockpit of the F-4 on three missions while a Misty instructor held down the backseat. Both men finished training on 26 August and on 2 September flew their maiden FAC missions in RP I.⁵⁸ Instruction of other volunteers followed.

In general, Stormy operations resembled those of Commando Sabre.* However, collocation of their detachment with strike units let the F-4D controllers get their out-country intelligence first hand at joint briefings.⁵⁹ The Stormies normally flew two sorties a day. They performed road reconnaissance from 4,000-5,000 feet and at 400-knot minimum airspeed. To assess bomb damage, they made a single pass at 2,000 feet and 500 knots.⁶⁰

*Each F-4D could carry two 370-gallon fuel pods on its outboard stations; an SUU-23 gun pod for the 6-barrel, 20-mm cannon on the centerline; two LAU-59 rocket pods at the inboard stations; and a wing root (the point at which the wing joins the fuselage) camera. The pilot also carried a 35-mm Pentax hand-held camera.

~~SECRET~~

The unceasing demand for night surveillance of enemy roads and trails swayed Seventh Air Force to direct a Stormy night experiment in Laos. Beginning 24 October 1968, the F-4D's flew one sortie per night. Enthusiastic controllers pushed for a bigger program but Seventh doubted its soundness. Moonless or cloudless nights severely hampered reconnaissance. In addition, once the trucks doused their lights and moved on, the Stormies were hard put to find them again. Armed night recce seemed preferable in that the targets could be hit at once. Moreover--as in all night operations--safety was a gnawing concern. The blacked-out armed recce aircraft and the Stormies risked colliding or passing through one another's strike formation. For example, of the first eight night sorties the Stormies flew, six near-misses occurred. To cap it off, the Stormy day/night schedule sliced deeply into FAC training time. Whereupon, Seventh Air Force decided to halt the Stormy night program for a while. ⁶¹

In April 1969 it was resumed in Laos. The Stormies flew two sorties a night, using the starlight scope to seek out targets, and receiving flare support from C-123 Candlesticks and C-130 Blind-bats. Day strike control tactics governed, but the controller kept his dive angle on marking passes no steeper than 30°. ⁶²

The Stormy operation changed as experience climbed. In May 1969 the sortie rate climbed to 3 a day and the number of FAC pilots grew to 10. The small F-4D detachment moved directly under the 366th Wing's Deputy Commander of Operations in July, improving coordination with the fighter squadrons of the wing. ⁶³ Like the Misties, the F-4D's worked with the RF-4C's of the 460th Wing and was affected by the same spotty coordination and slow film-processing. ⁶⁴ In 1970 the Stormies handled strike control for tactical fighters supporting the Allied incursion into Cambodia, and continued to shoulder the bulk of the FAC load there. ⁶⁵

Wolf FAC's

The Stormy operation kindled keen interest in other F-4 units. Early in October 1968, Capt Richard G. Mayo (a Stormy FAC) briefed unit operation officers of the Seventh Air Force at Bangkok, Thailand. As a result, Col. Slade Nash, head of 8th Tactical Fighter Wing operations, requested permission to employ an F-4D FAC element in his wing. He assured Seventh Air Force the planes were on hand without straining other missions. Specifically, one of the wing's squadrons that seeded sensors in Commando Hunt seldom used up its daily allocation of 18 sorties. Authorization was received on 26 October. ⁶⁶

~~SECRET~~

Benefiting from Misty and Storm experience, the 8th Wing didn't set up a separate FAC detachment. Instead, the F-4 FAC Section (called Wolf FAC's) worked directly under the Operations Division with a status comparable to the wing fighter squadrons. Another innovation was locating the Wolf office in the Intelligence Division to provide a smooth flow of information to the crews. The Wolf FAC's had no assigned aircraft but drew them daily from the wing aircraft pool. Maj. Benjamin R. Battle, first Wolf Commander, handpicked every pilot of the first five crews. All pilots had to have at least 3 months of out-country combat experience, come highly recommended by their commanders, and be approved by the Deputy Commander for Operations.⁶⁷

Training of the first two crews began on 12 November and by month's end five were qualified. Each crewmember took 10 rides in the F-4. Two were in the backseat behind Major Battle (or his operations officer), the remainder in the front seat with an instructor in back. The Wolf controllers received night orientation flights in the O-2A and C-130 Blindbat.⁶⁸

In December the Wolf forward air controllers commenced flying 3 1/2-hour day missions in Steel Tiger (see Fig. 34). The first crew arrived on station early in the afternoon; the second, 2 hours later. Seventh Air Force authorized a third sortie in January 1969 to spread the patrol into the early evening hours.⁺⁶⁹

The Communists felt the jet FAC's sting and replied with stepped-up ground fire. Flying below 5,000 feet quickly became hazardous and fatiguing. The jet controller constantly jinked (pulling 2-3 G's) during visual reconnaissance. He invited battle damage if he stayed below 4,000 feet very long, doubled back to circle a target, slowed down, or flew a predictable pattern for more than 10 seconds. Jet FAC's were accordingly advised to do VR during their first 45 minutes in the area (when they were fresh), then mix the remaining time with VR and strike control.⁷⁰

*The 8th Wing later used a navigator FAC in the rear seat of the F-4D. He underwent the same training as the pilot FAC, except for flying the plane.

+The Wolf F-4D's added an ALQ-87 ECM pod and LAU -3 rocket pod to its inboard stations. For night work, a SUU-42 flare pod (16 flares) replaced the left outboard fuel pod, and a 600-gallon fuel pod went on the centerline.

~~SECRET~~

JET FAC's in LAOS

BARREL ROLL

Summer 1969

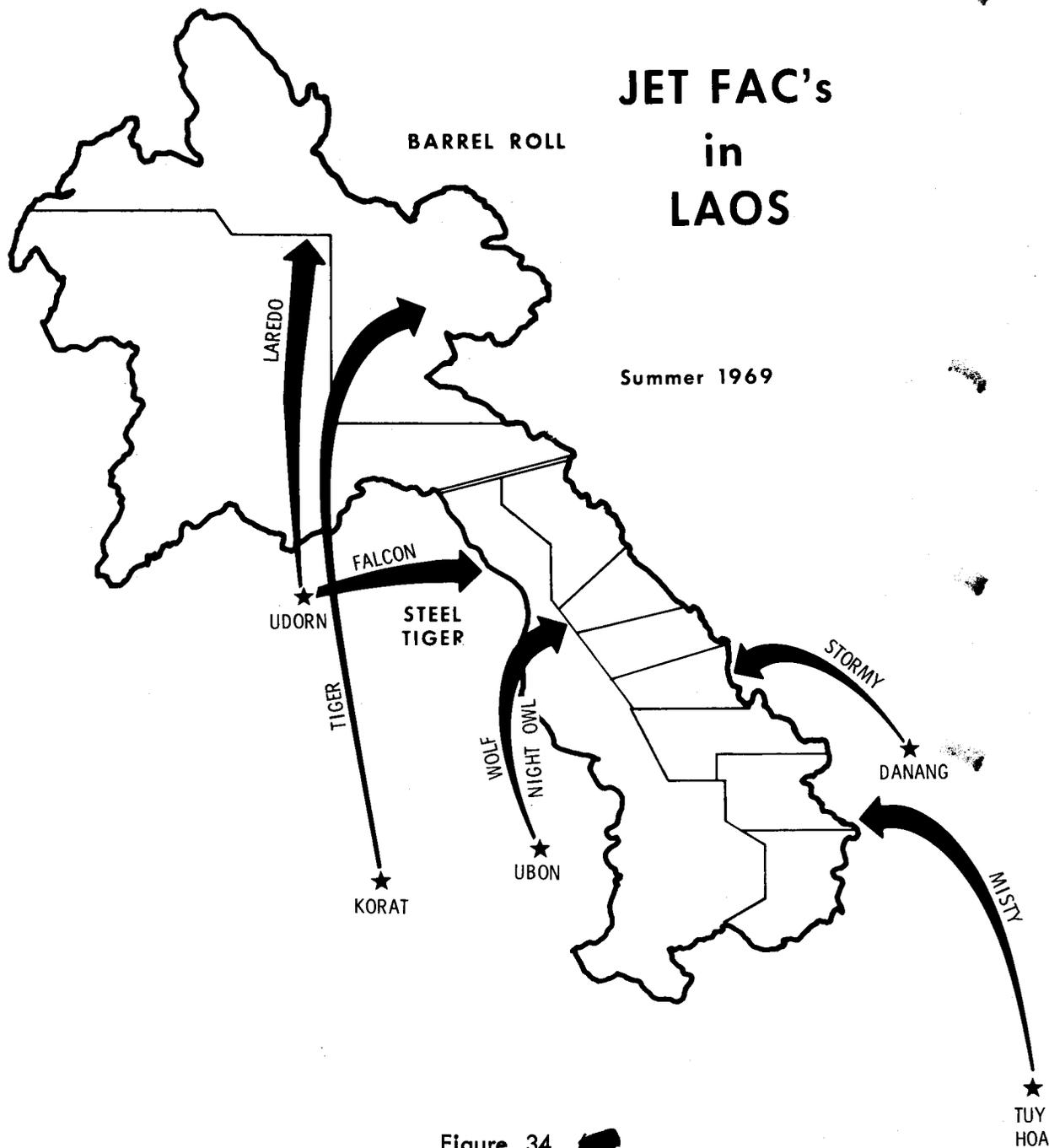


Figure 34

~~SECRET~~

The soaring demand for Wolf controllers forced the fighter crews to orbit longer, waiting to be brought in. To ease the delay, Seventh Air Force let strike aircraft be their own FAC's in areas of the eastern Laotian panhandle free of friendlies. However, the Wolf forward air controller was still required to locate the target and talk things over with the strike leader. He defined cardinal headings in relation to ground features, making sure the target was positively identified and enemy defenses pinpointed. A review of attack procedures followed, after which the strike leader took charge. This method freed the Wolf FAC's for extra VR and strike control.⁷¹

Tiger FAC's

The success of the Misties, Stormies, and Wolves impressed the 388th Tactical Fighter Wing, Korat AB, Thailand. Consequently, in January 1969 it also sought approval to use some of its F-4E's as forward air controllers in Barrel Roll (Fig. 34).⁷² It pointed out that the beefed-up enemy defenses had rendered a great deal of that area risky for the A-1 Firefly and O-1 Raven controllers. After securing Seventh Air Force's okay in February for one FAC sortie a day in Barrel Roll, the 388th Wing gave its new venture the call sign "Tiger!" It also sent volunteers from its 469th Tactical Fighter Squadron to Ubon for checkout with the Wolf FAC's. By the 19th of March, the Tigers were in business.⁷³

They were the first jet controllers to see duty in the Barrel Roll area of Laos. Their commander found that being a member of the Barrel Roll Working Group* helped cement good relations with the Raven FAC's. Basing the Tigers with the strike crews similarly smoothed coordination. One F-4E feature proved a boon in Barrel Roll--the inertial guidance system that automatically determined the plane's position. For example, on 1 March the sole TACAN channel in that area was lost with the fall of Lima Site 36.⁺ Notwithstanding, Tiger VR and strike control went on even in marginal weather, by the use of the system and pilotage. Moreover,

*Other members came from Seventh Air Force; Air Attache, Laos; Task Force Alpha; the Royal Laotian Government; and the Royal Laotian Air Force.

⁺Situated northeast of the Plain of Jars.

~~SECRET~~

the thrust and range of the E surpassed those of earlier F-4 models, and it carried its cannon internally.* 74

(6) The Tigers made their mark in March 1969 during Operation Rain Dance, as Gen. Vang Pao's forces went on the offensive against Communist troops on the Plain of Jars. USAF and RLAF fighters pounded the roads and trails leading into the Plain. Between 17 March-7 April the Tigers flew two sorties per day, doing VR, strike control, weather recce, and BDA.⁷⁵ Their sterling job of strike control and VR triggered a recommendation to use them in night road reconnaissance. The 388th Wing turned it down on the ground of lacking LLLTV and IR equipment.⁷⁶

(7) By July the Tigers were so immersed in strike control they seldom did visual reconnaissance. To remedy this, Seventh Air Force hiked the sortie rate to four per day. However, in October the entire FAC program suffered when tanker support was cut back.⁺ Misties, Stormies, Wolves, and Tigers altogether could muster only five sorties daily. Still the Tigers continued top-notch airstrike control,[‡] forcing the enemy to build bypasses around closed portions of his roads. Such achievement exacted its price--five F-4E's suffered heavy battle damage between September-December 1969.⁷⁷

Falcon/Laredo--FAC/VR Teams

(8) In February 1969, shortly after Seventh Air Force authorized the Tiger program, the 432d Tactical Reconnaissance Wing developed one of the most significant jet FAC concepts up to that time. It called for an RF-4C to orbit an assigned area searching for targets and photographing enemy positions. A forward air controller at the

*The F-4E FAC configuration kept outboard stations clean. The left inboard station carried rocket pods and the right one held a Nellis camera pod (with fore, aft, and side-looking 16-mm cameras). A KB-18 camera nestled in the right forward missile bay; a 600-gallon fuel tank, on the centerline.

⁺Part of the lost tanker support was restored in January 1970.

[‡]During July-September 1969 the Tiger FAC's flew 182 sorties and directed 2,004 strike sorties. The BDA disclosed 403 structures destroyed, 246 roads cut (including fords and bridges closed), 681 secondary explosions, 360 fires, 15 truck kills, 12 gunsites destroyed, and 34 KBA.

~~SECRET~~

same time carried out VR. When the controller spotted something suspicious, he requested photo coverage from the RF-4C. The photo recce crew (Atlanta) in turn, upon locating a lucrative target, called in the FAC to control strikes against it. The scheme also provided for prestrike and poststrike photo coverage of FAC-directed attacks.⁷⁸ The 432d Wing proposed the plan to Seventh Air Force on 19 March and got quick approval.⁷⁹

3) The 432d then set up the Falcon FAC unit at Udorn in April, structuring its program after the Wolf's at Ubon. The first five crews received checkouts from Stormy and Misty controllers and on the 8th flew their maiden missions in Steel Tiger (Fig. 34).⁸⁰ The Falcons became the initial jet FAC's to work for a tactical reconnaissance wing in SEA. They and the Atlanta photo recce crews formed a close-knit team, working together in mission planning and flying. A chief advantage to the Falcons was access to fresh intelligence from the rapidly developed photos.⁸¹

4) A general operational pattern emerged from the first joint Atlanta/Falcon mission of 26 April 1969 and those that followed. As soon as the Atlanta F-4 touched down, its film was speedily processed and rushed to the Wing Intelligence Division for evaluation and target selection.⁸² At a joint preflight briefing, Falcon and Atlanta aircraft commanders went over this intelligence, pinpointed the targets, and discussed surveillance tactics.⁸³ Both aircraft took off at the same time. The Falcon headed straight for the tanker; the Atlanta, to the target area for a look at the weather. Upon receiving a weather briefing from the photo recce crew, the FAC decided on the sequence for hitting the targets. The Atlanta took prestrike photos of the first target and, as the fighters attacked, moved on to photograph the other ones. This done, the photo recce crew returned to snap poststrike pictures of the first target and the remainder in turn.⁸⁴ If the mission was mainly for visual reconnaissance, the Falcon FAC plotted it out. The Atlanta crew tagged along as escort.⁸⁵

5) The Atlanta/Falcon team yielded more strikes per sorties than other jet controller programs, its BDA tripling Seventh Air Force averages. This success rested largely on the Atlanta's picture-taking, which shaved the time spent in detailing VR findings. Hence, the Falcon FAC could concentrate on strike control.⁸⁶

6) The increase of enemy activity in Barrel Roll (July-September 1969) swamped the Tiger controllers. They asked for help from Atlanta/Falcon teams and the 432d Wing replied with four sorties

~~SECRET~~

daily (Fig. 34).^{*} Then, as the Laotian government counteroffensive (About Face)[†] gained momentum, the Atlanta/Falcon effort centered in Barrel Roll. Two sorties a day continued there even after About Face halted, while four sorties went back to Steel Tiger.⁸⁷

During the operation, the Laredo FAC's developed a variation of the Misty hunter-killer concept. Dubbed Snare Drum, this mini-Arc Light operation employed formations of 16-20 fighter-bombers in lieu of B-52's.[‡] In September 1969 the Laredo controllers led three of these special missions. The Air Attache in Vientiane reported that one of them (comprising 20 aircraft) decimated 1,000 enemy troops massed in the target area, which was then taken with ease.⁸⁸

The Atlanta/Falcon teams also ferreted out targets not detected before. For example, their dawn-to-dusk coverage in Steel Tiger and Barrel Roll uncovered 102 new targets in November 1969 and another 172 in December. To garner these results, the crews often risked going in below 4,000 feet--suffering 21 cases of battle damage between October and December.⁸⁹ After Seventh Air Force ordered the FAC/recce crews to remain above 4,500 feet, they still found more targets than any other FAC unit.

Night Owls

All jet forward air controller units had at one time or another tried night programs with differing degrees of success. Nonetheless, Seventh Air Force in October 1969 again opted for night FAC's to block enemy truck traffic at selected pressure points along the roads leading from the Mu Gia and Ban Karai Passes. It therefore set up an F-4D controller unit (call sign Night Owl) in the 8th Tactical Fighter Wing at Ubon. These FAC's were to lead fighter-

^{*}The Falcon's call sign in Barrel Roll became Laredo; the Atlanta's, Bullwhip.

[†]A 6-pronged attack by 3,000 of Vang Pao's troops, for driving the enemy from the Plain of Jars. The Laredos directed 146 strikes during the operation.

[‡]Political sensitivity in Laos ruled out the use of B-52's in Barrel Roll at the time.

SECRET

bombers (loaded with Paveway II weapons)* to the pressure points. They would remain in the area, dropping flares, and bringing in more strikes to stop the Communists from repairing or bypassing the roadblocks.⁹⁰

The operation began on 18 October after a 4-day test. The Night Owl aircraft carried two SUU-42 flare dispensers on its outboard station, three LAU-3 rocket launchers on the left inboard, and three CBU-49 bombs on the right inboard. The FAC dispensed flares at random so the enemy wouldn't know when he could safely steal a few moments for road repair.⁹¹

Danger to the Night Owls outweighed any slowing of enemy truck traffic at the pressure points. The forward air controllers couldn't work in marginal weather or in the mountains. In October, two F-4D's (crews aboard) slammed into the ground while making marking passes during bad weather. Moreover, the AA fire heated up. These and other dangers--but chiefly the higher priority missions imposed on the 8th Wing--induced Seventh Air Force to wrap up the Night Owl operation in January 1970.⁹²

Summary

With the first Misty sortie in July 1967, the jet FAC program proved it could bring strike aircraft into heavily defended enemy areas. By 1970 the program's refinements reached to hunter-killer teams, photo recce/FAC support, weather reconnaissance, day-and-night operations, and artillery spotting. At the same time, jet FAC/strike pilot coordination and that of the controllers themselves improved by way of briefings, conferences, and exchange programs. Thus, when the Misty program phased out, other jet FAC units took up the slack.⁹³

Statistically, jet FAC duty ranked among the most hazardous jobs in Southeast Asia--yet volunteers were always at hand. Between July 1967 and July 1970, 42 jet controller aircraft went down. This loss rate of 4.37 per 1,000 sorties far surpassed that for other flight duty. Seventy percent of the losses took place below 4,500 feet where

* Paveway II--an electro-optical device for directing ordnance to the target after release from the aircraft.

~~SECRET~~

AA fire was devastating (downing 30 aircraft). Jet FAC losses soared during the last 6 months of 1969 (14 planes) and on through early 1970. Notwithstanding, Seventh Air Force deemed the program too vital to close out.⁹⁴ Then, too, what other aircraft could survive so well in high-threat areas? Final and solid proof of the jet FAC program's worth lies in the USAF contingency plans that call for its future use if need be.

~~SECRET~~

X. VNAF ASSUMES FAC OPERATIONS

(U) In 1961 USAF military leaders estimated that South Vietnam--given financial and military aid from the United States--would within several years need no outside help to defend itself.¹ In 1962, however, Vietnamese military preparations lagged while enemy activity mushroomed. In October Secretary of Defense McNamara concluded that it might take the Vietnamese armed forces at least 3 years to become self-sufficient. Meanwhile, to keep apace of the mounting Communist insurgency, he called for an accelerated buildup of Saigon's armed forces, including a doubling of VNAF pilot training.*²

(U) From 1962 through 1964, Air Force FAC's shouldered more and more of the VNAF forward air controller responsibility. This was due in part to Saigon government reluctance to employ air power against targets in the heavily populated countryside. For example, under President Diem a VNAF FAC who directed an airstrike that inadvertently caused civilian casualties might well end up in jail. Then, too, most VNAF pilots shunned controller duty considering it a loss of status.³

A shortage of FAC aircraft also hampered forward air control operations. Since the few planes on hand were jealously guarded, ARVN commanders chose to rely on the more readily available American controllers. To reverse this trend, Air Force ALO's visited ARVN units and talked up air power and the need for coordination with the VNAF. By mid-1964 a glint of progress could be discerned as VNAF forward air controllers expanded their strike control operations and visual reconnaissance programs. Vietnamese crews began getting out in the field and relations with the ARVN improved. FAC self-confidence grew when the Vietnamese government eased penalties for strike control errors.⁴

A new phase of the war began in February 1965 when, after Viet Cong terrorist attacks on American facilities, President Johnson ordered the first airstrikes against North Vietnam. He

*For more details on development of VNAF FAC's before 1965, see Maj. Ralph A. Rowley's USAF FAC Operations in Southeast Asia, 1961-1965 (S) (Ofc/AF Hist, Jan 1972).

~~SECRET~~

later ordered thousands of American ground troops to South Vietnam and deployed more air units to Southeast Asia. With U.S. ground forces on the scene, the use of Air Force FAC's to control airstrikes expanded. U.S. Army/USAF agreements specified that FAC's be experienced fighter pilots, which practically eliminated VNAF FAC's.*5 The next 3 years therefore witnessed chiefly an American conflict. The plan to prepare the Vietnamese to fight their own war receded into the background but didn't die.

Subsequently the Vietnamese Air Force felt the tightening pinch in forward air controller resources. The United States funneled just enough O-1's to the Vietnamese to replace those lost to attrition.† The receipt of radios, spare parts, and jeeps likewise fell short of actual needs.‡6

Caught up in its own SEA operations, the Air Force's attention was diverted from the VNAF FAC problem, with the result that in 1965 Vietnamese controllers were frequently misused. For example, in June, the Joint General Staff deployed VNAF liaison aircraft to province and sector headquarters to beef up the VR program. But once there, the controllers got scant guidance because no effective ALO structure existed. Instead of doing VR, they frittered away their time flying province officials from place to place. During the last 4 months of 1965 alone, less than 20 percent of all missions were FAC-related.‡7 In 1966, in an effort to clear up the situation, the JGS returned the O-1's to ARVN division level, under control of an ALO with USAF advisers at hand.‡8

Following the initial buildup of USAF forces in Southeast Asia, Air Force officials were able to pay a bit more attention to growing VNAF needs. One plan called for bringing the four liaison squadrons ‡ to their projected full strength of 120 O-1 aircraft and 164 FAC crews (368 men). To do this would require expanded pilot-observer training. As a first step toward this goal, the Vietnamese Air Force in January 1966 took over the O-1 course (established by

*The majority of VNAF controllers in 1965 lacked fighter pilot training. Their 14 hours of observer/FAC training left them grossly unqualified for directing American aircraft in strike operations.

†In 1965, for example, there were 39 O-1's for 68 FAC's; in 1968, 66 O-1's for 82 FAC's.

‡The 110th squadron at Da Nang; 112th, Bien Hoa; 114th, Nha Trang; and 116th, Binh Thuy.

~~SECRET~~

~~SECRET~~

the Air Force at Bien Hoa in late 1965) and moved it to Nha Trang.⁹ In February 1966, Secretary McNamara approved a modernization program to achieve VNAF "self-sufficiency." One of the program's requirements was that the Air Force Advisory Group oversee the replacement of USAF pilots by VNAF officers at the lower levels¹⁰ of the Tactical Air Control System and with ARVN units in the field.

The Vietnamese Air Force was hard put to provide observer-FAC's, let alone fill the requirements of the new McNamara program. Nonetheless, a solution adopted in September 1966 put ARVN officers as observers aboard USAF controller aircraft supporting ARVN ground operations. These officers handled the radio and translated messages, freeing VNAF observers who were needed for further forward air controller and pilot training.¹¹

Meanwhile, working with the Air Force Advisory Group, the Vietnamese Air Force readied its TACS Plan 67-02 for revising the VNAF air request net. Tactical air control parties, each headed by an ALO/FAC and having at least one radio operator, were to be equipped and sent to the field as advisers to ARVN commanders. Forward air controllers in the TACP's would know how to direct air-strikes from the ground at forward locations, as well as from the air. Phase I of the plan was to get under way in IV Corps between September 1966 and July 1967. Phase II would then take over and last until July 1968, finally followed by phase III that would end in July 1969.*¹²

Erosion set in as the plan unfolded. Wherever possible, ALO's and advisers to ARVN commanders were to be VNAF pilots with fighter experience. Observers occupied these positions, however, because the VNAF needed pilots for cockpit duty. The plan also stipulated ALO's be field or senior company grade officers, but had to settle for junior officers of little experience.¹³

Phase I of the program nevertheless remained on schedule. Within IV Corps the VNAF forward air controllers slid smoothly into sector-level positions. The TACP's received 2 months training at the TACC and on-the-job guidance from USAF ALO/FAC's in the field.¹⁴ Phase II in contrast lagged almost at once primarily because Phase I

*Operation of the revised net would take an estimated 500 people, 164 of them officers. There would be 103 TACP's--27 in Phase I, 43 in II, and 33 in III.

~~SECRET~~

~~SECRET~~

had consumed the lion's share of VNAF controller resources. The prospects for an influx of additional volunteers and equipment appeared bleak. Seventh Air Force had its hands full in keeping its own controllers equipped with radios, jeeps, and aircraft. Thus, in July 1967 it was able to provide the VNAF only 53 of the 84 O-1's due.¹⁵

The Vietnamese Air Force policy of rotating TACP's every 2 or 3 weeks complicated the problem. It not only hindered training but kept observer-FAC's from learning their areas. What stability there was stemmed from the presence of USAF forward air controllers. However, the Air Force planned to withdraw some FAC's from IV Corps in 1967 and turn more of the operation over to the VNAF. In view of this, the VNAF stabilized controller tours to a minimum of 3 months at each sector.¹⁶

A handful of forward air controllers, without aircraft or equipment, entered the program during the remainder of 1967.¹⁷ Moreover, in February 1968 an Air Force/Vietnamese Air Force conference at Bien Hoa gave the VNAF responsibility for all controller support of certain ARVN units. USAF personnel withdrew from these units, leaving ARVN and VNAF to go it alone. As the 7th Division in IV Corps first felt the transition,¹⁸ it became clear ARVN commanders still doubted that the VNAF controller could give good strike support and control.* The VNAF on its part was reticent to do the job.¹⁹

In June 1968 the Vietnamese Air Force launched a new training program in which it tried to brighten the FAC image. All pilots (below the grade of deputy wing commander) had to attend a 2-week Air Support Officer Training Course, conducted by the Air Training Center at Nha Trang. Thirty students went through at a time⁺ and were introduced to ALO/FAC operations. Every graduate moved on to the DASC nearest his own unit for 2 weeks of field training.²⁰ This effort enhanced the picture of FAC operations and enticed a few more pilots into the program.

*A throwback to the pre-1965 attitude.

⁺Six pilots from each of the five VNAF wings.

~~SECRET~~

RVNAF Improvement and Modernization Program

Hard on the heels of the above training, the Department of Defense ushered in a stepped-up Improvement and Modernization Program (IMP) for the Republic of Vietnam Armed Forces (RVNAF). The IMP rested on the premise the U.S. presence had to end, and envisioned a 5-year timed withdrawal of American and North Vietnam forces from South Vietnam. It set a ceiling of 801,000* for South Vietnam's armed forces, who were to absorb the American equipment and resources left behind.²¹ The VNAF would have 45 operational squadrons⁺ and expand from 16,000 to over 35,000 men.²²

In the first of the IMP's three phases, South Vietnamese forces would undertake an all-out ground offensive, with American support. The goal was to pacify the countryside and further secure the area under government control. Phase II would seek a "self-sufficiency" capable of coping with a scaled-down insurgency after the Americans pulled out--even though an estimated 12 North Vietnamese divisions would still be in Laos. Phase III would witness the withdrawal of NVN troops from South Vietnam and neighboring countries.²³ It was believed completion of the three phases would take 4 or 5 years.

VNAF FAC Modernization

Under the modernization program, three additional liaison squadrons (118th, 120th, and 122d) would be in place before June 1971 at Pleiku, Da Nang, and Binh Thuy (see Table 5).[‡] However, the arrival of O-2A's and OV-10's for Air Force units failed to speed the flow of USAF O-1's to the VNAF. The reason lay in a growing demand for USAF controllers in out-country operations. Thus, by December 1968 the number of VNAF combat-ready O-1's fell to a low of 49.²⁴ However, this trend reversed as the drawdown of

*Raised to 954,000 in August 1968.

⁺Included were 2 F-5 units for air defense plus 9 tactical fighter, 1 reconnaissance, 4 cargo, 4 gunship, 17 helicopter, 1 training, and 7 liaison squadrons.

[‡]This would make a total of seven liaison squadrons. In 1970 an eighth (the 124th at Bien Hoa) was projected.

~~SECRET~~

TABLE 5

VNAF LIAISON SQUADRONS
O-1 AND U-17 AIRCRAFT AUTHORIZATIONS

<u>Squadron (Parent Tac Wg)</u>	<u>Location</u>	<u>Aircraft Authorized</u>	
		<u>O-1</u>	<u>U-17</u>
110th (41st)	Da Nang	25	7
112th (23d)	Bien Hoa	25	7
114th (62d)	Nha Trang	25	7
116th (74th)	Binh Thuy	25	7
118th (92d)	Pleiku	25	7
120th (41st)	Da Nang	25	7
122d (74th)	Binh Thuy	25	7
124th (23d)	Bien Hoa	<u>25</u>	<u>7</u>
	TOTAL	200	56

SOURCE: USAF MANAGEMENT SUMMARY SOUTHEAST ASIA (S), 19 Feb 71, p 55.

~~SECRET~~

Air Force units began to take effect.*25

In March 1969 the Vietnamese Air Force (with Seventh Air Force) introduced its TACS ALO/FAC Upgrading Plan. It provided for complete VNAF control of the Tactical Air Control System by 1971. It would collocate VNAF TACP's with USAF counterparts for side-by-side training. When a corps area became self-sufficient, it would take over the Air Force's TACS responsibilities. In the summer of 1969, with the start of withdrawals of American troops in accordance with President Nixon's decision to Vietnamize the war, the Air Force Advisory Group's role was increased and its personnel began spending more time in the corps area monitoring progress.26

IV Corps⁺

The upgrading program got off to its fastest start in IV Corps, where the Vietnamese Air Force had experienced some earlier success in operating on its own. It already handled air support for the 7th and 9th ARVN Divisions (excepting American airstrikes), and ran a FAC training program at My Tho in Kinh Tuong Province. Consequently, takeover of the IV Corps TACS by the end of 1969 didn't seem out of the question. In addition, VNAF officials anticipated that their forward air controllers would direct USAF strike aircraft in support of ARVN operations. The Air Force therefore checked out those FAC's who had mastered English terminology and--under watchful American eyes--directed strikes by USAF planes. By 30 June 1969 all tactical airstrikes for the 7th ARVN Division were under VNAF FAC control.27

Part of the VNAF controller problem was the government's insistence on 2-man FAC teams. Previous Air Force arguments for using a single controller had fallen on deaf ears. Now, however, the government reluctantly agreed to go along. On 1 September 1969 the VNAF set up in IV Corps a FAC training program for pilots. The first 20 students graduated on 1 November, qualified to control VNAF and USAF airstrikes in support of the ARVN.‡ Despite this

*Of 122 liaison aircraft due from the Air Force by July 1969, the VNAF got only 97, 72 of them combat-ready. It received 10 planes per month from June through August, then 2 a month until February 1970. This built to a total of 139 and went far in easing the shortage. The remainder of the aircraft trickled in by June 1972.

⁺By 1969 the corps became known as military regions.

[‡]These supplemented the 17 currently qualified observer-FAC's in IV Corps.

~~SECRET~~

program's success, the idea of a single FAC never caught fire outside IV Corps.*28

The VNAF FAC program and training in DASC operations continued apace within IV Corps. Of 30 USAF personnel attached to the DASC on 1 January 1969, only 12 were there in December. Just one officer remained in each of the 19 TACP's. Vietnamization of FAC operations in IV Corps was virtually completed by January 1970--the 19th TASSq moving to Bien Hoa on the 15th. A few Air Force advisers stayed on at the DASC throughout 1970.29

I Corps

Creation of Horn DASC in I Corps during 1968⁺ set the stage for Vietnamization there. It freed I DASC to become the VNAF vehicle for directing air support of the ARVN. To tie together the air support effort, plans went ahead to relocate Horn DASC with I DASC at corps headquarters. This eliminated the Air Force TACP at I DASC. USAF officials also reduced DASC Victor (located near Hue) to a TACP and collocated the other TACP's with VNAF counterparts in I Corps.

Lt Col Edward Mendel, I Corps ALO, took charge of the FAC Vietnamization program in the summer of 1969. He stressed training, telling his advisers to be merely monitors and encourage the Vietnamese Air Force to exploit its tactical resources. By 30 September the VNAF TACS was handling all its own airstrikes.31

Vietnamization in I Corps nevertheless made headway but in fits and starts. The VNAF readily took over air support responsibility in Quang Tri and Hue sectors. Not so in Quang Ngai and Quang Tin, where the program suffered from inexperienced poorly motivated people. VNAF controllers, for example, didn't always check friendly positions before marking targets. They tended to fix exact coordinates (even in the middle of 'a rice paddy') without validating the target. These FAC's held neither preflight nor postflight briefings. Owing to the enemy threat, they frequently omitted VR in the mountainous areas.32

*The VNAF still deemed 2-man FAC teams best for visual reconnaissance. It insisted on them for controlling USAF aircraft, believing the language barrier was too much for one man, in light of his other duties.

+Horn DASC directed air support for free world forces.

~~SECRET~~

█ If that weren't enough, Quang Ngai and Quang Tin sectors came under the 2d ARVN Division Commander who held VNAF forward air controllers in low esteem. The callow VNAF ALO-- a lieutenant--did little to dispel the bad image. He knew next to nothing about types of ordnance available or delivery techniques. Nor could he accurately judge the best tactics to use. His low rank further downgraded him in the eyes of the division commander.³³

█) The USAF ALO adviser for the ARVN 2d Division had all VNAF controllers in the two sectors screened. Some were weeded out, others got further training. The Air Force forward air controllers were ordered not to do a thing their VNAF counterparts could handle. Preflight and postflight briefings began; USAF FAC's attended but kept silent. Ground commanders were told to deal with their own controllers and not counsel with the Americans.³⁴ These actions let Quang Ngai and Quang Tin catch up with the other sectors. The two became almost entirely Vietnamized by October 1970 and USAF elements commenced phasing out. The Air Force looked for the VNAF to be running the TACS in I Corps on its own by December 1971 or early 1972.³⁵

II Corps

█ Vietnamization of FAC operations moved slowest in II Corps. In 1969 VNAF controllers handled but 11 percent of all VNAF and USAF airstrikes supporting ARVN troops there. These FAC's suffered keenly from poor image, inexperience, and low rank. ARVN commanders shunned them frequently in favor of American controllers. Furthermore, most ARVN air support requests travelled up the command chain to corps headquarters where the commander sifted them and set target priorities. At that point the Vietnamese Air Force entered the picture--often too late for quick response. Yet it took all of 1969 and much of 1970 for USAF advisers and the VNAF to convince ARVN commanders to use the TACS net.³⁶

█ The sweep of II Corps checked coordination of VNAF controller operations. Inasmuch as the FAC's covered three times more area than those in the other corps, the coverage contained gaps.³⁷ The corp's size likewise affected communications, since the range of the old radios in the TACP's frequently couldn't reach the DASC. This required the relay of requests for air support through airborne aircraft or GCI sites.³⁸

~~SECRET~~

Despite drawbacks, transfer of DASC operations to the Vietnamese Air Force kept to schedule. By October 1969 Air Force-operated DASC Alpha had hastened the training of VNAF personnel at II DASC in Pleiku. In March 1970, II DASC and DASC Alpha merged, and on the 15th the former shouldered total TACS responsibility for the corps. DASC Alpha became backup until mid-April then for all practical purposes closed shop. After that, 10 of the 12 VNAF TACP's supporting the ARVN were collocated with USAF counterparts.³⁹

By October 1970 many kinks in ARVN and VNAF coordination had been worked out. VNAF controllers were going into the divisions to take over close air support. Just a sprinkling of USAF advisers⁴⁰ and a shrinking contingent of American troops were still on hand.

III Corps

The 10 provinces of III Corps surrounded and took in Saigon as well as the sprawling Bien Hoa and Tan Son Nhut military complexes. Acutely aware of this area's political and strategical significance, the Air Force carefully weighed each step toward Vietnamization. As of 31 December 1969, Vietnamese Air Force controllers directed about 22 percent of the strike sorties--200 of the 900 weekly average. Since only III Direct Air Support Center was used, coordination of FAC and support operations went well. The scheduled 20 TACP's were in place and operational, most of them collocated with USAF counterparts. By 31 March 1970 VNAF forward air controllers handled nearly all USAF strikes in support of ARVN. Plans called for the complete VNAF takeover in October and phasing down the Air Force presence to a small advisory team.⁴¹

Summary

By 1971 the Vietnamization of the forward air controller program and the tactical air control system had not been completely carried out. The VNAF tended to lean on USAF advisers until withdrawal of U.S. forces compelled reliance on its own resources. Similarly, when ARVN commanders could no longer call upon the Americans, they turned to the VNAF.⁴² On 11 May 1971 Air Force controllers were ordered to stop performing FAC duties in support of ARVN ground operations. This goaded the Vietnamese Air Force toward full acceptance of its role.⁴³

~~SECRET~~

When joint USAF-VNAF control of the tactical air control center ceased in June 1971, the Vietnamese Air Force used its TACC to coordinate air activity. Three months later, it had all its direct air support centers self-sufficient and positioned with ARVN tactical operations centers in the military regions. The radio request net, patterned after the Air Force's, also went into action.⁴⁴

But problems remained. A few diehard ARVN commanders complained of unresponsive air support and nurtured distrust of young, low-ranking VNAF FAC's. Many Vietnamese pilots continued to look down on controller duty, and the more experienced ones shunned it. The TACS ran into fragging trouble--at times sending FAC's too much air support while cutting others off short. Poor preplanning of targets existed, with the DASC holding back sorties until a forward air controller had found a target and called it in.⁴⁵ Coordination was nevertheless a far cry from the "chaos" of 2 years earlier. By 1972 it became clear the Vietnamese Air Force could do its job adequately.⁴⁶

Before the 1968 Improvement and Modernization Program had begun, the Air Force believed four liaison squadrons could meet VNAF FAC needs. During 1968, however, the number had risen to seven and in 1971 to eight. The first seven units (25 O-1's each) were scheduled to be combat-ready by 30 June 1972; the eighth (the 124th), by the end of 1972. (See Table 5.)⁴⁷

In March 1972 the Vietnamese Air Force conducted over 90 percent of all in-country tactical airstrikes. The TACS became more decentralized under VNAF control, each military region (corps) having an air division to handle tactical air. The TACC, however, centralized 10 percent of the country's air power. As need be, it diverted aircraft from this pool and from one air division to another. The tactical air control parties worked at ARVN division level, but plans were afoot to locate them in the regiments. At the DASC's the Air Force had just token advisory elements (called tactical air support divisions) for dovetailing its air support with the VNAF's. These advisers as well as the few remaining Air Force TACP's pulled up stakes in 1973.⁴⁸ The Vietnamese Air Force now ran the whole show.

*Requiring 300 crews and 200 planes, the eight squadrons had 213 crews and 227 O-1's as of 6 October 1972. [USAF Management Summary Southeast Asia (S), 6 Oct 72, p 37.]

⁺Phaseout of Air Force tactical air support squadrons kept step with Vietnamization. The 22d Squadron moved to Bien Hoa in January 1970 and on 15 May 1971 to Wheeler AFB, Hawaii. The 19th Squadron transferred to Osan, Korea, on 10 January 1972. The 504th Tactical Air Support Group--heart of the USAF FAC operation--closed down on 17 March 1972. The other Air Force FAC squadrons reverted to direct Seventh Air Force control and then out of Southeast Asia.

~~CONFIDENTIAL~~

EPILOGUE

(U) Emergence of the airborne forward air controller as a vital part of tactical air operations was a signal event of the Southeast Asia war. Excepting the Mosquito FAC's in Korea, controllers in earlier wars almost always worked from the ground. However, the jungle and mountainous terrain in SEA, which made it difficult to tell friend from foe, rendered ground control of tactical airstrikes extremely risky. Forward air controllers accordingly took to the air and in so doing found themselves performing missions other than that of close air support. They did visual reconnaissance, escorted truck convoys, served as airborne relay stations, supported Special Forces recon patrols, adjusted Army and Navy artillery fire, performed armed recon, reported results of airstrikes, supported day-and-night interdiction in Laos, directed clearing operations for landing zones, and assisted in search and rescue operations.

(U) Throughout the war and until the U.S. forces started pulling out, the demand for forward air controllers was greater than the numbers available. Initially, the Air Force--not ready for a "flying FAC"--shunted him to the O-1, a plane not built to withstand the hard usage it received. "Improvise" became the watchword while awaiting an aircraft suited to the controller role. Moreover, the stringent rules of engagement demanded every close air support strike be under FAC control. The Air Force was hard-pressed to come up with the fighter-experienced pilots to do the job. Later in the war, some controller trainees came straight out of pilot school. Lacking experience to direct close air support, they were widely used in the out-country interdiction program.¹

(U) As the Southeast Asia war recedes into the background, Air Force planners have been studying the future role of the forward air controller. They think it unlikely the United States will ever again enjoy complete air superiority as in SEA. Consequently, the FAC system formed there may not be applicable elsewhere. The controller in a future conflict may be highly vulnerable to an enemy's ground fire and fighter aircraft. Hence, only usable parts of the system will survive. The basic concept rests on qualified forward air controllers and air liaison officers attached to Army troops. FAC's will control air support from the ground but go airborne if need be. They will also direct artillery fire and do visual reconnaissance.²

(This page is Unclassified)

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

(U) Other controller operations perfected in SEA can be held in reserve and trotted out at the proper time. The armed controller, for example, is here to stay. Air Force Manual 51-110 requires OV-10 pilots to keep proficient in rocket-firing and strafing and to fly two dive-bombing missions during each training period.³

(U) The guided laser bomb (Pave Nail) employed in SEA with FAC help late in the war could be invaluable in a future conflict. As first used, an OV-10 controller would search out and pinpoint a target with a laser range indicator. He next directed the strike pilot into the radio cone that stretched from the designator to the target. The pilot then dropped his bomb which rode the conical beam all the way to impact. In pre-combat tests, the bombs landed only 25 feet from the center of the target. This system (without the bomb) was likewise used in search and rescue operations. By July 1972 OV-10 forward air controllers handled around 60 percent of laser-guided bomb deliveries in SEA.^{*4}

(U) The jet forward air controller also emerged from the war and will not drop from view. In future he will be needed to work high-threat areas too hot for slower FAC aircraft. Rather than directing support of ground troops, however, the jet controller will more than likely focus on strike control and reconnaissance. He can also act as a tactical air coordinator.⁵

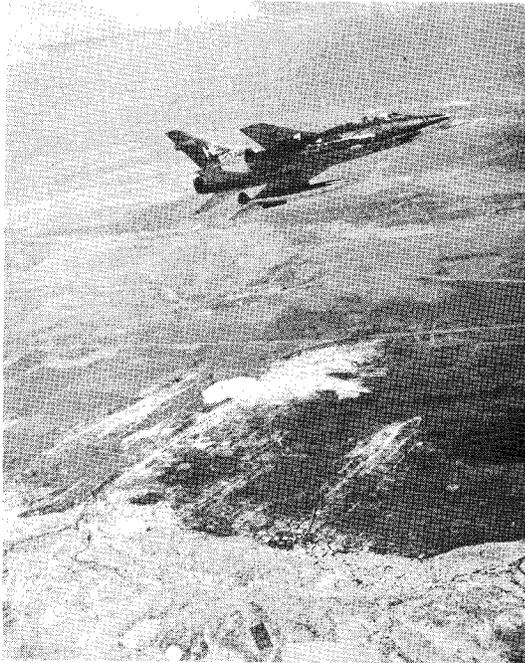
█ A FAC aircraft suited to every situation doesn't seem to be in the cards. No one type of plane in Southeast Asia did all things well--each had strengths and weaknesses. Plans are nevertheless in the mill for the FAC-X, a follow-on FAC aircraft. Its design is still to be decided upon; however, the cost of developing one to meet all requirements has dimmed the plane's prospects. At present the O-2A's will see further service, helped out by OV-10A's. Pending a decision on the FAC-X, consideration was given to beefing-up of the OV-10's engines and the withdrawal of jet FAC aircraft from inventory for modification.⁶

(U) The current FAC capability reposes in tactical air support squadrons, operating worldwide to keep controller proficiency finely honed.⁺ Tactical air control parties are assigned to Army units--trained and ready to go. The Air Force doesn't intend to be caught short again.⁷

*Subsequent laser systems did not need help from a target designator in a separate aircraft.

⁺These squadrons are located at Bergstrom AFB, Tex.; Shaw AFB, S. C.; and in Korea, SEA, Hawaii, and Europe.

~~CONFIDENTIAL~~



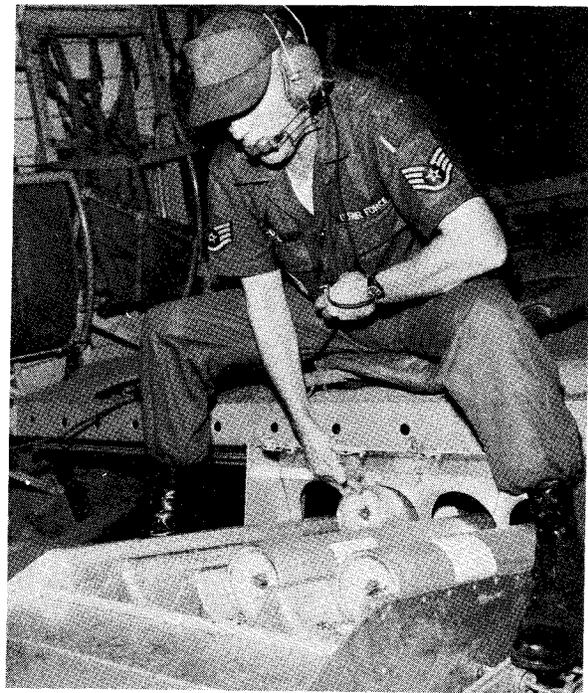
F-100F Misty Over North Vietnam



Checking Out a Starlight Scope



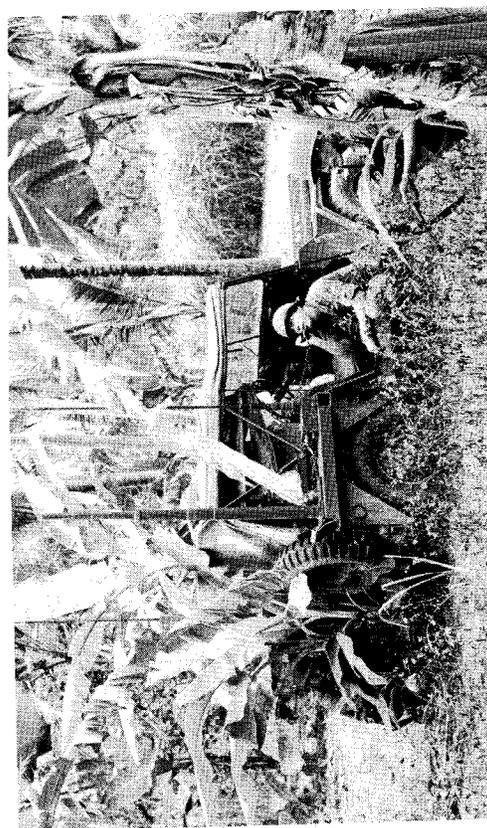
Preflighting the O-1



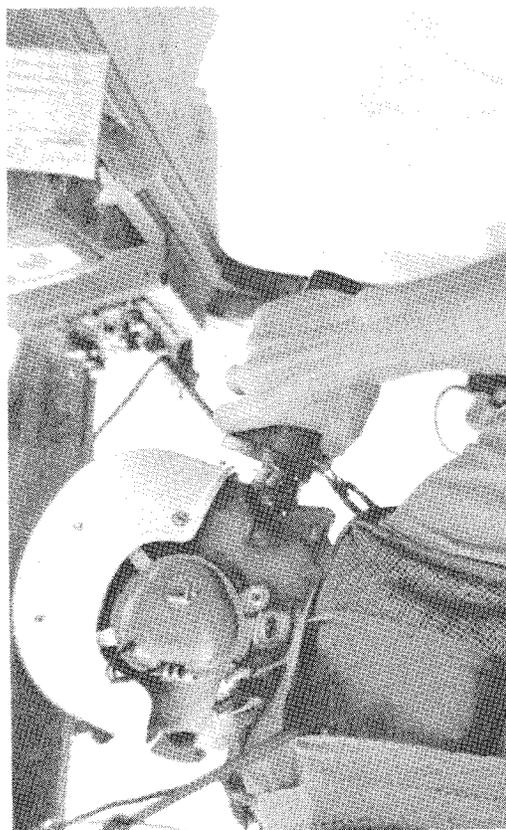
C-123 Crewmember Expends Flares



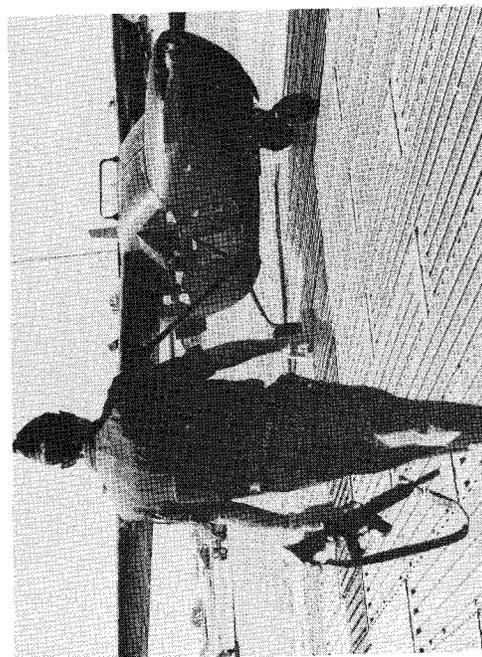
Ground FAC



TACP Directing Airstrike



O-1 FAC Directing Artillery Fire

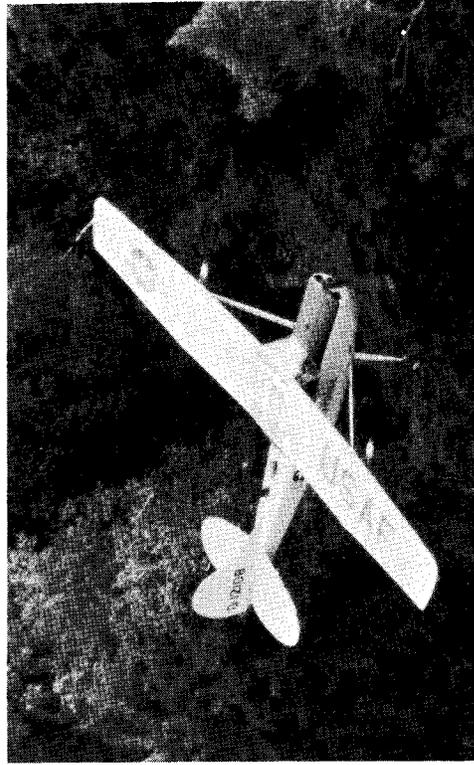


O-2 Controller--Ready for the Trail

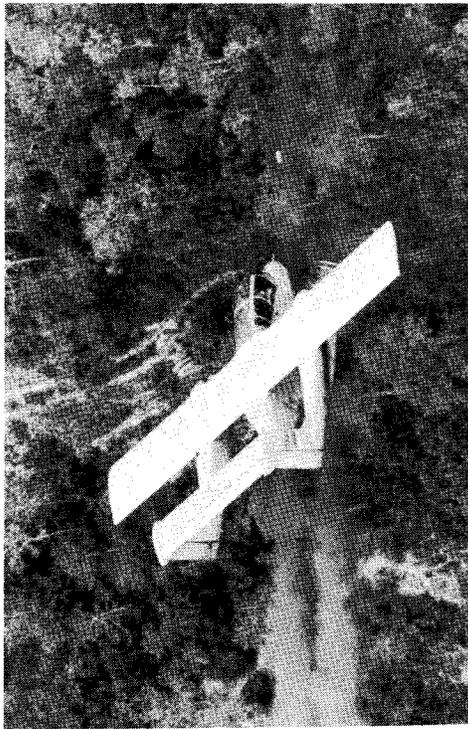
UNCLASSIFIED



OV-10 Bronco Over Thailand



Bird Dog "Reconning" Jungle Trail



Marking with Smoke Rockets

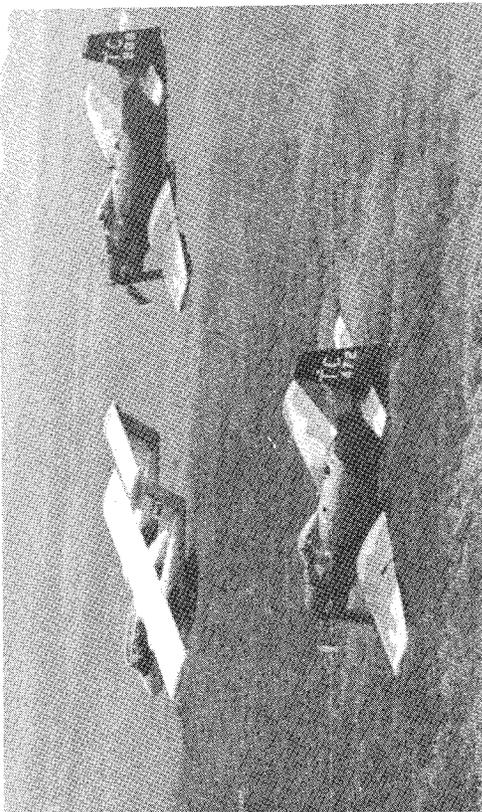


O-1 Bird Dog Performing BDA

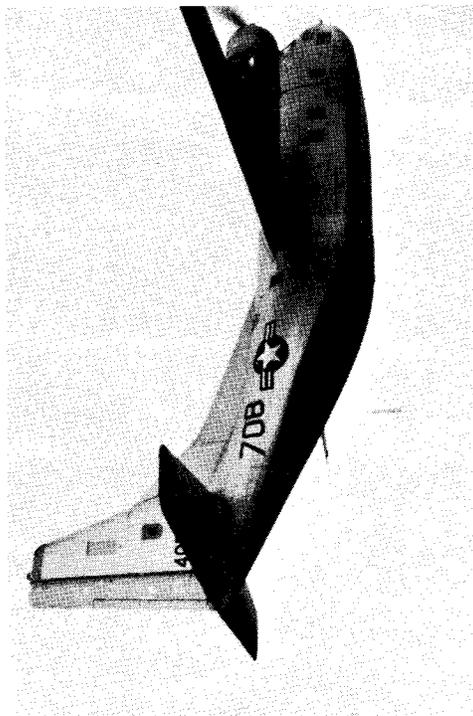
UNCLASSIFIED



F-4 Phantom (Strike and FAC Aircraft)



OV-10 Bronco and A-1E Skyraiders--
Search & Rescue



C-123 Candlestick Flaring



Well-Armed Skyraider Set to Go

SOURCES AND NOTES

Material for this study was collected from four general areas: official records (mostly Air Force); manuscript histories; interviews; and, to a lesser degree, various published works.

Official Records

Where applicable, the author utilized messages and papers from the Joint Chiefs of Staff (JCS) resources, particularly as they referred to the development of a new FAC aircraft, coordination of air resources between the different services and the armed FAC concept. The files of the Secretary of the Air Force were also made available to the author, as were retired materials at the National Federal Records Center, Suitland, Maryland.

The records of the Tactical Control Branch of Plans and Operations Division at Headquarters Air Force were particularly useful and drawn upon heavily for messages, letters, and studies which could not be found elsewhere. Moreover, the expertise of Lt. Col. Gary Boyer, of that branch was extremely useful in describing terminology, tactics and concepts of the FAC role. Letters, messages and miscellaneous correspondence (involving major commands and other organizations below Air Force level) were acquired from the Albert F. Simpson Historical Research Center, Maxwell AFB, Alabama. Records of the Air-Ground Operations School and the Tactical Air Warfare Center, at Eglin Air Force Base, Florida, proved to be other valuable sources of records information. The Air Force archives also provided operational records and histories of the 504th Tactical Air Control Squadron, and the records of other tactical air support units in Southeast Asia (this included Seventh Air Force records). The Air University Library, and Army War College at Carlisle Barracks, Pennsylvania proved helpful in supplying numerous studies and theses of students going through the Air-War College at Maxwell AFB, and the Army War College. The author is also indebted to the help offered by the Army's Office of Military History and the U. S. Marine Corps Historical Office for the material they made available, mostly in the form of reports and studies.

UNCLASSIFIEDManuscript Histories

Project CHECO (Contemporary Historical Examination of Current Operations) Reports, which were first narratives written by Air Force historians in the field during the war, were an excellent source of information. Frequently they pointed the way for other lucrative sources. Those specifically dealing with close air support, the Tactical Air Control System and forward air control were especially helpful. Also of considerable worth were the Project Corona Harvest Reports, studies and evaluations which related to Southeast Asia. These sources were available here at the Office of Air Force History. The Corona Harvest collection, stored at the Air Force archives, provided numerous documents that could be ordered and used.

Semiannual histories of the Headquarters USAF directorates, major commands (primarily Pacific Air Forces and Tactical Air Command), along with sub-unit periodic histories were helpful. The histories of the Commander in Chief, Pacific Command (CINCPAC) and MACV provided useful support documentation. These were both available at the Office of Air Force History. Histories below command level (air force, division, wing, squadron and detachment) can be located in the Air Force archives.

In addition to these histories were numerous monographs, commonly called "bluebooks" or "blue covers," published by the Office of Air Force History, were consulted as applicable to the topic.

Interviews

The author relied heavily on interviews to fill gaps not covered by other sources. During the course of research, several dozen Air Force and Army officers consented to be interviewed, and their information proved to be rich in added details of the war. The Special Acquisitions Branch at the Air Force archives, with a reservoir of more than 600 typed interviews, has been an excellent source for added information. All interviews noted in this study can be found in the Air Force archives, or the Office of Air Force History.

UNCLASSIFIED

Published Works

Published works utilized were primarily general in nature. They included various military magazines, articles in the Air Force Times, and Air Force Office of Information publications. These for the most part, provided insight from the opinions of others. The Pentagon Papers provided a more clear understanding of the political considerations and higher echelon decision-making process in the conduct of the war. Congressional publications, specifically those by the House of Representatives Armed Services Committee, were expressly useful in documenting the information contained herein. RAND studies, also provided a non-military perspective of different aspects of the war. Most of the material mentioned above may be found in the Air Force Studies and Analysis Library, the Pentagon's Army Library, Air University Library (Maxwell AFB), Air Force archives, Office of Air Force History, or other locations as noted.

UNCLASSIFIED

NOTES

Chapter I

1. Robert F. Futrell, Chronology of Significant Airpower Events in Southeast Asia, 1954-1967 (S) (USAF Hist Div, Dec 1967), p 10; Jacob Van Staaveren, USAF Plans and Policies in South Vietnam, 1961-1963 (TS) (USAF Hist Div Liaison Ofc, Jun 1965), p 18; Capt Edward Vallenty, VNAF FAC Operations in SVN Sep 1961-Jul 1968 (S) (HQ PACAF, Project CHECO, 28 Jan 69), p 4; hist (S), 13th AF, Jan-Jun 1963, I, 71.
2. Maj Ralph A. Rowley, USAF FAC Operations in Southeast Asia, 1961-1965 (S) (Ofc/AF Hist, Jan 1972), chap II; hists (S), 13th AF, 1 Jul-31 Dec 61, I, 73-74, 1 Jan-31 Dec 63, pp 72-73, 2d ADVON, Nov 1961-Oct 1962, p 90, 2d Air Div, Jan-Jun 1965, I, 64; 13th AF OpOrd 226-61 (S), Barn Door War Operations Plan, 31 Dec 61.
3. Rowley, USAF FAC Operations in Southeast Asia, 1961-1965, pp 100-01.
4. Chronology of Events Pertaining to US Involvement in the War in Vietnam and Southeast Asia (U) (MACV, 29 Sep 72) [hereinafter cited as MACV Chronology]; Adm U. S. G. Sharp and Gen William C. Westmoreland, Report on the War in Vietnam (As of 30 June 1968), Sec II of Report on Operations in South Vietnam, January 1964-June 1968 (Washington, 1968), pp 97-104; Charles B. MacDonald and Charles V. P. von Luttichau, American Military History, chap 29 (revised) of The U.S. Army in Vietnam (OCMH, U.S. Army, 1969), pp 622-27.
5. See note above; Wesley R. C. Melyan, The War in Vietnam, 1965 (TS) (HQ PACAF, Project CHECO, 25 Jan 67), pp 14-16, 23-26; rpt (U), MACV, Lessons in Strategy, 25 May 68.
6. MacDonald and Luttichau, American Military History, pp 629-29; rpt (U), MACV, 25 May 68.
7. See note above; Sharp and Westmoreland, Report on the War in Vietnam, pp 130-36; MACV Chronology.

UNCLASSIFIED

8. MACV Chronology; rpt (U), MACV, 25 May 68; Sharp and Westmoreland, Report on the War in Vietnam, pp 157-170.

Chapter II

1. Hist (S), 2d Air Div, Jul-Dec 1964, III, 27-28; Vallenty, VNAF FAC Operations in SVN, Sept 1961-Jul 1968, p 23; Futrell, Chronology of Significant Airpower Events in Southeast Asia, 1954-1967, p 47; HQ USAF draft rpt (TS), Effective SEAsia Tactics (TACS) [ca 1969], p 1-65 [hereinafter cited as Effective SEAsia Tactics].

2. Hist (TS), MACV, 1965, pp 46-48; Effective SEAsia Tactics, p 3-1.

3. Maj James B. Overton, FAC Operations in Close Air Support Role in SVN (S) (HQ PACAF, Project CHECO, 31 Jan 69), pp 31-32; Kenneth Sams, Operation Harvest Moon (S) (HQ PACAF, Project CHECO, 3 Mar 66).

4. Overton, FAC Operations in Close Air Support Role in SVN, pp 31-32; TAC/TAWC rpt (TS), Forward Air Control Operations in Southeast Asia, II, 1 January 1965- 31 March 1968, 10 Nov 69, 5e [hereinafter cited as FAC Ops in SEA, 1 Jan 65-31 Mar 68].

5. Overton, FAC Operations in Close Air Support Role in SVN, p 4.

6. Ernie S. Montagliani and Capt John R. Wohnsigl, The DASC's in II Corps Tactical Zone, July 1965-June 1969 (S) (HQ PACAF, Project CHECO, 31 Aug 69), p 3.

7. Team Report on Requirements for ALO/FAC/SCAR/Navigators and Aircraft in SEA (S), PACAF, 22 Nov 68, p 3 [hereinafter cited as SEA FAC Requirements]; Effective SEAsia Tactics, p 3-1.

8. Effective SEAsia Tactics, p 1-65; Agreement, Concept for Improvement of Joint Air-Ground Coordination (S) (approved by CSAF, 19 Mar 65, and CSA, 28 Apr 65), p 3.

9. Melyan, The War in Vietnam, 1965, p 232.

10. Effective SEAsia Tactics, p 3-1; msg (S), CSAF to TAC and PACAF, 091006Z Dec 67, subj: ALO/FAC Training.

UNCLASSIFIED

11. Hist (S), TAC, Jan-Dec 1965, I, 329-30.
12. Effective SEAsia Tactics, p 3-1.
13. Ibid., p 3-2; Joint Report, Project New Focus, Trip to Vietnam 25 Oct-12 Nov 65 (C), HQ USAF, 19 Nov 65, p 2.
14. Hist (TS), PACAF, Jan-Dec 1966, p 397; Effective SEAsia Tactics, p 3-2.
15. Effective SEAsia Tactics, p 3-2.
16. Hist (TS), PACAF, Jan-Dec 1966, pp 397-98.
17. Effective SEAsia Tactics, p 3-3; Overton, FAC Operations in Close Air Support Role in SVN, pp 32-33; SEA FAC Requirements, p 3; Air Staff Summary Sheet (S), Maj Gen Woodrow P. Swancutt, Dir/Ops, Tactical Air Control Party (TACP) Employment, 21 Jun 67.
18. Effective SEAsia Tactics, p 3-3.
19. Ibid., p 3-4; background paper (S), Dep Dir/Strike Forces, DCS/Plans and Ops, subj: ALO/FAC's in SEA, 29 Nov 67.
20. Overton, FAC Operations in Close Air Support Role in SVN, pp 32-33; SEA FAC Requirements, p 3.
21. SEA FAC Requirements, p 15; talking paper (S), Dep Dir/Strike Forces, Dir/Ops, subj: Forward Air Controller (FAC), and Strike Control and Reconnaissance (SCAR) Working Group, 18 Aug 69.
22. SEA FAC Requirements, p 15; Maj A. W. Thompson, Strike Control and Reconnaissance (SCAR) in SEA (S) (HQ PACAF, Project CHECO, 22 Jan 69), pp 75-76; PACAF rpt (S), Task: Intelligence Collection, Sub-task: Visual Reconnaissance in SEA, 1 January 1962-31 March 1968, 30 Sep 70, p 73 [hereinafter cited as VR in SEA, 1 Jan 62-31 Mar 68].
23. Hist (S), 504th TASGp, Jul-Sep 1968, I, 7-8.
24. Officer Manning Analysis for June 1969-December 1970 (U), AFMPC.

UNCLASSIFIED

25. Ibid.; msg (C), 504th TASGp to 7th AF, 301414Z Jun 69, subj: ALO/FAC and Aircraft Status Report as of 27 Jun 69; hist (S), 504th TASGp Apr-Jun 1969, p 11.

26. Msg (C), CINCPACAF to 7th AF, 131943Z Aug 69, subj: FAC/ALO Requirements.

27. Hists (S), 504th TASGp, Jul-Sep 1969, I, 12, Oct-Dec 1969, I, 10; ltr (C), 504th TASGp to 7th AF, subj: FAC/ALO Requirements, 17 Dec 69; msg (C), CINCPACAF to 7th AF, 131849Z Dec 69, subj: FAC/ALO Requirements; Officer Manning Analysis for June 1970 (U), AFMPC; USAF Officer Control Document (U), AFMPC, Dec 1970.

28. Ltr (U), Maj Gen Thomas G. Corbin, SAWC Comdr, to Gen Gabriel P. Disosway, TAC Comdr, subj: Quality of FAC Trainees, 20 Jan 67; Maj Charles O. Lescher, Jr., "Forward Air Controller Selection Criteria and Vietnam Tour Length" (U) (Thesis, ACSC, Maxwell AFB, Ala., Jun 1968), pp 33-34.

29. Lescher, "Forward Air Controller Selection Criteria and Vietnam Tour Length," p 35.

30. Thompson, Strike Control and Reconnaissance (SCAR) in SEA, p 18.

31. Quoted in hist (S), TAC, Jan-Dec 1965, I, 332.

32. Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 18-21.

33. Ibid.

34. Ltr (S), William G. Greene, Ops Analys, to Maj George Partridge, Air-Ground Control Br, Dir/Ops, subj: Comments on Working Copy of the Draft Report by the FAC and SCAR Working Group, 4 Aug 69; hist (S), TAC, Jan-Dec 1965, I, 332.

35. VR in SEA, 1 Jan 62-31 Mar 68, pp 76-77.

36. Hist (S), TAC, Jan-Dec 1965, I, 332-33; hist rpt (S), Dir/Pers Plans, PACAF, Mar 1966; hist (TS), PACAF, Jan-Dec 1966, pp 396-97.

UNCLASSIFIED

37. VR in SEA, 1 Jan 62-31 Mar 68, p 81; Effective SEAsia Tactics, p 3-2; msg (C), CINCSTRIKE to JCS, STRCC 2401, subj: Comparative Analysis of Air Force and Marine Corps Close Air Support Performance in South Vietnam, 29 Mar 66; Warren A. Trest, Control of Air Strikes in SEA, 1961-66 (TS) (HQ PACAF, Project CHECO, 1 Mar 67), pp 43-44.
38. Hist (S), TAC, Jan-Jun 1966, I, 457.
39. Thompson, Strike Control and Reconnaissance (SCAR) in SEA, p 75.
40. Ibid.
41. Effective SEAsia Tactics, p 3-13.
42. VR in SEA, 1 Jan 62-31 Mar 68, p 90.
43. Thompson, Strike Control and Reconnaissance (SCAR) in SEA, p 16; msg (U), 504th TASGp to 7th AF, 180541Z May 68, subj: FAC Manning; msg (U) TAC to CSAF, 032143Z Feb 69.
44. Msg (U), 7th TACC to 504th TASGp, 221105Z Jun 68, subj: The 504th and 7th AF Would Take All Necessary Actions to Insure That the U.S. Army and Free World Forces Are Manned with Fighter Qualified FAC's; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, p 16.
45. Intvw (U), author with Lt Col George L. Monahan, Dir/Ops, 8 Jan 71 [Monahan served as SCAR, 20th TASSq (Apr-Sep 1968) and 7th AF Dir/Combat Tactics (Oct 1968-Apr 1969)].
46. VR in SEA, 1 Jan 62-31 Mar 68, p 75; ltr (C), PACAF to CSAF, subj: Qualifications for Forward Air Controllers, 16 Nov 68.
47. Intvw (U), author with Maj Gary L. Boyer, Dir/Ops, 26 Jan 71 [Boyer was a FAC with 4th Inf Div (Jul-Dec 1966) and F-100 pilot, 35th TFWg (Dec 1966-Jul 1967)].
48. Hist (S), TAC, Jan-Jun 1966, I, 455-56; msg (S), CSAF to TAC, AFXOPF 76838, 16 Mar 66.
49. Hist (S), TAC, Jan-Jun 1966, I, 445, 455-56; msg (S), TAC to CSAF, C52735, 8 Apr 66.

UNCLASSIFIED

50. Hist (S), TAC, Jan-Jun 1966, I, 455-56; msg (S), CSAF to TAC, AFXDC 88743, 11 May 66.
51. Msg (S), TAC to PACAF, 200051Z Dec 67; msg (S), TAC to PACAF, 032045X Jan 68; Hist (S), TAC, Jul 1968-Jun 1969, I, 178-79.
52. Hist (S), TAC, Jul 1968-Jun 1969, I, 179-79.
53. Msg (S), AFPMC to CSAF, AFPMC 270115Z Aug 68; msg (S), AFPMC to CSAF, AFPMC 250131Z Aug 68; hist (S), TAC, Jul 1968-Jun 1969, I, 173-74.
54. Hist (S), TAC, Jul 1968-Jun 1969, I, 173-74.
55. Ibid., 179-182.
56. Msg (S), CSAF to PACAF, AFXOBF 80686, 8 Jul 66; hist (TS), PACAF, Jan-Dec 1966, pp 400-401.
57. Hist (TS), PACAF, Jan-Dec 1966, pp 400-401; Overton, FAC Operations in Close Air Support Role in SVN, p 5.
58. Hist (TS), PACAF, Jan-Dec 1966, p 400.
59. Ibid., pp 401-2; hist (S), 504th TASGp, Sep-Dec 1966, p 8; msg (C), 7th AF to PACAF, DPAO 54930, 10 Sep 66.
60. Hist (S), 504th TASGp, Jan-Mar 1967, pp 2-3; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 74-75.
61. Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 74-75; hist (S), 504th TASGp, Jul-Sep 1967, p 4; Monahan intvw (U), 8 Jan 71; ltr (U), CSAF to Dir/Ops, subj: FAC/ALO Training, 16 Dec 68.
62. Hist (S), USAFSAWC, Jul-Dec 1965, I, 33.
63. Hist (S), USAFSAWC, Jan-Jun 1966, I, 17.
64. Ibid.; hist (S), TAC, Jul-Dec 1963, I, 87; hist (S), USAFSAWC, Jul-Dec 1965, I, 76-77.

UNCLASSIFIED

65. Intvw (U), 1st Lt James M. McClaugherty, USAFSAWC Historian, with Lt Col Ernest R. McCready, 21 Apr 71 [McCready served as instructor at SAWC in early 1965 and at Bien Hoa, SVN (Mar 1965-Mar 1966)]; intrvw (U), author with Col Richard P. Schumann, JCS, 4 Mar 71 [Schumann was with SAWC FAC School (1965-1967), TIS Commander (Oct 1967-Feb 1968), and ALO/FAC, 504th TASGp (Oct 1967-Oct 1968)].
66. Schumann intvw (U), 4 Mar 71; TAC Syllabus (U), Course 141101, Pilot 0-1, Jun 1967, pp 1-2.
67. Ltr (U), TAC to CSAF, subj: Forward Air Controller Training, 12 Jan 66; hist (S), TAC, Jan-Dec 1965, I, 330; Schumann intvw (U), 4 Mar 71.
68. Hist (S), USAFSAWC, Jul-Dec 1965, I, 33.
69. Hist (U), AGOS, Jul-Dec 1965, p 31; AGOS Program of Instruction for Combat Operations Specialist Course (COSC) (U), 1 Aug 65, pp 1, 3.
70. Hist (S), USAFSAWC, Jan-Jun 1966, I, 18; hist (S), TAC, Jan-Jun 1966, I, 447.
71. Hist (S), USAFSAWC, Jul-Dec 1965, I, 37; Schumann intvw (U), 4 Mar 71.
72. Hist (S), TAC, Jan-Jun 1966, p 101; hist (S), USAFSAWC, Jul-Dec 1965, I, 38; msg (U), TAC to USAFSAWC, subj: Request for Use of Holley Field, 21 Apr 66.
73. Schumann intvw (U), 4 Mar 71.
74. Thompson, Strike Control and Reconnaissance (SCAR) in SEA, p 33; hist (S), USAFSAWC, Jan-Jun 1966, I, 18-19.
75. Overton, FAC Operations in Close Air Support Role in SVN, p 4; hist (S), USAFSAWC, Jan-Jun 1966, I, 18; hist (S), TAC, Jan-Jun 1966, I, 447-48.
76. Hist (S), USAFSAWC, Jan-Jun 1966, I, 18-19.
77. Msg (S), CINCPACAF to CSAF, 16 Feb 66; hist (S), TAC, Jan-Jun 1966, I, 447-48.

UNCLASSIFIED

78. Hist (S), USAFSAWC, Jan-Jun 1966, I, 19-20.
79. Ibid.; hist (S), TAC, Jan-Jun 1966, I, 448.
80. Msg (S), USAFSAWC to TAC, 15 Apr 66; hist (S), TAC, Jan-Jun 1966, I, 448.
81. See note 78; msg (U), USAFSAWC to TAC, DOTR 0301, Apr 1966.
82. Hist (S), TAC, Jan-Jun 1966, I, 448-49, 500.
83. Hist (S), TAC to USAFSAWC, DOTS-T 63247, 29 Apr 66; hist (S), USAFSAWC, Jan-Jun 1966, I, 22, Jul-Dec 1966, I, 24.
84. Hist (S), USAFSAWC, Jan-Jun 1966, I, 22.
85. McCready intvw (U), 21 Apr 71.
86. Ibid.
87. Ibid.; Schumann intvw (U), 4 Mar 71.
88. Hist (S), USAFSAWC, Jan-Jun 1968, I, 37; hist (S), 1st USAFSOF, Jul-Dec 1968, I, 42-44, Jan-Jun 1969, III, Doc 34; hist (S), 1st SOWg, Jul-Sep 1969, p 65, Oct-Dec 1969, pp 117, 120, Jan-Mar 1970, p 59, Apr-Jun 1970, p 64, Jul-Sep 1970, p 52.
89. Hist (S), TAC, Jan-Jun 1967, I, 536-37.
90. Ibid., 534-35; ltr (U), Lt Col James E. Rose to Maj Ralph A. Rowley, 10 Apr 71.
91. Hist (S), TAC, Jan-Jun 1967, I, 535-36; msg (S), CSAF to TAC, AFXOP 79979, 14 Oct 66; TAC Syllabus (S), O-2A Training, 15 Nov 66; msg (C), TAC to CSAF, 63587, 15 Nov 66; ltr (U), Rose to Rowley, 10 Apr 71.
92. See note 90.
93. Hist (S), TAC, Jan-Jun 1967, I, 534-35; msg (S), CSAF to TAC, AFXOPF 88483, 29 Nov 66; msg (S), 7th AF to PACAF, DOOP 09542, 17 Nov 66.
94. Hist (S), 504th TASGp, Apr-Jun 1967, I, 3; ltr (U), Rose to Rowley, 10 Apr 71.

UNCLASSIFIED

95. Hist (S), USAFSAWC, Jul-Dec 1967, I, 27; msg (S), TAC to CSAF, 092135Z Dec 68, subj: FAC and SCAR Training Aircraft.
96. Msg (S), DCS/Plans and Ops to CSAF, CINCPACAF, TAC, 161432Z Oct 67, subj: ALO/FAC Training; msg (S), CINCPAC to CSAF, DTG 40247, 2 Nov 67 [020247Z Nov 67].
97. Hist (S), USAFSAWC, Jan-Jun 1968, I, 38; intvw (U), author with Capt Walter L. Johnson, AFSC support pilot, 14 Jan 71 [Johnson was an 0-2A FAC with 2d ARVN Div, Quang Ngai, SVN (1 Jan-15 Dec 69)].
98. Johnson intvw (U), 14 Jan 71; 0-2A Phase Training Manual (U), 4410th CCT Wg, Mar 1968.
99. Ibid.
100. Hist (S), USAFSAWC, Jan-Jun 1968, I, 38; hist (S), 1st SOF Jul-Dec 1968, I, 40; msg (S), TAC to CSAF, 092135Z Dec 68; subj: FAC and SCAR Training Aircraft.
101. Hist (S), USAFSAWC, Jan-Jun 1968, I, 33.
102. Hist (S), 1st SOF, Jul-Dec 1968, I, 35-36; Johnson intvw (U), 14 Jan 71.
103. Hist (S), TAC, Jul-Dec 1966, I, 374-76, Jul-Dec 1967, I, 691.
104. Hist (S), TAC, Jan-Jun 1967, I, 18, Jul 1968-Jun 1969, I, 183; hist (U), 4410th CCT Sq, Jan-Jun 1967; ltr (C), TAC to PACAF, subj: OV-10 Training Syllabus, 13 Feb 67.
105. Ltr (C), TAC to USAFSAWC, subj: OV-10 Training Program, 27 Jun 67; hist (S), TAC, Jul 1968-Jun 1969, I, 184-85.
106. Hist (S), TAC, Jul 1968-Jun 1969, I, 185; msg (S), CSAF to TAC, 200001Z Mar 68; msg (C), CSAF to TAC, 112143Z Apr 68.
107. Hist (S), USAFSAWC, Jan-Jun 1968, I, 35.
108. Ibid.
109. Hist (S), TAC, Jul 1968-Jun 1969, I, 185; hist(S), 1st SOF, Jul-Dec 1968, p 44.

UNCLASSIFIED

110. Hist (S), 1st SOF, Jul-Dec 1968, p 44; hist (S), 4409th CCT Sq, Jul-Sep 1968.
111. Hist (S), USAFSAWC, Jul-Dec 1967, p 4, Jan-Jun 1968, p 36.
112. TAC Syllabus (U), Course 144103A, OV-10A Pilot, Sep 1969, pp 1-2, 15-20.
113. Hist (S), TAC, Jan-Jun 1966, L 459; rpt (S), PACAF ALO/FAC Training Conference, 3 Sep 68, atchs 3-4.
114. Capt Robert L. Vining, Air Operations in the Delta (S), (HQ PACAF, Project CHECO, 8 Dec 67), p 28; Effective SEAsia Tactics, pp 3-15, 3-16; intvw (U), author with Lt Col James L. Landers, Dir/Plans, 11 Feb 71 [Landers commanded the TIS (Sep 1967-Jan 1968)]; intvw (U), author with Lt Col James L. Gardner, Jr., DCS/Plans and Ops, 12 Feb 71 [Gardner was Flying Safety Officer, 504th TASGp (Oct 1966-Jul 1967)].
115. Vining, Air Operations in the Delta, pp 28-29; ltr (U), Rose to Rowley, 10 Apr 71.
116. Intvw (U), Proj CHECO stf with Maj James E. Rose, Jr., TIS Comdr, 8 Sep 67; Gardner intvw (U), 12 Feb 71; ltr (U), Rose to Rowley, 10 Apr 71; VR in SEA, 1 Jan 62-31 Mar 68, pp 83-86.
117. Rose intvw (U), 8 Sep 67; Vining, Air Operations in the Delta, pp 29-30; hist (S), 504th TASGp, Apr-Jun 1967, pp 3, 25; ltr (U), Maj Lee R. Goettsche to Maj Ralph A. Rowley, 1 Mar 71. [Goettsche was an instructor FAC at the TIS (Apr-Oct 1967)].
118. Rose intvw (U), 8 Sep 67; ltr (U), Rose to Rowley, 10 Apr 71; ltr (U), Goettsche to Rowley, 1 Mar 71; Vining, Air Operations in the Delta, pp 28-29.
119. Capt Joseph V. Potter, OV-10 Operations in SEAsia (S) (HQ PACAF, Project CHECO, 15 Sep 69), p 1; PAD 68-117 (S), 7th AF, FAC Alignment Program, 29 Apr 69.
120. Intvw (C), Maj James B. Overton, Proj CHECO historian, with Capt Robert G. Pearson, Secretary, TIS, 26 Nov 68; Potter, OV-10 Operations in SEAsia, pp 10-11.

UNCLASSIFIED

121. Syllabus (U), Det 1, 504th TASGp, Instruction for Theater Indoctrination Training (0-1/0-2/OV-10), Apr 1969; Potter, OV-10 Operations in SEAsia, p 11.
122. Pottter, OV-10 Operations in SEAsia, p 11; PAD 68-117 (S), 7th AF, 28 Apr 69.
123. EOT Rprt (S), Maj David J. Hahn, Out-Country FAC (14 Jul 66-1 May 67 [ca Jun 1967]; EOT Rprt (U), Maj Charles W. Rowan, ALO, 9th Inf Div (3 Dec 66-6 Feb 67), II FFV (6 Feb-1 Dec 67), 25 Nov 67; EOT Rprt (U), Maj Keete L. Hester, Ftr Ops Off, 1st Inf Div TACP (10 Feb 67-20 Jan 68) [ca Feb 1968].
124. EOT Rprt (S), Col Abner M. Aust, Jr., Comdr, 31st TFWg (3 May 68-8 Feb 69) [ca Mar 1969].
125. Johnson intvw (U), 14 Jan 71.
126. PACAF rprt (S), Task: Intelligence Collection, Sub-Task: Visual Reconnaissance in SEA, 1 April 1968-31 December 1969, 20 Nov 70, p 53 [hereinafter cited as VR in SEA, 1 Apr 68- 31 Dec 69].

Chapter III

1. VR in SEA, 1 Apr 68-31 Dec 69, p 63; JCS Pub 1 (S), Close Air Support (1965) [ca 1965], in Doc 23 to Trest, Control of Air Strikes in SEA, 1961-1966.
2. VR in SEA, 1 Jan 62-31 Mar 68, pp 107-110; Trest, Control of Air Strikes in SEA, 1961-1966, pp 49-50.
3. FAC Ops in SEA, 1 Jan 65-31 Mar 68, 43-44; intvw (U), author with Lt Col Frank M. Eichler, HQ USAF, 22 Jul 70 [Eichler
4. VR in SEA, 1 Jan 62-31 Mar 68, pp 109-110; FAC Ops in SEA, 1 Jan 65- 31 Mar 68, 43-44.
5. FAC Ops in SEA, 1 Jan 65-31 Mar 68, 44.
6. Ibid., 5b, 18-19, 21.

UNCLASSIFIED

7. PACAF rprt (S), In-Country and Out-Country Strike Operations in Southeast Asia, Vol IV, Support Communications (1 Jan 1965-31 March 1968), 3 Sep 70, 7 [hereinafter cited as Support Communications, 1 Jan 65-31 Mar 68].

8. Ibid., 2-4; rprt (S), In-Country and Out-Country Strike Operations in Southeast Asia, Vol IV, Support Communications (April 1968-December 1969), 23 Oct 70, 1-2 [hereinafter cited as Support Communications, Apr 1968-Dec 1969]; msg (S), COMUSMACV to CINCPAC, 040112Z Apr 66.

9. Support Communications, Apr 1968-Dec 1969, 1-4.

10. Support Communications, 1 Jan 65-31 Mar 68, 7-8; EOT rprt (S), Capt Frank N. Assoff, 602d Flt Sq, May 1966.

11. Support Communications, 1 Jan 65-31 Mar 68, 5-7; Support Communications, Apr 1968-Dec 1969, 4-5; hists (S), 504th TASGp, Jan-Mar 1969, I, 24, Apr-Jun 1969, I, 28; rprt (S), JCS Close Air Support Study Group, Comparative Analysis of Air Force and Marine Corps Close Air Support Performance in South Vietnam, 19 Feb 66, App D; Assoff EOT Rprt (S), May 1966.

12. See note above.

13. Effective SEAsia Tactics, p 2-21.

14. Overton, FAC Operations in Close Air Support Role in SVN, p 4.

15. Ibid.

16. Effective SEAsia Tactics, p 2-21.

17. VR in SEA, 1 Jan 62-31 Mar 68, pp 52-54; Trest, Control of Air Strikes in SEA, 1961-66, p 44.

18. Effective SEAsia Tactics, pp 2-21, 2-22; talking paper (S), Dep Dir/Strike Forces, Dir/Ops, subj: Tactical Air Control Parties and Airborne FAC, 28 Oct 66.

19. Effective SEAsia Tactics, pp 2-22 to 2-24.

UNCLASSIFIED

20. Ibid., p 2-22; ltr (C), Brig Gen Robert F. Worley, TAC, to HQ USAF (Dir/Ops), subj: Concept of Operations for Airborne Forward Air Controllers, 21 Jun 65.

21. Talking paper (S), Dir/Ops Rqmts and Dev Plans, subj: 0-2A, 26 Sep 66; Effective SEAsia Tactics, p 2-22; hist (S), TAC, Jul-Dec 1966, I, 379; "AF Test Completed on Prospective 0-1 Successor Planes," Aviation Daily, 26 Oct 66.

22. Effective SEAsia Tactics, p 2-22.

23. Ibid.

24. Ibid., p 2-24; USAF Management Summary for SEA (S) and PACAF Source Status of Forces Report (S), Apr 1965-Jul 1971.

25. Hist (S), TAC, Jul-Dec 1967, I, 693-95; intvw (U), author with Capt Walter L. Johnson, AFSC support pilot, 27 Dec 73.

26. TACLO Acty Rprt 17 (S), 7th AF to TAC et al, 1-15 Sep 68, 15 Sep 68, p 9.

27. Intvw (C), Maj James B. Overton, Proj CHECO historian, with Maj Royce U. Jorgenson, Wpns Force Planning Off [ca late 1968]; Overton, FAC Operations in Close Air Support Role in SVN, p 36; VR in SEA, 1 Jan 62-31 Mar 68, pp 49-52.

28. Lee Bonetti, et al, The War in Vietnam, July-December 1967 (S) (HQ PACAF, Project CHECO, 29 Nov 68), p 120.

29. Jorgenson intvw (C) [ca late 1968]; Johnson intvw (U), 14 Jan 71.

30. Hist (S), TAC, Jul-Dec 1967, I, 696; msg (C), CSAF to TAC, 131959Z Dec 67; msg (C), TAC to CSAF 131612Z Dec 67.

31. Capt Buddy L. Bowman, Night Avionics for 0-2A Aircraft (C) (APGC-TR-68-85, APGC, Eglin AFB, Fla., Jul 1968), Abstract.

32. Ibid., p 27; Johnson intvw (U), 14 Jan 71; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, p 83.

33. Hists (S), TAC, Jul-Dec 1966, I, 374-76, Jan-Dec 1965, I, 419-425; background paper (S), Dep Dir/Strike Forces, subj: OV-10, 8 Oct 69.

UNCLASSIFIED

34. Capt Joseph V. Potter, OV-10 Operations in SEAsia (S) (HQ PACAF, Project CHECO, 15 Sep 69), p 16; Working Paper 66/11 (S), Lloyd C. Alderman and Capt Robert W. Bublitz, 7th AF Dir/Ops Analys, subj: An Evaluation of the Visual Reconnaissance Program in South Vietnam, 20 Sep 66.
35. Hist (S), TAC, Jul-Dec 1967, I, 691-92.
36. TAC TR 67-274 (U), OV-10 Category III Test and Evaluation (SOC 1U-13, USAFSOC, Eglin AFB, Fla., Jul 1969).
37. 7th AF OpOrd 541-69 (S), Combat Bronco, Jul 1968; Potter, OV-10 Operations in SEAsia, p 1; Lt Col Stuart E. Kane, Jr., Final Report OV-10A Aircraft, Introduction, Evaluation, and Assistance Program in Southeast Asia (C) (HQ TAC, Nov 1968), p 1.
38. Potter, OV-10 Operations in SEAsia, pp 1-2; Kane, Final Report OV-10A Aircraft, Introduction, Evaluation, and Assistance Program in Southeast Asia, ppl-2; 7th AF OpOrd 541-69 (S), Jul 1968.
39. Unless otherwise cited, information for the Combat Bronco test in SEA was taken from Potter, OV-10 Operations in SEAsia, chap I.
40. Overton, FAC Operations in Close Air Support Role in SVN, p 37.
41. Kane, Final Report OV-10A Aircraft, Introduction, Evaluation, and Assistance Program in Southeast Asia, pp 16-7, A-85, A-86.
42. Ibid.
43. Ibid.; Overton, FAC Operations in Close Air Support Role in SVN, pp 38-39.
44. See note above; Potter, OV-10 Operations in SEAsia, pp 17-18; Effective SEAsia Tactics, p 2-37; intvw (U), author with Lt Col Jim Foltz, Dep Dir/Strike Forces, Dir/Ops, 11 Oct 73.
45. Potter, OV-10 Operations in SEAsia, pp 7-9.

UNCLASSIFIED

46. Bonetti, et al, The War in Vietnam, July-December 1967, pp 71-75; ltr (S), 7th AF TAC Wpns and Force Planning Br, to 7th AF Comdr, aubj: ALO/FAC/SCAR Operational Requirements and Manpower and Aircraft Required, 24 Feb 68; ltr (S), PACAF Survey Team to 7th AF, subj: Team Rprt of Requirements for ALO/FAC/SCAR/ Navigator and A/C in Support of 7AF, 2 Dec 68; PACAF rprt (TS), In-Country Strike Operations in Southeast Asia, 1 April 1968-31 December 1969, 23 Oct 70, I, Sub-Task 1e, 84-85 [hereinafter cited as In-Country Strike Ops, 1 Apr 68-31 Dec 69]; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 73-74; intvw (U), author with Col John R. Stoner, HQ TAC, 18 May 70, pp 4-5 [Stoner was an ALO with 1st Cav Div, An Khe, SVN (Jul 1965-Feb 1966)].

47. Lawrence J. Hickey, Night Close Air Support in RVN (1961-1966) (S) (HQ PACAF, Project CHECO, 15 Mar 67), p 6.

48. Capt Melvin F. Porter, Interdiction in SEA (1965-1966) (TS) (HQ PACAF, Project CHECO, 25 May 67), pp 57-58.

49. Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 36-37; C. William Thorndale, Interdiction in SEAsia, November 1966-October 1968 (S) (HQ PACAF, Project CHECO, 30 Jun 69), pp 73-74.

50. Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 36-37.

51. Ibid.; Maj Richard F. Kott, The Role of USAF Gunships in SEAsia (S) (HQ PACAF, Project CHECO, 30 Aug 69), p 23.

52. Kenneth Sams, et al, Air Support of Counterinsurgency in Laos, July 1968-November 1969 (S) (HQ PACAF, Project CHECO, 10 Nov 69), p 75; TACLO Acty Rprt 19 (S), 7th AF to TAC et al, 1-15 Oct 68, 15 Oct 68, p 14.

Chapter IV

1. Hist (S), 505 th TCGp, Jul-Dec 1965; msg (S), 2d Air Div to CINCPACAF and 13th AF, subj: 0-1F Bed Down, 4 Apr 65.

2. Hist (S), 505th TCGp, Jul-Dec 1965; hist (C), 504th TASGp, Oct-Dec 1966, I, 3.

3. Hist (S), 23d TASSq, Apr-Jun 1970; hist (C), 504th TASGp, Oct-Dec 1966, I, 3.

UNCLASSIFIED

4. See note above.
5. Intvw (U), author with Capt David L. Shields, F-100 pilot, Cannon AFB, N. Mex., 10 Jan 72 [Shields was a FAC with 5th SF Gp, Proj Delta (Sep 1967-May 1968)]; intrvw (S), author with Maj Allen R. Groth, F-100 pilot, Cannon AFB, N. Mex., 10 Jan 72 [Groth was a 5th SFGp FAC, Proj Delta (Dec 1966- Oct 1967)]; intvw (U), Maj Richard B. Clement and Mr Hugh N. Ahmann, Albert F. Simpson Hist Rsch Cen, with Col Andrew J. Chapman [unit unk], 20 Mar 72 [Chapman served as 504th TASGp Comdr (Apr 1970-Apr 1971)]; hist (C), 504th TASGp, Oct-Dec 1966; Overton, FAC Operations in Close Air Support Role in SVN, p 9.
6. Hist (C), 504th TASGp, Oct-Dec 1966, I, 2-4.
7. Overton, FAC Operations in Close Air Support Role in SVN, pp 9-10.
8. Ibid., pp 10-11; talking paper (S), Maj Ralph M. Jordan, Dir/ Ops, subj: FAC/SCAR Operations in SEAsia, 29 Jul 69; Air Force News Service Release 3-17-72-154, 17 Mar 72.
9. Lt Col Thomas D. Wade, Seventh Air Force Tactical Air Control Center Operations (S) (HQ PACAF, Project CHECO, 15 Oct 68), pp 22-23; 7th AF Reg 55-35 (U), Command, Control, and Support of Direct Air Support and AC and W Elements of the TACS, 28 May 67.
10. Wade, Seventh Air Force Tactical Air Control Center Operations, pp 19-21; Capt Russell W. Mank, TACC Fragging Procedures (S) (HQ PACAF, Project CHECO, 15 Aug 69), p 2; MACV Dir 95-11 (C), Aviation, Joint Air Ground Operations System (JAGOS), 21 Jun 66; hist data record (S), 7th AF TACC, Jan-Jun 1966; MACV Lessons Learned 77 (C), Fire Support Coordination in the Republic of Vietnam, 20 May 70, p C-3.
11. See note above.
12. Wade, Seventh Air Force Tactical Air Control Center Operations, pp 30-31; Capt Louis M. McDermott, III DASC Operation (S) (HQ PACAF, Project CHECO, 1 Aug 69), p 6; Lt Col Robert M. Burch, Command and Control, 1966-1968 (S) (HQ PACAF, Project CHECO, 1 Aug 69), p 18.
13. MACV Lessons Learned 77 (C), 20 May 70, p C-7.

UNCLASSIFIED

14. McDermott, III DASC Operations, pp 6-8; Wade, Seventh Air Force Tactical Air Control Center Operations, pp 20-22.

15. See note above.

16. Wade, Seventh Air Force Tactical Air Control Center Operations, pp 12-19.

17. Agreement, Concept for Improvement of Joint Air-Ground Coordination (S) (approved by CSAF, 19 Mar 65, and CSA, 28 Apr 65); intvw (S), author and Col Ray L. Bowers, Ofc/AF Hist, with Col Eugene P. Deatrick, JCS, and Col Eleazer Parmly, USA, Johns Hopkins University, 9 May 72 [Deatrick was 1st ACSq Comdr, Pleiku SVN (Feb 1966-Feb 1967), Parmly was SF Advisor to Laos (May 1960-May 1961) USSF Det Comdr, I and III Corps (Aug 1966-Jul 1967)]; Shields intvw (U), 10 Jan 72.

18. See note above.

19. See note 17.

20. Kenneth Sams, Operation Hawthorne (S) (HQ PACAF, Project CHECO, 8 Sep 66), pp 6-8, 18.

21. Ibid.

22. Ibid.

23. Warren A. Trest and Capt James B. Bruce, Jr., Operation El Paso (S) (HQ PACAF, Project CHECO, 30 Nov 66), pp 3-5; Capt Kenneth J. Alnwick, Direct Air Support in I Corps, July 1965-June 1969 (S) (HQ PACAF, Project CHECO, 31 Aug 69), p 69.

24. Kenneth Sams and Maj A. W. Thompson, Kham Duc (S), (HQ PACAF, Project CHECO, 8 Jul 68), pp 25-27.

25. After Action Report (C), Lt Col Charles E. Harrison, ALO 23d ARVN Inf Div, The Battle of Duc Lap, 23 August - 8 September 1968 [ca Sep 1968] pp 1-10.

26. Ibid.

27. Ibid.

UNCLASSIFIED

28. PACAF rpt (TS), In-Country Strike Operations in SEA, Vol V, Plans, Concepts, and Doctrine, Part II, 1 Jan 66-31 Mar 68, 30 Sep 70, 65, 67-68.
29. Maj David E. Folkman, Air Support in Quang Ngai Province (S) (HQ PACAF, Project CHECO, 25 Feb 70), p 21; Report of Evaluation, Single Management, 30 May-27 Jun 68 (S), MACV Eval Gp (COC), 4 Jul 68, p 1.
30. Alnwick, Direct Air Support in I Corps, July 1965-June 1969, pp 10-13; hist (S), 2d Air Div, Jul-Dec 1965, II, 49-50; intvw (U), Maj Samuel E. Riddlebarger, ASI, with Capt Tom C. Steiner, USA [unit unk], 21 Jan 69 [Steiner was an Army aviator in I Corps (6 Feb 67-5 Feb 68)].
31. Draft hist (S), HQ USMC, 30 Jun 70, part VII, pp 20-3, 20-4.
32. Alnwick, Direct Air Support in I Corps, July 1965-June 1969, pp 11-12, Doc 5.
33. Kenneth Sams, Operation Harvest Moon (S), (HQ PACAF, Project CHECO, 3 Mar 66).
34. Ibid.; Alnwick, Direct Air Support in I Corps, July 1965-June 1969, pp 11-12.
35. Lawrence J. Hickey, Warren A. Trest, and Maj Vallentino Castellina, Operation Hickory (TS) (HQ PACAF, Project CHECO, 24-27; intvw (S), CHECO stf with Maj William Newel, Ops Off, Tally Ho, 26 May 67).
36. See note above.
37. Warren A. Trest and Maj Valentino Castellina, Operation Neutralize (S) (HQ PACAF, Project CHECO, 5 Jan 68), pp 38-41 and Docs 15, 26; Warren A. Trest, Single Manager for Air in SVN (S) (HQ PACAF, Project CHECO, 1 Jul 68), p 10; draft hist (S), HQ USMC, 30 Jun 70, part VII, p 20-51.
38. See note above.

UNCLASSIFIED

39. Stmt (S), Chairman, JCS, subj: View of the Chairman, JCS, on Operational Control of III MAF Aviation Assets (General Wheeler), 10 Apr 68; Warren A. Trest, Khe Sanh (Operation Niagara), 22 Jan-31 Mar 68 (S) (HQ PACAF, Project CHECO, 13 Sep 68), pp 8-9, 18-21, 87-87, 90-98, Docs 1,3, 13-50; Mank, TACC Fragging Procedures, pp 4-5; Lt Col Robert M. Burch, Single Manager for Air in SVN (S) (HQ PACAF, Project CHECO, 18 Mar 69), pp 3-8.

40. See note above; Trest, Single Manager for Air in SVN, pp 2-6.

41. See note above.

42. Draft hist (S), HQ USMC, 30 Jun 70, part VII, pp 20:53; rpt (S), FMF, Pac, Extract from Official Historical Rprt on Operations of U.S. Marine Forces, Vietnam, Mar 1968, p 65; MR (S), 7th AF, subj: MACV First Review of Single Management of Air Resources, 20 May 68, p 3.

43. Trest Single Manager for Air in SVN, pp 19, 22; Lt Gen Keith B. McCutcheon, "Marine Aviation in Vietnam, 1962-1970," Naval Review, 1971, pp 134-35.

44. Draft hist (S), HQ USMC, 30 Jun 70, part VII, pp 20:53, 20:54; msg (S), JCS to CINCPAC, 202253Z May 68, subj: Single Management of Fighter/Bomber Reconnaissance Assets in SVN; MR (S), 7th AF, subj: Single Management of Air Assets, 19 May 68.

45. Draft hist (S), HQ USMC, 30 Jun 70, part VII, pp 20:56, 20:58; Trest, Single Manager for Air In SVN, p 49; McCutcheon, "Marine Aviation in Vietnam, 1962-1970," p 137.

46. Alnwick, Direct Air Support in I Corps, July 1965-June 1969, pp 22, 40; TAC/TAWC rpt (S), Tactical Air Control Systems in SEA, II, April 1968-December 1969, 1 Sep 70, 275, 326-28 [hereinafter cited as TACS, Apr 1968-Dec 1969]; Folkman, Air Support in Quang Ngai Province, p 21; EOT Rprt (C), Col Robert L. Jones, Horn DASC Comdr (Mar-Sep 1969) [ca Oct 1969], pp 2-3.

47. See note above; draft hist (S), HQ USMC, 30 Jun 70, pt VII, pp 20:58, 20:59.

48. McCutcheon, "Marine Aviation in Vietnam, 1962-1970," p 137.

49. Ibid.

UNCLASSIFIED

Chapter V

1. This entire section is based on Maj John Schlight, Rules of Engagement, 1 January 1966-1 November 1969 (TS) (HQ PACAF, Project CHECO, 31 Aug 69), pp 37-40; 7th AF Reg 55-49 (C), 14 Nov 68; MACV Directives 525-13, 12 Oct 68, 525-15, 27 Apr 69; intvw (U), Maj C. H. Gunderson, CHECO hist, with Capt Robert E. Kellock [unit unk], 28 Jul 69 [Kellock was a TDY C-130 ABCCC pilot (Dec 1964-Feb 1967) and 0-1/0-2A FAC (Apr 1967-Feb 1968)].
2. Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 60-62; FAC Ops in SEA, 1 Jan 65-31 Mar 68, 9.
3. Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 27-28; FAC Ops in SEA, 1 Jan 65-31 Mar 68, 5c-5e.
4. Working Paper 66/11 (C), 7th AF, An Evaluation of the Visual Reconnaissance Program in South Vietnam, 20 Sep 66, pp 5-12; J. I. Edelman, et al, Airborne Visual Reconnaissance in South Vietnam (C) (RM-5049-ARPA, The RAND Corp, Sep 1966), pp 2-4; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 65-66; intvw (U), Col Joe M. O'Grady, Proj CHECO, with Maj Lee Wise, USA [unit unk], [ca 1968] [Wise served as a SF adviser (1963-1964)].
5. See note above; FAC Ops in SEA, 1 Jan 65-31 Mar 68, 5c-5e; Team Report on Requirements for ALO/FAC/SCAR/Navigators and Aircraft in SEA (S), p 5.
6. FAC Ops in SEA, 1 Jan 65-31 Mar 68, 5c-5e; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 27-28.
7. Intvw (C), author with Maj Richard L.W. Henry, Dep Dir/Strike Support, 4-5 Jan 72 [Henry, 21st TASSq, was an ALO in Darloc and Binh Thuan Provinces, II Corps, SVN (6 Jan 68-12 Jan 69)]; intvw (U), author with Maj John F. Campbell, Dir/Ops, 4 Jan 72 [Campbell was a 22d TASSq ALO/FAC with ARVN in Kien Phong Province, IV Corps, SVN (31 Dec 68-19 Dec 69)]; Lt Edward P. Brynn, Reconnaissance in SEAsia, July 1966-June 1969 (S) (HQ PACAF, Project CHECO, 15 Jul 69), pp 27-28.
8. Maj Louis Seig, Impact of Geography on Air Operations in SEA (S) (HQ PACAF, Project CHECO, 11 Jun 70), pp xi, 11-14, 29-30; Henry intvw (C), 4-5 Jan 72.

UNCLASSIFIED

31. The paragraphs on 0-2A marking techniques are based on 504th TASGp Manual 55-3 (U), 1 Mar 70, pp 5-11 to 5-15; tng manual (U), 4410th CCT Sq, The Airborne Forward Air Controller, 8 Feb 67, pp 8-10; tng manual (U), 4410th CCT Wg, 0-2A Phase Training Manual, Mar 1968, pp 21-23.
32. 504th TASGp Manual 55-3 (U), 1 Mar 70, pp 5-15 to 5-17; Boyer intvw (U), 26 Jan 71.
33. See note above.
34. 504th TASGp Manual 55-3 (U), 1 Mar 70, pp 5-18 to 5-21; tng manual (U) 4410th CCT Sq, 8 Feb 67, pp 10-14; Henry intvw (C), 4-5 Jan 72; Campbell intvw (U), 4 Jan 72; Bode intvw (C), 4, 19 Jan 72.
35. See note above
36. See note 34.
37. 504th TASGp Manual 55-3 (U), 1 Mar 70, pp 5-20, 5-21; Overton, FAC Operations in Close Air Support Role in SVN, pp 19-20; Campbell intvw (U), 4 Jan 72; PACAF Tactics and Techniques Bul 47 (U), 29 Aug 66, TACLO Acty Rprt (S), 15 Oct 68, p 3.
38. Tng manual (U), 4410th CCT Sq, 8 Feb 67, p 23; 504th TASGp Manual 55-3 (U), 1 Mar 70, p 4-3; MACV Lessons Learned 77 (C), 20 May 70, p C-30.
39. EOT Rprt (S), Lt Col Norman G. Smith, F-100 pilot in SVN and out-country (Nov 1967-June 1969), Sep 1969, p 22; MACV Lessons Learned 77 (C), 20 May 70, p C-30.
40. Overton, FAC Operations in Close Air Support Role in SVN pp 22-23; 504th TASGp Manual 55-3 (U), 1 Mar 70, pp 5-23 to 5-25; PACAF Tactics and Techniques Buls (U), 47, 29 Aug 66, 59, 24 Mar 67; Henry intvw (C), 4, 5 Jan 72.
41. Overton, FAC Operations in Close Air Support Role in SVN, p 25; Henry intvw (C), 4, 5 Jan 72; Team Report on Requirements for ALO/FAC/SCAR/Navigators and Aircraft in SEA (S), p 6.
42. See note above.

UNCLASSIFIED

43. Maj A. W. Thompson and C. William Thorndale, Air Response to the Tet Offensive, 30 Jan-29 Feb 1968 (S) (HQ PACAF, Project CHECO, 12 Aug 68), p 15; Kenneth Sams and Lt Col Bert B. Aton, USAF Support of Special Forces in SEA (S) (HQ PACAF, Project CHECO, 10 Mar 69), pp 29-30; After Action Report (C), The Battle of Duc Lap, 23 August-8 September 1968, p 5.

44. Tng manual (U), 4410th CCT Sq, Mar 1968, pp 14-15.

Chapter VI

1. Lt Col Philip R. Harrison, Impact of Darkness and Weather on Air Operations in SEA (S) (HQ PACAF, Project CHECO, 10 Mar 69), p 37; TACS, Apr 68-Dec 1969, 348; Kane and Sheets intvw (S), 17 May 70, p 12; Stoner intvw (U), 18 May 70, pp 9-10.

2. Stoner intvw (U), 18 May 70, pp 9-10.

3. Kane and Sheets intvw (S), 17 May 70, pp 11-12; Harrison, Impact of Darkness and Weather on Air Operations in SEA, p 42; Groth intvw (S), 10 Jan 72.

4. Hickey, Night Close Air Support in RVN (1965-1966), p 32.

5. See note 2.

6. Harrison, Impact of Darkness and Weather on Air Operations in SEA, pp 39-41, 62; Maj Victor B. Anthony, The Air Force in Southeast Asia: Tactics and Techniques of Night Operations, 1961-1970 (S) (Ofc/AF Hist, Mar 1973), pp 46-47.

7. SEAOR 136 (S), 7th AF, subj: Forward Firing Target Marking Device [ca Jun 1967]; Harrison, Impact of Darkness and Weather on Air Operations in SEA, p 40.

8. Hist (S), 7th AF, Jan-Jun 1968, I, pt 2, 339; Harrison, Impact of Darkness and Weather on Air Operations in SEA, pp 41-42, 45, 47.

9. 504th TASSg Manual 55-3 (U), 1 Mar 70, pp 14-2, 14-3; 23d TASSq Tng Manual 1 (U), FAC Night Operations, 1 Sep 68, pp 34-36.

10. See note above; hist (S), TAC, Jan-Jun 1966, I, 276.

UNCLASSIFIED

11. See note 9.
12. See note 9.
13. Hist (S), 504th TASGp, Jul-Sep 1970, I, 29; 504th TASGp Manual 55-3 (U), 1 Mar 70, p 14-4; Eichler intvw (U), 22 Jul 70.
14. See note above; Capt Melvin F. Porter, The Defense of Attoupeu (S) (HQ PACAF, Project CHECO, 16 May 66), p 4.
15. Eichler intvw (U), 22 Jul 70; Capt Dorrell T. Hanks, Jr., Riverine Operations in the Delta, May 1968-June 1969 (S) (HQ PACAF, Project CHECO, 31 Aug 69), p 38; MACV Counterinsurgency Lessons Learned 59 (C), Image Intensification Devices, 13 Jul 66, p 9.
16. Porter, The Defense of Attoupeu, pp 1-7, 12; Capt Melvin F. Porter, Control of Airstrikes, January 1967-December 1968 (S) (HQ PACAF, Project CHECO, 30 Jun 69), pp 32-33.
17. See note above.
18. See note 16.
19. MR (U), Col Donald C. Shultis, Dir/Security and Law Enforcement [no subj and unsigned], 29 Jul 66.
20. Porter, Control of Airstrikes, January 1967-December 1968, pp 33-34.
21. Operational Test and Evaluation Stabilized Night Observation Device (Eye Glass) (C) (TAC-TR-67-109, TAC/SAWC, Eglin AFB, Fla., undated); Bowman, Night Avionics for O-2A Aircraft; hist (S), TAC, Jul-Dec 1967, I, 285-86.
22. See note above.
23. Anthony, Tactics and Techniques of Night Operations, 1961-1970, pp 94-96; Potter, OV-10 Operations in SEAsia p 17; TAC TR 67-274 (U), OV-10 Category III Test and Evaluation, pp L-1, L-2; Kane, Final Report OV-10A Aircraft, Introduction, Evaluation, and Assistance Program in Southeast Asia, pp A-85, A-86.
24. 23d TASSq Tng Manual 1 (U), 1 Sep 68, pp 14-15.
25. Ibid.

UNCLASSIFIED

26. Ibid.; Johnson intvw (U), 1 Sep 68, pp 14-15.
27. MACV Counterinsurgency Lessons Learned 59 (C), 13 Jul 66, pp 4, 9; PACAF Tactics and Techniques Bul 65 (S), 0-1 Night Operations, 30 June 67; 504th TASGp Manual 55-3 (U), 1 Mar 70, pp 14-3 to 14-5; 23d TASSq Tng Manual 1 (U), 1 Sep 68, pp 14-17.
28. See note above.
29. See note 27.
30. PACAF Tactics and Techniques Bul 65 (S), 30 Jun 67; 23d TASSq Tng Manual 1 (U), 1 Sep 68, p 18.
31. Intvw (S), author with Col Marvin C. Patton, Dir/Budget, 4, 15 Feb 72, p 7 [Patton was ALO, 5th SF Gp (May 1967-May 1968)]; PACAF Tactics and Techniques Bul 65 (S), 30 Jun 67; tng manual (U), 4410th CCT Sq, 8 Feb 67, pp 6-7; 23d TASSq Tng Manual 1 (U), 1 Sep 68, p 21.
32. 23d TASSq Tng Manual 1 (U), 1 Sep 68, pp 24-27; PACAF Tactics and Techniques Bul 65 (S), 30 Jun 67; 504th TASGp Manual 55-3 (U), 1 Mar 70, p 14-9; Anthony, Tactics and Techniques of Night Operations, 1961-1970, pp 67-70.
33. Tng manual (U), 4410th CCT Sq, 8 Feb 67, pp 9-13; Anthony, Tactics and Techniques of Night Operations, 1961-1970, pp 67-70.
34. 504th TASGp Manual 55-3 (U), 1 Mar 70, pp 14-9 to 14-10; 23d TASSq Tng Manual 1 (U), 1 Sep 68, pp 30-32.
35. 504th TASGp Manual 55-3 (U), 1 Mar 70, pp 14-10 to 14-13; 23d TASSq Tng Manual 1 (U), 1 Sep 68, pp 29-33.
36. Thorndale, Interdiction in SEAsia, November 1966-October 1968, pp 17-18.
37. Ibid., pp 18-19, 90-91.
38. Ibid., pp 91-92.
39. Shields intvw (U), 10 Jan 72, pp 13-14; Thorndale, Interdiction in SEAsia, November 1966- October 1968, p 95.

UNCLASSIFIED

40. Shields intvw (U), 10 Jan 72, pp 14-15; Thorndale, Interdiction in SEAsia, November 1966-October 1968, pp 107-110.
41. See note above.
42. Thorndale, Interdiction in SEAsia, November 1966-October 1968, pp 95-102; Kenneth Sams, et al, The Air War in Vietnam, 1968-1969 (S) (HQ PACAF, Project CHECO, 1 Apr 70), pp 33,35.
43. Thorndale, Interdiction in SEAsia, November 1966- October 1968, pp 103-6; Shields intvw (U), 10 Jan 72, pp 13-15.
44. Weekly Air Intelligence Summary (S), 7th AF, 4 May 68, pp 11-13.
45. Thorndale, Interdiction in SEAsia, November 1966-October 1968, p 112; Sams, et al, The Air War in Vietnam, 1968-1969, p 35.
46. Sams, et al, The Air War in Vietnam, 1968-1969, p 35.
47. Hist (S), 22d TASSq, Apr-Jun 1969, p 9; Tactical Air Control System in SEA, II, April 1968-December 1969, 349.
48. Sams, et al, The Air War in Vietnam, 1968-1969, pp 35-36; Thorndale, Interdiction in SEAsia, November 1966-October 1968, pp 117-19.
49. John F. Kennedy Center for Special Warfare, The Viet Cong (S), (Ofc of ACS/G-2, USA, 2d revision, Nov 1965), chap IV; PACOM Weekly Intelligence Digest 25-67 (S), A Typical Viet Cong Pre-Attack Evaluation, 23 Jul 67.
50. Hist (S), 504th TASGp, Jul-Sep 1968, I, Doc 6; C. William Thorndale, Defense of Da Nang (S), (HQ PACAF, Project CHECO, 31 Aug 69), pp 13.14.
51. Thorndale, Defense of Da Nang, p 14; EOT Rprt (S), Col Paul C. Watson, 366th TFWg Comdr (Jan 1968-Jan 1969) [ca Feb 1969], pp 41-42.
52. Thompson and Thorndale, Air Response to the Tet Offensive, 30 Jan-29 Feb 1968, p 6; hist (S), 504th TASGp, Jul-Sep 1968, I, Doc 6; Maj A. W. Thompson, The Defense of Saigon (S) (HQ PACAF, Project CHECO, 14 Dec 68), pp 45-49.
53. See note above.

UNCLASSIFIED

54. See note 52; Thompson, The Defense of Saigon, Docs 13-14.
55. Thompson, The Defense of Saigon, pp 49, 52-53; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, p 56.
56. Thompson, The Defense of Saigon, pp 52-53, Docs 8 and 11.
57. Thorndale, Defense of Da Nang, p 20; Thompson and Thorndale, Air Response to the Tet Offensive, 30 Jan-29 Feb 1968, pp 23-25.
58. Thompson, The Defense of Saigon, pp 51-53.
59. Ibid., pp 50-52.
60. Ibid., p 52; Sams, et al, The Air War in Vietnam, 1968-1969, p 73.
61. Thompson, Strike Control and Reconnaissance (SCAR) in SEA, p 63; Lt Col Stuart E. Kane, Jr., The Armed FAC Controversy (U) (AWC, Maxwell AFB, Ala., Apr 1971), pp 4-5.
62. Ed Blair, "Saga of a Fighting FAC," Airman, XIII (May 1969), 60-64; Medal of Honor Citation (U), Capt Hilliard A. Wilbanks, 24 Jan 68.
63. See note above.
64. Kane, The Armed FAC Controversy, pp 5-6; George L. Weiss, "The Fabulous FAC's of Vietnam," Air Trails--Military Aircraft, 1970, pp 35-36.
65. Shields intvw (U), 10 Jan 72; Groth intvw (S), 10 Jan 72; EOT Rprt (U), Lt Col Thomas P. Garvin, ALO, 25th Inf Div (23 Dec 67-14 Dec 68), 14 Dec 68; FAC Ops in SEA, 1 Jan 65-31 Mar 68, 12-13; In-Country Strike Ops, 1 Apr 68-31 Dec 69, 41-42; hist (S), TAC, Jul 1968-Jun 1969, I, 186 (footnote).
66. See note above; Michael H. Jones, Survey of Air Force Responsiveness to Immediate ASAP Requests for Air Support (C) (7th AF, Dec 1969), p 3; hist (S), TAC, Jan-Jun 1969, I, pt 2, 335; Richard T. Sandborn, Lee E. Dolan, Jr., and Michael H. Jones, Armed FAC (OV-10A) Evaluation, RVN, Jun-Sep 1969 (C) (ACS/Studies and Analys, Jul 1970), p 5; Maj Maxwell R. Sidner, Misty Bronco, Final Report (C) (Exercise Dir 1, 7th AF, Jul 1969), pp ii, 1; background paper (S), subj: Armed OV-10's [ca Aug 1970].

UNCLASSIFIED

67. Kane, The Armed FAC Controversy, pp 10-12, 14; Potter, OV-10 Operations in SEAsia, p 12.

68. Hist (S), TAC, Jul 1968--Jun 1969, I, 186-87; Final Report, Combat Cover (Phase III) (S) (AFOTE/TAC Test 68-6, TAC, Sep 1968), pp ii, 6-8; Sandborn, Dolan, and Jones, Armed FAC (OV-10A) Evaluation RVN, Jun-Sep 1969, pp 5-7; Sidner, Misty Bronco, Final Report, p 1.

69. See note above; hist (S), TAC, Jul 1968-Jun 1969, I, 187-88; In-Country Strike Ops, 1 Apr 68-31 Dec 69, 41-42.

70. Sidner, Misty Bronco, Final Report, pp 3-5, 7-9; Potter, OV-10 Operations in SEAsia, pp 12-14; TIA (S), Dir/Ops, Aug 1969, p 1-16; hist (TS), MACV, 1969, I, V-199, V-200.

71. Sidner, Misty Bronco, Final Report, p 8; TIA (S), Dir/Ops, Aug 1969, pp 1-16, 1-17; Potter, OV-10 Operations in SEAsia, p 13; Study (C), Evaluation of the Adequacy and Timeliness of Immediate Close Air Support (7th AF, Jun 1969), pp 3-4; hist (TS), MACV, 1969, pp V-199, V-200; Bode intvw (C), 4, 19 Jan 72; Jones, Survey of Air Force Responsiveness to Immediate ASAP Requests for Air Support, pp 1-2, 5-7.

72. Evaluation of the Adequacy and Timeliness of Immediate Close Air Support, pp 3-4; McDermott, III DASC Operations, pp 30-31; hist (TS), MACV, 1969, I, V-199, V-200; Potter, OV-10 Operations in SEAsia, pp 13-15; hist (S), 7th AF, Jan-Jun 1969, I, pt 2, 356; background paper (S), subj: Armed OV-10's, pp 1-2.

73. Msg (C), 7th AF to 504th TASGp, 040110Z Jun 69, subj: Arming OV-10A FAC Aircraft; background paper (S), subj: Armed OV-10's.

74. Background paper (S), subj: Armed OV-10's; Staff Summary Sheet (S), Col Henry W. Brown, Dep Dir/TACC, 7th AF, Armed OV-10's, 3 Aug 70.

75. Background paper (S), subj: Armed OV-10's; Brown Staff Summary Sheet (S), 3 Aug 70; msg (S), 7th AF (Gen Clay) to CSAF (Gen Ryan), PACAF (Gen Nazzaro), 241110Z Sep 70, subj: Armed OV-10's; Staff Summary Sheet (S), Brig Gen Walter T. Galligan, Dir/TACC, 7th AF, Arming OV-10 Aircraft, 9 Oct 70; msg (S), 7th AF to 504th TASGp, 120645Z Oct 70, subj: Arming OV-10 FAC Aircraft; msg (S), CINCPACAF to CSAF, 272342Z Oct 70, subj: OV-10 Armament;

UNCLASSIFIED

Summary Sheet (S), Brig Gen Walter T. Galligan, Dir/TACC, 7th AF, OV-10 Armament, 27 Nov 70; msg (S), 7th AF to 504th TASGp, 140305Z Dec 70, subj: Arming OV-10 Aircraft; PACAF Manual 55-110 (S), 17 Nov 70, II, chap 9, and 504th TASGp Sup 1 [ca Nov 1970]; msg (S); 7th AF to COMUSMACV, subj: Request for Additional Authority, 2 Dec 70; msg (S), 7th AF to 504th TASGp, 140305Z Dec 70, subj: Arming OV-10 Aircraft.

76. FAC Ops in SEA, 1 Jan 65-31 Mar 68, 5e.

77. Overton, FAC Operations in Close Air Support Role in SVN, p 28.

78. Sams and Thompson, Kham Duc, pp 1, 5-6, 14-17; Overton FAC Operations in Close Air Support Role in SVN, pp 28-31.

Chapter VII

1. Paul S. Ello, et al, US Army Special Forces and Similar Internal Defense Advisory Operations in Mainland Southeast Asia, 1962-1967 (S) (Tech Paper RAC-TP-354, Rsch Analys Corp, McClean, Va., Jun 1969), pp 1-2 [hereinafter cited as USA SF in SEA, 1962-1967].

2. Sams and Aton, USAF Support of Special Forces in SEA, p 2; USA SF in SEA, 1962-1967, p 31; Patton intvw (S), 4, 15 Feb 72; hist (TS), MACV, 1965, pp 78-79; ltr (S), Capt B. L. Jervel, Adj, 5th SFGA, to MACV J-3, subj: Employment of CIDG, Mike Forces, Mobile Guerrilla Force, and LRRP Projects, 19 Apr 67; Data Folder (C), Brig Gen H.C. Pattison, Field Visit to Hq 5th SFGA, 23 Feb 67.

3. USA SF in SEA, 1962-1967, pp 23-24; MR (TS), CINCPAC, subj: Prairie Fire, Jul 1967; hists (TS), Dir/Plans, Jan-Dec 1966, pp 170-76, Jan-Jun 1967, pp 382-385, Jan-Jun 1968, pp 1963-65.

4. USA SF in SEA, 1962-1967, p 5; Sams and Aton, USAF Support of Special Forces in SEA, p 2.

5. Pattison Data Folder (C), 23 Feb 67; ltr (S), Jervel to MACV J-3, 10 Apr 67; MR (TS), CINCPAC, Jul 1967; hists (TS), Dir/Plans, Jan-Dec 1966, pp 170-76, Jan-Jun 1967, pp 382-85, Jan-Jun 1968, pp 163-65.

UNCLASSIFIED

6. Deatruck and Parmly intvw (S), 9 May 72; intvw (S), author with Col Eugene P. Deatruck, JCS, 3 Feb 72; Sams and Aton, USAF Support of Special Forces in SEA, pp 13-15.
7. Patton intvw (S), 4, 15 Feb 72; Sams and Aton, USAF Support of Special Forces in SEA, pp 13-16, 66; intvw (U), Lt Col Vaughn Gallacher and Mr. Hugh N. Ahmann, Albert F. Simpson Hist Rsch Cen, with Maj Richard L. Griffin [unit unk], 24 Mar 72 [Griffin was a Sector FAC, ARVN 24th Spec Zone (Pleiku and Kontum) Sep 1966 -Sep 1967)]; Col Robert M. Lowry, Study of ALO/FAC Support of Special Forces (S) (HQ DASC Alpha, Aug 1968); intvw (U), author with Lt Col Kenneth L. Kerr, HQ USAF, 31 Mar 72 [Kerr was a Proj Delta FAC during 1966].
8. Kerr intvw (U), 31 Mar 72; Sams and Aton, USAF Support of Special Forces in SEA, pp 38-39; working copy, 5th SFGp study (C), Project Delta, Jul 1966, pp 1-2.
9. See note above.
10. See note 8; Working Paper (U), 1st Lt Roger P. Mackin, Intel Off with Project Delta in Operation Mallet [ca Feb 1966].
11. 5th SFGp study (C), Jul 1966, pp 2-4; Sams and Aton, USAF Support of Special Forces in SEA, pp 39-41; ltr (U), Capt Kenneth L. Kerr, Proj Delta FAC, to 5th SPFA (Col Simpson), subj: After Action Report for An Loa Valley Operation, 7 Feb 66.
12. Shields intvw (U), 10 Jan 72; ltr (U), Kerr to 5th SPFA (Col Simpson), 7 Feb 66; 5th SFGp study (C), Jul 1966, pp 2-4.
13. 5th SFGp study (C), Jul 1966, pp 4-7; Sams and Aton, USAF Support of Special Forces in SEA, pp 39-43.
14. See note above.
15. Sams and Aton, USAF Support of Special Forces in SEA, pp 43-44; 5th SFGp study (C), Jul 1966, p 7.
16. Ltr (C), 7th AF Ln Ofc/TACP, I FFV, to DASC Alpha, subj: After Action Report, Special Relief and Rescue Mission, 9-14 Jan 67, 6 Mar 67; Sams and Aton, USAF Support of Special Forces in SEA, pp 45-46.

UNCLASSIFIED

17. Patton intvw (S), 4 15 Feb 72; Groth intvw (S), 10 Jan 72; intvw (U), author with Col James R. Lindsay, WPAFB, 10 Apr 72 [Lindsay was the first ALO with 5th SFGA (Oct 1966-Jul 1967)].
18. Patton intvw (S), 4, 15 Feb 72; Groth intvw (S), 10 Jan 72.
19. See note above; Shields intvw (U), 10 Jan 72; Griffin intvw (U), 24 Mar 72.
20. See note 18; Lindsay intvw (U), 10 Apr 72; Shields intvw (U), 10 Jan 72.
21. See note 18; Shields intvw (U), 10 Jan 72.
22. See note 2.
23. Groth intvw (S), 10 Jan 72.
24. See note 18; Shields intvw (U), 10 Jan 72.
25. See note 18; Shields intvw (U), 10 Jan 72.
26. See note 23.
27. Patton intvw (S), 4, 15 Feb 72; Shields intvw (U), 10 Jan 72.
28. See note above.
29. See note 18; Shields intvw (U), 10 Jan 72.
30. See note 17; Deatrick and Parmly intvw (S), 9 May 72; intvw (U), Dr James C. Hasdorff and Maj Richard B. Clement, Albert F. Simpson Hist Rsch Cen, with Maj Thomas W. Scott [unit unk], 7 Apr 72 [Scott was an ALO/FAC, 3d Mobile Strike Force, 5th SFGA (Feb-Jul 1969)].
31. See note above.
32. Groth intvw (S), 10 Jan 72; Shields intvw (U), 10 Jan 72.
33. See note 17; Shields intvw (U), 10 Jan 72.
34. Patton intvw (S), 4, 15 Feb 72.
35. Ibid.

UNCLASSIFIED

36. See note 34; Griffin intvw (U), 24 Mar 72.
37. Deatrick and Parmly intvw (S), 9 May 72; Lowry, Study of ALO/FAC Support of Special Forces; USA SF in SEA, 1962-1967, pp 30-31, 105; rprt (S), 5th SFGA, Lessons Learned for Quarterly Period Ending 31 Jul 68 [ca Aug 1968].
38. See note 6.
39. Sams and Aton, USAF Support of Special Forces in SEA, pp 15-16; Griffin intvw (U), 24 Mar 72; Lowry, Study of ALO/FAC Support of Special Forces.
40. Sams and Aton, USAF Support of Special Forces in SEA, pp 66-69; Lowry, Study of ALO/FAC Support of Special Forces.
41. Hist (TS), MACV, 1970, II, chap VII, 116; Scott intvw (U), 7 Apr 72.
42. Sams and Aton, USAF Support of Special Forces in SEA, p 52.

Chapter VIII

1. Testimony of Ambassador William H. Sullivan, 28 Oct 69, in Hearings before the Senate Subcommittee on United States Security Agreements and Commitments Abroad, 91st Cong, 1st sess, Kingdom of Laos, pt 2, pp 20-22, 367-371, 376-77, 398, 476 [hereinafter cited as Sullivan Testimony].
2. Ibid.
3. Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 27-29, 32-35, fig 1; Thorndale, Interdiction in SEAsia, November 1966-October 1968, pp 19, 20-25; C. William Thorndale, Air War in the DMZ, September 1967-June 1969 (S) (HQ PACAF, Project CHECO, 1 Aug 69), pp 5-6.
4. Dr Robert F. Futrell, The United States Air Force in Southeast Asia, The Advisory Years 1950-1965 (S), comment ed (Ofc/AF Hist, 1971), pp 439-445; Sullivan Testimony, pp 456-57; intvw (S), Maj Samuel E. Riddlebarger, ASI, with Col Harry Aderholt [unit unk], 5 Mar 70 [Aderholt commanded the 606th ACSq and 56 SOWg (Dec 1966-Dec 1967)].

UNCLASSIFIED

5. Sullivan Testimony, pp 457-58; Sams, et al, Air Support of Counterinsurgency in Laos, July 1968-November 1969, pp 44-45.

6. Capt Henry S. Shields, USAF Control of Airstrikes in Support of Indigenous Lao Ground Forces (TS) (HQ PACAF, Project CHECO, 19 Jul 72), pp 15-25.

7. Ibid.

8. Hist (S), TAC, Jul-Dec 1966, I, 721-23; Porter, Control of Airstrikes, January 1967-December 1968, pp 1-2; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 27-28; Maj Robert M. Burch, The ABCCC in SEA (S) (HQ PACAF, Project CHECO, 15 Jan 69), pp 6-7,10.

9. See note above.

10. See note 8.

11. See note 3.

12. Intvw (S), Capt Melvin F. Porter, Proj CHECO historian, with Col John F. Groom, Tiger Hound Task Force Comdr, Tan Son Nhut AB, RVN, 28 May 66; Capt Melvin F. Porter, Tiger Hound (TS) (HQ PACAF, Project CHECO, 6 Sep 66), pp 9, 10, 11-17; PACAF rppt (TS), Out-Country Strike Operations in Southeast Asia, 1 January 1965-31 March 1968, I, Sub Task IIC, Strike Operations in Laos, 5 December 1965-21 October 1967, 30 Sep 70, pp 40-41 [hereinafter cited as Strike Ops in Laos, 5 Dec 65-21 Oct 67].

13. See note above.

14. Groom intvw (S), 28 May 66; Porter, Tiger Hound, pp 17-20; Strike Ops in Laos, 5 Dec 65-21 Oct 67, pp 41-42.

15. See note above.

16. Groom intvw (S), 28 May 66.

17. Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 27-29, 32-35; Warren A. Trest and SSgt Dale E. Hammons, Air Operations, Thailand, 1966 (TS) (HQ PACAF, Project CHECO, 31 Oct 67), pp 10, 17-18, 99-101; Strike Ops in Laos, 5 Dec 65-21 Oct 67, pp 43-45; Porter, Interdiction in SEA (1965-1966), pp 54-56; Trest, Control of Air Strikes in SEA, 1961-66, pp 64-66.

UNCLASSIFIED

18. See note above.
19. Trest and Hammons, Air Operations, Thailand, 1966, pp 98-100.
20. Sullivan Testimony, pp 367-371, 376-77, 398, 476.
21. Porter, Control of Airstrikes, January 1967-December 1968, p 39; Lt Col John Schlight, Jet Forward Air Controllers in SEAsia (S) (HQ PACAF Project CHECO, 15 Oct 69), p 2; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 39-41; Warren A. Trest, Operation Tally Ho (TS) (HQ PACAF, Project CHECO, 21 Nov 66), pp 21-24; Wesley R. C. Melyan and Lee Bonetti, The War in Vietnam, 1966 (TS) (HQ PACAF, Project CHECO, 23 Oct 67), pp 95-96.
22. Kenneth Sams, Lt Col John Schlight, and Maj John C. Pratt, Air Operations in Northern Laos, 1 November 1969-1 April 1970 (S) (HQ PACAF, Project CHECO, 5 May 70), p 20.
23. L. E. Paterson, Evolution of the Rules of Engagement for Southeast Asia, 1960-1965 (TS) (HQ PACAF, Project CHECO, 30 Sep 66), p 56.
24. Sullivan Testimony, pp 455-56; Trest and Hammons, Air Operations, Thailand, 1966, pp 12-13.
25. Msg (TS), COMUSMACV to 2d Air Div, COMSEVENTHFLT, JCS, CINCPACAF, 171632Z Oct 65, subj: Barrel Roll/Steel Tiger Operating Rules; Porter, Interdiction in SEA (1965-1966), p 45; Porter, Tiger Hound, p 5; Thorndale, Interdiction in SEAsia, November 1966-October 1968, pp 56-58; Melyan and Bonetti, The War in Vietnam, 1966, pp 17-20; Trest and Hammons, Air Operations, Thailand, 1966, p 16; Schlight, Rules of Engagement 1 January 1966- 1 November 1969, pp 18-19.
26. See note above.
27. See note 25.
28. Porter, Control of Airstrikes, January 1967-December 1968, pp 23-24; Capt Edward Vallenty, USAF Posture in Thailand, January-December 1967 (S) (HQ PACAF, Project CHECO, 25 Mar 69), pp 25-26; Thorndale, Interdiction in SEAsia, November 1966-October 1968, p 82.

UNCLASSIFIED

29. Msg (S), 7th AF to CHJUSMAGTHAI, USAF Comd Post, 100840Z Mar 67, subj: FAC Aircraft and Crew Requirements.
30. Hist (S), 14th ACWg, Jan-Jun 1966, I, 112; FAC Ops in SEA, 1 Jan 65-31 Mar 68, pp 77-80.
31. Intvw (C), author with Lt Col Ralph S. Hoggatt, Dir/Pers Planning, 29 Mar 71 [Hoggatt was a Flt Comdr, 602d ACSq, Udorn AB, Thailand (Jul 1967-Apr 1968)]; intvw (S), author with Maj Jimmy W. Kilbourne, Dir/Plans, 19 Mar 71 [Kilbourne served as an A-1 FAC, 602d ACSq (May-Dec 1967)].
32. Tng manual (S), 606th SOSq, The Candle Stick Forward Air Controller Tactics Manual, 1 Nov 68.
33. EOT Report (S), Col Walter D. Druen, Jr., Dep Comdr, 8th TFWg (21 Aug 69-8 Jun 70) [ca Jul 1970]; Staff Summary Sheet (S), Dir/Tiger Hound and Tally Ho Div, 7th AF, to TACC (Brig Gen Jones E. Bolt), Gunship II, 25 Feb 68; msg (S), 7th AF to 14th ACWg, 317th TAWg, 261415Z Feb 68, subj: FAC Schooling for C-130 Gunship Crews.
34. Porter, Control of Airstrikes, January 1967-December 1968, pp 23-27; Vallentiny, USAF Posture in Thailand, January-December 1967, p 69; rpt (S), 23d TASSq, Monthly Activity Report, 5 Feb 67.
35. Intvw (S), author with Maj Ronnie Rinehart, ACSC, 16 Dec 71 [Rinehart was a Raven FAC (Oct 1968-Apr 1969)].
36. Burch, The ABCCC in SEA, pp 12-15; Anthony, Tactics and Techniques of Night Operations, 1961-1970, pp 72-73.
37. FAC Ops in SEA, 1 Jan 65-31 Mar 68, pp 6, 64; Working Paper (S), Maj Gen David C. Jones, DCS/Ops, 7th AF, and Maj Gen Ernest C. Hardin, Jr., DCS/Ops, PACAF [no subj], 11 Apr 69; intvw (C), author with Maj James R. Thyng, ACS/ Studies and Analys, 8 Feb 72 [Thyng was an A-1 pilot, 1st ACSq (Sep 1966-Aug 1967)].
38. Maj Philip D. Caine, Igloo White, July 1968-December 1969 (S) (HQ PACAF, Project CHECO, 10 Jan 70), pp 1-2; hist (S), 7th AF Jan-Jun 1969, I, pt 2, 345-46; Thorndale, Interdiction in SEAsia, November 1966- October 1968, pp 84-86; Sams, et al, Air Support of Counterinsurgency in Laos, July 1968-November 1969, pp 6-7.

UNCLASSIFIED

39. TACS, Apr 1968-Dec 1969, 402-3; Sams, et al, Air Support of Counterinsurgency in Laos, July 1968-November 1969, pp 61-63; Trest and Castellina, Operation Neutralize, pp 18-20.

40. Hoggatt intvw (C), 29 Mar 71; Trest and Castellina, Operation Neutralize, pp 20-21; TACLO Acty Rprt 19 (S), 7th AF to TAC et al, 1-15 Oct 68, 15 Oct 68, pp 14-15; Anthony, Tactics and Techniques of Night Operations, 1961-1970, pp 68-72.

41. See note above.

42. See note 40.

43. Hists (S), 14th ACWg, Jan-Jun 1966, I, 110, 112, Jul-Sep 1966, I, 79-80; Deatrck and Parmly intvw (S), 9 May 72.

44. Hoggatt intvw (C), 29 Mar 71; Anthony, Tactics and Techniques of Night Operations, 1961-1970, pp 68-72.

45. See note above; Kilbourne intvw (S), 19 Mar 71.

46. Kilbourne intvw (S), 19 Mar 71; hists (C), 56th ACWg, Apr-Jun 1968, pp 55-61, Apr-Jun 1967, pp 13-16.

47. Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 29-30; Trest, Control of Air Strikes in SEA, 1961-66, p 63; msg (S), 7th AF to CINCPACAF and MACV, 270835Z Mar 67, subj: Rationale for Increasing FAC Aircraft and Crew Requirements.

48. Trest, Control of Air Strikes in SEA, 1961-66, pp 70-72; Strike Ops in Laos, 5 Dec 65-31 Oct 67, p 42; Trest, Operation Tally Ho, pp 17-20.

49. See note above.

50. Porter, Control of Airstrikes, January 1967-December 1968, p 33; tng manual (U), 4410th CCT Sq, 8 Feb 67, pp 4-6.

51. Anthony, Tactics and Techniques of Night Operations, 1961-1970, pp 75-79, 94.

52. Hist (S), 7th AF, Jan-Jun 1968, I, pt 2, 339.

UNCLASSIFIED

53. Hist (S), 315th Air Div, Jul-Dec 1965, pp 42, 58; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 36-37; Porter, Control of Airstrikes, January 1967-December 1968, pp 33-34; Anthony, Tactics and Techniques of Night Operations, 1961-1970, pp 27-29; Trest, Control of Air Strikes in SEA, 1961-66, pp 71-72.
54. Trest, Control of Air Strikes in SEA, 1961-66, pp 70-72.
55. Ibid.
56. Hists (C), 504th TASGp, Jan-Mar 1967, pp 37-39, Apr-Jun 1967, p 81; hist (S), 56th ACWg, Oct-Dec 1967, pp 18-20; Warren A. Trest, Lucky Tiger, Combat Operations (TS) (HQ PACAF, Project CHECO, 15 Jun 67), pp 27-34; Anthony, Tactics and Techniques of Night Operations, 1961-1970, pp 73-74, 81, 99-100, 107-8; intvw (S) Maj Victor B. Anthony, Ofc/AF Hist, with Maj Charles W. Brown, Dir/Plans, 9 Apr 71 [Brown was a T-28 pilot, 606th ACSq (Oct 1967-May 1968)].
57. See note above.
58. Anthony, Tactics and Techniques of Night Operations, 1961-1970, pp 81-83; Trest, Lucky Tiger, Combat Operations, pp 38-40; ltr (C), 606th ACSq to 7th/13th AF, subj: Capability of C-123 Aircraft to Drop Flares for T-28 Aircraft, 21 Feb 67.
59. Tactics manual (C), 23d TASSq, Night Tactics and Information for Crewmembers of the 23rd TASS [ca 1968]; Thorndale, Interdiction in SEAsia, November 1966-October 1968, p 82; Porter, Control of Airstrikes, January 1967-December 1968, pp 33-34; tng manual (S), 606th SOSq, 1 Nov 68.
60. Porter, Control of Airstrikes, January 1967-December 1968, pp 33-34; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 36-37; Lt Col Philip R. Harrison, Impact of Darkness and Weather on Air Operations in SEA, pp 22-25; intvw (S), Maj Victor B. Anthony, Ofc/AF Hist, with Maj Charles A. Beckwith, HQ USAF, 1 Mar 71 [Beckwith was a C-123 Nav/FAC, 606th SOSq (Apr 1969-Apr 1970)]; tng manual (S), 606th SOSq, 1 Nov 68.

UNCLASSIFIED

61. Anthony, Tactics and Techniques of Night Operations, 1961-1970, pp 81-89; tng manual (S), 606th SOSq, 1 Nov 68; Beckwith intvw (S), 1 Mar 71; hist (S), 56th ACWg, Oct-Dec 1967, pp 18-21; Trest, Lucky Tiger, Combat Operations, pp 38-40.
62. See note above.
63. See note 61.
64. Anthony, Tactics and Techniques of Night Operations, 1961-1970, pp 85-90.
65. Ibid., pp 88-89.
66. Ibid., p 89.
67. Ibid., pp 36-37; hists (S), 315th Air Div, Jul-Dec 1965, I, 3-10, Jan-Dec 1966, pp 65-67; PACAF Tactics and Techniques Bul 22 (S), Airborne Coordinator Procedures, 7 Jun 65; TAC-TR-65-47 (U), Night Owl Procedures, Jul 1965.
68. See note above.
69. Druen EOT Rprt (S) [ca Jul 1970/; Staff Summary Sheet (S), Dir/Tiger Hount and Tally Ho Div, 7th AF, to TACC (Brig Gen Jones E. Bolt), 25 Feb 68; msg (S), 7th AF to 14th ACWg and 317th TAWg, 261415Z Feb 68, subj: FAC Schooling for C-130 Gunship Crews.
70. TIA (S), Dir/Ops, Sep 1968, p 2-19.
71. Ibid., pp 2-19, 2-22; PACAF Tactics and Techniques Bul 55 (S), C-130 Flare Mission, 24 Jan 67; Anthony, Tactics and Techniques of Night Operations, 1961-1970, pp 38-42; Druen EOT Rprt (S), 21 Aug 69-8 Jun 70.
72. See note above.
73. Ltr (S), 20th TASSq to 7th AF, subj: Night Tactics Employed by 0-2 FAC Aircrews [ca late 1967].
74. Hist (S), 7th AF, Jan-Jun 1969, I, pt 2, 275-77.

UNCLASSIFIED

UNCLASSIFIED

75. Anthony, Tactics and Techniques of Night Operations, 1961-1970, pp 44-45; EOT Rprt (S), Lt Col James C. Mitchell, Comdr, 606th SOSq, NKP, Thailand (30 Jul 68-24 Jul 69) [ca Aug 1969]; Hickey, Night Close Air Support in RVN, (1961-1966), p 9; TIA, Dir/Ops, Sep 1968, p 2-22.

76. See note above.

77. See note 75; hist (S), 7th AF, Jan-Jun 1970, I, pt 2, pp 195-96.

78. Sullivan Testimony, pp 457-58; Sams, et al, Air Support of Counterinsurgency in Laos, July 1968-November 1969, pp 44-45; 7th AF OPlan 446-69 (S), Raven FAC Survey, 24 Jan 69, p 2; msg (S) OUSAIRA, Laos, to 7th AF, 2601335Z Aug 67; Ops Instruc 55-1 (S), OUSAIRA (Laos), Raven Forward Air Controller Program, 15 Nov 69; intvw (S), author with Col Joe C. Williams, Dir/Plans, 23 May 72 [Williams was Dir/Ops, Proj 404 and Senior AF Officer (Aug 1968-Aug 1969)]; Shields, USAF Control of Airstrikes in Support of Indigenous Lao Ground Forces, pp 20-25, 37, 42-50.

79. Shields, USAF Control of Airstrikes in Support of Indigenous Lao Ground Forces, pp 20-25, 37, 42-50.

80. Ibid.

81. Ibid., pp 48-53.

82. Ibid., pp 48-53, 57, 59-60, 115-18; Rinehart intvw (S), 16 Dec 71.

83. See note above; 7th AF OPlan 446-69 (S), 24 Jan 69, p 9; Williams intvw (S), 23 May 72; intvw (S), author with Lt Col William B. Foster, Dir/Plans, 23 May 72 [Foster was Dir/Ops, Proj 404 (Dec 1970-Dec 1971)]; Ops Instruc 55-1 (S), OUSAIRA (Laos), 15 Nov 69.

84. Sams, Schlicht, and Pratt, Air Operations in Northern Laos, 1 November 1969-1 April 1970, p 6; Porter, Control of Airstrikes, January 1967-December 1968, pp 28-30; Sams, et al, Air Support of Counterinsurgency in Laos, July 1968-November 1969, pp 31-33; Ops Instruc 55-1 (S), OUSAIRA (Laos), 15 Nov 69; Williams intvw (S), 23 May 72; Foster intvw (S), 23 May 72.

UNCLASSIFIED

UNCLASSIFIED

85. See note above; msg (S), AmEmb Laos to CINCPAC, 270530Z Dec 68, subj: USAF Support for FAC Mission in Laos; draft ltr (S), Det 72, 1133d USAF Sp Actys Sq, to Maj Gen Louis T. Seith, subj: FAC Operations in Laos, 9 Sep 68; msg (S), CINCPAC to DEPCHJUSMAGTHAL, 021101Z Dec 68, subj: FAC and Training Aircraft; hist (TS), 7th AF, Jan-Jun 1969, sup, p 30; hist (S), 7th AF, Jul-Dec 1969, I, pt 2, 239.

86. Rinehart intvw (S), 16 Dec 71; msg (S), AmEmb Laos to CINCPAC, 270530Z Dec 68; MR (U), Joe C. Williams to Col Robert L. D. Tyrell, subj: 0-1 Contract Maintenance, 5 May 69; Sams, et al, Air Support of Counterinsurgency in Laos, July 1968-November 1969, p 32; Foster intvw (S), 23 May 72; Williams intvw (S), 23 May 72; Shields, USAF Control of Airstrikes in Support of Indigenous Lao Ground Forces, pp 60-62.

88. Hist (S), 7th AF, Jul-Dec 1969, I, pt 2, 339; ltr (S), 504th TASGp to 7th AF, subj: Steve Canyon Pilot Replacement, 15 Oct 69; memo (S), 7th AF Dir/Comd and Control to 7th AF DCS/Ops, subj: Raven FAC's, 18 Jul 69; Shields, USAF Control of Airstrikes in Support of Indigenous Lao Ground Forces, pp 62, 64-67, 71, 80-85; 7th AF OPlan 446-69 (S), 24 Jan 69, p 11; ltr (S), Ch Raven FAC to AIRA, Laos, subj: Raven FAC Replacement Pilot Program, 7 Nov 69; Sams, Schlight, and Pratt, Air Operations in Northern Laos, 1 November 1969-1 April 1970, pp 4, 33; Rinehart intvw (S), 16 Dec 71; rpt (C), Site 20A to AIRA, Vietnam, subj: Suitability of the T-28 As a FAC Aircraft [ca Aug 69]; msg (S), OUSAIRA, Vietnam, to 7th AF, 080425Z Apr 68, subj: Authorized FAC/FAG in Northern Laos.

89. Sams, et al, Air Support of Counterinsurgency in Laos, July 1968-November 1969, pp 37, 50-51.

90. Ibid.

91. Ibid., pp 49-51; Rinehart intvw (S), 16 Dec 71.

92. Sams, et al, Air Support of Counterinsurgency in Laos, July 1968-November 1969, pp 7, 37; Aderholt intvw (S), 5 Mar 70, p 112; Rinehart intvw (S), 19 Dec 71.

93. Aderholt intvw (S), 5 Mar 70, pp 114-115.

UNCLASSIFIED

94. Sams, et al, Air Support of Counterinsurgency in Laos, July 1968-November 1969, p 48; Sams, Schlight, and Pratt, Air Operations in Northern Laos, 1 November 1969-1 April 1970, p 14; memo (S), 7th AF Dir/Command and Control to 7th AF DCS/Ops, 18 Jul 69; Shields, USAF Control of Airstrikes in Support of Indigenous Lao Ground Forces, pp 80-85; intvw (S), author with Lt Col Robert E. Drawbaugh, Dir/Plans, 1 Jun 72 [Drawbaugh was Dir/Ops, Proj 404, and Ch Raven FAC (Jun 1970-Jan 1971)].
95. See note above.
96. Ops Instruc 55-1 (S), OUSAIRA (Laos), 15 Nov 69.
97. Ibid.
98. Sams, et al, Air Support of Counterinsurgency in Laos, July 1968-November 1969, pp 32, 48-50; Drawbaugh intvw (S), 1 Jun 72; Shields, USAF Control of Airstrikes in Support of Indigenous Lao Ground Forces, pp 107-8; Sams, Schlight, and Pratt, Air Operations in Northern Laos, 1 November 1969-1 April 1970, p 14.
99. Porter, Control of Airstrikes, January 1967-December 1968, pp 29-32; ltr (S), 7th AF to AIRA, Laos, 14 Sep 69.
100. Sams, et al, Air Support of Counterinsurgency in Laos, July 1968-November 1969, pp 49-50.
101. Shields, USAF Control of Airstrikes in Support of Indigenous Lao Ground Forces, pp 25-31, 36-38.
102. Ibid., pp 71-75, 77-78, 90; Foster intvw (S), 23 May 72.
103. Shields, USAF Control of Airstrikes in Support of Indigenous Lao Ground Forces, pp 90-93, 102-5; Foster intvw (S), 23 May 72.
104. Maj David I. Folkman, Jr., and Maj Philip D. Caine, The Cambodian Campaign, 29 April-30 Jun 1970 (TS) (HQ PACAF, Project CHECO, 1 Sep 70), pp 11-14; hist (S), 504th TASGp, Jul-Sep 1970, I, 9-10; hist (C), 19th TASSq, Apr-Jun 1970, p 8.
105. Folkman and Caine, The Cambodian Campaign, 29 April-30 June 1970, pp 11-15; Lt Col J. F. Loye, Jr., and Maj Philip D. Caine, The Cambodian Campaign, 1 Jul-31 Oct 1970 (TS) (HQ PACAF, Project CHECO, 31 Dec 70), pp 23-24, 33-35.

UNCLASSIFIED

106. Loye and Caine, The Cambodian Campaign, 1 Jul-31 Oct 1970, pp 33-38, 41-43.

Chapter IX

1. Porter, Control of Airstrikes, January 1967-December 1968, p 39; Schlight, Jet Forward Air Controllers in SEAsia, p 2; hist (S), Commando Sabre Ops, Apr-Jun 1969, p vi; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, p 41.

2. Thompson, Strike Control and Reconnaissance (SCAR) in SEA, p 41; EOT Rprt (S), Col Leroy J. Manor, Comdr, 37th TFWg, and Col Benjamin H. Clayton, Vice Comdr, 37th TFWg (May 1968-Apr 1969)[ca May 1969], p 19; Schlight, Jet Forward Air Controllers in SEAsia, pp 2, 10-11; rprt (S), 7th AF, Commando Sabre Operations 31 Jul 67.

3. EOT Rprt (S), Capt Gary R. Tomkins, 18 Oct 67; Schlight, Jet Forward Air Controllers in SEAsia, p 3; intvw (C), Proj CHECO stf with Maj Philip J. White, Misty Comdr, 3 Oct 67, p 1.

4. Bonetti, et al, The War in Vietnam, July-December 1967, p 19; Schlight, Jet Forward Air Controllers in SEAsia, pp 2-4; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 41-44; hist (S), Commando Sabre Ops, Apr-Jun 1969, pp 4, 8, 37th TFWg, Jul-Sep 1967, p 8, 31st TFWg, Apr-Jun 1969, pp 22-23; intvw (C), author with Maj Merrill A. McPeak, Dir/Plans, 22-23 Mar 71 [McPeak was a F-100F Misty FAC at Phu Cat, SVN (20 Dec 68-31 May 69) and Tuy Hoa, SVN (20 Dec 68-31 May 69) and Tuy Hoa, SVN (1 Jun 69-15 Nov 69)].

5. Schlight, Jet Forward Air Controllers in SEAsia, pp 3-4; Tomkins EOT Rprt (S), 18 Oct 67.

6. See note above; McPeak intvw (C), 22-23 Mar 71.

7. McPeak intvw (C), 22-23 Mar 71; hist (S), 37th TFWg, Jul-Sep 1967, p 20, Commando Sabre Ops, Apr-Jun 1969, pp 11-12; Commando Sabre Ops Instruc 55-1 (U) Mar 1969, p 2-2; Schlight, Jet Forward Air Controllers in SEAsia, pp 8-9.

8. McPeak intvw (C), 22-23 Mar 71; hist (S), 37th TFWg, Jul-Sep 1967, p 21, Jan-Mar 1968, pp 18-19, Commando Sabre Ops, Jan-Mar 1969, atch 2; Schlight, Jet Forward Air Controllers in SEAsia, p 4.

UNCLASSIFIED

9. Hists (S), Commando Sabre Ops, Jul-Sep 1967, p 23, Jul-Sep 1968, pp 14-23, Jan-Mar 1969, pp 12-13, Apr-Jun 1969, p 10; Commando Sabre Ops Instruc 55-1 (U), Mar 1969, pp 4-1, 4-2; Manor and Clayton EOT Rprt (S) [ca May 1969], pp 19-20; Schlight, Jet Forward Air Controllers in SEAsia, p 6; Bonetti, et al, The War in Vietnam, July-December 1967, p 19; McPeak intvw (C), 22-23 Mar 71.
10. McPeak intvw (C), 22-23 Mar 71.
11. Ibid.
12. Ibid.; hist (S), Commando Sabre Ops, Oct-Dec 1968, p 16.
13. Commando Sabre Ops Instruc 55-1 (U), Mar 1969, pp 5-2 to 5-4; McPeak intvw (C), 22-23 Mar 71.
14. Ibid.
15. Ibid.
16. Ibid.
17. Manor and Clayton EOT Rprt (S) [ca May 1969], p 20; hists (S), Commando Sabre Ops, Jan-Mar 1969, pp 12-13, Apr-Jun 1969, p 10; Commando Sabre Ops Instruc 55-1 (U), Mar 1969, pp 3-1 to 3-3; McPeak intvw (C), 22-23 Mar 71; Schlight, Jet Forward Air Controllers in SEAsia, p 6.
18. Memo (S), Commando Sabre Gp, 31 Aug 67; Schlight, Jet Forward Air Controllers in SEAsia, p 5.
19. Hist rprt (S), Commando Sabre, 31 Jul 67; Schlight, Jet Forward Air Controllers in SEAsia, p 5; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, p 42.
20. Rprt 69-3 (S), Air Operations in Southeast Asia, Aug 1967-Jan 1969 (ASL, Jul 1969), p 1; Rprt 69-1 (S), Operation Neutralize: The Pattern is Set (ASL, Jun 1969), pp 1-2; Tomkins EOT Rprt (S), 18 Oct 67; Schlight, Jet Forward Air Controllers in SEAsia, pp 7-8.
21. Schlight, Jet Forward Air Controllers in SEAsia, pp 7-8; Trest and Castellina, Operation Neutralize, p 20.

UNCLASSIFIED

22. Trest and Castellina, Operation Neutralize, pp 20-21, 24-25, 34; intvw (S), Warren A. Trest, Proj CHECO historian, with Lt Col Herbert Brennan, Asst DCS/Ops, 366th TFWg, 30 Sep 67; ASI Rprt 69-1 (S), Jun 1969, pp 11-12; ASI Rprt 69-3 (S), Jul 1969, pp 2-3; Tomkins EOT Rprt (S), 18 Oct 67.
23. Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 42-43; MR (S), 7th AF, subj: Operations in 37th Tactical Fighter Wing, 4 Aug 67; hists (S), 37th TFWg, Oct-Dec 1967, p 1, Commando Sabre Ops, Jul-Dec 1968, p vi.
24. Staff Summary Sheet (S), Dir/Prgms, DCS/Plans, 7th AF, Expanded F-100F FAC Program, 30 Oct 67; msg (S), CSAF to CINCPACAF (AFOUT 92084), 27 Sep 67; Schlight, Jet Forward Air Controllers in SEAsia, pp 11-12; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 43-44; msg (S) 7th AF to CINCPACAF, 051200Z Nov 67, subj: Expanded F-100F Program; hists (S), Commando Sabre Ops, Jul-Sep 1968, p 1, 37th TFWg, Oct-Dec 1967, p 1; intvw (C), author with Col Walter J. Bacon, NWC, 5 Apr 71 [Bacon was Misty Comdr (Jun-Oct 1968)].
25. Bacon intvw (C), 5 Apr 71.
26. Tomkins EOT Rprt (S), 18 Oct 67; McPeak intvw (C), 22-23 Mar 71; Schlight, Jet Forward Air Controllers in SEAsia, pp 9-10.
27. Hists (S), 37th TFWg, Oct-Dec 1967, pp 1, 15, Commando Sabre Ops, Jan-Mar 1969, atch 2, Jan-Mar 1970, p 11, Schlight, Jet Forward Air Controllers in SEAsia, p 13.
28. Schlight, Jet Forward Air Controllers in SEAsia, pp 14, 15.
29. Hist (S), Commando Sabre Ops, Jul-Sep 1968, pp 30-38; Schlight, Jet Forward Air Controllers in SEAsia, p 16; Staff Summary Sheet (S), 7th AF, Feasibility of Starlight Scope in the F-100F Aircraft, 24 Jun 68; ltr (C), Capts Donald W. Sheppard and James E. Risinger, 3d TFWg, to Dir/Tiger Hound and Tally Ho Div, 7th AF, subj: Inflight Evaluation of PVS-3 Night Starlight Scope, 16 June 68; ltr (S), 37th TFWg to 7th AF, subj: The Impact of Weather and Darkness on Air Operations in SEA, 14 Dec 68; Bonetti, et al, The War in Vietnam, July-December 1967, p 19.
30. Hist (S), Commando Sabre Ops, Jul-Sep 1968, pp 30-34; rprt (S), Commando Sabre Operations, 12 Aug 68; Schlight, Jet Forward Air Controllers in SEAsia, pp 16-18.

UNCLASSIFIED

31. See note above.
32. Staff Summary Sheet (S), 7th AF, Misty Night Missions, 1 Sep 68; ltr (S), 37th TFWg to 7th AF, 14 Dec 68; ltr (S), 37th TFWg to 7th AF, subj: Commando Sabre Night Operations [ca Oct 1968]; hist (S), Commando Sabre Ops, Jul-Sep 1968, pp 34-35.
33. See note above.
34. Hists (S), Commando Sabre Ops, Jul-Sep 1968, p 36, Oct-Dec 1968, p 20.
35. Ltr (S), 37th TFWg to 7th AF [ca Oct 1968]; ltr (S), 37th TFWg to 7th AF, subj: Special Operational Historical Report, 9 Apr 69, pp 1-2.
36. Hist rprt (S), 37th TFWg, Apr 1969, pp 1-2; Commando Sabre Ops, Jan-Mar 1969, p 12, Apr-Jun 1969, p 9, Oct-Dec 1969, p 9; Manor and Clayton EOT Rprt (S) [ca May 1969], p 20.
37. Hist (S), Commando Sabre Ops, Jan-Mar 1970, p 7.
38. McPeak intvw (C), 22-23 Mar 71; intvw (C), author with Lt Col Benjamin R. Battle, JCS, 8 Apr 71 [Battle was the first Wolf FAC Comdr, 8th TFWg, Ubon, Thailand (Nov 1968-May 1969)]; hist rprt (S), 37th TFWg, Apr 1969, pp 1-2.
39. Bacon intvw (C), 5 Apr 71; McPeak intvw (C), 22-23 Mar 71; hist rprt (S), 37th TFWg, Apr 1969, p 3; Manor and Clayton EOT Rprt (S) [ca May 1969], p 20; hists (S), 37th TFWg, Jan-Mar 1968, pp 24-25, Commando Sabre Ops, Oct-Dec 1969, p 20.
40. Hists (S), Commando Sabre Ops, Jul-Sep 1968, pp 25-26, 37th TFWg, Oct-Dec 1968, p 19.
41. See note above.
42. Hist (S), 37th TFWg, Oct-Dec 1968, p 18.
43. Sams, et al, Air Support of Counterinsurgency in Laos, July 1968-November 1969, pp 77-78; Schlight, Jet Forward Air Controllers in SEAsia, pp 29-30.

UNCLASSIFIED

44. Hist rprt (S), 37th TFWg, Misty, Apr-Jun 1969; Schlight, Jet Forward Air Controllers in SEAsia, p 32; McPeak intvw (C), 22-23 Mar 71.

45. McPeak intvw (C), 22-23 Mar 71.

46. Ibid.

47. Thompson, Strike Control and Reconnaissance (SCAR) in SEA, p 44.

48. Hist (S), 366th TFWg, Jul-Sep 1969, pp 20-22.

49. McPeak intvw (C),

50. Hists (S), 31st TFWg, Apr-Jun 1970, pp 37, 39, Commando Sabre Ops, 1 Apr-15 May 70, pp 1, 6; ltr (S), 7th AF Dep Comdr/ Ops to 7th AF DCS/Plans, subj: Misty FAC Operational Requirement, 15 Mar 68.

51. Schlight, Jet Forward Air Controllers in SEAsia, p 9; ltr (S), 37th TFWg to 7th AF, subj: Commando Sabre Ops, 12 Aug 68.

52. Rprt (S), Commando Sabre, 31 Jul 67; Schlight, Jet Forward Air Controllers in SEAsia, pp 10-11; hist (S), 37th TFWg, Jul-Sep 1967, I, 35.

53. Memo (S), Col Heath Bottomly to Gen Norman O. Sweat, Dep Dir/Plans, 7th AF, 5 Jan 68.

54. See note 50.

55. TACLO Acty Rprt 17 (S), 15 Sep 68, pp 4-5; ltr (S), 366th TFWg to 7th AF, subj: End of Training Comments/Recommendations of 366 TFW, 20 Aug 68; ltr (S), 37th TFWg to 7th AF, subj: Report of FAC Training, 37th TFW and 366th TFW, 20 Aug 68; Schlight, Jet Forward Air Controllers in SEAsia, pp 22-23; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 46-48; hists (S), Commando Sabre Ops, Jul-Sep 1968, pp 38-41, 37th TFWg, Jan-Mar 1968, pp 21-23.

56. See note above.

UNCLASSIFIED

57. Staff Summary Sheet (S), Tac Intel Div, 7th AF, Increased FAC Sorties for Operation Thor, 30 Jun 68; Schlight, Jet Forward Air Controllers in SEAsia, p 23; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 46-47.

58. TACLO Acty Rprt 18 (S), 7th AF to TAC et al, 16-30 Sep 68, 30 Sep 68; ltr (S), 366th TFWg to 7th AF, 20 Aug 68; ltr (C), 37th TFWg to 7th AF, subj: Report of FAC Training, 37TFW and 366TFW, 26 Aug 68; hist (S), 366th TFWg, Jul-Sep 1968, p 20; EOT Rprt (S), Col Louis W. La Salle, Dep Comdr, 366th TFWg (Dec 1967-Dec 1968) [ca Jan 1969]; Schlight, Jet Forward Air Controllers in SEAsia, pp 23-24; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, p 47; OPlan 10-68 (U), 366th TFWg, subj: Stormy, 15 Sep 68.

59. Ltr (C), 37th TFWg to 7th AF, 26 Aug 68; Bacon intvw (C), 5 Apr 71; Schlight, Jet Forward Air Controllers in SEAsia, p 25.

60. OPlan 10-68 (U), 366th TFWg, 15 Sep 68; Schlight, Jet Forward Air Controllers in SEAsia, pp 24-25; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 47-48; TACLO Acty Rprt 17 (S), 15 Sep 68; TACLO Acty Rprt 18 (S), 30 Sep 68; hist (S), 366th TFWg, Jul-Sep 1968, p 20.

61. Msg (S), 366th TFWg to 7th AF, 010800Z Nov 68, subj: Stormy Night Operations; Schlight, Jet Forward Air Controllers in SEAsia, pp 24-25; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, p 48.

62. Hist (S), 366th TFWg, Apr-Jun 1969, pp 26-27.

63. Ibid., pp 21-22; hist (S), 366th TFWg, Jul-Sep 1969, p 20; ltr (U), 366th TFWg to 4th, 389th, and 390th TFSqs, subj: Length of Stormy Tour, 8 May 69.

64. Hist (S), 366th TFWg, Jul-Sep 1969, pp 20-22.

65. Hists (S), 366th TFWg, Apr-Jun 1970, p 14, Jul-Sep 1970, p 27.

66. EOT Rprt (S), Col Charles C. Pattillo, Comdr, 8th TFWg (Jul 1968-May 1969) [ca Jun 1969]; EOT Rprt (S), Col Slade Nash, Dep Comdr/Ops and Vice Comdr, 8th TFWg (Oct-Dec 1968) [ca Jan 1969]; Battle intvw (C), 8 Apr 71; hist (S), 8th TFWg, Oct-Dec 1968, pp 21-22; Schlight, Jet Forward Air Controllers in SEAsia, p 26.

UNCLASSIFIED

67. Battle intgw (C), 8 Apr 71; Nash EOT Rprt (S) [ca Jan 1969]; hist (S), 8th TFWg, Oct-Dec 1968, p 22; Druen EOT Rprt (S) [ca Jul 1970].
68. Hist (S), 8th TFWg, Oct-Dec 1968, pp 22-23; Battle intvw (C), 8 Apr 71.
69. See note above; Pattillo EOT Rprt [ca Jun 1969], p 23; Nash EOT Rprt [ca Jan 1969], p 17.
70. Hist (S), 8th TFWg, Jan-Mar 1969, pp 23-25; Battle intvw (C), 8 Apr 71.
71. Hist (S), 8th TFWg, Jan-Mar 1969, pp 73-74; Battle intvw (C), 8 Apr 71.
72. Msg (S), 388th TFWg to 7th AF, 250855Z Jan 69, subj: F-4E Tiger FAC Program; hist (S), 388th TFWg, Jan-Mar 1969, p 42; Schlight, Jet Forward Air Controllers in SEAsia, p 27.
73. Pattillo EOT Rprt [ca Jun 1969]; hist (S), 388th TFWg, Jan-Mar 1969, pp 42-43.
74. Hists (S), 388th TFWg, Jan-Mar 1969, pp 42-44, Jul-Sep 1969, I, 61; OPlan 301-69 (S), 388th TFWg, subj: Tiger FAC, 1 Mar 69; EOT Rprt (S), Col A.K. McDonald, Comdr, 388th TFWg (Dec 1968-Jun 1969) [ca Jul 1969]; rprt (S), Maj John F. O'Donnell, 388th TFWg Tactics Off, subj: Tiger FAC Program [ca Apr 1969]; Schlight, Jet Forward Air Controllers in SEAsia, pp 27-28.
75. Hist (S), 388th TFWg, Apr-Jun 1969, I, 52-53; Schlight, Jet Forward Air Controllers in SEAsia, pp 28-29.
76. Schlight, Jet Forward Air Controllers in SEAsia, pp 28-29; OPlan 301-69 (S), 388th TFWg, 1 Mar 69.
77. Hists (S), 388th TFWg, Oct-Dec 1969, I, 49-50, Jan-Mar 1970, p 84.
78. Hist (S), 432d TRWg, Apr-Jun 1969, I, 13; ltr (S), 432d TRWg to 7th AF, subj: Falcon FAC Report, 24 May 69.
79. Msg (S), 7th AF to 432d TRWg, 190501Z Mar 69, subj: Request for Approval of F-4 FAC Program; hist (S), 432d TRWg, Apr-Jun 1969, I, 13.

UNCLASSIFIED

80. Hist (S), 432d TRWg, Apr-Jun 1969, I, 13; msg (S), 7th AF to 432d TRWg, 230656Z May 69, subj: FAC Certification; Schlight, Jet Forward Air Controllers in SEAsia, p 30.

81. Msg (S), 7th AF to 432d TRWg, 240200Z Apr 69, subj: RF-4C Visual Reconnaissance Program; Schlight, Jet Forward Air Controllers in SEAsia, pp 30-31; hist (S), 432d TRWg, Apr-Jun 1969, I, 13-14.

82. Hists (S), Current Ops Div, 432d TRWg, Apr-Jun 1969, pp 1-3, 432d TRWg, Apr-Jun 1969, p 14.

83. See note above; Schlight, Jet Forward Air Controllers in SEAsia, pp 30-31.

84. See notes 82 and 83.

85. See notes 82 and 83.

86. See note 82; Schlight, Jet Forward Air Controllers in SEAsia, pp 31-32.

87. Hists (S), 388th TFWg, Jul-Sep 1969, I, 63, 432d TRWg, Jul-Sep 1969, I, 18-20, 8th TFWg, Apr-Jun 1969, I, 24; ltr (U), Col Walter L. Bevan, Jr., Dir/Cmbt Ops, 7th AF, to 432d TRWg Comdr, 3 Jul 69; msg (C), 388th TFWg to 7th AF and 432d TRWg, 250915Z Jul 69, subj: Tiger FAC/Atlanta VR Barrel Roll; Schlight, Jet Forward Air Controllers in SEAsia, pp 32-33.

88. Hist (S), 432d TRWg, Jul-Sep 1969, I, 25; Schlight, Jet Forward Air Controllers in SEAsia, pp 33-34.

89. Hist (S), 432d TRWg, Oct-Dec 1969, I, 19-20 and Doc 34, Jan-Mar 1970, I, 18.

90. Hist (S), 8th TFWg, Jan-Mar 1970, I, 103-4; Schlight, Jet Forward Air Controllers in SEAsia, pp 33-34.

91. Hists (S), 8th TFWg, Oct-Dec 1969, I, 55-57, 497th TFSq, Oct-Dec 1969, pp 9-13; Schlight, Jet Forward Air Controllers in SEAsia, pp 33-34.

92. Hists (S), 497th TFWg, Oct-Dec 1969, pp 9-13, 8th TFWg, Oct-Dec 1969, I, 56, Jan-Mar 1970, I, 103-4.

UNCLASSIFIED

93. Sams, et al, Air Support of Counterinsurgency in Laos, July 1968- November 1969, p 79; Schlight, Jet Forward Air Controllers in SEAsia, p 34; hists (S), 8th TFWg, Apr-Jun 1970, I, 31, Jul-Sep 1970, I, 23, Wolf FAC, Apr-Jun 1970, pp 1,17, Jul-Sep 1970, pp 1-2.

94. Hists (S), Commando Sabre Ops, 1 Apr-15 May 70, pp 6-13, 31st TFWg, Apr-Jun 1970, I, 39, 8th TFWg, Apr-Jun 1970, I, 31-33.

Chapter X

1. Lt Col Donald F. Martin and Carl O. Clever, Contemporary Historical Evaluation of Counterinsurgency Operations, October 1961-December 1963 (TS) (HQ PACAF, Project CHECO, May 1964), pt VI, pp 7, 17; rpt (TS), SECDEF Conf, 15 Jan 62, p 3-4.

2. Rpts (TS), SECDEF Conf, 21 Mar 62, p 5-1, 23 Mar 62, p 2-1, 8 Oct 62, Summary, item 6a.

3. Rowley, USAF FAC Operations in Southeast Asia, 1961-1965, chap II.

4. Vallentiny, VNAF FAC Operations in SVN, Sep 1961-Jul 1968, pp 26-27; Eichler intvw (U), 22 Jul 70; intvw (U), author with Maj Donald M. Nagel, ACS/Studies and Analys, 22 Jul 70 [Nagel was a Sector FAC, Phan Thiet, Binh Thuan Province, II Corps (Sep 1965-Aug 1966)].

5. See note above.

6. See note 4; hist (C), AFGP, 1965, Introduction, p 5; USAF Management Summary for SEA (S), 19 Jan 68, p 64; James T. Bear, VNAF Improvement and Modernization Program (S) (HQ PACAF, Project CHECO, 5 Feb 70), pp 6-7; Capt Drue L. Deberry, Vietnamization of the Air War, 1970-1971 (S) (HQ PACAF, Project CHECO, 8 Oct 71), p 2.

7. Vallentiny, VNAF FAC Operations in SVN, Sep 1961-Jul 1968, pp 28-31.

8. Hists (C), AFGP, 1965, pp 2, 6, 15, May, Sep, and Oct 1966; ltr (C), Chief, AFGP, to COMUSMACV, subj: Implementation of VNAF Liaison Employment Concepts, 28 Apr 66; Vallentiny, VNAF FAC Operations in SVN, Sep 1961-Jul 1968, pp 27-32; Bear, VNAF Improvement and Modernization Program, p 6; Col Thomas M. Crawford, The Airborne Forward Air Controller-Peacetime Casualty (U) (AWC, Maxwell AFB, Ala., Apr 1970), pp 21-22.

UNCLASSIFIED

9. Hists (C), AFGP, 1965, pp 5, 21-23, Jan and May 1966; USAF Management Summary for SEA (S), 16 Jul 65, pp 29-30; Vallentiny, VNAF FAC Operations in SVN, Sep 1961-Jul 1968, pp 33-34.

10. Hist (C), AFGP, Feb 1966; Vallentiny, VNAF FAC Operations in SVN, Sep 1961-Jul 1968, pp 33-34.

11. See note above; hists (C), AFGP, Aug and Sep 1966; Disposition Form (U), AFGP to 7th AF Chief of Staff, subj: Transfer of ARVN Officers to VNAF, 6 Aug 66; Vallentiny, VNAF FAC Operations in SVN, Sep 1961 - Jul 1968, pp 32-33.

12. Rprt (C), AGGP, MAP for VNAF Tactical Air Control System, 22 Jul 66, atch 2; Vallentiny, VNAF FAC Operations in SVN Sep 1961-Jul 1968, pp 33-35; VNAF Plan 67-02 (C), 31 Mar 68.

13. Vallentiny, VNAF FAC Operations in SVN, Sep 1961-Jul 1968, pp 35-36; VNAF Plan 67-02 (C), 31 Mar 68.

14. Hist (C), AFGP, Apr 1967.

15. Vallentiny, VNAF FAC Operations in SVN, Sep 1961-Jul 1968, pp 37-38; VNAF Plan 67-02 (C), 31 Mar 68; ltr (C), Brig Gen Donavon F. Smith, AFGP Chif, to AFGP Advsy Teams, subj: VNAF ALO/FAC Support, 27 Oct 67; USAF Management Summary for SEA (S), Jul 1967.

16. See note above; EOT Rprt (U), Maj Leslie B. Fox, Jr., Senior Sector FAC, Dinh Tuong Province, 26 Jan 68.

17. USAF Management Summary for SEA (S), Jul 1967 and Jan 1968.

18. Fox EOT Rprt (U), 26 Jan 68; TACS, Apr 1968-Dec 1969, pp 346, 387-88; Vallentiny, VNAF FAC Operations in SVN, Sep 1961-Jul 1968, pp 41-42; Maj Philip D. Caine, IV DASC Operations, 1965-1969 (S) (HQ PACAF, Project CHECO, 1 Aug 69), pp 15-17.

19. Vallentiny, VNAF FAC Operations in SVN, Sep 1961-Jul 1968, p 42; hist (C), AFGP, Jun 1968.

20. See note above.

UNCLASSIFIED

21. Hists (S), PACAF, Jul 1969-Jun 1970, pp 142-43, MACV, 196k, II, VI-1; USAF Management Summary for SEA (S), 7 Mar 69, pp 74-76; Deberry, Vietnamization of the Air War, 1970-1971, pp 1-2; Bear, VNAF Improvement and Modernization Program, pp 9-10.

22. Hist (TS), PACAF, Jul 1969-Jun 1970, pp 142-43; Bear, VNAF Improvement and Modernization Program, pp 9-10.

23. Hist (TS), PACAF, Jul 1969-Jun 1970, pp 142-43; hist (S), MACV, 1969, II, VI-1 to VI-4; USAF Management Summary for SEA (S), 7 Mar 69, pp 74-76, 9 Jul 69, p 82, 25 Aug 69, pp 2-73 to 2-74; hist (S), TAC, Jul-Dec 1969, I, 244-46.

24. USAF Management Summary for SEA (S), Mar 1969.

25. Hist (S), MACV, 1969, II, VI-35; USAF Management Summary for SEA(S), Mar 1969, 19 Feb 71, pp 56-57, 25 Aug 69, pp 2-73, 2-74.

26. TACS, Apr 1968-Dec 1969, p 431; VNAF TACS ALO/FAC Upgrading Plan (S), VNAF/7th AF, Mar 1969; Bear, VNAF Improvement and Modernization Program, p 38.

27. Caine, IV DASC Operations, 1965-1969, pp 11, 15-17.

28. Ibid.; Bear, VNAF Improvement and Modernization Program, pp 35-38.

29. TACS, Apr 1968-Dec 1969, pp 431-32; hist (TS), PACAF, Jul 1969-Jun 1970, p 154p; Bear, VNAF Improvement and Modernization Program, pp 43-47; hist (S), 22d TASSq, Jan-Mar 1970, p 1; Caine, IV DASC Operations, 1965-1969, p 19; hist (S), 504th TASGp, Oct-Dec 1969, I, App 6, p 17 and App 7, p 10, III, App 9, p 8; hist (S), 19th TASSq, Jan-Mar 1970, p 2.

30. Bear, VNAF Improvement and Modernization Program, pp 40-41; Folkman, Air Support in Quang Ngai Province, pp 25-27.

31. See note above.

32. Folkman, Air Support in Quang Ngai Province, p 27; intvw (C), author with Col Adam C. Vallejo, Dir/Plans, 10 Nov 72 [Vallejo was an ALO with 2d ARVN Div, MRL, I Corps (May 1970-Apr 1971)].

33. Vallejo intvw (C), 10 Nov 72; Folkman, Air Support in Quang Ngai Province, pp 27-28.

UNCLASSIFIED

34. Vallejo intvw (C), 10 Nov 72.
35. Ibid.; Weekly Staff Digest (S), AFGP, 11-17 Oct 70, p 2-1.
36. Maj David H. Roe, et al., The VNAF Air Divisions Reports on Improvement and Modernization (S) (HQ PACAF, Project CHECO, 23 Nov 71), p 51.
37. Ibid., p 72.
38. Roe, et al., The VNAF Air Divisions Reports in Improvement and Modernization, pp 52, 54.
39. Bear, VNAF Improvement and Modernization Program, p 42.
40. Weekly Staff Digest (S), AFGP, 11-17 Oct 70, p 2-1.
41. Bear, VNAF Improvement and Modernization Program, p 43; hist (TS), PACAF, Jul 1969-Jun 1970, pp 154o, 154p.
42. Vallejo intvw (C), 10 Nov 72; Bear, VNAF Improvement and Modernization Program, pp 34-35, 39; ltr (S), Brig Gen Walter T. Galligan, Dir/TACC, 7th AF, to Dep Dir/TACC, 7th AF, subj: Vietnamization of the SEA TACS, 7 Jul 70.
43. Roe, et al., The VNAF Air Divisions Reports on Improvement and Modernization, pp 10-11.
44. Hist (TS), PACAF, Jul 1969-Jun 1970, pp 154o, 154p; Deberry, Vietnamization of the Air War, 1970-1971, pp 29-33; Roe, et al., The VNAF Air Divisions Reports on Improvement and Modernization, p 80; Bear, VNAF Improvement and Modernization Program, pp 33, 35, 38; debriefing (S), Lt Col Russell B. Ruonavaara, 10 May 72 [Ruonavaara was Ops Off, 20th TASSq (Apr 1971-Apr 1972)].
45. See note above.
46. See note 44.
47. USAF Management Summary for SEA(S), 19 Feb 71, p 55, 13 Mar 70, pp 2-46, 2-47, 2-51, 2-52, 17 Dec 70, p 54; ltr (C), I DASC to Chief, AF Advsy Team 1, subj: Phase-out of U. S. FACs in ARVN System, MR-1, 10 Jan 71; Bear, VNAF Improvement and Modernization Program, p 39; TIA (S), Dir/Ops, Feb 1970, II; Vallejo intvw (C), 10 Nov 72; VNAF Status Review (S), AFGP, Feb 1972, p B-6.

UNCLASSIFIED

48. MR (U), Maj Gary L. Boyer, Dir/Ops, subj: Tactical Air Operations in RVN, 7 Jun 72; background paper (S), Lt Col Jack C. Strasser, Dir/Ops, subj: Tactical Air Control System in RVN, 20 Jul 72; msg (C), CSAF to CINCPACAF, TAC, and AFGP, 311144Z May 72, subj: SEAsia Air-Ground Operations; Release 3-17-72-154 (U), AF News Svc, "504th Tactical Air Support Group Inactivated," 17 Mar 72.

EPILOGUE

1. Intvw (U), author with Lt Col Gary L. Boyer, Dir/Ops, 17 Dec 72; Thompson, Strike Control and Reconnaissance (SCAR) in SEA, pp 13-17; Capt Roger Dunn, draft, FAC History, Post 1970 Summary (S) (USAFTAWC, Eglin AFB, Fla., Dec 1972).

2. Boyer intvw (U), 17 Dec 72.

3. Ibid.

4. Dunn, FAC History, Post 1970 Summary.

5. Ibid.

6. Dunn, FAC History, Post 1970 Summary, Annex B; Boyer intvw (U), 17 Dec 72.

7. Dunn, FAC History, Post 1970 Summary.

UNCLASSIFIED

GLOSSARY OF TERMS AND ABBREVIATIONS

A-1	Single-engine (reciprocating) strike aircraft developed by Douglas Aircraft at the close of World War II; categorized as a slow mover, the aircraft had several missions in SEA with both the USAF and VNAF
A-26	Strike aircraft of the 56th SOWg, Nakhon Phanom RTAFB, Thailand, operating in Laos; call sign Nimrod
AC-47	The C-47 transport converted into a gunship by adding the General Electric SUU-11A minigun; the AC-47 had several nicknames: Puff the Magic Dragon, Dragon Ship, and Spooky
AC-119G	Gunship with call sign Shadow
AC-130	Gunship, call sign Spectre
AN/AVG-3	An improved USAF version of the starlight scope
AA	antiaircraft
AAA	antiaircraft artillery
AAGS	Army Air-Ground System (for close air and reconnaissance support)
AARN	Army Air Request Net
AAVS	Aerospace Audio Visual Service
AB	airbase
ABCCC	Airborne battlefield command and control center; usually a C-130 deployed in support of out-country air operations, it was an extension of Seventh Air Force Command Center
abn	airborne
acft	aircraft
acq	acquisition
ACS	Assistant Chief of Staff
ACSC	Air Command and Staff College
ACSq	Air Commando Squadron
actg	acting
acty	activity
ACW	aircraft control and warning
ACWg	Air Commando Wing

UNCLASSIFIED

ADF	Automatic direction finder; it automatically and continuously measures the direction of arrival of the received signal; data are usually displayed visually
adj	adjutant, adjustment
Adm	Admiral
adv	advance, advanced, advancement
ADVON	advanced echelon
advsy	advisory
aerosp	aerospace
AF	Air Force
AFAC	airborne forward air controller
AFAG	Air Force advisory group
AFAT	Air Force advisory team
AFB	Air Force base
AFGP	Air Force Advisory Group, MACV
AFLC	Air Force Logistics Command
AFMPC	Air Force Military Personnel Center
AFOT&E	Air Force operational test and evaluation
AFR	Air Force Regulation
AFSC	Air Force Systems Command; Air Force Specialty Code
AGE	aerospace ground equipment
AGL	above ground level
AGOS	Air-Ground Operations School
AIRA	air attache
Air America	A contract airline that flew for the Central Intelligence Agency in SEA
air commando	An Air Force member engaged in counterinsurgency operations
alft	airlift
Alleycat	The EC-130 ABCCC at night in Barrel Roll, northern Steel Tiger, and the panhandle of North Vietnam
ALO	air liaison officer
AM	Amplitude modulation; modulation in which the amplitude of a carrier is varied
AmEmb	American Embassy
amph	amphibious
AMTI	airborne moving target indicator
analys	analysis
AOC	air operations center

UNCLASSIFIED

AOCC air operations coordination center
 APD Airborne personnel detector; nicknamed "people sniffer"

APGC Air Proving Ground Center
 API armor-piercing incendiary
 app appendix
 AR Army Regulation
 Arc Light (S) B-52 operations in SEA; initially missions were flown from Andersen AFB, Guam; Kadena AB, Okinawa, and U-Tapao RTAFB, Thailand; later, all Arc Light missions were flown from U-Tapao

armt armament
 arty artillery
 ARVN Army of Republic of Vietnam
 ASD Aeronautical Systems Division
 ASGp Air Support Group
 ASI Aerospace Studies Institute
 ASOC air support operations center
 asst assistant
 ATC Air Training Command
 atch attachment
 AU Air University
 AW automatic weapons
 AWC Air War College

Barky Call sign for FAC's of the 20th TASSq, operating in Military Region I, RVN, during Lam Son 719

Barn Door Code name for first element of the Tactical Air Control System, introduced into South Vietnam in January 1962 to establish an effective network

Barrel Roll (S) Interdiction and close air support operations in eastern Laos (beginning 14 Dec 64), later reduced to the area of northern Laos (3 Apr 65); the operations were under 2d Air Division and later, Seventh Air Force control; most recently, Barrel Roll refers to strikes against personnel and equipment from North Vietnam

BDA Bomb damage assessment; the term encompasses the determination of the effect of all air attacks on targets (e.g., bombs, rockets, or strafe); also referred to as "battle damage assessment"

bde brigade

beddown A unit's deployment

Bird Dog The 0-1 FAC aircraft

Black Crow (S) An ignition system detection sensor used on AC-130 and AC-123 Black Spot aircraft

Blindbat Nickname of C-130 FAC/flaeship aircraft operating in southern Laos; eventually Blindbat became the nickname for all C-130 flare missions [see Lamplighter]

BLU Bomb Live Unit; applies to various ordnance, e.g., the bomblets dropped from dispensers and special purpose bombs

bn battalion

boresight line An optical reference line used in harmonizing guns, rockets, or other weapon launchers

br branch

Brig Gen Brigadier General

bul bulletin

Butterfly (S) An Air America FAC in Laos (CIA); name also applied to early enlisted FAG's (those airborne before 1967)

ca (circa) about

Canberra The B-57 strike aircraft

Candlestick (S) Call sign for the C-123 FAC/flare aircraft in Laos

CAP combat air patrol

Capt Captain

CAS Controlled American Source: close air support

CBU cluster bomb unit

CCT combat crew training

CEA circular error average

CEG Combat Evaluation Group

cen center

CG Commanding General

ch chief
 CHAAG Chief, Army Advisory Group
 chaff Radar confusion reflectors consisting of thin, narrow, metallic strips of various lengths and frequency responses, used to reflect echoes for confusion purposes

chap chapter
 Charlie Nickname for the Viet Cong, commonly used by military personnel

CHJUSMAGTHAI Chief, Joint United States Military Advisory Group, Thailand

Christmas Tree A SEA operational term referring to normal (noncombat) lighting of an aircraft

CIA Central Intelligence Agency
 CIDG Civilian Irregular Defense Group
 CINCPAC Commander in Chief, Pacific Command
 CINCPACAF Commander in Chief, Pacific Air Forces
 CINCPACFLT Commander in Chief, Pacific Fleet
 CINCSTRIKE Commander in Chief, United States Strike Command
 claymore A directional antipersonnel mine
 CMAC Capital Military Advisory (Assistance) Command
 cmbt combat
 CNABATRA Chief, Naval Air Basic Training Command
 co company
 COC combat operations center
 COIN counterinsurgency
 Col Colonel
 Combat Bronco SEA evaluation of the OV-10 in a FAC role (1968)
 comd command
 comdr commander
 Commando (S) Operations begun in June 1967 to test jet aircraft in the FAC role; the F-100 was used of slower FAC aircraft in higher threat areas
 Sabre

COMSEVENTHFLT Commander, Seventh Fleet
 COMUSMACV Commander, United States Military Assistance Command, Vietnam

conf conference
 CONUS Continental United States

eval evaluation
 EW electronic warfare
 EWO electronic warfare officer
 eyeball Reconnaissance by sight rather than by radar and
 reconnaissance sensors

Eye Glass (S) A night observation device (NOD)--also called
 starlight scope--that could compensate for motion of
 targets; used on Gunships II and III, this direct-
 viewing scope detected targets by intensifying images
 through use of ambient (surrounding) moonlight or
 starlight

F-4 Strike aircraft nicknamed Phantom
 FAC forward air control; forward air controller
 FAG forward air guide
 FAN forward air navigator
 FANK Forces Armees Nationale Khmer (Cambodian Army)
 FAR Forces Armee Royale (rightwing component of the
 Royal Laotian Army)

Farm Gate Replaced Jungle Jim in December 1961 as covert
 USAF mission to train VNAF personnel

fast movers high-performance aircraft
 FC fire control; force commander
 FCC fire control center
 FDC fire direction center
 FDCC fire direction control center
 FFV Field Forces Vietnam
 fig figure
 fire arrow Could be made of many materials; metal gas cans
 filled with gasoline-soaked sand were often used;
 ignited, it was easy to see at night; hamlet
 defenders relayed to flare/strike aircraft the
 enemy's position with reference to the fire arrow

Fire Fly A-1E strike aircraft in Barrel Roll, used for
 forward air control as well as strikes

1st Lt First Lieutenant
 Fishhook The protrusion of Cambodia into Military Region III

flak	Bursting shells fired from AA guns
flak-suppression fire	Fire used to suppress AA fire immediately prior to and during an air attack on enemy positions
flechette	small steel dart
flight-following	the task of keeping in contact with specified aircraft to determine enroute progress and/or flight termination
FLIR	forward-looking infrared
FLR	forward-looking radar
flt	flight
Flying Boxcar	Nickname of the C-119 twin-boom transport
FM	frequency modulation
FO	forward observer
FOB	forward operating base
FOL	forward operating location
fr	from
frag	Fragmentation operations order; the daily supplement to standard operations order governing the conduct of the air war in Southeast Asia; it contained mission number and function, type of ordnance, time on target, and other instructions; "to frag" means to issue a fragmentation operations order covering the details of a single mission
FSCC	fire support coordination center
FSO	fire support officer (United States Army)
FTD	field training detachment
ftr	fighter
Funny Bomb	A 500- or 750-pound incendiary bomb cluster (M-31/32 and M-35/36 munitions)
FWF	free world forces
G	The measure or value of the gravitational pull of the earth or of a force required to accelerate or decelerate any freely movable body at the rate of about 32.16 feet-per-second; to pull "3 G's" means to be subjected to a G-force of 3 G's
G-2/G-3 Air	Intelligence and Operations (corps and division level)

UNCLASSIFIED

Gen	General
GLO	ground liaison officer
GP	general purpose bomb
gp	group
Hammer	Call sign of FAC's from the 23d TASSq (augmented), operating over the Lam Son 719 operations area of Laos
hard ordnance	General purpose bombs to achieve blast or cratering effect
HE	high-explosive (iron bomb)
HF	high frequency
high-drag bomb	Weapon equipped with fins that increase its time of fall; for low-altitude delivery
Hillsboro	The EC-130 ABCCC in southern Steel Tiger during the day
hist	history, historical
Hobo	Call sign of 56th SCWg A-1 aircraft operating in Laos from Nakhon Phanom RTAFB, Thailand
HQ	headquarters
IAS	Indicated airspeed, i. e., airspeed read from the face of the indicator in the aircraft's cockpit
<u>ibid.</u>	in the same place
IFF	Identification, friend or foe; a method for determining the friendly or unfriendly character of aircraft and ships by other aircraft or ships, and by ground forces using electronic detection equipment and associated IFF units
IFR	instrument flight rules
Igloo White	A surveillance system consisting of hand-implanted and air-delivered sensors, relay aircraft, and an infiltration surveillance center; Igloo White was formerly Muscle Shoals

UNCLASSIFIED

incl	inclosure, include
in-country	That part of the Southeast Asia conflict within South Vietnam
inf	infantry
info	information
instruc	instruction
intel	intelligence
intvw	interview
IP	Initial point--a well-defined point, easily distinguished visually and/or electronically, used as a starting point for the bomb run to the target
IR	infrared
iron bomb	A high-explosive bomb
ITACS	integrated tactical air control system
JAGOS	joint air-ground operations system
JAOC	joint air operations center
JCS	Joint Chiefs of Staff
JGS	Joint General Staff (RVN)
jinking	An aircraft maneuver in which a series of rapid turn reversals and abrupt changes of roll and/or pitch attitude at random intervals prevents an enemy gunner from tracking the aircraft
JOC	joint operations center
Jungle Jim	Original covert training and reconnaissance program in RVN (code name later changed to Farm Gate)
JUSMAG	Joint United States Military Advisory Group
JUSMAGTHAI	Joint United States Military Advisory Group, Thailand
karst	A limestone region marked by sinks and interspersed with abrupt ridges, irregular protuberant rocks, caverns, and underground streams
KBA	killed by air
KIA	killed in action
KIAS	knots, indicated airspeed

UNCLASSIFIED

286

knot	A speed of 1 nautical mile an hour (a nautical mile equals 6,076.115 feet or 1,852 meters)
LAU-59	A lightweight, cylindrical, 7-tube, expendable rocket launcher; tubes were reusable
Lamplighter	Nickname of C-130 aircraft operating in northern Laos; eventually Blindbat became the nickname of all C-130 flare missions
Lao	Laotian
LARA	light armed reconnaissance aircraft
laser	light amplification by stimulated emission of radiation
LAU	launching mechanism
lead	The head of an aircraft formation
Leaping Lena	U. S. Special Forces and indigenous forces who conducted long-range reconnaissance/interdiction missions; they acted as hunger-killer teams to conduct small search-and-destroy operations, initially in I and IV Corps; Leaping Lena became Delta in December 1964
LF	low frequency
Lima Site	Aircraft landing sites (dirt strips) in Laos used as resupply points
LLTV	low-light-level television
ln	liaison
LO	liaison office; liaison officer
LOC	line of communication
log	Logistic; also a ground flare used by FAC aircraft to create a reference point during night strikes
loran	Long-range electronic navigation system that uses the time divergence of pulse-type transmissions from two or more fixed stations; also called long-range navigation
LRP	long-range patrol
LRRP	long-range reconnaissance patrol
Lt Col	Lieutenant Colonel
LTD	laser target designator
Lt Gen	Lieutenant General
ltr	letter

UNCLASSIFIED

MAAG	Military Assistance Advisory Group
MAAGAF	Military Assistance Advisory Group, Air Force
MAC	Military Airlift Command
MACTHAI	Military Assistance Command, Thailand
MACV	Military Assistance Command, Vietnam
MAF	Marine Amphibious Force
MAAGAF	Military Assistance Group, Air Force
Maj	Major
Maj Gen	Major General
MAP	Military Assistance Program
MAW	Marine Air Wing
MEB	Marine Expeditionary Brigade
MGF	Mobile Guerrilla Force
MIA	missing in action
Mike Forces	Nickname for mobile strike forces
mil	military
Misty	Call sign for F-100F FAC's flying out of Phu Cat and Tuy Hoa Air Bases, RVN
mm	millimeter (s)
Moonbeam	The EC-130 ABCCC in Laos (Steel Tiger at night)
MR	Military Region; memorandum for record; modification requirement
msg	message
MSQ	mobile search special
MTI	moving target indicator
Mule Team	Early logistical air support in RVN
Nail	Call sign for FAC's of the 23d TASSq operating in Laos out of Nakhon Phanom, RTAFB, Thailand
napalm	A petroleum jelly fire bomb
nape	napalm
Night Owl	Night combat operations in SEA; the delivery of ordnance by F-4's under their own flare illumination; also the call sign for 497th TFSq, Ubon RTAFB, Thailand
Nimrod	Call sign for A-26 aircraft of the 56th SOWg, Nakhon Phanom RTAFB, operating in Laos

UNCLASSIFIED

NKP	Nakhon Phanom, a city and RTAFB in northeastern Thailand
NOD	night observation device (e. g., starlight scope)
NVA	North Vietnamese Army
NVN	North Vietnam
NWC	National War College
O-1	FAC aircraft nicknamed Bird Dog
O-2A	FAC aircraft nicknamed Super Skymaster
OV-10	FAC aircraft nicknamed Bronco
OCMH	Office of the Chief of Military History
OER	officer effectiveness report
ofc	office
off	officer
OJT	on-the-job training
OPD	Operations Planning Document
opl	operational
OPlan	Operation Plan
OpOrd	Operation Order
ops	operations
ord	ordnance
org	organization
OSAF	Office of the Secretary of the Air Force
OSD	Office of the Secretary of Defense
OT&E	operational test and evaluation
OUSAIRA	Office of the United States Air Attache
out-country	That part of Southeast Asia conflict outside South Vietnam, i. e., Laos and North Vietnam
p	page
PACAF	Pacific Air Forces
PAD	program action directive
pam	pamphlet
panel code	A prearranged code for visual communications by use of marking panels (usually between friendly units)
para	paragraph
Parrot's Beak	The tip of the Cambodian salient west of Saigon, South Vietnam

UNCLASSIFIED

Pave Spot A night observation device with boresighted laser target designator, used in the OV-10 aircraft

Pave Way (S) The F-4 aircraft using various guidance devices: Pave Way I (laser); Pave Way II (electro-optical); Pave Way III (infrared)

PCS permanent change of station

pers personnel

PI photointelligence

pilotage Navigation by reference to checkpoints

pipper The center or bead of a gunsight

POL petroleum, oil, and lubricants

popular forces (PF) South Vietnamese paramilitary forces recruited and employed in hamlets and villages; they were nicknamed Puffs

pp pages

Prairie Fire (S) MACV support reconnaissance commando (RECONDO) teams, normally organized to assess ground battle damage and locate lucrative targets for tactical airstrikes; they frequently worked behind enemy lines

prgm program

proj project

provisional unit A temporary assemblage of personnel and equipment to accomplish a specific mission; the personnel are TDY from other units

psychological operations (PSYOPS) Psychological warfare and those political, military, economic, and ideological actions planned and conducted to create in neutral or friendly foreign groups the emotions, attitudes, or behavior to support the achievement of national objectives

pt part

Ranch Hand Defoliation and herbicide operations of UC-123 aircraft

R&T rest and recuperation

Raven (S) USAF FAC's in Laos (usually with a Lao observer aboard), under direct control of the Air Attache, Laos

real time The absence of delay, except for the time required for the transmission by electromagnetic energy, between the occurrence of an event or reception of the data at some other location

recce Reconnaissance, to reconnoiter

reciprocal Opposite in direction; said of a bearing, course vector, or the like; e.g., a reciprocal bearing is the one taken plus or minus 180°

recon Reconnaissance, to reconnoiter

RECONDO reconnaissance commando

ref reference

reference point A prominent, easily located point in the terrain

reg regulation

regional forces South Vietnamese local defense forces (RF)

regt regiment

ret retired

reticle A system of lines, dots, crosshairs, or wires in the focus of an optical instrument

RHAW radar homing and warning

RLAF Royal Loatian Air Force

RLG Royal Laotian Government

roadrunners Indigenous personnel, dressed as enemy and working along infiltration routes in enemy-held territory (1966)

ROC required operational capability

ROE rules of engagement

ROK Republic of Korea

RP Route Package

rpm revolutions per minute

rprt report

rqmts requirements

rsch research

RTAFB Royal Thai Air Force base

rules of engagement Directives issued by competent military authority delineating the circumstances under which United States forces will begin and/or continue combat engagement with other forces met

RVN Republic of Vietnam
 RVNAF Republic of Vietnam Armed Forces

2d ADVON 2d Advanced Echelon
 S-2/S-3 Air Intelligence and Operations (battalion, regiment,
 and brigade level)

SAC Strategic Air Command
 SAF Secretary of the Air Force
 SAM surface-to-air missile
 Sandy Call sign of A-1 search and rescue aircraft located
 at Nakhon Phanom RTAFB, Thailand

SAR search and rescue
 SAWC Special Air Warfare Center
 SCAR Strike control and reconnaissance; also applied to
 pilot FAC's without tactical fighter experience who
 were not authorized to conduct strikes with United
 States troops-in-contact; they were assigned out-
 country

scramble To take off as quickly as possible (usually followed
 by course and altitude instructions)

SEA Southeast Asia
 Sea Dragon (S) Naval gunfire against North Vietnam
 SEAFAC Southeast Asia FAC course at the Special Air Warfare
 Center

SEAITACS Southeast Asia Integrated Tactical Air Control System
 SEAOC Southeast Asia orientation course
 SEAOR Southeast Asia Operational Requirement
 sec section
 SECDEF Secretary of Defense
 2d Lt Second Lieutenant
 SECSTATE Secretary of State
 SF Special Forces
 SFGA Special Forces Group, Airborne
 SGU special guerrilla unit
 shack A direct or perfect hit
 Shadow Call sign of AC-119G gunship
 Shining Cross-border reconnaissance into Laos and the DMZ;
 Brass called Prairie Fire after 1 March 1967

SIF/IFF selective identification feature/identification, friend or foe

Skyspot (S) MSQ-77 and TPQ-10 ground radars and control used to direct aircraft on bomb runs

slant range The line-of-sight distance between two points not at the same elevation

SLAR side-looking airborne radar

slick Low-drag weapon; unarmed troop-carrying helicopter

slow movers Relatively slow-moving strike aircraft (e.g., the A-1, B-57, AC-119, AC-130) as opposed to the fast movers (e.g., the F-4, F-105)

Snort
socked in Call sign for OV-10 FAC's
To be closed or unusable because of no visibility; said of a place, an airbase, or the like

SOF special operation force

SOG Studies and Observations Group; special operations group

sortie One aircraft making one takeoff and landing to conduct the mission for which it was scheduled

SOSq Special Operations Squadron

SOWg Special Operations Wing

sp special

Special Forces Military personnel with cross-training in basic and specialized military skills, organized into small multiple-purpose detachments with the mission to train, organize, supply, direct, and control indigenous forces in guerrilla warfare and counter-insurgency operations, and to conduct unconventional warfare operations

special operations Secondary or supporting operations which may be adjunct to various other operations, and for which no one Service is assigned primary responsibility

Spectre Call sign of AC-130 gunship

Spooky Call sign of AC-47 gunship

Spotlight Report of a moving target derived from sensors and by a FAC or the ABCCC

~~UNCLASSIFIED~~

sq squadron
 SSZ specified strike zone
 starlight
 scope An image intensifier using reflected light from the
 stars or moon to identify targets

Steel Tiger (S) The geographic area in southern Laos designated
 by Seventh Air Force to facilitate planning and
 operations; the term also referred to strikes in
 southern Laos against personnel and equipment
 from North Vietnam

Steve Canyon (S) Code word used in South Vietnam for covert FAC
 operations in Laos (volunteers were USAF FAC's)

stf staff
 stmt statement
 stn station
 strike lead The pilot leading a fighter formation
 subj subject
 sup supply, supplement
 Super Sabre F-100 strike aircraft
 Super Skymaster 0-2A FAC aircraft
 svc service
 SVN South Vietnam
 sys system

III MAF III Marine Amphibious Force
 tac tactical
 TAC Tactical Air Command
 TAC Air A term used in Southeast Asia to encompass all
 aircraft sorties other than B-52 and strategic
 airlift

TACAN tactical air navigation (radio navigation system)
 TACC tactical air control center
 TACLO Tactical Air Command liaison officer
 TACS Tactical air control system; the organization and
 equipment necessary to plan, direct, and control
 tactical air operations and to coordinate air opera-
 tions with other Services; it is composed of control
 agencies and communications-electronics facilities
 which provide the means for centralized control and
 decentralized execution of missions

~~UNCLASSIFIED~~

TADC tactical air direction center
TAGP Tactical Airlift Group
Tally Ho An intensified interdiction campaign in southern Route Package I using O-2 FAC's in the western mountains and F-100F's in the eastern lowlands (1966)

TAOC tactical air operations center
TAOR tactical area of responsibility
TASE tacticalair support element (U. S. Army)
TASGp Tactical Air Support Group
Task Force (S) A filter point for sensor information received Alpha (TFA) under the Igloo White/Commando Hunt concept; it was organized in 1967 at Nakhon Phanom RTAFB, Thailand, under command of Seventh Air Force

TASSq Tactical Air Support Squadron
TAWC Tactical Air Warfare Center
TAWg Tactical Airlift Wing
TCGp Tactical Control Group
TCMSq Tactical Control Maintenance Squadron
TCSq Tactical Control Squadron
TDY temporary duty
Tet The Lunar New Year holiday observed in Vietnam and other Asian countries; it occurs early in the Julian year

TFSq Tactical Fighter Squadron
TFWg Tactical Fighter Wing
TIA Trends, Indicators, and Analyses
TIC troops-in-contact (with the enemy)
Tiger/Tiger (S) Southern Steel Tiger south of 17° north latitude, Hound for FAC employment (1965-1968); it was redesignated Steel Tiger South and its northern border moved southward

TIS Theater Indoctrinated School
tng training
TOC tactical operations center
TOT time-over-target
Tri-Border The area west of Dak To, South Vietnam, at the Area convergence of the Cambodia, Laos, and South Vietnam borders

Tropic Moon III Follow-on B-57 program for night attacks in high-threat areas, forerunner to the B-57G

Truscott White (S) A United States Army operation in an area near the Laotian and Cambodian borders, west and southwest of Dak To, South Vietnam (1968); the operation's objective was to deny the enemy unrestricted use of the roadnets by destroying installations, personnel, and equipment; the Air Force added tremendous firepower to the operation

TRWg Tactical Reconnaissance Wing
TSN Tan Son Nhut Air Base, Republic of Vietnam
TUOC tactical unit operations center

UE unit equipment
UHF ultra high frequency
UMD unit manning document
unk unknown
US United States (of America)
USA United States Army
USAF United States Air Force
USAFE United States Air Forces in Europe
USAFSAWC United States Air Force Special Air Warfare Center
USAFSOC United States Air Force Special Operations Center
USAFSOF United States Air Force Special Operations Force
USAFTAWC United States Air Force Tactical Air Warfare Center
USAID United States Agency for International Development
USASF United States Army Special Forces
USMC United States Marine Corps
USN United States Navy

VC Vieg Cong; Vietnamese Communists
VFR visual flight rules
VHF very high frequency
VNAF Vietnamese Air Force
VNSF Vietnamese Special Forces
VOR VHF omnirange (for navigation)
VR visual reconnaissance

War Zone C A Viet Cong stronghold northwest of Saigon, roughly encompassing northwestern Tay Ninh Province

War Zone D A Viet Cong stronghold north-northwest of Saigon, embracing an area centered on the intersection of the borders of Binh Long, Phuoc Long, and Bin Duong Provinces

Water Pump (S) Detachment 1, 56th Special Operations Wing, Udorn RTAFB, Thailand

wg wing

wind sheer A condition created by collision of winds from different directions

wing root The very base of an aircraft wing where it joins and blends into the fuselage

Wolf Call sign of F-4 FAC's assigned to the 8th TFWg, Ubon RTAFB, Thailand

WP White phosphorous; plasticized white phosphorous munitions were used as marking rockets or bombs by FAC's who directed airstrikes

wpn weapon

WRAMA Warner Robins Air Materiel Area

Z Zulu Time (Greenwich Mean Time)

Zorro Call sign of T-28 and A-1 aircraft assigned to the 56th SOWg, Nakhon Phanom RTAFB, Thailand

ABSTRACT

This study is the second of a two-part history of Air Force FAC operations in Southeast Asia. The author discusses the evolution of the FAC force, its training, and typical aircraft flown in combat, primarily the O-1, O-2A, and OV-10. He also describes the use of other aircraft in FAC roles, such as helicopters, AC-47 gunships, A-26K attack aircraft, AC-130's, C-123's, the AC-119G, and the F-4 jet. The study also reviews steps taken by the Air Force to improve and refine tactics and techniques, including visual reconnaissance, marking targets, bomb damage assessment, etc. Among the combat roles forward air controllers performed were flying armed FAC aircraft, supporting long-range ground reconnaissance teams and the Special Forces, and maintaining a round-the-clock "rocket watch" in the Saigon area to deter Communist mortar and rocket attacks on allied bases.

DISTRIBUTION

HQ USAF

- | | | |
|------------|-----------------|--|
| 1. SAFOS | 24. AFRD | |
| 2. SAFUS | 25. AFRDG | |
| 3. SAFFM | 26. AFRDM | |
| 4. SAFRD | 27. AFSAG | |
| 5. SAFIL | 28. AFSAMI | |
| 6. SAFMR | 29. AFLG | |
| 7. SAFGC | 30. AFLGF | |
| 8. SAFLL | 31. AFLGP | |
| 9. SAFOI | 32. AFLGX | |
| 10. SAFOII | 33. AFLGY | |
| 11. SAFAAR | 34-35. AFXOD | |
| 12. AFCC | 36. AFXOOF | |
| 13. AFCV | 37. AFXOOSR | |
| 14. AFCVA | 38. AFXOOSL | |
| 15. AFCCN | 39. AFXOOSLC | |
| 16. AFCVS | 40. AFXOOSLD | |
| 17. AFIGPP | 41. AFXOOSN | |
| 18. AFJA | 42. AFXOOSW | |
| 19. AFIN | 43. AFXOXFT | |
| 20. AFPR | 44. AFXOXFTA | |
| 21. AFPRC | 45. AFXOFTF | |
| 22. AFPRE | 46-47. AFXOXXEP | |
| 23. AFPRP | 48. NGB | |

MAJOR COMMANDS

- | | | |
|--------|--------|--|
| 49-50. | AFLC | |
| 51-52. | AFSC | |
| 53-54. | ATC | |
| 55-56. | MAC | |
| 57-60. | PACAF | |
| 61-62. | SAC | |
| 63-66. | TAC | |
| 67-68. | USAFE | |
| 69. | USAFSS | |
| 70. | AULD | |

OTHER

- | | | |
|---------|--|--|
| 71-75. | USAF Air Ground Operation School, Eglin AF Auxillary Field, FL 42544 | |
| 76-78. | USAFTFTAWC (TAC)
Eglin AFB, FL 32542 | |
| 79. | USAF TFWC
TAC
Nellis AFB, NV 89100 | |
| 80-81. | AFSHRC | |
| 82. | CHECO (DAD) | |
| 83-100. | AF/CHO (Stock) | |