THE UNITED STATES AIR FORCE
IN SOUTHEAST ASIA

INTERDICTION
in Southern Laos
1960 - 1968

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Washington, D.C.

1993

Library of Congress Cataloging-in-Publication Data

Van Staaveren, Jacob.
Interdiction in southern Laos, 1960-1968 : the United States Air Force in Southeast Asia / Jacob Van Staaveren.
p. 358 cm.
Includes bibliographical references and index.
1. Vietnamese Conflict, 1961-1975—Aerial operations, American. 2. United States. Air Force—History—Vietnamese Conflict, 1961-1975. 3. Vietnamese Conflict, 1961-1975—Campaigns—Laos. 4. Laos—History. I. Title.
DS558.8.V36 1992
959.704'348—dc20 92-28507
CIP

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402

Foreword

Throughout the War in Southeast Asia, Communist forces from North Vietnam infiltrated the isolated, neutral state of Laos. Men and supplies crossed the mountain passes and travelled along an intricate web of roads and jungle paths known as the Ho Chi Minh Trail to the Viet Cong insurgents in South Vietnam. American involvement in Laos began with photo-reconnaissance missions and, as the war in Vietnam intensified, expanded to a series of air-ground operations from bases in Vietnam and Thailand against fixed targets and infiltration routes in southern Laos.

U.S. Air Force leaders and aircrews flying interdiction missions over Laotian territory faced a unique set of challenges. Their efforts were plagued by political controversies, daunting weather, rugged terrain, a tenacious foe, and above all a bewildering array of rules of engagement limiting the effectiveness of air operations. *Interdiction in Southern Laos, 1960–1968* examines this complex operational environment. Many of these issues—particularly those relevant to conducting a politically sensitive, limited war from foreign bases, with a commitment to minimizing civilian casualties—are still relevant today and for the foreseeable future as the modern Air Force meets its responsibilities in an ever-changing global environment.

Richard P. Hallion
Air Force Historian

Preface

Of the diverse American military actions instituted from 1960 to 1973 to prevent the spread of communism in the Indochina peninsula, none were more complex than those in Laos. There, two highly restricted air and air-ground wars were fought. One was waged in the north to assure the independence, territorial integrity, and neutrality of the Laotian government, guaranteed by the 1954 and 1962 Geneva agreements. The other was waged in the south to arrest the infiltration of manpower and supplies from communist North Vietnam to the Viet Cong insurgents in non-communist South Vietnam. This volume addresses the first phase of the latter war, 1960 to January 1968. It focuses on the activities of the United States Air Force in carrying out a variety of mandated anti-infiltration measures.

Among the complexities of warfare in Laos discussed, one deserves mention from the outset. This is the role of a series of American ambassadors to Laos who were fated to serve as the principal American military as well as political representatives in that country. Their unique position stemmed from the two Geneva agreements that forbade the Laotian government from entering into any formal foreign military alliance. The practical effect of these agreements, which the Lao government largely honored during both wars within its borders, was to preclude the establishment of American and allied military headquarters and bases in Laos. In consequence, virtually all Air Force and other American and allied operations in Laos were normally launched from bases in neighboring Thailand and South Vietnam. The U.S. military commanders in the two countries obtained Lao government approval for these operations through the American ambassador in Vientiane.

The first phase of American military operations in Laos (1960–1963) was chiefly confined to determining the magnitude of North Vietnamese manpower and supply infiltration into South Vietnam. This was done by periodic Air Force photo-reconnaissance missions, small air-supported ground probes into the famous Ho Chi Minh Trail by U.S.-trained Laotian tribesmen living in South Vietnam, and limited border patrolling by U.S.-trained South Vietnamese personnel. Because of the monsoon weather, the largely jungle terrain, and North Vietnamese concealment efforts, the extent of infiltration was hard to ascertain. Nonetheless, intelligence analysts concluded that annually the North Vietnamese were

sending to the Viet Cong in South Vietnam 4,500 to 12,000 personnel plus an unknown amount of weapons and supplies.

Meanwhile, from May 1963 onward, political and military instability in South Vietnam grew. On November 1, 1963, it culminated in the overthrow of President Ngo Dinh Diem by a military junta, exacerbating the infiltration problem in southern Laos. Encouraged by the turbulence in its southern neighbor, the North Vietnamese stepped up their manpower and supply flow to the Viet Cong. The United States embarked on a series of expanding but still small-scale actions. Among them was the dispatch of a special Air Force unit to Thailand to furnish more training to the fledgling Royal Laotian Air Force and to the Royal Thai Air Force as well. The United States also began regular Air Force and Navy tactical reconnaissance over Laos with accompanying armed escorts. It accelerated the recruitment and training of Laotian roadwatch and other information-gathering personnel within Laos and South Vietnam for probes into the trail. And it encouraged the Royal Laotian Air Force to interdict selected infiltration routes more frequently.

Air Force and Navy aircrews flying reconnaissance were not free agents. Administration authorities in Washington and the American embassy in Vientiane imposed an intricate web of air restrictions. These limited the number of sorties that could be flown, the territory that could be covered, and the targets that could be struck by the armed escorts. The curbs sprang from a cardinal element of American foreign policy—to keep Laos from becoming a primary theater of military operations. The aim was to avoid draining resources from the concurrent but higher priority air and ground operations against the communists in South Vietnam, and (beginning in 1965) from the ROLLING THUNDER bombing operations in North Vietnam.

When manpower and supply infiltration through southern Laos failed to diminish in 1964, the United States secured the Lao government's approval to expand the anti-infiltration effort. It launched in December of that year a limited Air Force and Navy interdiction campaign against fixed targets and infiltration routes throughout Laos. The principal purpose of these strikes was to signal the Hanoi government of greater military pressure to come, unless Hanoi ceased supporting the insurgencies in Laos and South Vietnam. When the signal was not heeded, the United States in April 1965 inaugurated a day-and-night Air Force and Navy interdiction campaign in southern Laos while continuing a separate program in the north.

By now it was evident that the two air wars in Laos, the concurrent American and allied operations in South Vietnam, and the recently begun bombing program in North Vietnam would not induce the Hanoi government to come to the conference table soon. Thus more military pressure began to be applied in all areas. In southern Laos during the last half of 1965 and throughout 1966 and 1967, initial air and air-ground programs expanded and new ones were introduced. This resulted in intensified attacks on enemy troops, trucks, logistic and antiaircraft sites, bridges, and many other targets. Strategic Air Command B-52 bombers, already engaged in South Vietnam, began striking enemy redoubts near the South Vietnamese border. As the relatively small, separate air and air-ground programs evolved, each received a nickname: LEAPING LENA, BARREL ROLL, STEEL TIGER, TIGER HOUND, CRICKET, GATE GUARD, TALLY-HO, SLAM, SHOCK, POPEYE, and IGLOO WHITE.

The challenge to air commanders and aircrews in conducting these programs was considerable, for among the Indochina states, Laos had the harshest physical environment. The monsoon weather virtually assured that any given day, pilots and other crewmembers would encounter rain, drizzle, overcast, or fog. On a clear day they were likely to encounter smoke and haze from native slash-and-burn farming and fires from bombings. The jungle terrain of the mountains and the valleys further obscured much of the route and trail system. These conditions, making so difficult the task of pilots and aircrews in flying combat missions in daytime, compounded the problem in finding and striking targets at night. In addition, the airmen had to contend with a wily enemy who traveled under the cover of darkness and was adept at speedily repairing bombed routes, trails, and bridges; building bypasses; and extending his routes and trails. The airmen also had to comply with a bewildering array of ever-changing air restrictions imposed by higher authorities to minimize the danger of causing civilian casualties and over-escalating the air war.

As the infiltration effort continued in 1967, American officials believed that the major objectives in Laos were being achieved. Militarily, Laos remained a secondary theater of operations. The neutralist Vientiane government had not succumbed to the communist-led insurgency in the north. The anti-infiltration campaign appeared to exact an unremitting toll of enemy personnel and supplies moving down the Ho Chi Minh Trail. But in the closing weeks of the year, there were ominous signs that the anti-infiltration programs had not prevented a steady

buildup of Viet Cong and North Vietnamese strength in South Vietnam. This was confirmed by developments in January 1968. In mid-month, communist troops began an envelopment of the U.S. Marine Corps base at Khe Sanh in the northwestern part of the country. This was followed at month's end by the onset of a major Tet offensive against the country's largest cities and American and South Vietnamese airfields and other military bases and installations.

In describing the anti-infiltration campaign until January 1968, this volume notes particularly the many restrictive air rules associated with each evolving air and air-ground program. It also shows how the United States Air Force performed its mission using specially equipped aircraft, applying and experimenting with new interdiction technology, and devising new air tactics and techniques.

A subsequent volume will complete the story of United States Air Force operations in the anti-infiltration campaign in southern Laos from February 1968 until the end of the war in 1973.

Jacob Van Staaveren

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Interdiction in Southern Laos 1960–1968

Chapter I

Early Efforts to Reduce North Vietnamese Infiltration through Laos

The Geneva agreements of 1954, ending French control over Indochina, left the Kingdom of Laos a very fragile country, ruled by contesting factions. The Vientiane government, headed by Prime Minister Souvanna Phouma, was an uneasy coalition of neutralists, led by the prime minister, and communist-oriented Pathet Lao (PL) with Souvanna's half-brother, Prince Souphanouvong, serving as its "nominal" military and political leader. There were separate military groupings with the neutralists controlling the Royal Laotian Army (shortly renamed the *Forces Armées du Royaume* or FAR) and a Pathet Lao army occupying two northern provinces, Houa Phan, also called Samneua, and Phong Saly. The population of three million included a small, French-educated elite and numerous diverse, illiterate tribal groups who lived in isolated jungle and mountainous areas.

The United States supported but did not sign the 1954 Geneva agreements. It nevertheless believed that the free world's interest required keeping Laos and two other newly created Indochina states, South Vietnam and Cambodia, outside the orbit of Communist North Vietnam,* China, and the Soviet Union. The provisions applicable to Laos forbade the Vientiane government from entering into any foreign military alliance, called for the withdrawal of all foreign troops except a French military training mission, and limited the types and amount of military equipment that could be used by the small Royal Laotian Army of 10,000 men. Also established was an International Control Commission consisting of Indian, Canadian, and Polish representatives to ensure compliance with the provisions.[1]

Given Laos's weaknesses, the impreciseness of some of the agreement's provisions, and the suspicions in Washington of the intentions of Hanoi, Peking, and Moscow, enforcement of the agreements to assure

*Officially named the Democratic Republic of Vietnam or DRV.

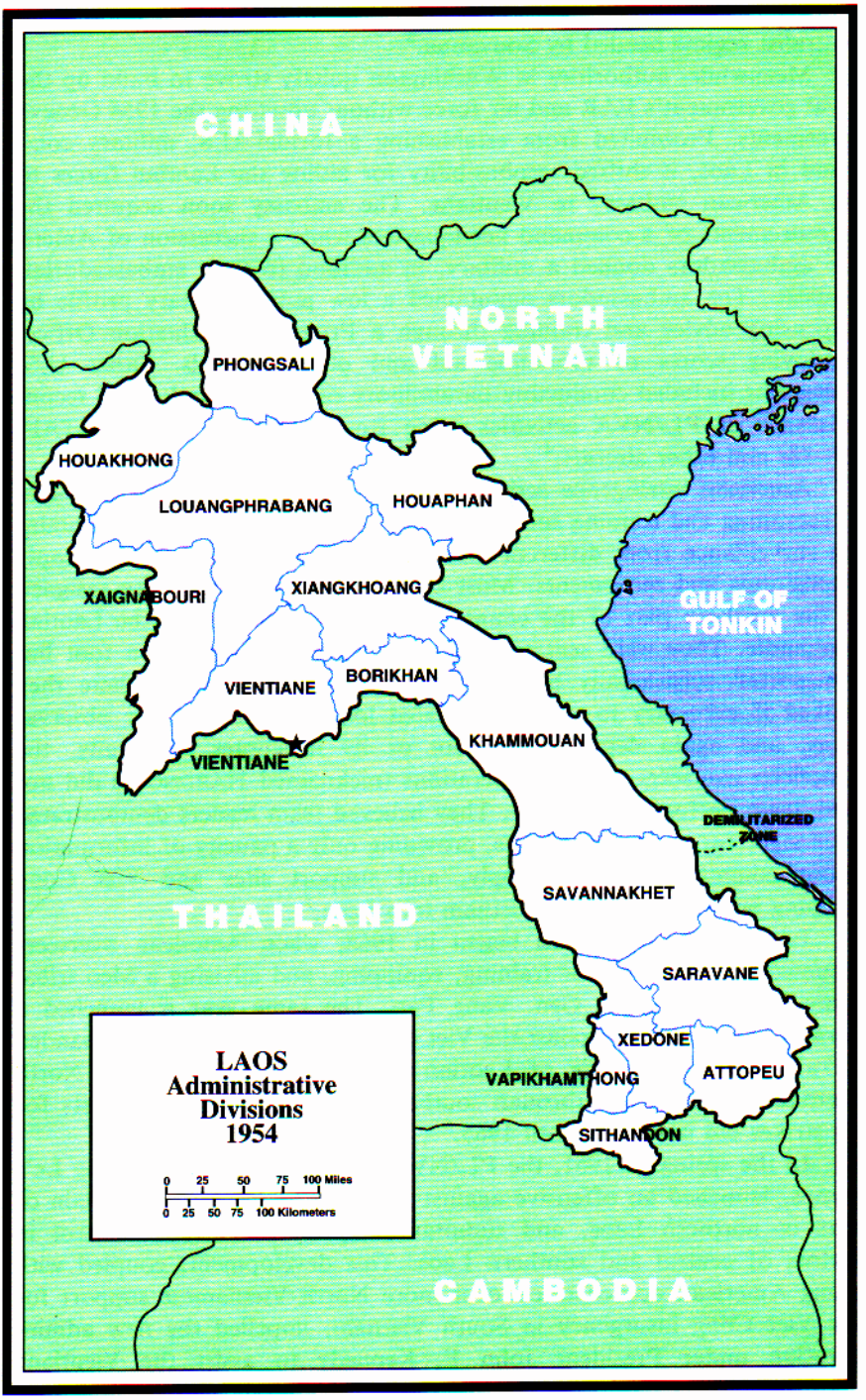
Laos's neutrality promised to be difficult. With few exceptions, the Pathet Lao barred the International Control Commission from entering its occupied areas, and Hanoi made no significant withdrawal of its North Vietnamese cadres engaged in training, equipping, and supporting their Pathet Lao allies. Deeply concerned with these developments and desiring to prevent further spread of communism in Asia, the United States established the Southeast Asia Treaty Organization on September 8, barely seven weeks after the conclusion of the Geneva pacts. Signed by eight nations,* the treaty contained a protocol that brought the three new Indochina states, who were not signatories, under the treaty's protection. Additionally, the United States on January 1, 1955, opened an operating mission in Vientiane to provide Souvanna's government with direct economic assistance. In the ensuing months the United States gradually took over from the French† the training and equipping of the Laotian Army and the minuscule Laotian Army Air Force later renamed the Royal Laotian Air Force (RLAF).[2]

Throughout the late 1950s and early 1960s, Washington persevered in supporting a neutral Laos in a volatile political and military environment. Souvanna's government was threatened not only by the Pathet Lao but by a rightist faction whose principal leaders were Brig. Gen. Phoumi Nosavan, Phoui Sananikone, and Boun Oum na Champassak. Souvanna Phouma resigned as prime minister on July 23, 1958, and was replaced by Phoui Sananikone. Prince Tiao Somsanith became prime minister following elections held in April 1960. In August, a dissident paratroop captain, Kong Le, and his troops overthrew the rule of Prince Tiao Somsanith, and Souvanna Phouma was once again named prime minister. After Souvanna's reinstatement, fighting broke out among the various factions, and the Soviet Union manifested its growing interest in Laos. The Soviets first furnished military airlift to Kong Le's forces, who became allied with the Pathet Lao before going back to the neutralist side, then extended airlift support to the Pathet Lao and the North Vietnamese Army (NVA).‡ The State Department adjusted to the swiftly shifting political winds. When General Phoumi, head of the rightist faction, threatened to pull the United States deeper into the

*Australia, France, New Zealand, Pakistan, Republic of the Philippines, Kingdom of Thailand, United Kingdom, and the United States. The treaty went into force on February 19, 1955.

†Most of the French moved from Vietiane to an air base at Seno.

‡Until 1956, North Vietnamese guerrillas and troops were called Viet Minh (VM); thereafter, more properly, North Vietnamese Army (NVA) or People's Army, Vietnam (PAVN). Although the abbreviation VM appears in many documents after 1956, for consistency this study will use only the abbreviation NVA.


CHINA
NORTH VIETNAM
PHONGSALI
HOUAKHONG
LOUANGPHRABANG
HOUAPHAN
XAIGNABOURI
XIANGKHOANG
GULF OF TONKIN
VIENTIANE
BORIKHAN
VIENTIANE
KHAMMOUAN
DEMILITARIZED ZONE
SAVANNAKHET
THAILAND
SARAVANE
XEDONE
VAPIKHAMTHONG
ATTOPEU
SITHANDON
LAOS
Administrative
Divisions
1954
0 25 50 75 100 Miles
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CAMBODIA

conflict, State switched its backing from the rightists to the reconstituted neutralist regime headed by Souvanna.[3]

Meanwhile, authorities in Washington quietly strove to build up the royal government's FAR and air force without upsetting the 1954 Geneva agreements. Prohibited from establishing a formal U.S. military command in Laos, it shifted responsibility for aiding the Laotian forces to the American embassy in Vientiane. The embassy soon acquired the accoutrements of a command headquarters while a succession of American ambassadors donned a military, in addition to their ambassadorial, chapeau. The ambassadors maintained a low public military profile by dispensing advice and training through a Programs Evaluation Office, employing scores of economic aid and other officials. Other U.S. strategems included conducting paramilitary operations and aerial reconnaissance of PL/NVA activities using Royal Thai Air Force (RTAF) RT-33s and other aircraft.[4]

American intelligence activity in Laos at this time consisted chiefly of recruiting and training small teams of Laotian tribesmen for maintaining surveillance from different locations of PL/NVA troop and supply dispositions and movements. Most of the available teams were assigned to the northern part of the country, but a few operated in the Laotian panhandle. They were sent to a surveillance point, usually on foot but transported occasionally by an American helicopter. From there they walked if necessary to other designated locations, made their observations, and again departed on foot or by helicopter. Generally, the American overseers of these operations (nicknamed HARDNOSE) did not rank team performance highly. They believed team leaders demonstrated little vigor for their assignments, providing only a paucity of information about communist troop, supply, and support sites and Viet Cong crossing points from North Vietnam into Laos.[5]

Larger-scale operations began in 1962, when American overseers assumed responsibility for training, equipping, and advising a Meo tribal army headed by Maj. Gen. Vang Pao. The same year it launched a paramilitary program against the Viet Cong in South Vietnam. Expanded recruitment and training of Laotian tribal teams to report on North Vietnamese infiltration through southern Laos and to select targets for air strikes did not begin until 1965.[6]

In the spring of 1961, the PL/NVA, with the support of Kong Le's troops, launched an offensive against government forces in the Plain of Jars in northern Laos, and simultaneously extended their control in sectors of central and southern Laos. This development, coupled with rising American apprehension over more North Vietnamese support for the Viet Cong insurgency in South Vietnam, impelled the new administration under President John F. Kennedy to assist the Vientiane

government more openly. In April the U.S. Embassy's Programs Evaluation Office was converted into a U.S. Military Advisory Assistance Group (MAAG), and in October, Kennedy sanctioned limited United States Air Force (USAF) reconnaissance of communist activities in both countries. Four USAF RF-101 Voodoos (known as PIPESTEM) began operations from Tan Son Nhut Airfield in South Vietnam. After flying 67 missions in 37 days, they were replaced in early November by 4 other USAF RF-101s (called ABLE MABLE), emplaced at Don Muang Airport outside Bangkok. By the end of the year, ABLE MABLE aircraft had logged 130 sorties, and they continued their reconnaissance missions into 1962. The RF-101s and the photoprocessing units deployed with them provided U.S. agencies in Saigon, Honolulu, and Washington for the first time with some photographic evidence of PL/NVA activities and the Democratice Republic of Vietnam's supportive role.[7]

The early 1961 PL/NVA offensive, which exacerbated the political tensions in Laos, had international repercussions. It impelled Great Britain and the Soviet Union, who had co-chaired the 1954 Geneva agreement, to propose a cease-fire and another conference in Geneva to settle Laos's internal problems. The concerned powers were amenable, as were the three Laotian political groups headed by the rightist Phoumi Nosavan, the neutralist Souvanna Phouma, and the communist Souphanouvong. There followed months of negotiations between the contending Laotian factions, another military crisis at Nam Tha, a show of military force in Thailand by Southeast Asia Treaty Organization members, and protracted debate in Geneva and elsewhere before the fourteen-nation body agreed, on July 23, 1962, to the Declaration on the Neutrality of Laos. This provided for a tripartite coalition Government of National Union with rightists, neutralists, and communists sharing power. Generally, the new agreement reaffirmed the 1954 objectives of a neutral, non-aligned Laos, the withdrawal of foreign troops, and supervision of the agreement by the International Control Commission.[8]

In accordance with the neutrality declaration, the United States shortly withdrew its Military Assistance Advisory Group from Vientiane and in December 1962 terminated USAF ABLE MABLE RF-101 photo-reconnaissance operations after the aircraft had flown 720 missions over Laos and South Vietnam. A series of USAF RB-26 low- and medium-altitude night reconnaissance missions (nicknamed BLACK WATCH), flown from May 29 to July 21, 1962, over the 2 countries, was not resumed. During the 8-week period the RB-26s had flown 50 missions. The Air Force was distressed by Washington's decision to end photo reconnaissance over Laos in the absence of any other direct means to check on communist compliance with the declaration's provisions.

Unfortunately, the mutual suspicions between the United States and its communist adversaries over each other's activities in Laos were unallayed. Washington continued to assist General Vang Pao's guerrilla army, now numbering between 14,000 and 18,000 men, and Kong Le's neutralist troops. Hanoi, with Peking's verbal support, refused to withdraw most of its troops from Laos. Each accused the other of undermining the declaration. The International Control Commission remained largely impotent. In Vientiane the tripartite coalition deadlocked over the distribution of cabinet posts, and fighting resumed between PL/NVA troops and the government's FAR, Kong Le's neutralists, and Vang Pao's guerrillas. The United States and communist powers again stepped up materiel shipments to their respective allies. By the spring of 1963 the combatants were prepared for more large-scale fighting in and around the Plain of Jars.[9]

By now, American aid for Laos was overshadowed by similar but substantially greater aid for the Republic of Vietnam (RVN), led by President Ngo Dinh Diem whose Republic of Vietnam Armed Forces (RVNAF) were battling Viet Cong insurgents. Direct U.S. support for French-held Vietnam began in 1950 when State and Defense Department officials established a MAAG in Saigon. After the south achieved de facto independence following the 1954 Geneva agreements, the Viet Cong threat to the nascent Diem regime impelled Washington to provide more direct military assistance. As noted earlier, the Kennedy administration in late 1961 authorized USAF PIPESTEM and ABLE MABLE RF-101 reconnaissance of South Vietnam and more U.S. combat advisory training for the RVNAF. The Air Force's advisory contribution, sent in November of that year, was a counterinsurgency detachment. Commonly known as FARM GATE, the detachment consisted of 151 officers and men, 8 T-28s, 4 SC-47s, and 4 RB-26s, and it was commanded by Col. Benjamin H. King. The FARM GATE crews quickly began training the Vietnamese Air Force (VNAF).

Early 1962 witnessed further expansion of the U.S. combat advisory activities in South Vietnam. In February, Washington officials established a United States Military Assistance Command, Vietnam (USMACV) in Saigon with Lt. Gen. Paul D. Harkins, United States Army (USA), as commander (COMUSMACV). Attached was an Air Force component, 2d Advanced Echelon (ADVON) (renamed 2d Air Division in October 1962), headed by Brig. Gen. Rollen H. Anthis, and which included the FARM GATE detachment. Anthis also served as chief of Air Force Section, Military Assistance Advisory Group, Vietnam (MAAGV), which gradually became an integral part of USMACV. Army units were also controlled by USMACV. The U.S. Navy was represented in the Indochina theater by the Pacific Fleet (PACFLT), headed by

Adm. John H. Sides, United States Navy (USN), and a component, Seventh Fleet, commanded by Vice Adm. William A. Schoech, USN.[10]

Overseeing service activities in the Indochina theater was the Commander in Chief, Pacific Command (CINCPAC), Adm. Harry D. Felt, USN, headquartered in Honolulu. Like USMACV, Felt's Pacific Command (PACOM) was a unified one with three components: PACFLT; the Pacific Air Forces (PACAF), headed by Gen. Emmett O'Donnell, Jr.; and the United States Army, Pacific (USARPAC). The Air Force's command chain in the Pacific ran from PACAF to Headquarters Thirteenth Air Force at Clark Air Force Base, the Philippines, to 2d ADVON (later, 2d Air Division), an arrangement that would remain in effect until April 1, 1966, when the 2d Air Division became Seventh Air Force and was assigned directly to PACAF. Throughout the war, 2d Air Division/Seventh Air Force also remained concurrently a component of USMACV, which was a sub-unified command under PACOM.[11]

During 1962, the Kennedy administration sent additional military personnel and units to upgrade the Diem government's RVNAF military and pacification programs. Although American support to Saigon was considerably more overt than to Vientiane, it was nonetheless characterized by restraint to avoid a fatal breach of the Geneva agreements and a sharp confrontation with Hanoi and its Soviet and Chinese allies.[12]

American assistance to the Diem regime included support for border control of South Vietnam's 900-mile boundary with Laos and Cambodia to reduce the flow of manpower and supplies from the Democratic Republic of Vietnam (DRV) to the Viet Cong. However, three-fourths of the boundary lay in rugged terrain—the remainder was in the delta region—and the overall geography and climate of the area posed formidable difficulties in countering enemy infiltration.

Most of Laos's 91,400 square miles consisted of jungle-covered mountains, some rising to about 9,000 feet in the north and 5,000 feet in the south. Tropical rain forests of mixed evergreens and deciduous trees abounded. Other trees were second growth bamboo, wild banana, and scrub, and much of the ground was covered with tall tough grass called *tranh*. The country had a very rudimentary transportation system of small, poor roads and trails, but it also had an extensive network of streams and rivers of which the Mekong was the largest and most famous. There was no railroad.[13]

To infiltrate men and supplies to South Vietnam, the DRV relied on the eastern sector of Laos contiguous to southern North Vietnam and northern South Vietnam, an area popularly known as the Ho Chi Minh Trail. This was a latticework of roads, trails, tracks, and waterways along the western slope of the Annamite Mountain chain and the

adjacent hilly country. There were numerous valleys between rugged mountain passes with elevations of 4,600 to 5,600 feet. Roads generally followed valleys and were often parallel to navigable rivers which served as alternate routes.

A crude approximation of the trail was used in World War II by anti-Japanese guerrillas (called the Viet Minh) who traversed the jungle mountains between Tonkin (North Vietnam) and Saigon. In their war against the French after 1945, the Viet Minh again used the tortuous jungle trails and tracks until French control of the Vietnamese coast weakened, enabling them to use the seacoast more freely. Three-month journeys over the land routes were not uncommon.

After the French defeat in 1954 and the division of Vietnam at the 17th parallel, the trail became the main route for DRV agents and communist-indoctrinated South Vietnamese "returnees"* en route to South Vietnam. By the early 1960s, the network of trails near the Laos-South Vietnam border leading to Viet Cong camps in southeastern Laos evolved into a dry-season truck route. Until 1964, vehicles were confined to relatively poor roads—such as Routes 12 and 8 through the Mu Gia and Nape Passes respectively—to Thakhek, on the Mekong River, and then to Tchepone (via Routes 13 and 9), or to southern Laos (via Route 23). There were only trails directly south of Mu Gia to Attopeu and the Cambodian border, and there was no route open to truck traffic since Thakhek was then held by troops of the Lao government's army (i.e., the FAR). Roads averaged eight to twelve feet wide, trails about three feet. Generally, the trails were not visible from the air except at isolated spots such as stream crossings, or in savannah areas (open grassland or *tranh* with scrub and scattered trees).[14]

For U.S. airmen who would spend nearly fourteen years flying reconnaissance and strike sorties over Laos, the country possessed not only a forbidding terrain, but its weather presented a formidable challenge. The climate, like that of Burma and Thailand, was characterized by two major seasons: the annual southwest monsoon from about mid-May to mid-September and the northeast monsoon from mid-October to mid-March. The two seasons were separated by a short

*The returnees were among the 87,000 Viet Minh troops and 43,000 civilians and dependents that elected to go from South to North Vietnam after the 1954 Geneva agreements. After integration into the NVA, some of the southerners were sent back to South Vietnam in the late 1950s as leadership cadres to assist the Viet Cong insurgency, while others were integrated into regular NVA divisional units that entered the South at a later date. [Bernard B. Fall, *The Two Viet-Nams* (New York, 1963), pp 358–59; Joseph J. Zasloff, *The Role of North Vietnam in the Southern Insurgency* (RM-4140-PR, Santa Monica, 1964), pp 32–33.]

transitional period, mid-March to mid-May and mid-September to mid-October. The southwest monsoon brought heavy and frequent precipitation, overcast, high humidity, and tropical temperatures except at the higher elevations. Roughly seventy percent of the annual precipitation in Laos, averaging fifty to one hundred inches a year, fell in this period. The heaviest rainfall was in July and August. The northeast monsoon brought a relatively dry season with less rain, somewhat lower temperatures and humidity, and clearer skies. Nevertheless, pilots would often encounter a mixture of fog, overcast, and then clear visibility. Poor flying conditions existed mostly in the mornings when visibility was reduced below two and a half miles by fog before burning off a few hours later. In the dry season, when good flying weather often prevailed, many areas of Laos were enveloped in smoke, dust, and haze as a result of a Laotian practice of slashing and burning vegetation to clear land for cultivation.[15]

Thus Laos's terrain, particularly the border region with South Vietnam, and its climate severely handicapped U.S. and RVN officials responsible for gathering information on and countering North Vietnam's infiltration along the Ho Chi Minh Trail. In the early 1960s, U.S. agencies addressed the problem in numerous studies and reports, usually in conjunction with overall assessments of Saigon's political and military difficulties.

As already noted, shortly after assuming office in January 1961, the Kennedy administration stepped up actions to blunt communist advances in Laos and South Vietnam. Officials believed that the upsurge in Viet Cong activity began after a meeting of the Central Committee of the North Vietnamese communist party in Hanoi on May 13, 1959, when it vowed publicly "to smash" the Diem regime. Following this decision, the Viet Cong "significantly increased [its] program of infiltration, subversion, sabotage, and assassination designed to achieve this end." In April 1961 Kennedy approved additional aid for the Diem regime to enable its armed forces among other things

> to increase . . . border patrol and insurgence suppression capabilities by establishing an effective border intelligence and patrol system, by instituting regular aerial surveillance over the entire frontier area, and by applying modern technological area-denial techniques to control roads and trails along South Vietnam's borders.

The magnitude of the infiltration was not spelled out, but in June President Diem wrote President Kennedy asking for more aid. Diem claimed enemy documents obtained in a recent military operation along Route 9 from Laos to South Vietnam contained "definite proof" that

2,860 armed agents had infiltrated over the preceding 4 months.* While some high-ranking officials were skeptical about the preciseness of the figure, they nonetheless viewed infiltration as a serious problem. In September 1961, for example, Ambassador Frederick E. Nolting, Jr., in Saigon, and the State Department believed there was "increasing infiltration" from the DRV, principally manpower, not only through Laos but through the demilitarized zone between the two Vietnams, and by sea.[16]

The facts were hard to come by. On October 5, 1961, a special national intelligence estimate concluded that only a small part of the Viet Cong main force, then estimated at about 17,000, came from outside South Vietnam. Of these, 80 to 90 percent were recruited locally, and there was little evidence that the Viet Cong relied on external supplies. However, a month later, Maxwell D. Taylor, former Chairman of the Joint Chiefs of Staff (JCS), and now military representative to President Kennedy, returned from a special mission to South Vietnam. He considered the infiltration problem sufficiently important to warrant helping the Diem regime organize a border ranger force for a long-term campaign on the Laotian border against Viet Cong infiltrators. Taylor also urged assisting Diem's counterinfiltration efforts with air reconnaissance, airlift, special intelligence, and air-ground support techniques.†[17]

The Kennedy administration's growing alarm over infiltration impelled the State Department to issue a white paper in December 1961. The document alleged that a Hanoi-based Central Research Agency with branches in Laos and South Vietnam "was responsible for sending agents and supplies to the South by sea, across the demilitarized zones, and along the mountain trails through Laos." The State Department published excerpts of confessions by a few Viet Cong soldiers who had entered South Vietnam by land and sea routes.[18]

The bulk of infiltration data was compiled by U.S. Army advisory and intelligence units (principally by MACV after its establishment in February 1962), but throughout 1962 and early 1963 the data was fragmentary and assessments of its importance conflicting. MACV reported the capture of increasing amounts of Chinese, Soviet, and some Czech small arms and ammunition from the Viet Cong in the last half of

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*Later, MACV intelligence calculated that about 5,843 infiltrators entered South Vietnam in 1961, of which only 4,486 could reliably be confirmed. [*The Senator Gravel Edition, The Pentagon Papers*, 4 vols. (Boston, 1971), II, 60; DIA Bul 135-64, Jul 14, 1965.]

†Basically, Taylor's recommendations constituted a high-level endorsement of counter-infiltration actions approved by Kennedy in April and already under way by the U.S. MAAG in Saigon.

1962, but compared with total enemy materiel found, the external aid was small. In contrast with the Air Force's view, MACV said there had been virtually no aerial observation of infiltration (i.e., by the USAF RF-101 missions from October 1961 to September 1962) along the Laos-South Vietnam border, and that most confirmatory evidence depended on low-level agent reports. The evidence frequently did not reach MACV until five or or six months later. On the other hand, belief persisted that infiltration was an important factor in explaining Viet Cong advances. "We are not unmindful of the fact that pressure on South Vietnam may well continue through infiltration through the Laos corridor," testified Secretary of Defense Robert S. McNamara before the House Armed Services Committee early in February 1963.[19]

The next month, Michael V. Forrestal, a presidential aide, and Roger Hilsman, Director of the Bureau of Intelligence and Research in the State Department, after a visit to South Vietnam, downgraded the importance of infiltration. In a report to President Kennedy, they noted that despite alleged losses of 20,000 killed* and 4,000 wounded over the past year, the insurgents were still able to field about 23,000 regular forces, 100,000 other military, and unknown thousands of sympathizers. The figures suggested that the Viet Cong "are able to obtain an adequate supply of recruits and large quantities of food and other supplies . . . from the villagers of South Vietnam." The report claimed that infiltration by sea had been "effectively blocked" since early 1962. Whatever supplies delivered by land were in meager quantities, and

> there seems no doubt that trails have so far been used for specialized equipment such as radios, for medicines; and perhaps a few automatic weapons, although no weapons have yet been captured which could proved to have been brought in after 1954. Thus the conclusion seems inescapable that the Viet Cong could continue the war effort at the present level, or perhaps increase it, even if the infiltration routes were completely closed.

As for manpower infiltration, the report asserted that "captured documents, POW [prisoner-of-war] interrogation, evidence gathered by patrolling, and other intelligence indicates [sic] that 3,000 to 4,000 Viet Cong at the most have come over the . . . Ho Chi Minh trails since January 1962."[20]

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*Such estimates by the South Vietnamese, to say the least, were viewed with considerable skepticism by U.S. officials. In their report to Kennedy, Forrestal and Hilsman observed, "No one really knows . . . how many of the 20,000 'Viet Cong' killed last year were only innocent or at least persuadable villagers."

Later, MACV intelligence analysts, generally revising manpower infiltration figures upward, compiled the following annual totals of infiltrators, noting the number of confirmed, including probables, and the unconfirmed or possibles:*

INFILTRATORS	1959-60	1961	1962	1963
Confirmed	1,800	4,166	5,630	4,486
Unconfirmed	2,756	1,677	7,045	3,207
TOTAL	4,556	5,843	12,675	7,693

The figures indicate that intelligence analysts were unable to confirm about forty-eight percent of the estimated total infiltrators for these years, or determine how many infiltrators were South Vietnamese returnees and indigenous North Vietnamese. The Defense Intelligence Agency in Washington believed the 1959-1960 and 1962 figures were possibly overstated. The sudden rise in infiltrators in 1962 could be ascribed to overreliance on inaccurate South Vietnamese reporting or to a sudden change in criteria in counting infiltrators. MACV's explanation for the radical drop in infiltration in 1963 was that most South Vietnamese veterans of the French war in Indochina (i.e., the southern returnees) had now rejoined the Viet Cong and that Hanoi was sending its own draftees.†[21]

Meanwhile, the United States assisted the Diem regime in developing counterinfiltration forces. In October 1961 the U.S. MAAG in Saigon completed an air-ground infiltration plan, and the RVNAF Joint General Staff (JGS) approved it in December. Using the plan as a guide, and U.S. Army Special Forces personnel began training elements of the Army of the Republic of Vietnam (ARVN), rangers, and the Civilian Irregular Defense Group (CIDG) (an American-directed group of irregulars outside

*Beginning in October 1963, MACV established three basic criteria for determining if a NVA unit or group was in South Vietnam. Its presence was *confirmed* if verified by two NVA prisoners of war (POWs) or returnees; *probable* if verified by one POW or returnee and a captured document; and *possible* if based on data evaluated as possibly true but not supported by evidence from a POW, returnee, or captured document. Generally, MACV considered the "probables" confirmed. As the war progressed, the criteria was not rigidly adhered to. [M. G. Weiner, J. R. Brom, and R. K. Koon, *Infiltration of Personnel from North Vietnam, 1959-1967* (RM-5760-PR, Santa Monica, 1968) (hereafter cited as *Rand Memo on NVN Infiltration, 1959-1967*); Harkins Fact Book (MACV Fact Book 57), Jun 64, Tab B.]

†In July 1965, MACV estimated total 1964 infiltration at 8,285 with 4,976 confirmed and 3,274 unconfirmed. Later, MACV again boosted the infiltration figures slightly upward for the period 1959 through 1963, but substantially raised the 1964 figure to 12,424 (presumably all confirmed). For a discussion of the vagaries of the infiltration estimating process from 1959 to 1967, see *Rand Memo on NVN Infiltration, 1959-1967*, pp 40-49.

of the RVNAF which included many Montagnard tribesmen)* for border-control operations. The MAAG's role in cross-border training was gradually transferred to Headquarters MACV after the latter's establishment on February 8, 1962.† However, the transfer of CIDG training responsibilities to MACV, ordered by Secretary McNamara, was not completed until November 15, 1962.

By March 1963, the Saigon government's border-control force consisted of about 5,000 ARVN, ranger, and CIDG personnel deployed within 12 miles of South Vietnam's borders in 103 outposts ranging in size from platoons to battalions. The force included a number of special teams, composed of South Vietnamese Montagnards who had many kinsmen in Laos, trained to conduct incursions up to 6 miles inside Laos to collect intelligence and to interdict enemy personnel along segments of the Ho Chi Minh Trail. Generally, MACV military trainers considered initial border-control operations not very effective, citing the poor performance of many recruits and the inadequate way they were organized by the RVNAF. The operations were also limited upon the insistence of the State Department. Concerned about the political fallout from untimely border incidents, State persuaded the Saigon government on November 15, 1962, not to conduct ground or VNAF air operations within 6 miles of South Vietnam's borders with Laos and Cambodia without Washington's prior approval. MACV, working on plans for more effective border control, considered the restriction "completely incongruous" as did the RVNAF Joint General Staff.[22]

The low-key counterinfiltration activity was undertaken in conjunction with gradually expanding U.S. military support for the Diem regime. In March 1963, the combat advisory forces in South Vietnam totaled about 13,000 Army, Air Force, Marine, and Navy personnel. The aid included a wide array of weapons, equipment, aircraft, and supplies to battle Viet Cong insurgents now numbering an estimated 23,000 regular troops, 100,000 militia-type supporters, and thousands of sympathizers despite alleged high casualties inflicted by the RVNAF.‡ The Air Force was represented by about 3,200 airmen, 2 squadrons of C-123 transports (a third squadron would arrive soon), a FARM GATE unit grown to 41

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*In addition to counterinfiltration activities, CIDG recruits were used in South Vietnam's youth programs, in civic action, and in commando units. [Jacob Van Staaveren, *USAF Plans and Policies in Vietnam, 1961-1963* [The Air Force in Southeast Asia] (Washington, 1965), pp 29-30.]

†MAAG was eventually merged with MACV beginning May 15, 1964. [Hist, MACV, 1964, pp 10-14.]

‡As indicated earlier, the Saigon government claimed the Viet Cong lost 20,000 killed and 4,000 wounded from about February 1962 to February 1963. [*Gravel Pentagon Papers*, II, 717.]

aircraft—principally T-28s, B-26s, RB-26s, and C-47s—6 ABLE MABLE RF-101s, and other supporting aircraft. Most units were emplaced on South Vietnamese bases although a few were stationed in Thailand. The Army and Marines possessed helicopters and other aircraft, and offshore lay PACFLT's carrier force.

In Laos, as a result of the Geneva agreements of July 23, 1962, U.S. military assistance remained at low ebb, including suspension of USAF reconnaissance. With an upsurge in PL/NVA operations including infiltration in the spring of 1963, the United States cautiously began to increase its support for the Vientiane government. Simultaneously, it provided more resources for Government of Vietnam border surveillance and control, optimistic that Saigon, finally, was "beginning to win the war."[23]

The U.S. policy of supporting but also restricting border-control operations irritated the RVNAF Joint General Staff. In April 1963, against the State Department's wishes, the JGS announced new border operational rules that allowed the ARVN to probe within six-tenths of a mile of the Laotian or Cambodian borders and to the border line where it was clearly marked by a river, a road, or some other geographical feature. In the north, the ARVN could patrol to within six miles of the demilitarized zone. VNAF aircraft were permitted to fly to the Laotian and Cambodian borders only if the borders were clearly marked. If not, aircraft had to remain one mile from the borders if a mission was controlled by a forward air control (FAC) aircraft, and three miles distant if flying without one. In addition, the JGS shifted operational control of border surveillance and related activities to RVNAF corps commanders. Despite a warning from Ambassador Nolting and General Harkins (acting on State Department instructions) that untimely border violations could jeopardize common U.S.-RVN interests, Saigon's generals placed the new border-control rules in effect on May 1, 1963.[24]

Convinced that U.S. aerial reconnaissance was also needed for the counterinfiltration program, Gen. Emmett O'Donnell,* Commander in Chief, Pacific Air Forces (CINCPACAF) in Honolulu proposed to Admiral Felt on April 30 a USAF aerial survey of South Vietnam's borders with Laos and Cambodia. He believed this would assist detection of infiltration, correct map inaccuracies, and provide other civil and military benefits. But authorities in Washington, unwilling to risk a clear breach of the Geneva agreements of 1962, were not ready to reintroduce

*General O'Donnell served as CINCPACAF from August 1, 1959, to July 15, 1963. He was succeeded by Gen. Jacob E. Smart who served from August 1, 1963, to July 31, 1964.

USAF aircraft over Laos. They permitted, however, an additional buildup of South Vietnam's border-control forces. On May 6, at a conference in Honolulu attended by McNamara and other ranking military and State Department officials, it was decided the force would be increased substantially, from about 5,000 to 8,000 personnel, although General Harkins doubted if it could do more than hinder infiltration. However, Roger Hilsman, now Assistant Secretary of State for Far Eastern Affairs,* was more optimistic about organizing and training the ground forces for effective anti-infiltration operations.[25]

The conferees at Honolulu also discussed the feasibility of ending infiltration by applying more military pressure on the Hanoi regime by striking, for example, eight important North Vietnamese targets. Defense Secretary McNamara opposed air strikes at this time but believed Admiral Felt should include this option in his contingency planning. He favored a less volatile policy, ordering a step-up in sabotage activities† against the DRV as a means of warning its leaders more pressure could be applied.[26]

Meanwhile, the communists gave no indication they were prepared to retrench militarily. On the contrary, after some territorial gains in the Plain of Jars region in northern Laos in the early months of 1963, they expanded their control of the eastern sector of the central and southern panhandle. Possessing a few, small, Soviet-built transport aircraft, they made preparations to fly in men and supplies to areas close to the Ho Chi Minh Trail. In May they completed building 2 airstrips near the South Vietnamese border somewhat south of Tchepone, and were engaged in rehabilitating an airfield once used by the French near Chavane, and constructing a new airfield not far from Saravane. From Lao intelligence sources, American officials learned that Pathet Lao agents on the left bank of the Kong River north of Attopeu had recruited in April and May local Laotians to transport supplies. About 300 of them, after returning to their villages, revealed they had carried wooden cases with unknown contents from Chavane to a supply area at Sam Luang. Later, the Americans learned that 500 other villagers had been

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*Hilsman was appointed to his new post in April 1963.

†After the end of the French Indochina war in 1954, the United States attempted to undermine support for the new communist Hanoi regime by sponsoring low-level covert operations. It organized, trained, and equipped anti-communist Vietnamese who committed acts of sabotage such as contaminating the oil supply of a bus company, disrupting rail transportation, and distributing leaflets designed to create disaffection among the populace. [See *The Pentagon Papers as Published by the New York Times* (New York, 1971), pp 53–66.] Larger and harder-hitting covert operations against the DRV began under the aegis of CINCPAC's Operation Plan 34A on February 1, 1964 (discussed later).

recruited and conveyed similar types of wooden cases from Sam Luang towards South Vietnam.[27]

The foregoing and similar reports triggered further high-level discussions in Washington, culminating in June 1963 in the completion of a U.S. three-phase plan to augment counterinsurgency activities in Laos. On the 19th, President Kennedy approved Phase I. This assured more direct aid to Lao FAR, neutralist, and General Vang Pao's guerrilla forces, an upgrading of Lao intelligence (including recruiting more Kha tribesmen for intelligence collecting), and equipping of the RLAF with larger T-28s in exchange for their T-6s. Additionally, Phase I sanctioned expansion of Government of Vietnam (GVN) border patrols to collect intelligence on the PL/NVA and to attack NVA troops entering South Vietnam.[28]

In the ensuing weeks evidence of a larger PL/NVA buildup around Tchepone (in enemy hands) and a threat to Attopeu farther south prompted President Kennedy on July 30 to approve stronger Phase II measures that were incorporated in National Security Action Memorandum 256 issued the same day. The document encouraged FAR and neutralist troops and the RLAF, using T-6s and newly acquired T-28s, to conduct selective operations against the PL/NVA, and authorized expansion of intelligence collecting by tribesmen in Laos,* attacks by GVN border patrols against DRV infiltrators,† and stepped-up sabotage of enemy bases in northern Laos and North Vietnam. However, only the Department of State, with Department of Defense concurrence, would determine when provisions of National Security Action Memorandum 256 should be carried out with maximum impact on the enemy. Later, tougher Phase III measures would be disapproved.[29]

Because the RLAF's acquisition of more T-28s and American recruitment of more tribal roadwatch teams would take time, National

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*By July 1963 about 400 Laotian tribesmen had been recruited for intelligence collecting. Trained by American intelligence personnel in camps near Savannakhet and Pakse in southern Laos, they observed PL/NVA dispositions and movements near or along the Ho Chi Minh Trail. However, their primitive backgrounds made training difficult and their intelligence collection was accordingly limited. [Intvw, Lt Col Robert G. Zimmerman, Oral Hist Br, Albert F. Simpson Hist Rsch Cen, with Col Robert L. F. Tyrrell, former AIRA, Vientiane, May 12, 1975; memo, Henry L. T. Koren, Dept of State (FE/SEA), to Roger Hilsman, Asst SECSTATE for Far Eastern Affairs, subj: Meeting on Laos, Jul 27, 1963.]

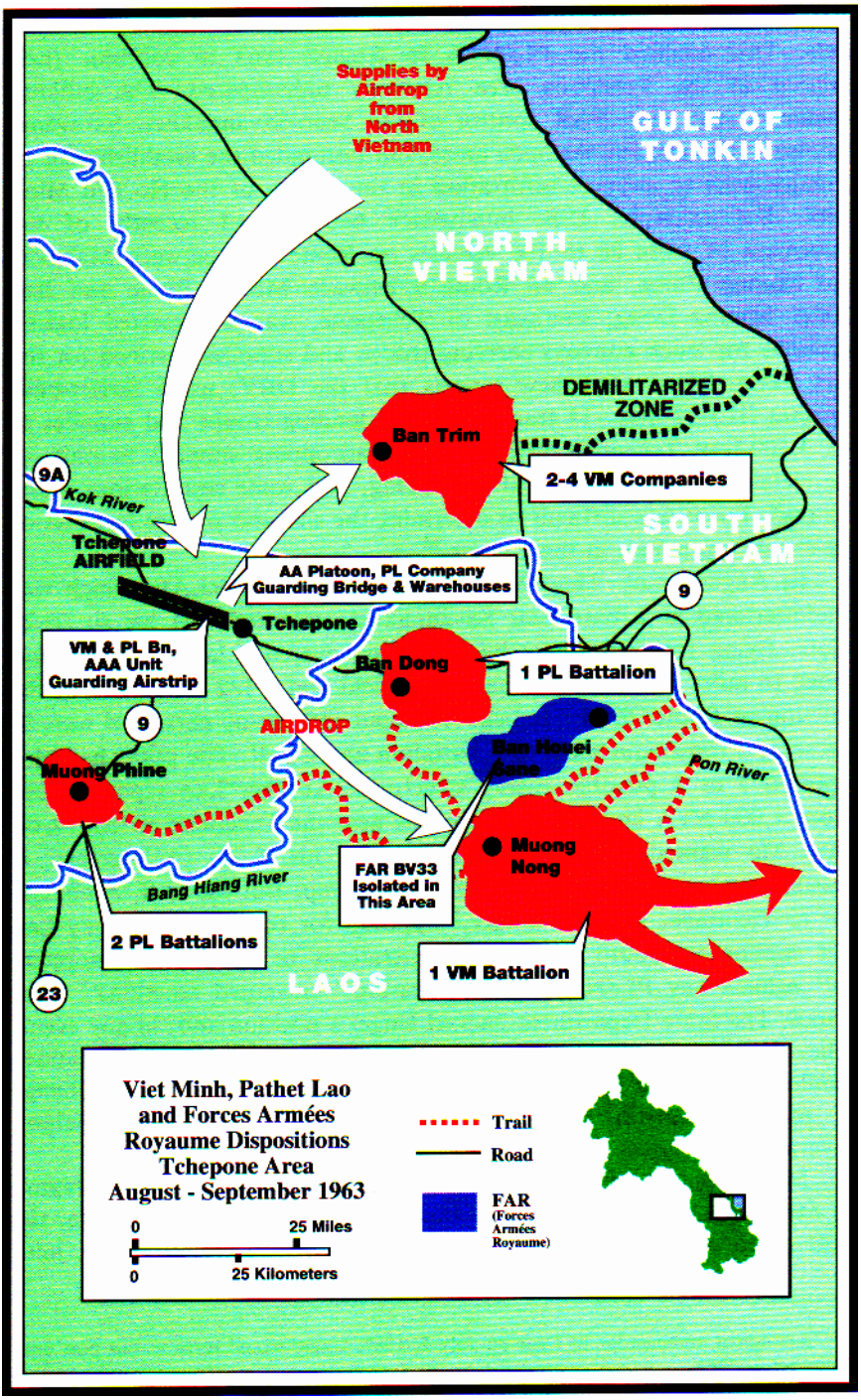
†By July 1963 MACV military trainers had organized the 5,000-man-plus border-control force into 2 active Montagnard tribal units of 18 men each, 5 ARVN companies of 151 men each, and 10 specially trained ARVN ranger companies. About 150 Montagnards had undergone some cross-border training but most were not yet assigned to organized units. [Memo, Koren to Hilsman, Jul 27, 1963.]

Security Action Memorandum 256 could not be implemented immediately. This enabled the PL/NVA in August 1963 to continue their buildup in the Tchepone area relatively unhampered. The buildup threatened not only FAR control of the Seno-Savannakhet, Saravane-Bolovens Plateau, and Attopeu areas, but portended the establishment of a major base to support infiltration in this sector of the Ho Chi Minh Trail. For example, U.S. intelligence had learned recently of the movement of from 80 to 160 vehicles on Route 12A between Mahaxay and Muong Phine, and on Route 9 between Muong Phine and Ban Dong. Muong Dong, southeast of Tchepone, was a suspected logistic terminus for truck convoys carrying troops and supplies destined for the Viet Cong. There were new reports that the DRV, using Soviet-built Ilyushin (IL)-12 and -14 transports, was landing troops and supplies at the 3,600-foot Tchepone airfield and paradropping supplies to units in the vicinity of Muong Sen, Muong Nong, and some rest stations along the trail. But it was difficult to determine the size and precise location of the enemy's presence in these areas.[30]

In August, Col. Thao Ma, Commander of the RLAF, which was headquartered at a base near Savannakhet, reported that his six T-28 pilots, flying from the same base, had uncovered a large enemy camp about 16 miles west of the Tchepone airfield and 1 1/2 miles west of the junction of Routes 9/23. He believed about 750 enemy personnel were in the area, a force equivalent to a battalion and a half. The pilots had also reported 7 or 8 possible enemy structures. Another Lao report placed about 1,000 NVA and 500 local recruits near the Tchepone airfield. Col. Thao Ma wanted to launch a patrol with his T-28s to intercept, if possible, enemy aircraft and to strike the camp. But the U.S. Ambassador in Vientiane, Leonard Unger,* opposed for the time being any Lao and supporting South Vietnamese operations or American "mopping up" against key PL/NVA targets, fearing "unwanted reactions" from Hanoi. The State Department backed Unger's position and, in any event, believed joint Lao and South Vietnamese air and ground operations should be preceded by improved intelligence collection and an exchange of military liaison officers between the Vientiane and Saigon governments.[31]

Meantime, in conjunction with high-level discussions in Washington on expanding communist activity in both Laos and South Vietnam, the joint chiefs asked Admiral Felt's views about the feasibility of a joint

*Appointed ambassador to Laos on July 3, 1962, Unger would serve in this post until December 1, 1964.


Supplies by Airdrop from North Vietnam
GULF OF TONKIN
NORTH VIETNAM
DEMILITARIZED ZONE
Ban Trim
2-4 VM Companies
9A
Kok River
Tchepone AIRFIELD
AA Platoon, PL Company Guarding Bridge & Warehouses
SOUTH VIETNAM
9
Tchepone
VM & PL Bn, AAA Unit Guarding Airstrip
Ban Dong
1 PL Battalion
9
AIRDROP
Muong Phine
Ban Houei Sane
Ron River
Muong Nong
FAR BV33 Isolated in This Area
Bang Hiang River
2 PL Battalions
1 VM Battalion
23
LAOS
Viet Minh, Pathet Lao and Forces Armées Royaume Dispositions Tchepone Area August - September 1963
0
25 Miles
0
25 Kilometers
Trail
Road
FAR (Forces Armées Royaume)

FAR, neutralist, and GVN assault on Tchepone if and when Washington's "political climate" was favorable. After conferring with General Harkins who, in turn, consulted with the Air and Army attachés in Vientiane and the U.S. Embassy in Saigon, Felt on September 11 sent to the service chiefs four military options for attacking the enemy in the vicinity of Tchepone and Muong Phine. The first would consist of air strikes by the RLAF, the VNAF, and USAF's FARM GATE aircraft; the second, hit-and-run attacks by American-led Laotian and South Vietnamese units of company- and battalion-size that would enter the combat area by land, helicopter, and parachute with support from the three separate air arms; and the third, a major air and ground assault by Laotian and South Vietnamese troops with the Laotians occupying Tchepone and Muong Phine. The fourth option would be like the third except that the South Vietnamese would occupy the two towns and in addition keep the enemy from using Route 9 east of Lao Bao.

Prior to conducting any military operations, Felt recommended launching an intensive intelligence-collecting effort, including low-level U.S. aerial reconnaissance, to determine more precisely the enemy's dispositions. American and allied forces could then proceed with option one, following up with option two and, if necessary, one of the last two options. Strong military action was mandatory "to definitively turn off the Tchepone [infiltration] faucet." He said the United States and its allies should seize and hold the Tchepone area and its routes to Muong Phine and Muong Nong. An ARVN division, with air support, was probably needed for this task. In addition, U.S. and allied air commanders should be prepared to interdict constantly the routes and bases leading to or in support of the enemy concentrations in these area. Aware that his proposals risked large-scale counteraction by the North Vietnamese, the Chinese, or both, the PACOM commander said the United States should be willing to execute either of two air and ground contingency plans prepared by his headquarters: Operation Plan 99-63 for stabilizing the situation in Laos, and Operation Plan 32-64 for the defense of mainland Southeast Asia.

In support of his military recommendations, Felt said a number of recent PL/NVA actions in southern Laos were cause for concern. One was the shooting-down on September 5, 1963, of a C-46 with three Americans and four Asians aboard while airdropping rice to a FAR battalion in the vicinity of Tchepone. A search and rescue effort by an American helicopter for the seven personnel* was frustrated by intensive

*Later, the Pathet Lao radio announced that five crewmembers, including one American, survived the crash and would be brought to trial. This triggered a debate in the

antiaircraft (AA) fire from the crash area. This appeared to signify that the PL/NVA intended to keep the Tchepone and Muong Phine areas closed off to Laotian or South Vietnamese forces.[32]

In Washington the administration did not share the PACOM commander's view that a crisis was growing. Officials such as Hilsman; W. Averell Harriman, the Undersecretary of State for Political Affairs; and Michael V. Forrestal, a senior member of the White House national security staff; found Felt's air and ground options unpalatable. In Vientiane, Ambassador Unger was convinced that air strikes on enemy infiltration would be counterproductive and that ground action was not possible at this time. Souvanna Phouma, he observed, would not be inclined to approve the presence of foreign troops on Laotian soil, and their use in any event would violate the 1962 Geneva agreements on Laos's neutrality. Confronted with such opposition, the joint chiefs on October 26 officially sent Admiral Felt's recommendations to Secretary McNamara for use only in further State and Defense Department discussions. The chiefs indicated their general support, however, for Felt's relatively low-level military options, beginning with more intensive intelligence collection using aerial reconnaissance and U.S.-led South Vietnamese ground probes into the Laotian panhandle. These would be followed by small-scale, air-supported hit-and-run attacks by Laotian or South Vietnamese units as proposed in option two.[33]

McNamara held the views of the Joint Chiefs of Staff in abeyance. However, a series of new enemy activities in South Vietnam and Laos in the ensuing weeks impelled the Defense secretary to recommend, and the president to approve, a more concerted intelligence-collecting effort in Laos and North Vietnam. Included were the use of aerial reconnaissance and other limited measures against the communists in the two countries.

In the remainder of September and throughout October 1963 the PL/NVA problem in southern Laos was subordinated to the spiraling political and military crisis in Saigon. Official U.S. statements about the Diem regime's "progress" in defeating the Viet Cong were suddenly overtaken by the reality of Saigon's internal disintegration. Buddhist riots, beginning in May 1963, had triggered a series of politically destabilizing events that reached flashpoint on November 1, 1963, when a military junta, led by Maj. Gen. Duong Van (Big) Minh, in a coup d'état assumed control of the government after killing President Ngo Dinh Diem and his brother Ngo Dinh Nhu. Although the U.S. government

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United States and the United Nations about the treatment of prisoners of war captured in Laos. [Msg, USUN to SECSTATE, 71, Sep 26, 1963; msg, SECSTATE to AmEmb Paris, 1988, Oct 19, 1963.]

tacitly supported the coup in the hope that the new Vietnamese leaders would prosecute the war more effectively, it disapproved strongly of the killing of President Diem and his brother. The change in Vietnamese rulers did not have the desired salutory result. In fact, it further weakened the Vietnamese war effort, including the performance of the RVNAF which had, in truth, been waging an ineffectual struggle against the Viet Cong and DRV infiltration despite considerable American assistance.

Official Washington experienced its own political trauma on November 22 when President Kennedy was assassinated and Vice President Lyndon B. Johnson, succeeded to the presidency. Only four days after taking office, Mr. Johnson issued National Security Action Memorandum 273, largely a restatement of American policy in South Vietnam, to underscore the continuity of support for that country under a new administration. The document prescribed more economic and military assistance for the new Minh government and solicited plans from the Joint Chief of Staff to step up clandestine warfare against North Vietnam and to conduct cross-border incursions up to thirty-one miles into Laos against infiltration.* As justification for such measures, the national security action memorandum directed the State Department to prepare another public report on how the Viet Cong was controlled, maintained, and supplied from the north by infiltration through Laos and other channels.†[34]

The president also sent Secretary McNamara to Saigon to confer with General Harkins, the MACV Commander, and Henry Cabot Lodge, Jr., who had succeeded Frederick E. Nolting, Jr., as ambassador in August 1963. In his trip report the Defense secretary observed that infiltration of men and equipment from the DRV passed through the Laotian and Cambodian corridors, the Mekong River waterways, from Cambodia, and possibly by sea and the tip of the delta. To counter this flow he doubted if cross-border operations from South Vietnam into Laos on the scale desired by U.S. officials in Saigon would be either politically acceptable or militarily effective. He recommended stepping up activities against the DRV with psychological impact such as sabotage and intelligence collection in Laotian border areas by Laotian tribesmen.

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*In partial support of National Security Action Memorandum 273, MACV in December completed two plans which became the basis for further counterinfiltration planning early in 1964. See Chapter II.

†Entitled *Aggression from the North: The Record of North Vietnam's Campaign to Conquer South Vietnam*, the report was not issued until February 1965 by the Office of Media Services, Bureau of Public Affairs, Department of State. The findings echoed those in the white paper issued by the State Department in December 1961 (discussed earlier).

He also directed the immediate mapping of the Laos-Cambodia-South Vietnam borders to obtain data on infiltration routes, this to be done by high-flying U-2 reconnaissance planes from the Air Force's Strategic Air Command (SAC).[35]

On February 13 a SAC detachment of three U-2 aircraft, under the code name LUCKY DRAGON, began mapping selected border areas of Laos, North Vietnam, South Vietnam, and Cambodia, averaging about two sorties per day. Assigned to SAC's 4080th Strategic Wing, the aircraft deployed from the United States initially to Clark Air Base, the Philippines, and transferred on March 5 to Bien Hoa Air Base in South Vietnam. U-2 photography was processed by a SAC detachment at Clark until early April 1964 when the detachment moved to a new facility, shared by PACAF's 13th Technical Reconnaissance Squadron, at Tan Son Nhut Airfield in South Vietnam. SAC exercised operational control over the facility, however. LUCKY DRAGON was the first reconnaissance program over Laos permitted by authorities in Washington since it discontinued the USAF tactical RF-101 missions in December 1962 in compliance with the Declaration on the Neutrality of Laos, July 23, 1962.[36]

Nevertheless, the joint chiefs considered the foregoing measures insufficient to deal with infiltration in Laos or the deepening crisis of the Saigon government, now ruled by another junta headed by Maj. Gen. Nguyen Khanh. On March 2 with Gen. Curtis E. LeMay, the Air Force Chief of Staff, serving as acting JCS chairman in the absence of General Taylor, the chiefs asked McNamara among other things to permit U.S. tactical, low-level, aerial reconnaissance of Laos and North Vietnam to supplement U-2 photography; increased border-control measures; and more energetic actions against the DRV. They urged air strikes by the Vietnamese Air Force, possibly augmented by the USAF combat advisory FARM GATE unit based in South Vietnam. General LeMay in preceding months had been the JCS's chief advocate for using air power to destroy vital DRV targets and to convince Hanoi's leaders to cease their support to the Laotian and South Vietnamese insurgents.[37]

On his return to Washington, General Taylor, who disagreed with some of the JCS's recommendations of March 2, withdrew the memo and sent McNamara a new one reflecting more accurately his views. He considered it premature to bomb the North. Meanwhile, there was no lessening of high-level concern over unabating communist activity in South Vietnam and Laos. In March, McNamara flew to Saigon to confer with General Harkins and Ambassador Lodge. The Defense secretary returned to Washington with new proposals to strengthen the Khanh government and counter the DRV in the two countries. Infiltration through Laos, he informed the president, was evidenced by improved

weapons captured from the Viet Cong such as Chinese 75-mm recoilless rifles, heavy machineguns, 90-mm rocket launchers and mortars, and large quantities of ammunition and chemicals to produce explosives. To improve detection and reduce the weapons and supply flow from China through North Vietnam and Laos, he recommended tighter border control.

Accepting most of Secretary McNamara's suggestions, the president issued National Security Action Memorandum 288 on March 17, authorizing twelve new measures to aid the overall war effort in the Indochina theater. Ten were designed to strengthen the Khanh regime internally. The eleventh would permit continued high-level SAC U-2 mapping missions along South Vietnam's borders, the "hot pursuit" of the Viet Cong into Laos if necessary, and more limited (MACV-organized) South Vietnamese ground reconnaissance operations into Laos with the proviso that any units of battalion size or larger required the approval of Prime Minister Souvanna Phouma. The twelfth measure directed military commanders to prepare to launch, on seventy-two hours' notice, a wide range of border-control actions inside Laos and Cambodia, and on thirty days' notice a program of "graduated overt military pressure against North Vietnam."[38]

Meanwhile, there were new efforts to enlarge the RLAF, now possessor of six T-28s. Ambassador Leonard Unger in Vientiane, preoccupied with preserving Laos's neutrality, cautiously supported a stronger RLAF only to assist Lao ground forces in their see-saw battles with PL/NVA forces in northern Laos. He took a dim view of unleashing the T-28s along the Ho Chi Minh Trail to hit enemy targets, fearing a strong military riposte from Hanoi. Air Force officers, notably General LeMay, considered Unger's proposals of aid for the RLAF too modest. LeMay advocated more U.S. and Vietnamese assistance for the Lao air arm so it could attack roads leading toward South Vietnam. His views were reflected generally in a JCS recommendation of March 11 to Secretary McNamara urging a RLAF capability for offensive as well as defensive operations. The joint chiefs believed the RLAF commander should assign first priority to striking enemy convoys entering the country and second priority to destroying hard-to-repair roads and bridges, with the Air Force assisting by flying low-level reconnaissance.[39]

Frequent use of the RLAF against North Vietnamese infiltration would not be possible until after more aircraft and pilots were available, a decision that would rest with high administration officials rather than the service chiefs. To improve the RLAF's operations, McNamara on March 5 directed the assignment of an Air Force T-28 detachment to Thailand to step up the training of both Lao and Thai air forces (the agreement of July 23, 1962, on Laos prohibited the stationing of U.S. or

other foreign troops in the country). The Air Force moved swiftly. At Hurlburt Field in Florida, the Special Air Warfare Center organized Detachment 6, 1st Air Commando Wing, under the command of Maj. Drexel B. Cochran, which deployed to Udorn Airfield with four T-28s and forty-one personnel. Nicknamed WATER PUMP, the detachment became operational on April 1, 1964. CINCPAC assigned operational control directly to Maj. Gen. Joseph H. Moore's* 2d Air Division at Tan Son Nhut Airfield in South Vietnam. Besides training Lao and Thai airmen (the emphasis would be on the former), the detachment provided logistic support to the RLAF and was alerted, if ordered, to transfer its aircraft directly to the Laotians or to fly them for covert missions against the communists in Laos.[40]

Detachment 6 had no sooner launched its training program when two crises drew the United States deeper into Laos's internal affairs. The first occurred on April 10 when a rightist faction of the Government of National Union again attempted a coup to replace Prime Minister Souvanna Phouma. American officials acted quickly to restore things as they were. The second crisis derived from the first. Taking advantage of the political disarray in Vientiane, the Pathet Lao in mid-May stepped up military operations against neutralist Kong Le's forces and shortly captured the Plain of Jars. Souvanna Phouma asked for more U.S. assistance. Responding affirmatively, U.S. authorities for the first time released to the RLAF munitions and other supporting resources to permit air strikes on communist positions. When the RLAF attacks proved unequal to the task,† more were laid on shortly by Udorn-based T-28s.[41]

In Washington, State and Defense officials now believed the upsurge in communist activity warranted an additional response. After obtaining Souvanna Phouma's consent and the reluctant acquiescence of Ambassador Unger, who agonized constantly over the international consequences of losing American airmen in Laos, the officials authorized temporarily the resumption of U.S. tactical aerial reconnaissance as previously recommended by the JCS. Unlike the earlier tactical USAF operations terminated in December 1962, these flights would be conducted at low-level. Their aim was to assist the commanders of the Lao government's FAR units by disclosing enemy positions and movements, and as a "show of force," to impress upon communist leaders in Laos and South Vietnam America's concern. General Taylor, the JCS Chairman,

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*General Moore succeeded Maj. Gen. Rollen H. Anthis as 2d Air Division commander on January 31, 1964.

†The emergency expedited further expansion of the minuscule RLAF. By early June 1964 it possessed twenty-three pilots, twenty T- and RT-28s, thirteen C-47s, and eight liaison aircraft. [Anthony, Chap IV.]

directed Admiral Felt on May 19 to launch the program, called YANKEE TEAM, along specified infiltration routes leading from North Vietnam through Laos into South Vietnam, and against the Ban Thay military installation east of Muong Phine. He barred overflights of North Vietnam and the area west of 105 degrees in Laos. Admiral Felt, in turn, assigned the first mission to General Moore who scheduled four ABLE MABLE RF-101s of the 15th Tactical Reconnaissance Squadron based at Tan Son Nhut Airfield, South Vietnam, the same day (May 19).*[42]

On the 21st the Joint Chiefs of Staff ordered another reconnaissance mission that was flown immediately by both Air Force RF-101s and Navy RF-8As, the latter from the carrier *Kitty Hawk*. On the same day, Admiral Felt designated the MACV commander, coordinator of the Air Force-Navy reconnaissance missions, a responsibility quickly redelegated by COMUSMACV to General Moore, 2d Air Division Commander. The State Department publicly announced that the Laos government had requested the missions to assist the International Control Commission in documenting Pathet Lao violations of the 1962 Geneva agreements. The public acknowledgment did nothing to diminish the political sensitivity of the reconnaissance operations. High Washington officials, through the JCS, dictated the type of aircraft and cameras that should be used, and interjected themselves in other planning details normally left to the discretion of air commanders.[43]

On May 26, the JCS ordered a "continuing program" of low-level reconnaissance over Laos to: provide intelligence for friendly ground forces; assess RLAF T-28 bombings; determine the extent of troops and materiel moved from North to South Vietnam via Laos; give "a psychological shot in the arm" to Lao and other allied forces in Southeast Asia; and demonstrate American resolve to support the neutralist government of Laos. Overflights of North Vietnam continued to be prohibited, but the stricture against flying west of 105 degrees in Laos was removed. With the aerial photography obtained in subsequent weeks and months, intelligence personnel were able to identify numerous infiltration routes or route segments. Estimates of enemy manpower and supply infiltration, however, were based principally on interrogation of

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*The 15th Tactical Reconnaissance Squadron (TRS) deployed initially to Tan Son Nhut on May 1, 1963. [Robert F. Futrell, *A Chronology of Significant Airpower Events in Southeast Asia, 1950–1968* (Maxwell Air Force Base, Ala., 1969), p 34.] With the inauguration of BLUE TREE reconnaissance of North Vietnam in March 1965, the Thai government approved the deployment of four 15th TRS RF-101s to Udorn Airfield at the end of that month. Designated GREEN PYTHON, the Udorn-based reconnaissance unit was soon augmented, and its aircraft flew missions over both Laos and North Vietnam. [William H. Greenhalgh, Jr., "U.S. Air Force Reconnaissance in Southeast Asia, 1960–1975," manuscript (Maxwell AFB, Ala., 1977), p 182.]

captured or defecting Viet Cong and documents found by the ARVN during their attacks in enemy territory.[44]

In early June, shortly after the annual southwest monsoon rains began, the PL/NVA ceased large-scale assaults on government forces in northern Laos. However, some observers were inclined to attribute the slowdown to RLAF and U.S. air operations rather than the weather. Ambassador Unger believed the operations had sent to the PL/NVA leaders America's "signal" of deep concern about violations of Lao neutrality. Kong Le (now a general), whose troops were routed temporarily from part of the Plain of Jars area in mid-May, averred that without air support the troops would have been lost. General LeMay was most effusive about the contribution of air power. He was convinced that the RLAF's operations by U.S.-trained Lao pilots had "paid off." He said that YANKEE TEAM reconnaissance had raised the morale of friendly Laotians and furnished valuable data on the DRV's infiltration activities into Laos and South Vietnam. Ensuing events demonstrated, however, that some of the aerial accomplishments were only transitory and that the communist leaders paid scant recognition, if any, to America's aerial "signal."[45]

Chapter II

Expansion of Counterinfiltration Activities

In June and July 1964, events propelled the United States—and the Air Force—into deeper military involvement in both northern and southern Laos. On June 6, communist antiaircraft fire downed a Navy YANKEE TEAM RF-8A near Xiengkhouang. The pilot, Lt. Charles F. Klusmann, was captured.* President Johnson, with Prime Minister Souvanna's approval, quickly ordered fighter escorts for the reconnaissance aircraft with pilots henceforth authorized to return enemy fire. The next day, while the Navy was flying another reconnaissance mission, communist gunners scored once more. They downed an escorting F-8, although the pilot, Comdr. Doyle W. Lynn, was rescued by an American helicopter. At the strong urging of General LeMay, the president ordered escorting aircraft to precede reconnaissance missions and "neutralize" an AA area before a photo run.[1]

To assure escorts for the Air Force's YANKEE TEAM RF-101s, the JCS on June 8 directed a detachment of 8 F-100s of the 510th Tactical Fighter Squadron (TFS) of the 3d Tactical Fighter Wing (TFW) to deploy from Takhli Air Base (where they had just arrived from the States) to Tan Son Nhut Airfield. From there the Super Sabres flew their first combat mission on the 9th against the offending enemy gun positions near Xiengkhouang. The aircraft dropped two 750-pound bombs and fired fifty-seven 2.75-inch rockets into the target area. On June 13 the Air Force directed the F-100s transferred to Da Nang Airfield from where they flew escort as needed. General Moore ordered the 3d Tactical Fighter Wing to place as soon as possible 2 Super Sabres on constant alert and prepare to put 2 others on 15-minute alert and 4 on 1-hour alert. YANKEE TEAM escort aircraft would engage increasingly in combat in subsequent months, especially in the Laotian panhandle. In expectation that more U.S. reconnaissance, escort, and other aircraft

*Lieutenant Klusmann successfully escaped from his captors on August 21, 1964.

would be shot down by enemy ground fire, the 2d Air Division and Air America augmented their search and rescue capabilities.[2]

The Air Force's command structure for the air war in Laos was also changed to accede to Thai government objections to having Thai-based USAF aircraft operationally controlled from 2d Air Division headquarters at Tan Son Nhut Airfield in Saigon. In late July, General Moore established Headquarters, Deputy Commander for 2d Air Division, Thailand/Laos,* an air operations center (AOC) and a control and reporting post (CRP) at Udorn Airfield. Col. Jack H. McCreery was appointed deputy commander.† Secure communication links now existed to the 2d Air Division's air operations centers in Saigon, to Thai bases with USAF tenants, and to the RLAF AOC in Vientiane. Colonel McCreery, as General Moore's deputy, technically could exercise operational control of any combat operations using Thai-based USAF aircraft. Administrative and logistic support was provided by Detachment 2, 35th Tactical Group, established at Udorn in June.[3]

From the outset, the task of Colonel McCreery was sensitive and difficult. He was asked, in effect, to serve two masters whose views on air requirements, priorities, and operations were often far from congruent: Ambassador Unger and his air attaché and embassy staff in Vientiane, and General Moore, the 2d Air Division Commander in Saigon. (Headquartered in Saigon, Moore served as component commander to Gen. William C. Westmoreland, USA, who had assumed command of MACV on June 20, 1964.) Westmoreland's principal responsibility was to contain the Viet Cong insurgency in South Vietnam, and his interest in Laos was largely confined to the southern panhandle where North Vietnamese infiltration was on the rise. Thus McCreery and his successors had to deal constantly with Vientiane's and Saigon's competing aircraft demands.

This built-in conflict was exacerbated with the beginning of the ROLLING THUNDER interdiction in North Vietnam in March 1965, the STEEL TIGER assault on enemy infiltration in Laos in April, and later aerial anti-infiltration programs in that country. The Thai government had to clear all USAF deployments into and out of Thailand and all operations involving the use of Thai-based USAF aircraft. Consequently,

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*In November 1964 the deputy commander's headquarters was redesignated Deputy Commander, 2d Air Division/Thirteenth Air Force. It became Deputy Commander, Seventh Air Force/Thirteenth Air Force, after the Seventh Air Force replaced the 2d Air Division on April 1, 1966.

†Colonel McCreery was succeeded in May 1965 by Brig. Gen. John R. Murphy. Murphy retained this post until January 6, 1966, when he was followed by Maj. Gen. Charles R. Bond, Jr. Bond served until March 31, 1967, when he was replaced by Maj. Gen. William C. Lindley, Jr., who held his position until May 31, 1968.

McCreery and his successors also had to keep the American ambassador to Thailand and his staff fully apprised of air planning for Laos and North Vietnam. Despite the complexity and frequently controversial nature of its task, the deputy commander position gradually became a workable mechanism for funneling the air requests and views of the American ambassadors in Vientiane and Bangkok to the air commander in Saigon.[4]

Meanwhile, the search continued for more and better air targets, especially in southern Laos. In Vientiane, the American intelligence personnel had begun to organize fifteen to twenty teams of Laotian tribesmen and planned to equip them with radios to speed up their reporting of enemy targets underneath Laos's jungle terrain. The teams would be airlifted to observation points stretching from north of Saravane southward towards the Cambodian border.[5]

General Westmoreland likewise desired to launch ground surveillance of parts of the Ho Chi Minh Trail from South Vietnam, as developing monsoon weather promised to reduce the effectiveness of YANKEE TEAM photo-reconnaissance missions. He planned to use local Laotians or Vietnamese and supply them with logistic support. There was no other way, he believed, to detect with precision communist positions, supply areas, and infiltration movements. He possessed two cross-border plans, numbered 98-84 and 98A-64, for overt and covert activities. Completed initially in December 1963, the plans outlined three kinds of operations: intelligence collection; harassment of communist units and their infiltration routes by air, ground, or both; and "hot pursuit" of the Viet Cong from South Vietnam into their Laotian redoubts, by ARVN and supporting American combat advisory personnel and units. The plans envisaged small and large search forays no more than thirty-one miles into selected areas of the Ho Chi Minh Trail below the 17th parallel. There would be a concerted enlistment of as many South Vietnamese Kha, Meo, and other tribesmen as possible to serve as guides, informers, sabotage teams, and security personnel. The cross-border teams would be supported by U.S. military and intelligence resources in South Vietnam and Thailand, occasionally by American advisory personnel in a non-combat role, and by the VNAF. MACV would exercise overall control of and coordinate with the RVNAF in conducting these operations.[6]

MACV's plans for ground counterinfiltration operations received additional high-level endorsement in early spring 1964. In support of Secretary of Defense McNamara's recommendations, the president ordered military commanders to launch on seventy-two hours' notice extensive border control activities in Laos and Cambodia, and on thirty

days' notice graduated military pressure on North Vietnam.* In early April, Ambassador Unger secured Prime Minister Souvanna Phouma's assent to "modest cross-border operations" from South Vietnam into the Laos panhandle except in populated areas.[7]

The ensuing weeks witnessed more preparations for a thrust into the Ho Chi Minh Trail. MACV reviewed alternate choices of personnel: ARVN Special Forces; a combination of ARVN Special Forces and Montagnard tribesmen with the ARVN providing leadership; or solely Montagnards (as previously). Initial patrols could enter the trail by parachute, helicopter, or on foot and leave either by helicopter or on foot. After Saigon government approval, personnel training time would require roughly four to eight weeks depending on the type of recruits selected. Leadership and good communications would be a prerequisite for success. MACV's Studies and Observations Group (SOG), established initially on January 24, 1964, as a special office for covert activities,† was assigned to complete the planning of and to conduct the operation as soon as the joint chiefs flashed the order to do so.[8]

In early May, Washington signaled Vientiane and Saigon to proceed with a very limited intelligence-collecting operation without direct U.S. support. MACV quickly readied five eight-man patrol teams composed of South Vietnamese Montagnard tribesmen with Vietnamese Special Forces (VNSP) personnel serving as leaders, and selected several landing areas along Route 9 in the Muong Phine-Tchepone region of the panhandle. Known as LEAPING LENA, the Phase I scenario called for parachuting the radio-equipped teams to their respective landing areas by unmarked VNAF-piloted aircraft. The teams were expected to remain in enemy territory up to thirty days and counseled to observe in daytime, move at night, report their observations by radio, request aerial resupply if necessary, and depart on foot or by helicopter. After studying their intelligence, MACV would launch larger Phase II cross-border operations to interdict the PL/NVA lines of communication.

The first team was airdropped on June 24, three more the next day, and the fifth on July 2. LEAPING LENA was virtually a total failure. One team was lost and never communicated, the second was captured when it landed in an enemy-held village, and three remained in radio contact

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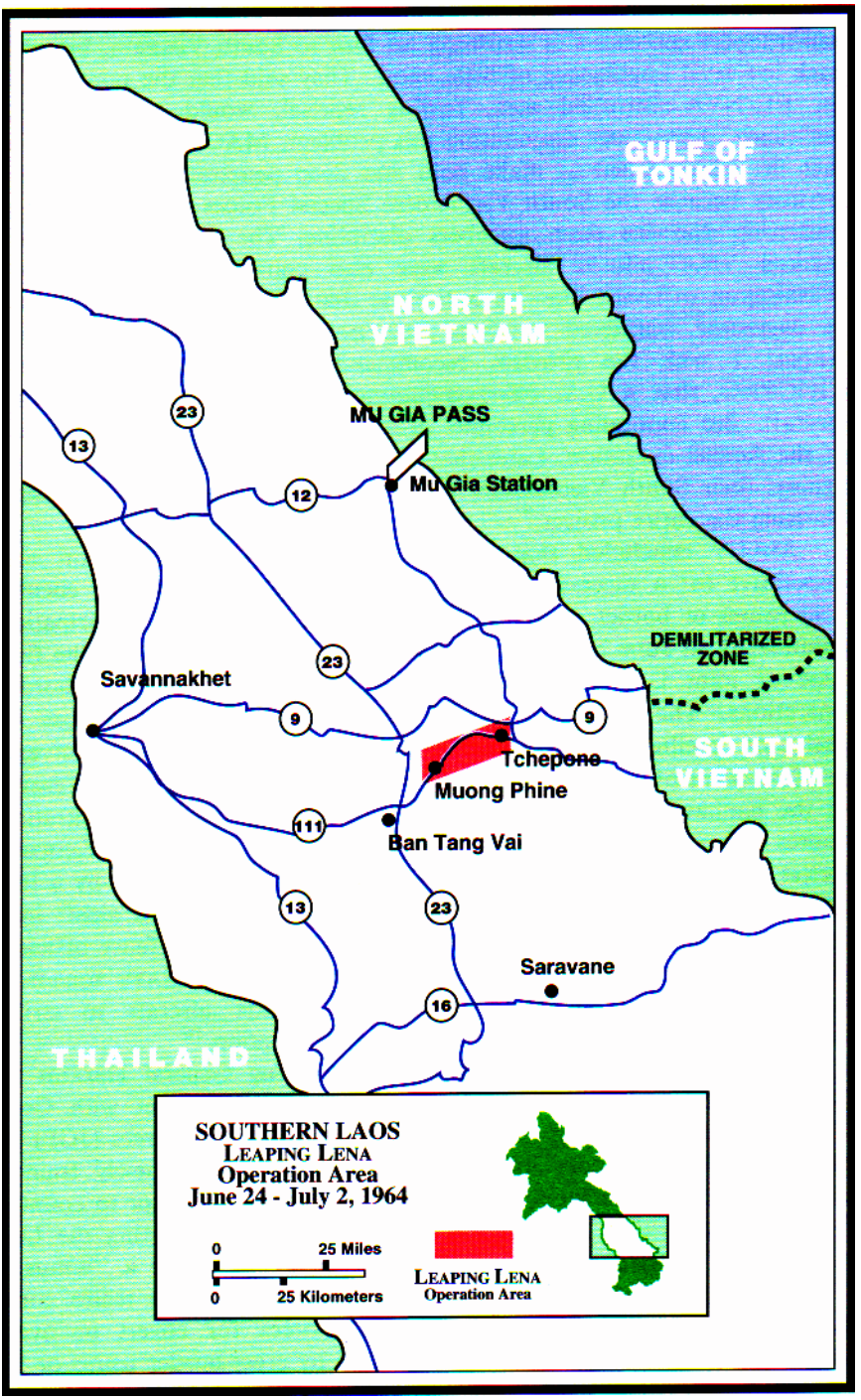
*See Chapter I.

†SOG's mission was to intensify programs of harassment, diversion, political pressure, capture of prisoners, physical destruction, intelligence collection, and propaganda against North Vietnam or its troops in Laos. Each action had to have prior approval of the Secretaries of State and Defense and the White House. [Hist, MACV, 1964, Annex A, p A-1; Gen. William C. Westmoreland, USA, Ret, *A Soldier Reports* (New York, 1976), pp 106-07.]


GULF OF TONKIN
NORTH VIETNAM
MU GIA PASS
Mu Gia Station
23
13
12
23
Savannakhet
9
9
DEMILITARIZED ZONE
SOUTH VIETNAM
Tchepone
Muong Phine
111
Ban Tang Vai
13
23
Saravane
16
THAILAND
SOUTHERN LAOS
LEAPING LENA
Operation Area
June 24 - July 2, 1964
0
25 Miles
0
25 Kilometers
LEAPING LENA
Operation Area

until July 9 when all communications ceased. Only six of the forty paratroopers succeeded in returning on foot to South Vietnam, bringing back low-level intelligence of little value. They said that the populace in the PL/NVA-controlled area, fearing reprisal, would give them no assistance. Apparently discounting this problem, MACV officials judged that the teams failed to make bold and deep penetrations into enemy territory because the South Vietnamese Special Forces personnel lacked leadership and the team members discipline. The airdrops from unmarked VNAF-piloted aircraft were also considered unsatisfactory. Washington officials, likewise optimistic that the initial problems could be overcome, approved a second LEAPING LENA operation beginning August 1 with the proviso, recommended jointly by MACV and CINCPAC, that a U.S. observer-jumpmaster accompany each VNAF aircraft. But continuing personnel problems resulted in the cancellation of the August operation. Later that month Montagnard trainees revolted against their South Vietnamese trainers at Nha Trang, South Vietnam, aborting the entire project.[9]

MACV concluded that more direct American participation was imperative for a successful intelligence-gathering operation into enemy-held routes or border areas. In fact earlier studies on such participation culminated on June 27, 1964, in State and Defense approval for the first time of joint U.S./GVN planning for covert and overt cross-border operations. The operations would not only be for the purpose of gathering intelligence but would attempt to disrupt the movement and reinforcement of PL/NVA forces in the event they launched an offensive in the panhandle (in the vicinity of Attopeu), and interdict infiltration routes and destroy facilities supporting infiltration into South Vietnam. Better trained South Vietnamese teams would be accompanied by a few U.S. Army Special Forces advisers, and supported by U.S. airlift into and out of Laos and for resupply. However, State and Defense officials forbade the use of the USAF combat advisory FARM GATE squadron based in South Vietnam or other U.S. fighter aircraft to strike communist targets in support of this type of operation.[10]

In late June, about a week after succeeding General Harkins as MACV Commander, Gen. William C. Westmoreland met with Gen. Tran Thien Khiem, Chief of Staff of the Joint General Forces (JGF) of the RVNAF, to discuss joint operations. They agreed newly trained South Vietnamese personnel should, as first priority, attempt to counter Viet Cong activities. Any impact of such operations assisting the Lao government in its struggle against the PL/NVA would be a "bonus." They examined several military options: six- to eight-man teams composed exclusively of Vietnamese Special Forces for covert or overt attacks, VNAF strikes on targets uncovered by cross-border teams or by

aerial reconnaissance, and VNAF airlift supported as necessary by USAF airlift.[11]

Saigon's interminable domestic difficulties, however, foreclosed proceeding with any operations for the time being, although planning continued. Military planners in Vientiane and Saigon also devised a "three bridgehead" concept to stop infiltration. This called for Vietnamese Special Forces, ranger, airborne, or other units, with extensive American air, ground, and logistic support, to establish bridgeheads at strategic points in Laos. But the bridgehead concept likewise floundered. Ambassador Unger, concerned about the political impact of American military participation in Laos, wanted operations restricted to shallow penetrations of the Laotian panhandle with a minimum of aerial support and resupply requirements. In Saigon, some U.S. officials feared the sizable bridgehead operations would divert resources needed for South Vietnam's pacification program, and create a control problem if the VNAF alone was authorized to support them.[12]

Military planners next contemplated an American-supported attack against infiltration in southern Laos, fitting in with the bridgehead concept. Two or three battalions of Laotian tribesmen would be reinforced by paramilitary or ranger personnel and backed by close air support. They would cut across Laos toward Muong Phalane near the Ho Chi Minh Trail while another Lao unit, supported by the ARVN from South Vietnam, would advance westward toward the Muong Phine-Tchepone segment of Route 9. Both would harass and sabotage enemy redoubts and infiltration movements. Again Unger opposed the proposal, arguing that operations of such magnitude could not be hidden. Furthermore, they required assurances to the Lao and South Vietnamese governments that if a PL/NVA counteraction threatened to overwhelm their personnel, the United States would furnish air or ground forces to extricate them.[13]

In the ensuing weeks other efforts in getting cross-border operations off the planning boards also failed, despite the issuance of National Security Action Memorandum 314, approved by President Johnson on September 10, 1964. The memo authorized more U.S./Lao discussions on limited GVN air and ground operations against infiltration in Laos. It also required an endorsement of such action at the first meeting of the Coordinating Committee for U.S. Missions Southeast Asia (SEACOORD) on October 8 in Saigon.* On October 23, Westmoreland

*SEACOORD was established in 1964 by Maxwell Taylor, recently appointed ambassador to Vietnam. Its purpose was to improve the coordination of U.S. political and military policies in South Vietnam, Laos, and Thailand. Membership consisted of the U.S.

informed the joint chiefs that a successful ground thrust into the Laotian panhandle could not be made until early 1965. The delay stemmed from the GVN's recent training difficulties with Montagnard tribesmen (picked to conduct incursions across the border), more destabilizing personnel changes in the Vietnamese military high command, and a plethora of unresolved internal political and military problems.[14]

Failure to translate cross-border plans into action left information gathering on communist activity in Laos largely to tactical YANKEE TEAM reconnaissance and SAC's LUCKY DRAGON U-2s despite the heavy monsoon weather. A steady albeit restricted pattern of photo-taking was under way. For example, during a five-week period from June 19 through July 24, 1964, PACAF and PACFLT completed thirty-seven YANKEE TEAM missions, with seven others aborted because of weather or camera malfunctions. While some missions covered the panhandle, most were sent to the Plain of Jars area or along routes leading thereto in support of FAR and neutralist forces. SAC's U-2s flew twenty-eight sorties in the same time span, mapping and targeting the border regions between Laos and South and North Vietnam.

Considerable photography was turned over to the RLAF to assist its T-28 close air support and interdiction operations, but the photos often contained insufficient detail and target resolution. This was partly due to Secretary McNamara's injunction requiring YANKEE TEAM aircraft to fly at medium altitude (roughly 10,000 feet) to avoid losses. Air Staff and Joint Staff proposals to fly reconnaissance well below 10,000 feet to obtain more detail of targets and target areas were usually turned down by the Defense secretary. State, Defense, and White House approval of each YANKEE TEAM mission, he said, would remain in effect, with exceptions considered solely on a case-by-case basis.[15]

Although YANKEE TEAM's recently assigned escort aircraft were permitted to fire back if fired upon, there was no authorization per se for escorts to attack infiltration targets. Weighing alternatives, U.S. officials in late July 1964 again considered using the VNAF in panhandle operations. They hoped this might defuse a recent threat by Saigon's generals, including Brig. Gen. Nguyen Cao Ky, the VNAF's colorful commander, to strike the North alone if the United States was unwilling to do so. But Ambassador Unger strongly opposed unleashing the VNAF in Laos. He insisted the air strikes would prove only marginally effective, create more political and military problems for Souvanna Phouma's

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ambassadors to the three countries, MACV and PACOM commanders, and officials of other U.S. agencies concerned with the war in Southeast Asia. In the absence of key officials, their representatives attended the sessions. [Hist, CINCPAC, 1964, pp 21-22.]

government, and strain America's relationships with the Soviets, the British, and the Canadians, all of whom were involved in Laotian affairs as a result of the 1962 Geneva agreements.*[16]

The possibility that the administration might reverse course and adopt a bolder air policy in Southeast Asia was suggested on August 5 when, in response to an attack on a U.S. destroyer in the Gulf of Tonkin, U.S. Navy carrier fighters conducted the first strike of the war against North Vietnam. Simultaneously, the United States deployed more military units to the war zone. Pacific theater shifts brought fifty additional USAF aircraft (B-57s, F-102s, RF-101s) to South Vietnam and twenty-six (F-100s, F-105s, KB-50s) to Thailand, while other aircraft (F-105s, C-130s) went to bases in Japan, Okinawa, and the Philippines. The U.S. Army and Marines dispatched selected ground and aviation units, and the U.S. Navy added a carrier and other ships to the Seventh Fleet stationed in waters not far off North Vietnam. On August 10, the U.S. Congress strengthened the president's hand to deal firmly with the crisis by passing a Southeast Asia resolution (popularly called the Gulf of Tonkin resolution), urging him to take "all necessary measures" to repel any armed attack against U.S. forces and "to prevent further aggression."[17]

To the dismay of Gen. Hunter Harris, Jr., PACAF Commander,† Adm. Ulysses S. Grant Sharp, Jr.,‡ the joint chiefs, and other officials, the president barred followup air strikes. Mr. Johnson's concern, and that of his principal advisers, was that further heavy blows might trigger a North Vietnamese and/or a Chinese response beyond the capability of the Saigon government to handle, or encourage the Soviets to apply pressure on the United States elsewhere. Laos's political and military posture was even less likely to withstand more external pressure. As a result the administration opted in the coming weeks and months for a continued relatively "low-risk" policy in both countries.[18]

Nevertheless, the Tonkin Gulf incident stimulated more planning by the various military commands and the Saigon and Vientiane embassies. They searched for ways to apply other punitive measures against the communists within low-risk guidelines. One alternative, previously recommended, was to ask Brig. Gen. Thao Ma,§ the RLAF Commander, to strike panhandle infiltration targets. On August 3, Thao Ma had informed Col. Robert L. F. Tyrrell, the U.S. air attaché, who was

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*See Chapter I.

†Gen. Harris succeeded Gen. Jacob E. Smart as CINCPACAF on August 1, 1964.

‡Admiral Sharp, previously CINCPACFLT, succeeded Admiral Felt as CINCPAC on June 30, 1964.

§Thao Ma was promoted from colonel to brigadier general in the spring of 1964.

visiting Savannakhet, that he was considering using RT- and T-28s to fly reconnaissance and to strike bridges, supply depots, and other targets in that area. A conclave of U.S. officials from Vientiane, Saigon, MACV, and Bangkok discussed Thao Ma's offer at Udorn on August 18, and drew up a tentative plan for the RLAF to strike twenty U.S.-designated targets (shortly increased to forty) south of Mu Gia Pass. PACAF's and PACFLT's escort aircraft (which could fire back if fired upon) would be enlisted in a disguised supporting role, striking targets beyond the capability of the RLAF or too heavily protected by enemy antiaircraft emplacements.[19]

Ambassador Unger discouraged proceeding with the plan citing, as usual, political reasons. The Vientiane government was fairly amenable to such operations, he said. Still, it was reluctant to undertake them at this time while new tripartite talks between rival political factions in Laos (i.e., the rightist, neutralist, and communist) were under way. Furthermore, Vientiane would expect the United States to use planes and troops to assist Lao ground forces if the attacks triggered reprisal military action by Hanoi in Laos.[20]

Despite Unger's opposition, discussions on possible panhandle strikes continued because of the Saigon government's continued ineffectual military operations against the Viet Cong. This triggered at the beginning of September 1964 another high-level meeting in Washington attended by Ambassador Taylor and other presidential advisers. Their deliberations produced National Security Action Memorandum 314, issued by President Johnson on September 10. It again directed more small, covert actions against North Vietnam and discussions with Lao officials on permitting limited South Vietnamese air and ground operations, RLAF air strikes, and U.S. armed reconnaissance against the communists in the Laos corridor. The "first order of business," however, was to "strengthen the fabric of the Government of South Vietnam." The joint chiefs supported the proposals, although General LeMay and Gen. Wallace M. Greene, Jr., Commandant of the United States Marine Corps (USMC), desired stronger measures. Asserting that "time is against us," the two service leaders recommended countering the next "significant" Viet Cong incident in South Vietnam (such as a battalion-size attack) with a retaliatory U.S. and VNAF air strike against North Vietnam in accordance with a recently developed ninety-four-target plan.*[21]

*A four-phase air attack plan against ninety-four of the most important military targets in North Vietnam. Prepared by the JCS in the summer of 1964 and frequently revised, the plan was officially sent to McNamara on August 24, 1964.

On September 11, during a meeting in Saigon, U.S. officials in Saigon and from Vientiane and Bangkok spelled out the Laotian options for administration leaders. If the principal aerial objective in Laos was psychological, they said, RLAF T-28 strikes plus some Air Force-Navy YANKEE TEAM armed reconnaissance (e.g., against five bridges) would suffice. If the objective was military, then substantially larger strikes by USAF FARM GATE and other aircraft and by the VNAF were essential. The conferees agreed that initially a mix of RLAF and YANKEE TEAM strikes would appear adequate. They also discussed cross-border operations, disagreeing whether U.S. advisers should accompany the Vietnamese teams.[22]

On September 29, Ambassador Unger presented the latest American proposals for RLAF panhandle interdiction to Souvanna Phouma. Souvanna agreed reluctantly after Unger (following State Department instructions) assured him the strikes would be primarily psychological to apply more pressure on Hanoi. They would also demonstrate America's serious concern over infiltration and violation of the 1962 Geneva accords, and would neither sacrifice operations along Route 7 in northern Laos (where Souvanna anticipated another enemy dry season offensive) nor require the use of South Vietnamese planes. Unger avoided discussing supplementary PACAF and PACFLT YANKEE TEAM strikes in view of the prime minister's prior authorization for these aircraft to conduct retaliatory, suppressive fire against enemy antiaircraft guns. The ambassador recognized that operational rules could be mildly stretched to make such attacks supportive of the RLAF.[23]

After securing Souvanna's consent for the RLAF portion of the program, U.S. authorities strove to get the operations under way as soon as possible. The Lao air arm's current inventory of thirty-three RT- and T-28s required augmentation, as General Thao Ma indicated he needed at least fifteen strike aircraft to carry out panhandle interdiction. Ten normally were based at Savannakhet and shuttled frequently to Wattay Airfield near Vientiane for operations in northern Laos. The rest were at Udorn, employed for training RLAF pilots and for operations in northern Laos. But more were on the way. On August 14, Secretary of Defense McNamara had instructed the Air Force to withdraw twenty RT-28 trainers from storage to convert them to fighters, and in late September Unger asked General Moore to turn over to the RLAF all T-28s in excess of the VNAF's needs (the VNAF was transitioning from T-28s to A-1Hs).[24]

In early October, Colonel Tyrrell, the Air Force attaché, and Col. William Law, the U.S. Army attaché in Vientiane, met with members of the FAR General Staff and the RLAF to smooth out details of the impending air program. Playing a key role in the program's preparation,

Tyrrell had learned earlier that the FAR ground commanders in the southern Laotian panhandle, while lukewarm about "stirring anything up" in their sectors, nonetheless would not oppose the air operations. An initial list of twenty-two MACV-selected targets was pared down to thirteen for the RLAF. Several targets were judged too hazardous for General Thao Ma's pilots, being either too close to a MiG base near Hanoi or heavily protected by antiaircraft guns.

The air plan approved by Ambassador Unger called for launching strikes about October 15. If weather permitted, the RLAF would fly eighteen sorties daily for eight days against thirteen targets. Air Force jets would fly cover to guard against a possible North Vietnamese Air Force (NVAF) MiG attack while the RLAF struck four targets close to the DRV border. Three additional targets consisting of a barracks area near Tchepone, the Nape highway bridge, and the Ban Thay military area—all surrounded by flak guns—would be struck by the RLAF with the assistance of USAF YANKEE TEAM escort aircraft. After finishing off the thirteen targets, the RLAF's T-28s would fly armed reconnaissance against enemy trucks, logistic convoys, or other targets of opportunity.[25]

Despite his support of the air plan, Unger remained disquieted about the upcoming air and ground operations in the panhandle. There should be no illusion, he advised his peers in Washington on October 6, that of all actions under consideration, a "military venture" by the Lao, the Vietnamese, and the Americans was "most likely" to trigger strong enemy responses and draw the United States into a deeper commitment in Laos. He was particularly troubled by a contemplated (but not yet approved) ground thrust by either FAR or South Vietnamese troops into certain areas around Tchepone as a follow-on to RLAF/U.S. air strikes in the panhandle. In his view, this would constitute an incursion into territory indisputably held by the Pathet Lao at the time the 1962 Geneva accords were signed. Apparently troubled by Unger's warnings, President Johnson on October 7 barred the employment of USAF aircraft for cover or strikes and indicated he would also withhold approval of any cross-border operations from South Vietnam into Laos. He backed the planned RLAF attacks against enemy facilities and infiltration in the panhandle, however, and urged they begin as soon as possible. He believed the RLAF should keep its strikes in line with its capabilities (i.e., avoid the dangerous targets such as the Mu Gia Pass area) and spread them out over a period of weeks.[26]

The president's decision deeply upset members of the SEACOORD (meeting formally for the first time in Saigon on October 8), as well as the joint chiefs, General Westmoreland, and Admiral Sharp. All asserted the importance of direct U.S. support for the planned RLAF panhandle strikes and cross-border operations and objected to the ban against

striking certain targets. The upshot of a dialogue on these matters saw Washington authorities retreat but little from their position. They sanctioned a USAF combat air patrol (CAP) against MiGs for RLAF strikes near the North Vietnamese border, but prohibited CAP aircraft from conducting suppressive fire against enemy antiaircraft installations except while supporting a search and rescue operation for downed pilots. They further banned an RLAF strike on Mu Gia Pass (determined to be 700 yards within the North Vietnamese border), or on Mu Gia Station (located barely inside the Laotian border).* A Defense Intelligence Agency (DIA) analysis of the Mu Gia Station area, Washington said, showed no signs of enemy activity as the Lao had claimed.[27]

The president's injunction against an RLAF strike on Mu Gia Station—the first scheduled RLAF mission in the Laotian panhandle—arrived too late. On October 14, Gen. Thao Ma led a flight of four T-28s against a military storage target about six miles south of the station, and a second flight of three T-28s hit buildings within the station's perimeter. A third flight of four T-28s also aimed at the buildings. Air Force F-100s from Da Nang Air Base, South Vietnam, flew MiG combat air patrol, and an RF-101 with two escorts followed to assess the results. Several other strikes on targets followed. There was some confusion about initial strike achievements. The air attaché's reading of poststrike photos and pilot debriefings suggested "excellent" results with individual targets destroyed upwards to sixty, seventy, eighty, and ninety percent. Some DIA interpretations, conversely, revealed that the RLAF aircraft missed or inflicted little damage on some targets. Photo personnel in Saigon eventually confirmed that about ninety-five percent of the targets within Mu Gia Station were destroyed. In any event, Ambassador Unger did not consider this a serious problem. If the RLAF missed some targets, he saw no reason why a strike could not be rescheduled.[28]

As the RLAF's attacks began, FAR General Bounpone Makthepharak, Commander of Military Region (MR) III in central Laos (which included Savannakhet where the aircraft were based), launched a VICTORIOUS ARROW attack against PL/NVA forces in his region. He planned to capture Muong Phine and Tchepone in concert with GVN troops moving westward from South Vietnam toward these two areas. No GVN operations materialized, for by now Westmoreland had informed Washington that cross-border operations were not feasible until

*The two were segments of the same key infiltration route, distinguished chiefly by the fact one was inside North Vietnam, the other inside Laos. Besides the road net, both contained suspected supply storage buildings and areas.

early 1965. Bounpone's plan fizzled but not before about 200 of 450 planned panhandle sorties were diverted to VICTORIOUS ARROW, which in the end turned out to be a spoiling attack.[29]

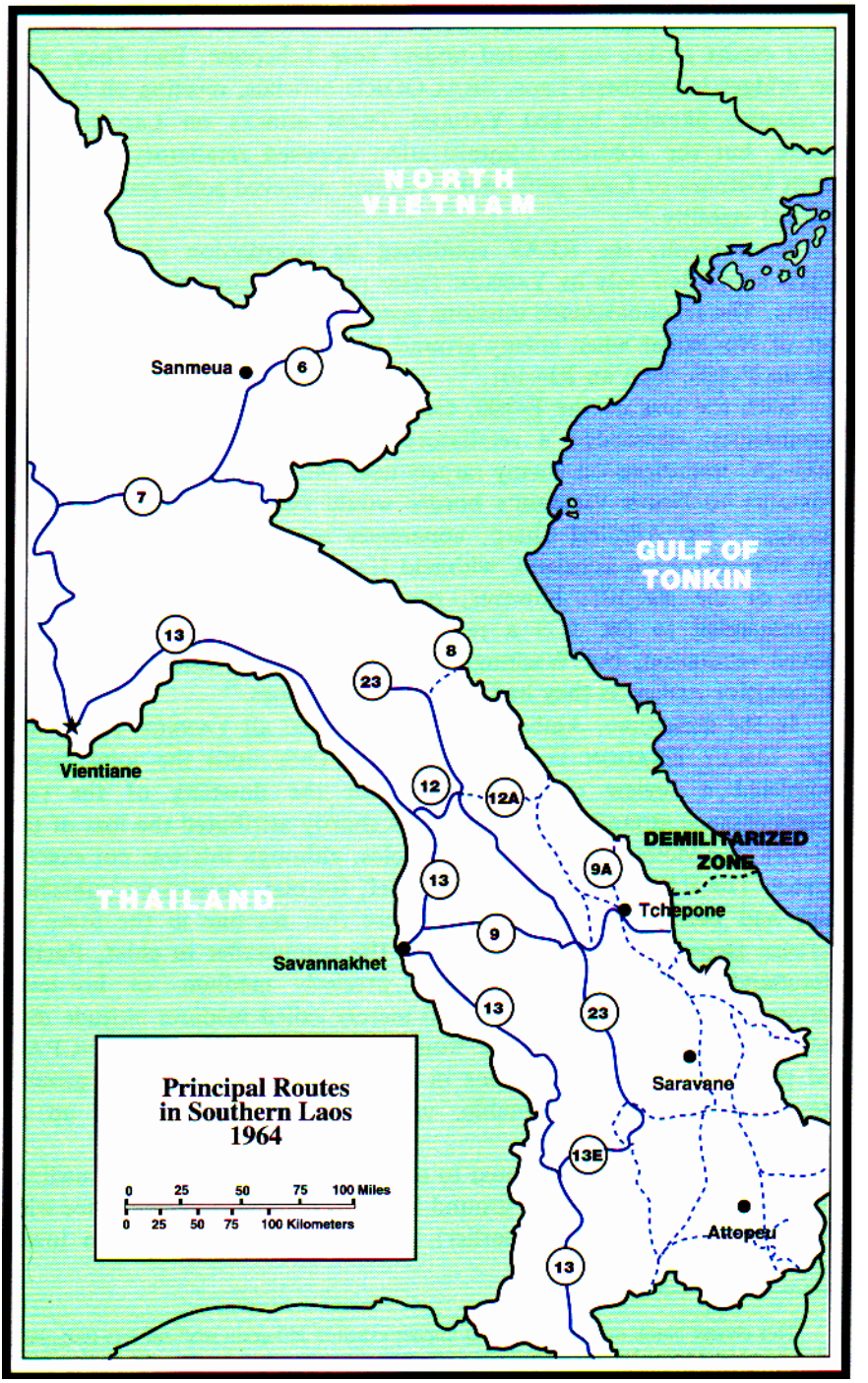
Thus the RLAF flew intermittent rather than sustained operations against Ho Chi Minh Trail targets, consisting largely of supply and other military areas, huts, buildings, and bridges. Between October 14 and November 2 the RLAF struck all thirteen MACV-selected targets plus three of its own. It made ten restrikes, inflicting various degrees of destruction and damage.

American officials in Vientiane and Washington maintained close oversight of the RLAF panhandle program to avoid a possible strong North Vietnamese riposte to an accidental bombing within its borders. They relaxed a few restrictions. The Nape bridge on Route 8 (an entry point from North Vietnam into Laos) and the Ban Thay military areas, both originally reserved for USAF air strikes, were struck by RLAF T-28s in late November, the attacks supported by USAF aircraft on MiG combat air patrol. Twelve T-28s dropped half of the bridge's 305- by 12-foot steel truss into the water. There was only one RLAF restrike. Conducted without U.S. approval, Thao Ma's pilots once more hit targets within the Mu Gia Station area. After several weeks of operations, the overall impact on the communists of the RLAF's attacks on trail targets was unknown. U.S. analysts assumed that they had impaired infiltration movements and made things uncomfortable for the communists in the area.[30]

Meanwhile, insufficient aircraft slowed the tempo of operations. Although the RLAF possessed about thirty-one fighters in late October (thirteen at Savannakhet, eighteen at Udorn), not all Udorn-based aircraft could fly interdiction. Some were reconnaissance models while others were out of commission for repair, leaving just five or six available for launching attacks from Udorn (via Wattay Airfield near Vientiane).* To bolster the RLAF's inventory, Defense Secretary McNamara ordered the Air Force to transfer another dozen T- and RT-28s from the VNAF, these aircraft transitioning into the force in subsequent weeks.

Concurrently, the services continued to seek presidential approval for letting U.S. aircraft supplement RLAF operations, their efforts invigorated on November 1 by a devastating Viet Cong attack on U.S. aircraft at Bien Hoa Air Base in South Vietnam. General Westmoreland, Ambassador Taylor, Admiral Sharp, and the joint chiefs urged an

*Udorn was also the home of the USAF WATER PUMP detachment which trained and provided maintenance and logistic backup for the RLAF.


NORTH VIETNAM
Sanmeua
6
7
13
Vientiane
8
23
12
12A
13
9A
Tchepone
DEMILITARIZED ZONE
THAILAND
Savannakhet
9
13
23
Saravane
13E
Attopeu
13
GULF OF TONKIN
Principal Routes in Southern Laos 1964
0 25 50 75 100 Miles
0 25 50 75 100 Kilometers

immediate U.S. reprisal strike on North Vietnam as well as YANKEE TEAM escort strikes on selected targets near Tchepone, Ban Thay, and two bridges in southern Laos. SEACOORD officials, meeting on the 5th in Saigon, likewise backed YANKEE TEAM attacks on Lao corridor targets, but the Johnson administration opposed retaliatory action in North Vietnam or Laos until South Vietnam achieved some semblance of political stability.[31]

As a result, the RLAF continued its interdiction of panhandle targets supported only by YANKEE TEAM reconnaissance planes and their escorts. The reconnaissance missions generated another crisis in the latter part of November when enemy ground fire downed two USAF aircraft, first an F-100, then an RF-101.[32]

With the loss of the F-100, Gen. Hunter Harris, Jr., the PACAF Commander, demanded a retaliatory USAF strike with napalm and CBU-2A* munitions on enemy targets near Mu Gia Pass, believing their proximity to North Vietnam's border would enable Hanoi to "get the message." But Admiral Sharp, apparently sensing the unlikelihood of high administration approval, withheld Harris's request. With the shoot-down of the RF-101, however, the PACOM commander personally recommended to the JCS a retaliatory strike. The joint chiefs also backed retaliation, but Washington, as usual, turned aside the requests for punitive strikes as they had escalatory overtones.[33]

In the meantime, Ambassador Unger halted all YANKEE TEAM and SAC LUCKY DRAGON U-2 missions over Laos until the joint chiefs completed a review of the reasons for the downing of the two reconnaissance aircraft. The joint chiefs shortly attributed the loss of the RF-101 to a violation of operational rules, although this was not exactly correct. The PACAF commander in chief, for one, insisted no published rules had been violated. The facts were that no one in the State or Defense Departments, the JCS, or on the commander in chief, Pacific Command, staff had ever defined precisely medium- or low-level reconnaissance. The joint chiefs had merely called medium altitude that above which hostile ground fire would not be expected, and CINCPAC had permitted low-level missions in areas where the risks from ground fire were considered acceptable, usually leaving the decision up to operational commanders.

The service chiefs attempted to settle the matter by defining medium altitude as 10,000 feet above ground level (AGL) and, in accordance with the previous policy (noted earlier), said they would consider a lower

*This cluster bomb unit upon ground impact expelled 250-grain steel spheres (popularly called bomblets) into the air.

altitude for reconnaissance aircraft on a case-by-case basis. Unger, dissatisfied, proposed more stringent flight requirements, insisting that all U.S. military pilots flying in Laos conform to procedures in the *Foreign Clearance Guide*,* maintain a 10,000-foot altitude, submit flight plans 3 days before takeoff, and await final approval from the air attaché's office in Vientiane.

Unger's proposed strictures, however, were not adopted. The war's exigencies in the ensuing days dictated a relaxation rather than a tightening of operational rules in both Laos and North Vietnam.[34]

In late November 1964, Ambassador Taylor warned Washington that South Vietnam's continuing political and military problems required more action against the communists. Asserting that the United States was playing a "losing game" in South Vietnam, he outlined several military options. At the bottom of the escalation ladder were intensified covert and anti-infiltration operations in North Vietnam and reprisal bombings (i.e., tit for tat) for Viet Cong depredations. Proceeding upward from this level, the United States could slowly add heavier bombings. Simultaneously, greater participation in operations in Laos would demonstrate to Saigon America's willingness to share the risks of a larger war with the North.[35]

Before the month was out, Taylor conferred in Washington with President Johnson and his advisers. In the course of the discussions, Taylor proposed and the president approved a two-phase military program to arrest further communist advances in the war. Phase I, lasting thirty days, would consist of heavier air strikes mainly against infiltration in the Laotian panhandle and intensified, covert, Operation Plan 34A operations against North Vietnam largely by U.S.-trained South Vietnamese. The air strikes, carried out by RLAF T-28s, would be supplemented by U.S. armed reconnaissance missions. The objective was more psychological than military, to warn Hanoi of American strength. After thirty days, the United States could continue the armed reconnaissance missions or take other measures to signal Hanoi. For example, it could withdraw American dependents from South Vietnam or conduct—for the first time—air strikes in the North, a short distance above the demilitarized zone.

If Hanoi failed to heed the military warnings, the United States would launch, with the president's approval, Phase II operations. These would consist of U.S./VNAF coordinated strikes on the southernmost sector of North Vietnam, and increase in weight and tempo over two to

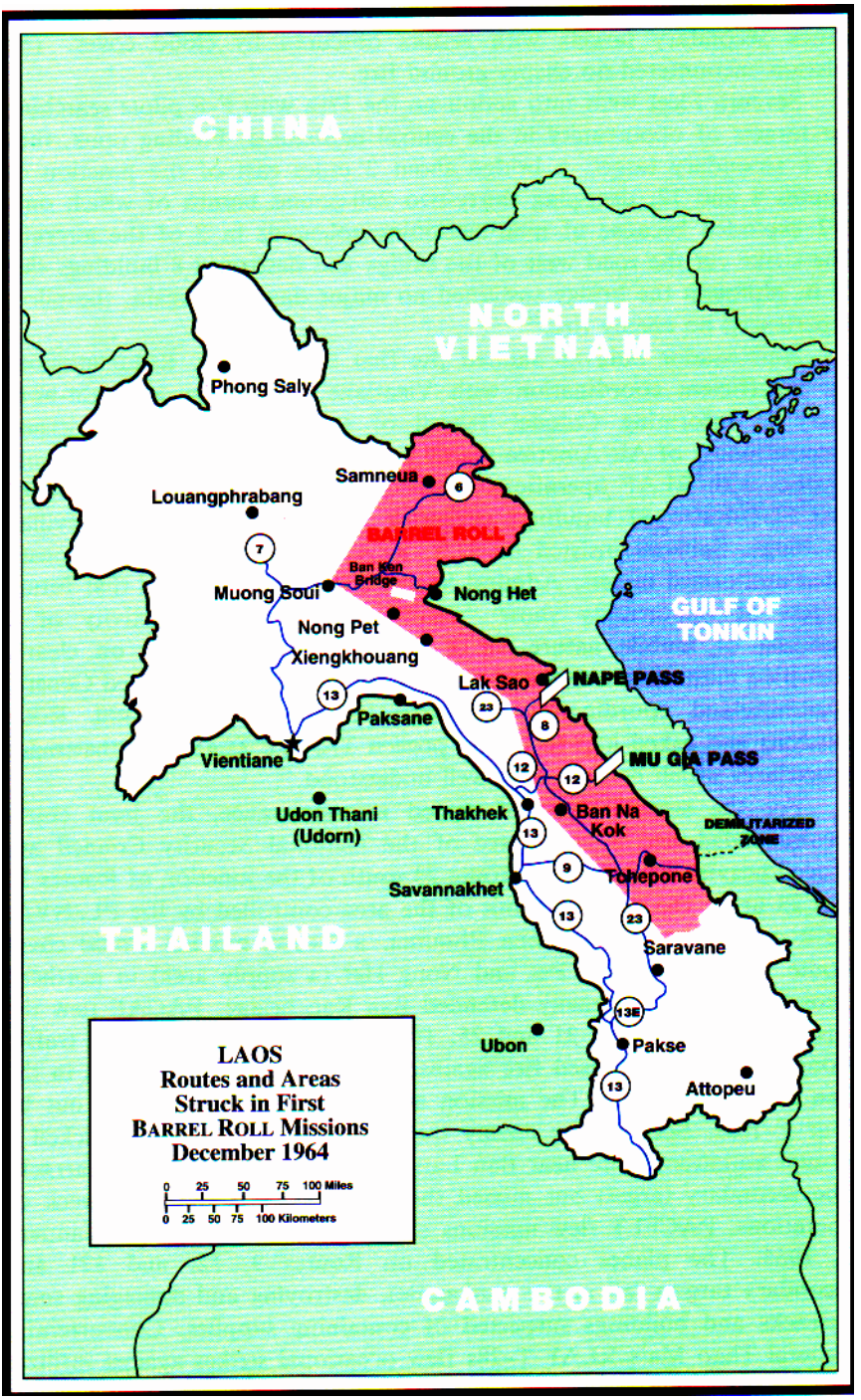
*A publication of the Defense Mapping Agency covering requirements for aircraft and personnel entering foreign countries. It contains information, for example, on aircraft clearances, uniforms, immunizations, passports and visas, quarantine, and customs.

six months until all significant targets in the country were hit. Meanwhile, the administration could exert other pressures, such as mining or blockading the North's seacoast, while simultaneously seeking to negotiate an end to the conflict. Taylor's personal view, shared by the joint chiefs, was to bomb the North sooner rather than later. Still, he found neither the president nor most of his advisers ready to abandon the dictum that insuring a stable government in Saigon should precede an attack on the North.[36]

After the president approved Phase I, the joint chiefs prepared a plan providing for two initial armed reconnaissance missions against targets of opportunity along segments of Routes 8, 12, and 121 in the Laotian central panhandle, with enemy barracks and military strongpoints earmarked as secondary targets. The plan enjoined air commanders to limit each strike mission to no more than four aircraft, use conventional ordnance (excluding napalm), allow at least three days between missions, remain two miles from the North Vietnamese border, and launch no strike missions from a Thai air base. Nevertheless, they were authorized to dispatch combat air patrol, search and rescue, and poststrike reconnaissance aircraft as necessary. The sensitivity of the proposed program was underscored by Deputy Secretary of Defense Cyrus R. Vance who briefed a select "Committee of NSC Principals" on Phase I on December 12. The committee would oversee and control virtually every facet of the new air program nicknamed BARREL ROLL.

Meanwhile, Taylor discussed the Phase I and II proposals with Government of Vietnam leaders, and on December 10 William H. Sullivan (appointed on November 25 to succeed Unger as U.S. Ambassador to Laos) secured Souvanna Phouma's consent, provided there was no publicity, to fly U.S. armed reconnaissance in the panhandle. The prime minister exacted a quid pro quo, requesting missions along Route 7 in the Plain of Jars in northern Laos, his principal area of interest. He also asked that Colonel Tyrrell and General Thao Ma coordinate U.S./RLAF actions.[37]

On December 12, Admiral Sharp alerted Generals Westmoreland and Moore and Admiral Thomas H. Moorer, the PACFLT Commander, before launching BARREL ROLL. The first mission was flown on the 14th by 4 Da Nang-based USAF F-105 Thunderchiefs laden with 750-pound bombs, CBU-2A bomblets, and AGM-12 Bullpup missiles. Accompanying the strike aircraft were 4 Da Nang-based F-100s for combat air patrol, 1 RF-101 from Tan Son Nhut for poststrike reconnaissance, 2 Korat-based F-105s for escort, and 2 refueling KC-135 tankers. The pilots flew along Route 8 and near the Nape bridge (hit on November 21), spotting a vehicle on an apparent nearby sunken bridge serving as a bypass. One F-105 aimed 6 of its 750-pounders on the vehicle-bridge


CHINA
NORTH VIETNAM
Phong Saly
Samneua
Louangphrabang
BARREL ROLL
Ban Ken Bridge
Muong Soui
Nong Het
GULF OF TONKIN
Nong Pet
Xiengkhouang
Lak Sao
NAPE PASS
Paksane
Vientiane
MU GIA PASS
Udon Thani (Udorn)
Thakhek
Ban Na Kok
DEMILITARIZED ZONE
Tchepone
Savannakhet
THAILAND
Saravane
Ubon
Pakse
Attopeu
CAMBODIA
LAOS
Routes and Areas Struck in First BARREL ROLL Missions December 1964
0 25 50 75 100 Miles
0 25 50 75 100 Kilometers

target, but the bombs fell between the 2 bridges. The other 3 fighters struck secondary targets with results obscured by cloud cover. The mission encountered no enemy ground fire.

Seventh Fleet went into action on the 17th with F-8 pilots searching for targets of opportunity in the central panhandle. Finding none, they hit a secondary target, a bridge about 2 miles east of the junction of Routes 8 and 12, dropping thirty-two 250-pound bombs of which only 1/2 exploded because of malfunctioning solenoids in 2 of the aircraft. The strike cut the road west of the bridge and destroyed 8 buildings east of it, although the bridge sustained no major damage. Again, the pilots experienced no enemy fire.[38]

Ambassador Sullivan faulted the first two BARREL ROLL missions for insufficient coordination with Vientiane. There was an eight-hour delay in informing Colonel Tyrrell of the initial launch to assure prepositioning of Air America search and rescue helicopters and to avoid conflict with RLAF operations. Secondly, bomb damage assessment of PACFLT-destroyed buildings suggested they might have been civilian dwellings. Sullivan insisted on U.S./RLAF agreement on what constituted authorized targets. Admiral Sharp, concurring, directed that future targets of opportunity show "unmistakable" military activity of a transient or mobile nature, or a connection with attacks on clearly identified military convoys and military personnel. He appointed General Westmoreland coordinating authority for all future BARREL ROLL missions and asked him to follow proven YANKEE TEAM reconnaissance procedures which by now were well understood.[39]

For the second week of armed reconnaissance, the joint chiefs recommended and a committee of the National Security Council approved heavier air strikes on Route 23 south of the junction of Routes 12 and 23 up to the southern limit of the area controlled by the PL/NVA. As a concession to Souvanna Phouma, a second mission would cover Route 7 between Nong Pet and Nong Het (a supply area) in northern Laos but avoid the heavily defended Ban Kan bridge. PACAF flew the missions on December 21 and 25, 1964. Pilots found no enemy traffic along Route 7 but loosed fire against active antiaircraft batteries in the Ban Kan bridge area. The mission along Route 23 was carried out by four F-105s. Spotting no enemy traffic, the Thunderchiefs attacked a 37-mm antiaircraft site near Ban Langkhang and the Tchepone barracks (the secondary target) but missed the buildings. For the third week of operations, PACFLT flew missions on December 30, 1964, and January 2, 1965. The planes concentrated on Routes 9, 12, and 121 and secondary targets (all in the panhandle), destroying and damaging some barracks and buildings suspected of containing supplies. Concurrently, General Thao Ma's RLAF T-28s flew occasional strikes against infiltra-

tion in the panhandle. On December 24 they began to lay on about six armed reconnaissance sorties per day.[40]

As there was no public or other reaction from Hanoi after the first half-dozen BARREL ROLL missions, high officials concluded that the strikes had failed to send a signal of American strength and warning of heavier military action. The Defense Intelligence Agency speculated that the communists apparently were unable to distinguish between attacks conducted under the aegis of BARREL ROLL on the one hand and the RLAF and YANKEE TEAM on the other. Between October 1 and December 30, 1964, the RLAF had flown 724 sorties and YANKEE TEAM, 170 missions.*

Ambassadors and military officials attending another SEACOORD conference in Saigon on January 6 and 7, 1965, agreed BARREL ROLL had not achieved its primary purpose. Nonetheless they were convinced it had a salutary effect on the war effort insofar as it improved Lao and Thai morale, provided training and terrain familiarity for pilots, caused some defections of Pathet Lao troops and civilian laborers, forced enemy dispersal or abandonment of fixed facilities, and disrupted the PL/NVA counterattacks at Muong Soui and elsewhere—although not all of these results could be easily verified. Despite the DIA assessment, the SEACOORD conferees believed that the air operations would not be unnoticed in Hanoi and Peking. They were gratified by Moscow's forebearance, interpreting it as a willingness to ignore the new air program so long as the United States did not advertise what it was doing in Laos.†[41]

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*From May 15 through December 1964, PACAF and PACFLT flew a total of 880 YANKEE TEAM missions consisting, respectively, of the following: photo, 214 and 198; escort, 118 and 171; weather, 98 and 81. PACAF missions totaled 430, PACFLT 450. One hundred fifteen aircraft assigned on 56 missions received enemy ground fire. Eleven were hit and 4 were shot down, PACAF and PACFLT each losing 2. [Hist, CINCPAC, 1964, p 272.] Recordkeepers failed to translate missions into sorties as they did for the RLAF.

†The last observation appears to have been quite accurate. More than four and a half years later, Ambassador Unger's successor, William H. Sullivan (later Deputy Assistant Secretary of State for East Asian and Pacific Affairs), explained the Soviet's forebearance of U.S. violations of Laos's neutrality: "A senior Soviet official, for example, has said that insofar as he reads things in newspapers or hears statements and allegations about U.S. operations, he does not have to take any official cognizance of them. But if they are made directly by U.S. officials he does have to take cognizance of them, and this will color, to some extent, the Soviet attitude toward Souvanna Phouma's neutrality and toward . . . the understandings which underlie the agreement between ourselves [i.e., the United States] and the Soviets for the neutrality of Laos." [Hearings before the Subcommittee on United Security Agreements and Commitments Abroad of the Committee on Foreign Relations, Senate, *United States Security Agreements and Commitments Abroad, Kingdom of Laos*, Statement by Mr. William H. Sullivan, Deputy Assistant Secretary of State for Far Eastern and Pacific Affairs, on Oct 20, 1969, 91st Cong, lst sess (Washington, 1970), pt 2, p 399.]

Still, the main purpose of BARREL ROLL—to signal American strength and willingness to apply more military pressure—seemed lost on Hanoi's leaders. Thus, as Phase I ended in early January 1965, the joint chiefs clamored for a harder-hitting BARREL ROLL program. They urged more frequent and extensive armed reconnaissance, less restraint in selecting targets, and relaxation of Thai government restrictions on flying USAF strike missions from Thai bases. Washington's top officials, insisting on maintaining at least the facade of the 1962 Geneva agreements in Laos, were unwilling to risk such unfettered air operations. They also opposed expanded armed reconnaissance until the new Saigon government under Premier Tran Van Huong demonstrated more strength and a capability to withstand a possible Viet Cong/DRV military counterthrust.[42]

However, administration overseers permitted a few changes in BARREL ROLL. After they authorized limited night missions, a USAF C-123 flareship and four F-100 Super Sabres combined to fly the first one along Route 7 in northern Laos. On January 13 the 2d Air Division was assigned to fly the largest day mission thus far. Sixteen F-105s, plus accompanying aircraft, struck the Ban Ken bridge, also on Route 7. The bridge was completely destroyed, but enemy ground fire downed an F-100 and an F-105. Both pilots were rescued.[43]

The next BARREL ROLL mission, again against infiltration in southern Laos, was flown by PACFLT's A-1Hs on the night of January 15-16 but with unhappy repercussions for air commanders. Straying off course about 25 miles from Route 23, the A-1Hs accidentally hit Ban Tang Vai village in Savannakhet Province, destroying 5 houses, partially destroying 7 granaries, and reportedly wounding 5 civilians and 5 Lao military personnel. The attack left a large bomb crater in the middle of a rice paddy 1,500 yards from the village. General Thao Ma was highly upset, and Ambassador Sullivan, with sharp words about "undisciplined pilots," halted temporarily further night missions. An investigation revealed that casualties had been overstated—only 4 villagers were slightly injured.

With U.S. officials anxious to maintain BARREL ROLL's "signal sending" momentum, Sullivan lifted the night bombing halt but at a price. General Thao Ma restricted further U.S. operations to a region south of Route 9 to an area east of Muong Phine, leaving Route 23 south of Route 9 to the RLAF. He reminded American pilots that campfires (which attracted Navy pilots to Ban Tang Vai) did not automatically mean the presence of communists. Admiral Sharp reemphasized the importance of BARREL ROLL operating rules issued in December 1964, confining strikes to "unmistakable" military activity or

installations and requiring adherence to YANKEE TEAM procedures and COMUSMACV coordination with Vientiane.[44]

Despite the Ban Tang Vai incident and the resulting constriction of the BARREL ROLL area, the services continued to urge a less restrained BARREL ROLL program. A veritable blizzard of communications between Vientiane, MACV, 2d Air Division, PACAF, PACOM, and Washington throughout January and February argued the case for expanding or improving the efficiency of BARREL ROLL operations. Among the recommendations in which administration authorities evinced some interest was stepping up night operations.

Secretary of Defense McNamara wondered if it was possible to locate enemy vehicles at night using aircraft equipped with infrared sensors, and queried the services about their resources in the Indochina theater for this type of operation. The Air Force at this time possessed four South Vietnamese-and Thai-based B-57s, all with infrared equipment and two with day-night optical cameras. It believed it could develop vehicle-detection techniques using these aircraft in conjunction with improved navigational aids. For general night operations, the Air Force also had C-123 and C-130 flareships for use with accompanying strike B-57, F-100, and F-105 aircraft. The Army owned infrared-equipped OV-1 Mohawks, presently used in South Vietnam, and the Navy had Skyraider A-1Hs and a newly developed A-6A (scheduled to enter its inventory in the spring of 1965) for night armed reconnaissance. Because of weather and jungle terrain, Admiral Sharp opined that at best, night missions would only be complementary to more productive day missions.[45]

As no order was issued stepping up night armed reconnaissance, the missions continued intermittently, but air commanders made some progress in getting approval to strike fixed secondary targets at night. Two USAF weather-aborted night missions on January 23 in northern Laos underscored a requirement for secondaries if night missions were not to be wasted. Desiring to avoid "short rounds" (accidental strikes on friendly troops or civilians) Ambassador Sullivan was reluctant to approve hard-to-find targets, but Washington's defense officials in early February acquiesced to service requests for strikes if there were adequate safeguards. They approved an intricate system of selecting and verifying targets drawn from two lists prepared by Sullivan's and Westmoreland's staffs, one for armed reconnaissance, the other for fixed secondaries. General Thao Ma would approve targets for the Lao government, but State and Defense officials insisted on reviewing and approving them. The officials also decided that requests for using jet aircraft against targets developed by FAR troops, tribal roadwatch teams, and contract (Air America) pilots should rest with the RLAF and not, as General

Moore and Ambassador Sullivan proposed, with an Air Force-embassy planning group at Udorn.[46]

In late January 1965, a series of crises in northern Laos also failed to persuade State and Defense to significantly increase the scope and tempo of BARREL ROLL operations. One was the beginning of the PL/NVA's long-awaited dry season campaign against the FAR and General Vang Pao's Meo forces. A second was another attempt by a rightist faction headed by General Phoumi to take over the government in Vientiane (the coup failed). The third was the RLAF's accidental loss of ten aircraft, nine of them T-28s, in an explosion at Wattay Airfield near Vientiane. (All the aircraft were shortly replaced.)[47]

In early February, however, two incidents in South Vietnam—rather than in Laos—finally evoked an important change in U.S. air policy, although not immediately in BARREL ROLL operations. Using demolition charges and mortars, small groups of Viet Cong on the 7th attacked an American barracks and a U.S. Army airfield near Pleiku, South Vietnam. They killed 8 U.S. soldiers, wounded 104, and destroyed 5 Army UH-1B helicopters, 2 CV-2 transports, and 3 USAF O-1Fs. With the complete support of all of his advisers, President Johnson ordered a retaliatory air strike against selected North Vietnamese targets. With the code name FLAMING DART, the strike was carried out swiftly by Navy and Air Force-supported VNAF aircraft. On the 10th, another Viet Cong attack on American barracks near Qui Nhon, costing 23 American and 7 South Vietnamese lives, triggered a second Navy- and USAF-supported VNAF strike called FLAMING DART II.[48]

While the president and his advisers awaited the reaction of Hanoi, Peking, and Moscow to the aerial ripostes, the services urged continuing the assault on the North and stepping up operations in Laos. General Moore recommended an "overwhelming blow" on MiG bases to forestall a possible MiG challenge to further FLAMING DART strikes or YANKEE TEAM and BARREL ROLL operations. Admiral Sharp, in addition to backing a followup aerial assault and more covert pressures on the North, advocated medium- and low-level reconnaissance of all infiltration routes in southern Laos, direct U.S. air support for Lao government FAR troops and the RLAF, and a PACAF strike at the key border infiltration point at Mu Gia Pass.[49]

The White House again resisted these pressures—but briefly. After the joint chiefs drafted an eight-week as well as other interdiction scenarios, President Johnson on February 19 approved a gradually escalating air program called ROLLING THUNDER beginning with strikes on military targets in southernmost North Vietnam. Saigon's unresolved political problems and bad weather, however, delayed ROLLING THUNDER's debut until March 2, when an armada of 104 USAF strike and

support aircraft and 19 VNAF A-1Hs struck military targets at Quang Khe and Xom Bang.[50]

With the decision to bomb North Vietnam, General Westmoreland asked the JCS to obtain higher approval, if possible, to permit consolidation of YANKEE TEAM, BARREL ROLL, and ROLLING THUNDER into a single air program. However, Prime Minister Souvanna Phouma, informed of the request through Ambassador Sullivan, vetoed the proposal. He believed it would further weaken his policy not to let Laos's territory and air space be used against the North, provoke Hanoi to send more NVA troops into Laos, and jeopardize his neutralist role, presently supported by the Soviets who, in turn, were in a position to restrain Hanoi from sending more manpower into Laos. Ambassador Sullivan agreed with these arguments as did Washington officials, although the latter had additional reasons for not consolidating the air programs, such as the fear of Chinese intervention in the war. Despite the political objections, Westmoreland and other military commanders were convinced heavier military pressure against the communists was needed in the Indochina theater, including expanded counterinfiltration measures.[51]

Chapter III

The Beginning of the STEEL TIGER Program

The U.S. decision in February 1965 to inaugurate a regular bombing program of North Vietnam was taken amidst more evidence of DRV manpower infiltation. MACV intelligence believed that about 7,000 additional DRV troops* had joined the Viet Cong during 1964, 90 percent of them draftees of North Vietnamese origin. There were darker forebodings in the discovery that elements of several regular DRV army regiments had arrived in South Vietnam's northernmost provinces in December 1964.[1]

Because the limited RLAF/YANKEE TEAM and BARREL ROLL operations had failed to have a measurable impact on infiltration or to signal Hanoi into restraint, U.S. military commanders welcomed the ROLLING THUNDER program. But the restrictions placed on ROLLING THUNDER also made it questionable if the new air program could persuade Hanoi quickly to reduce or halt its assistance to the Viet Cong.

In Honolulu on March 11, during another review of the war, U.S. officials continued to weigh counterinfiltration proposals. The Army's solution was to "isolate the battlefield" by inserting a corps of three to five U.S. divisions across South Vietnam and the Laotian panhandle to the Mekong River. John T. McNaughton, Assistant Secretary of Defense (International Security Affairs), predicted the rejection of such advice by higher authorities unless convinced that victory could not be won any other way.

Air Force and Navy commanders, as in past months, urged the use of more air power. Maj. Gen. Thomas S. Moorman, Deputy Commander of PACAF, Maj. Gen. Theodore R. Milton, Commander of the Thirteenth Air Force, and Admiral Moorer, the PACFLT Commander, singly and jointly proposed continuous (as against intermittent) day-and-night operations against the communists in South and North Vietnam

*By July 1965, MACV had revised this figure to 8,250 infiltrators in 1964 of which 4,976 were listed as confirmed and 3,274 as unconfirmed. [DIA Bul 135-65, Jul 14, 1965.]

and fewer constraints on the YANKEE TEAM and BARREL ROLL programs in Laos. For example, Milton underscored the importance of flying low-level, single-pass reconnaissance over targets to obtain better prestrike and poststrike photography, and Moorer wanted authority for air commanders to conduct restrikes as necessary. McNaughton was sympathetic and even supportive of some requests but warned of Washington's sensitivity to two factors: the danger of involving the Soviet Union by escalating the air war, and the aircraft losses that would inevitably accompany stepped-up air activity.[2]

Frustrated by the many air constraints, General Harris, PACAF chief, asked Admiral Sharp several days later to impress again upon Washington officials the necessity for prestrike photography through flying low-level reconnaissance in Laos. Agreeing with Harris but mindful of McNaughton's assessment of administration thinking, the PACOM commander said it was untimely to submit another request for relaxing reconnaissance operating rules.[3]

Meanwhile, in Vientiane, Sullivan was devising another air program for Laos, hopefully more effective but still within U.S. and Lao government-imposed constraints. The "steady signal" intended for Hanoi failed, in his estimate of BARREL ROLL, because of the United States' propensity "to jump around too much" in its objectives. Accordingly, he informed Washington on March 6 that the embassy and MACV were completing a traffic "chokepoint" plan against communist supply infiltration into South Vietnam before the dry season ended (i.e., about mid-April). This envisaged rebombing of vital traffic points and bombing saturation of selected routes by armed reconnaissance aircraft, especially at night, to create a backup of enemy supplies. Thus exposed, the supplies could be attacked, slowing logistic movements. The ambassador proposed starting the chokepoint program shortly, before the onset of the monsoon rains in the latter part of April.

Admiral Sharp supported Sullivan's concept with a qualification. Noting the forty-eight-hour lapse required between BARREL ROLL missions, he expected the communists to take advantage of it by clearing away ordnance—especially delayed-fuze bombs—from interdicted roads and traffic points and by repairing road damage. From the standpoint of effectiveness, the PACOM commander believed that strikes of fixed targets such as supply dumps would be more promising. At bottom, his views were fairly congruent with those of Sullivan, who had no objection to striking fixed targets along with chokepoints. The thrust of the ambassador's position was that BARREL ROLL's objective could best be served by a well-orchestrated series of strikes on related targets rather than by random attacks as in the past.[4]

On March 12, the Deputy Chief of Mission, Emory C. Swank, in a briefing for Souvanna Phouma on the ambassador's proposed program, said eight chokepoints were under consideration. Five were on Routes 6, 7, and 65 in northern Laos (an area of greatest concern to the prime minister) and three were in southern Laos. The latter included the Nape and Mu Gia Passes near the North Vietnamese border, which had already been struck, and the third was on Route 23. After looking at a map of the routes, Souvanna gave his assent.[5]

Sullivan had informed the State Department that his program initially would involve strikes that were limited to about four chokepoints, bomb "reseedings," and three or four armed reconnaissance missions per week along key routes with fixed installations serving as secondary targets. State said it could support this air tempo but advised that there was difficulty in "holding the line" against service pressure to increase the scale and frequency of missions. Its currrent stance was to approve a maximum of four day and two to four night strike sorties per day. The JCS, in contrast, was proposing a biweekly (as against the present weekly) Laotian air program consisting of seven day and seven night missions daily without limiting the number of aircraft per mission, and a reduction from forty-eight to twenty-four hours of the "sterile" period between missions.* State solicited Sullivan's guidance on maintaining a low-key, carefully controlled air program.[6]

In reply, Sullivan stressed the importance of conducting systematic chokepoint strikes at key locations on vital road infiltration routes without diverting aircraft to other enemy supply areas as in the past. Noting the State Department's anxiety about a somewhat accelerated Laotian air program, the ambassador said only Washington's highest officials could determine the extent to which the program might strain the toleration of the Soviets and the Poles.† He said he supported Secretary of State Dean Rusk's objective of not forcing the Soviets to equate their position with the Chinese and North Vietnamese, especially if the administration hoped to use Moscow as a lever with Hanoi in ending the present military confrontation in Indochina.[7]

Sullivan's chokepoint scenario was overtaken, however, by the return to Washington from South Vietnam on March 14 of Gen. Harold K. Johnson, Army Chief of Staff. Sent by the president at the beginning of the month to conduct a new study of the Saigon government's

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*On March 23, Washington's top civilian authorities acceded to a part of this request and reduced the time lapse between missions to twenty-four hours. [Msg, JCS to CINCPAC, 232208Z Mar 65.]

†In reporting on infractions of the 1962 Geneva agreements on Laos, the Polish representatives of the International Control Commission normally sided with the PL/NVA.

military, economic, and pacification progress, General Johnson submitted to the president and his advisers a pivotal twenty-one-point program for blunting the communist challenge against Laos as well as South Vietnam. Most of his recommendations sought to shore up Saigon's faltering military and economic efforts. But he also urged stepping up ROLLING THUNDER strikes in North Vietnam, confining BARREL ROLL operations to northern Laos, and creating a new air program for attacking communist infiltration in the southern panhandle.[8]

The president approved most of the recommendations the next day and on March 20 gave the go-ahead for a new Laotian air program. He enjoined the services to exert "maximum effort" against infiltration through Laos into South Vietnam. Known as STEEL TIGER, the program had first claim on Air Force and Navy aerial assets for Laos. BARREL ROLL operations would be confined to northern Laos. The military services, needless to say, applauded the decision to allocate more air power against infiltration.[9]

Sullivan reluctantly supported the president's decision, then hastened to send the State Department some advice. As the STEEL TIGER program evolved, he said, American military interests should not take precedence over the need to preserve Laos's neutral status. The new U.S. air undertakings could not be accomplished without Souvanna Phouma's full cooperation. To retain his confidence required absolute frankness with him, a congruence of U.S. operations and Laotian interests, careful coordination of American and Laotian activities, and assurance that air operations would be carried out meticulously with pilots aborting missions, for example, rather than inflicting damage on friendly villagers. The last was most important. Because Laos was not North Vietnam and the Viet Cong had not occupied territory as in South Vietnam, the United States was not completely free to attack all targets.

Further, Laos was a friendly country where villagers and guerrillas were assets, and where the embassy's country team performed as paymaster and quartermaster for guerrillas, gave orders, and directed operations. This meant that the United States had to "bend over backwards" in executing its military mission to maintain the political foundations of its activities and refrain from trying to maximize its military opportunities. The American decision not to use napalm in Laos was another example of the type of self-abnegation required.[10]

On March 23 the JCS instructed the PACOM, PACAF, and PACFLT commanders to submit an operational plan for the first two weeks of STEEL TIGER activities. Numerous service operational and coordination matters needed resolution, and these were tackled during another SEACOORD conference at Udorn on March 27. Attendees included members of Vientiane's country team headed by Sullivan as

chairman, and representatives from the American embassy in Bangkok, the 2d Air Division, MACV, and Air America. The conferees quickly agreed to demarcate BARREL ROLL and STEEL TIGER boundaries from east to west at about 18°30′N latitude or just below Nape Pass, although a special message soon directed a more precise delineation. As in the past, COMUSMACV would coordinate (through the 2d Air Division) all PACAF and PACFLT operations, possibly adding the RLAF. General Thao Ma, the RLAF Commander, desired to place one or two RLAF officers at Nakhon Phanom Royal Thai Air Force Base (RTAFB) who would establish a direct communication link with his headquarters at Savanakhet. Representatives of the 2d Air Division and MACV said they would look into the possibility of creating the link.

The conferees agreed the 2d Air Division should continue to assume primary responsibility for search and rescue operations using HH-43 Huskie helicopters based at Nakhon Phanom and two other Huskies, one based at Paksane in east-central Laos and the other at Pakse farther south. To increase helicopter radius, stocks of JP-4 fuel would be prepositioned at key refueling sites in the panhandle.

The conferees agreed to "crank in" roadwatch team locations within the STEEL TIGER area in strike planning documents at the embassy-MACV level. As the teams moved into and out of enemy areas, strike plans would be revised accordingly. (In practice the embassy staff would firmly control all team and target clearances in the STEEL TIGER area, much to the frustration of the Air Force.) The RLAF was assigned a segment of Route 92 and other routes and areas in the vicinity of Saravane, where several FAR units were engaged in reconnoitering. This would avoid accidental U.S. air attacks on friendly troops. FAR Maj. Gen. Phasouk Somly, Commander of Military Region IV, delineated the U.S. and FAR strike areas on a map.

In a review of the BARREL ROLL program, Sullivan requested a more rapid air response system to reduce procedural delays in obtaining strike clearances for Air Force and Navy aircraft. He wanted on-call USAF aircraft at Udorn to hit preselected targets and those spotted by roving roadwatch teams, some of which would receive radios within thirty days for flashing their findings to 2d Air Division. To make better use of aerial photography, Sullivan further suggested processing all YANKEE TEAM photos at Udorn, where they could be collated with other intelligence data. Finally, he solicited administration approval to allow PACAF and PACFLT weather aircraft to take targeting photos during their weather missions.[11]

Sullivan's objectives widened a growing breach between the ambassador and his planners, on the one hand, and the Air Force and Navy on the other, over the use of reconnaissance, strike, and other aircraft in

Laos. With tribal teams engaged in ground reconnaissance, officials desired quick air reaction to team-designated targets. But 2d Air Division and PACFLT, in accordance with general air priorities established by McNamara, were enjoined to give aerial precedence first to close support in South Vietnam, then to targets in North Vietnam. Thus Moore was reluctant to assign or "dedicate" any aircraft to Vientiane's targeteers. Nonetheless, Sullivan insisted, and Moore shortly stationed a small number of F-4 and F-105 on-call aircraft at several Thai air bases.* As air needs in northern and southern Laos expanded in the ensuing months, the tug-of-war between Vientiane and the 2d Air Division over the use of aircraft in Laos would heighten. Because the 2d was a component of MACV, Westmoreland invariably was a major participant in the dispute.[12]

On March 30, Sullivan briefed Souvanna Phouma on American plans to intensify air operations in southern Laos. The prime minister assented, provided U.S. officials maintained close air liaison with General Thao Ma and briefed him periodically on strike results. He also underscored the importance for American airmen to avoid civilian casualties when bombing in heavily forested areas or during bad weather.[13]

The next day CINCPAC dispatched the first STEEL TIGER operational order to his component commanders, directing them, beginning April 3, to conduct U.S. armed reconnaissance and interdiction against selected infiltration routes and facilities in southern Laos. The order directed armed reconnaissance missions against

> enemy targets of opportunity . . . defined as military vehicular and troop movements and active AA (guns manned or unmanned) spotted on or within 200 yards of roads designated for armed recce missions . . . . Camp fires and civilian habitations will not be attacked. Fixed installations will be struck only in connection with attacks on clearly identified military convoys and military personnel, or when pre-briefed as primary and secondary interdiction target. Unexpended ordnance should be dumped in free strike zones as announced by COMUSMACV.
>
> Individual mission aircraft will avoid areas of heavy AA concentration unless [the] concentration is [a] target for [an] attack by [an] appropriate size force and will not approach [the] NVN [North Vietnam] border closer than two miles unless directed differently.

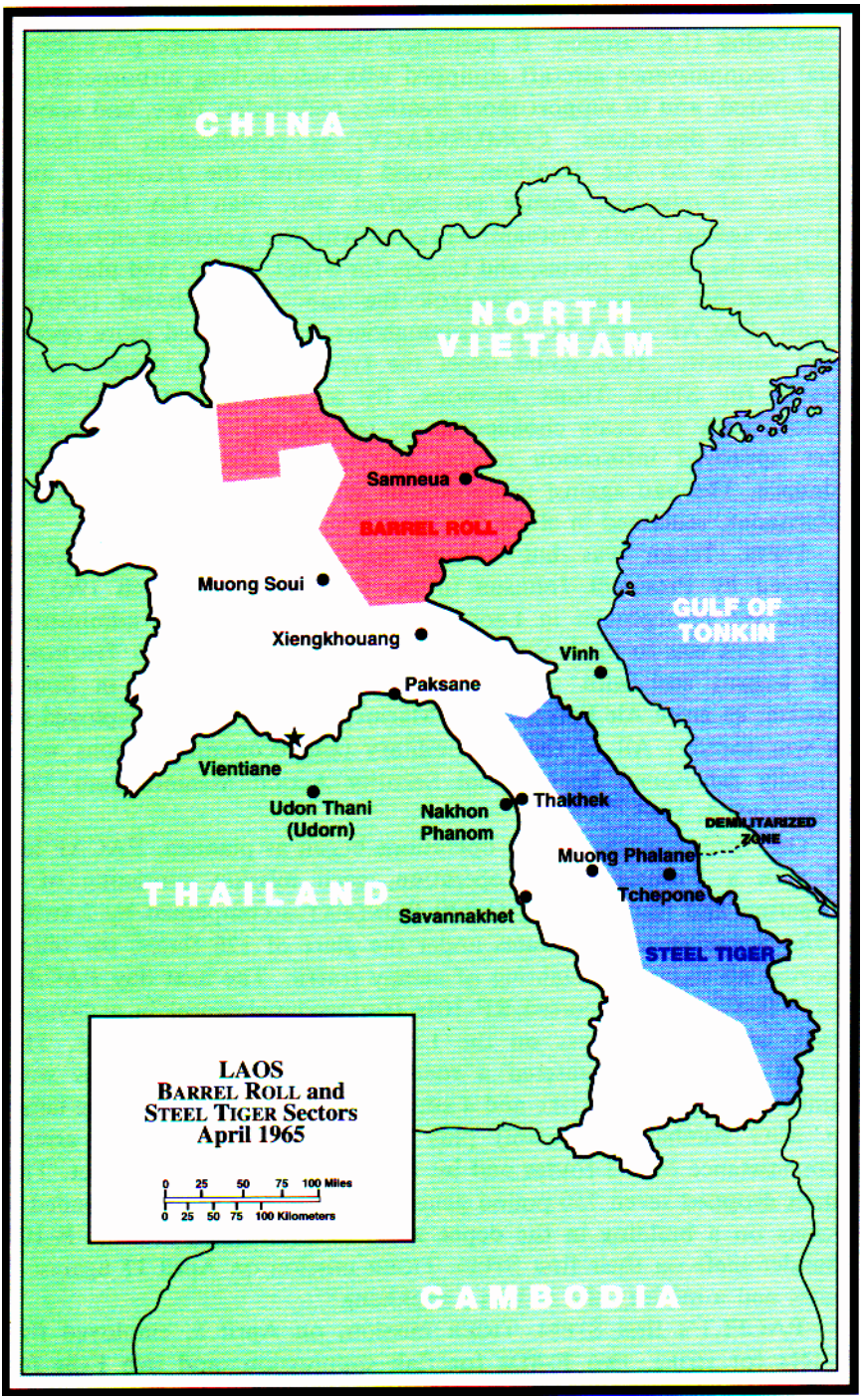
*At three Thai air bases in May 1965, four USAF BANGO F-4Cs and four WHIPLASH F-105s were placed on alert for Laotian targets.

The directive eased some of the flying restrictions in Laos heretofore encumbering U.S. airmen. It permitted them to fly more pre-mission visual reconnaissance aircraft equipped with side-looking airborne radar and infrared, and to support more weather, pathfinder, flare, and search and rescue operations. COMUSMACV, as coordinating authority (through the 2d Air Division), would prescribe the frequency and sequence of missions; ensure no conflict with Plan 34A covert air activities against North Vietnam; work out with the American embassy in Vientiane the timing, routes, and targets for STEEL TIGER; and plan with the American embassy in Bangkok the use of Thai-based (USAF) aircraft. PACAF and PACFLT commanders were assigned more operational authority. They could select the type of aircraft deemed most suitable for STEEL TIGER missions, fly an unrestricted number of missions daily to create chokepoints or to "reseed" the Nape Pass or other approved infiltration routes, and use "optimum" unclassified ordnance. The ban against using napalm in Laos, unless waived by the ambassador, remained in effect.[14]

STEEL TIGER was but one of several new military programs approved by President Johnson in the latter half of March 1965 to contain the insurgencies in Laos and South Vietnam. The administration's intent was to mesh STEEL TIGER loosely with ROLLING THUNDER (just begun) and with stepped-up air and ground action in South Vietnam, as more Air Force, Navy, Marine, and Army units deployed to the war theater. All of the new military (and economic) actions were officially sanctioned by National Security Action Memorandum 328, dated April 6, 1965.[15]

On April 3, STEEL TIGER operations began as planned. PACAF led off with a 2-mission night operation, each mission consisting of 1 navigation and flare-carrying C-130 BLINDBAT accompanied by 2 strike B-57s. Scanning several routes under the glare of 126 flares, the pilots reported no significant sighting of enemy traffic. The next day PACAF sent 7 B-57s and 3 escorted RF-101s (for reconnaissance) in a daytime attack on Mu Gia Pass on the Lao-North Vietnamese border. The tactical jet bombers cratered a road and reseeded other routes with bombs. On April 5, 4 strike and 4 support F-100 Super Sabres (the latter for MiG combat air patrol) plus 2 RF-101s flew daytime armed reconnaissance over 3 routes and hit the Ban Phanop supply depot. The planes dropped seven 750-pound general purpose bombs and expended 4 rockets on a building in the depot area. PACAF dispatched its F-105 Thunderchiefs on their first STEEL TIGER mission on April 11 against 2 routes and a military site at Ban Langkhang.

PACFLT's first STEEL TIGER mission, on April 5, employed five A-1Hs for strike, two F-8Ds for flak suppression, and two F-8s for


CHINA
NORTH VIETNAM
Samneua
BARREL ROLL
Muong Soui
Xiengkhouang
Paksane
Vientiane
Udon Thani (Udorn)
Nakhon Phanom
Thakhek
Vinh
GULF OF TONKIN
DEMILITARIZED ZONE
Muong Phalane
Tchepone
Savannakhet
STEEL TIGER
THAILAND
CAMBODIA
LAOS
BARREL ROLL and
STEEL TIGER Sectors
April 1965
0 25 50 75 100 Miles
0 25 50 75 100 Kilometers

combat air patrol plus other support aircraft to create a chokepoint on Route 23. In the ensuing week (i.e., through April 12) the two services flew daily missions over the famed Ho Chi Minh Trail, interspersing their armed reconnaissance with chokepoint, road cut, or secondary target strikes. The last consisted chiefly of known or suspected military and supply areas, truck stops, and, in one instance, a Pathet Lao-held airfield near Tchepone, which was attacked on April 8.[16]

Pilots sighted only a few enemy trucks during the first half of April but observed more later that month. On the 18th, PACFLT airmen saw eight to ten trucks in one convoy and sixteen to twenty-two in another. Roadwatch teams, now furnishing more information on truck movements, believed the enemy had developed a shuttle system between fixed supply points. For example, on April 22 the teams reported sixty-five trucks moving north, twenty-nine south and the next day eleven moving north and twenty south.

Although pilots interdicted some trucks, jungle terrain or weather often obscured results. Uncertainty of bombing results also applied to strikes on such secondary targets as buildings, military and supply areas, chokepoints, and road cuts. The communists were able to nullify some of the bombing impact by quickly clearing chokepoint areas or constructing bypasses near severed roads. They made air operations more hazardous by placing more antiaircraft weapons around vital logistic areas such as the Nape and Mu Gia Passes, two key entry points from North Vietnam that soon became primary targets. Nonetheless, some intelligence analysts believed the air strikes slowed supply infiltration by forcing the PL/DRV to divert more people to road clearing, detour to poorer secondary routes over more difficult terrain, and substitute manpower for vehicles.

By April 29 the two services had flown 791 STEEL TIGER sorties of all types. Each service flew about the same number of night sorties with PACAF relying on its C-130/B-57 flare and strike aircraft. For daylight strike missions PACAF after mid-April employed chiefly its Thai-based F-105 Thunderchiefs.[17]

STEEL TIGER operations had scarcely begun when Secretary McNamara on April 12 discussed with the Joint Chiefs of Staff how to make current air programs more effective against the PL/NVA in Laos, and to slow down DRV infiltration into South Vietnam. The joint chiefs recommended and McNamara quickly approved the transfer of some of his authority over the BARREL ROLL and STEEL TIGER programs to the JCS and Admiral Sharp, and the further relaxation of certain operating rules. Consonant with this decision the joint chiefs on April 17 authorized Sharp to strike validated, fixed, and secondary targets at night as well as in daytime (after coordinating with PACAF and PACOM on how to achieve "optimum results"). He was further

permitted to create or reseed chokepoints in selected areas, and to crater specified roads in uninhabited regions. Also, in the absence of suitable night targets in Laos, he was allowed to drop unexpended ordnance on Viet Cong/North Vietnamese forces in free-strike zones in South Vietnam or on Hon Gio (Tiger Island), a DRV military stronghold off the North Vietnamese coast slightly above the 17th parallel. Air commanders could use all available conventional ordnance in Laos except napalm. To speed decisionmaking for the two major Laotian air programs, the service chiefs shortened from fourteen to seven days the period between the issuance of their periodic operational guidance (which would be broadly retained), and their final approval to launch aircraft. They also instructed the PACOM commander to work with Ambassador Sullivan in preparing more anti-infiltration measures.[18]

The foregoing measures were heartily endorsed on April 21 at another SEACOORD meeting in Saigon, attended by Graham A. Martin (Ambassador to Thailand), Ambassador Sullivan, Deputy Ambassador U. Alexis Johnson (from Saigon), Admiral Sharp, General Westmoreland, and other officials. They agreed, however, that one rule could not be easily relaxed. This was the twenty-four-hour advance notification by 2d Air Division (through the deputy commander, 2d Air Division/Thirteenth Air Force at Udorn) to the Bangkok embassy of all Thai-based USAF aircraft scheduled for strikes in Laos. Ambassador Martin emphasized the importance of keeping the Thai leadership fully informed of these operations. The overall impact of the new STEEL TIGER operations and the stepped-up BARREL ROLL and ROLLING THUNDER programs, the conferees believed, had "markedly" raised the morale of the Laotians and South Vietnamese.

On May 3, Sullivan authorized air strikes on approved secondary targets first, if pilots chose to attack them before flying armed reconnaissance. He approved the change after he learned that PACAF pilots, with several weeks of experience, could fly armed reconnaissance missions more effectively if their strike aircraft (still mostly F-105s and B-57s) could quickly dispense their normal load of six 750-pound bombs on a secondary target. The pilots said the bombs were frequently dropped in haste because of low fuel when flying armed reconnaissance and, in any event, the 750-pounders were not the best ordnance for that type of mission. Colonel Tyrrell, the air attaché, convinced the ambassador that after dropping their heavy ordnance loads, aircraft could maneuver better and would have sufficient rockets and cannon ordnance for flying the high-priority armed reconnaissance missions.[19]

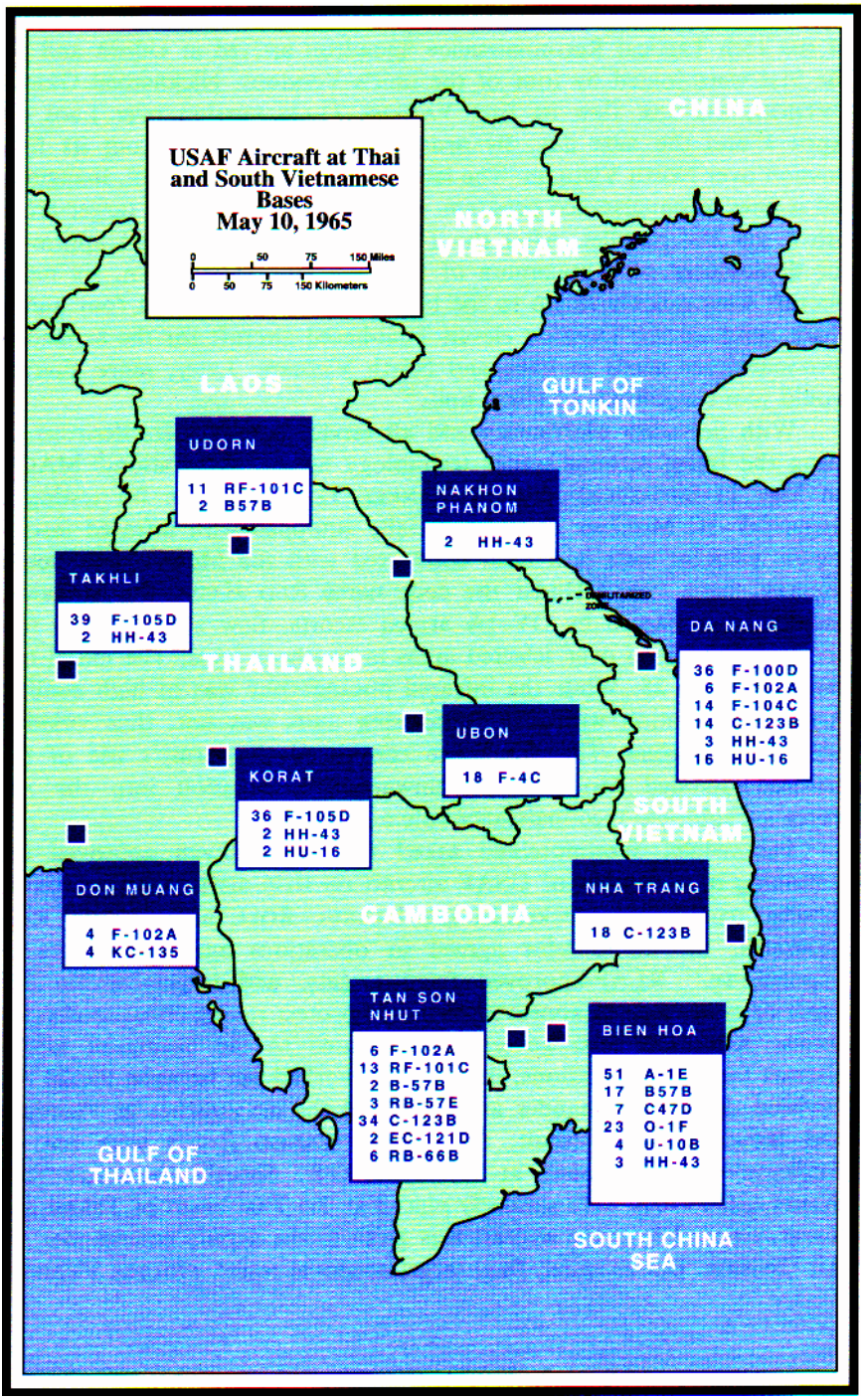
The accelerated strike programs in Laos and North Vietnam inevitably increased the demand for more photo reconnaissnce in both countries, a demand that could best be met by locating some RF-101

Voodoos on a nearer Thai base. On the 6th of March, an advance party of the 15th Tactical Reconnaissance Squadron arrived at Udorn and on the 31st were joined by four of the unit's Voodoos. Nicknamed GREEN PYTHON, the unit flew its first YANKEE TEAM mission over Laos on April 1 and the next day, by order of the JCS, carried out its first mission over North Vietnam. The latter, known as BLUE TREE, inaugurated a new reconnaissance program with missions limited to target areas below the 21st parallel. After the Thai government on May 1 approved the deployment of a maximum of twelve RF-101s at Udorn, six more aircraft were quickly flown to the base. These, plus the first four and a spare, gave 2d Air Division eleven Thai-based aircraft for the expanded reconnaissance needs in Laos and North Vietnam. Later, more aircraft would join the GREEN PYTHON unit.[20]

With Secretary McNamara and all service commanders desirous of using the latest reconnaissance technology against infiltration,* MACV on May 11 introduced into the YANKEE TEAM program for testing a single OV-1C Mohawk aircraft specially equipped with infrared instruments. (Similar tests had been conducted with the Mohawks in South Vietnam since 1962.) Under the code name RED HAZE, the Mohawk, usually accompanied by OV-1A armed escorts, flew at about 150 feet above ground level over selected areas in southern Laos. The initial test ended on May 25. While the infrared photography was of high quality, Army coordination with Air Force-using units was not, thus vitiating much of its value. The Air Force considered the Army's use of the infrared-equipped Mohawks an unwarranted intrusion into the Air Force's traditional reconnaissance role and mission.[21]

Meanwhile, Westmoreland asked for and Sullivan approved the stationing of a number of USAF aircraft on strip alert to strike fleeting targets, particularly trucks. In the BARREL ROLL and STEEL TIGER programs, the ambassador agreed to operations against "targets of opportunity," RLAF-approved fixed targets, and targets within 200 yards of either side of approved routes to protect roving tribal roadwatch teams. After the Thai government assented to the basing of USAF aircraft for these operations, details were worked out between the 2d Air Division deputy commander at Udorn and the air attachés at Vientiane and Bangkok. As a result, four USAF BANGO F-4Cs were put on fifteen-minute strip alert at Ubon RTAFB. Shortly thereafter four WHIPLASH F-105s were similarly placed at the Thai bases of Takhli and Korat. Control over the aircraft was given to the deputy commander, 2d Air Division. But as usual, final target approval rested with the Vientiane

*See Chapter II.


USAF Aircraft at Thai and South Vietnamese Bases
May 10, 1965
0 50 75 150 Miles
0 50 75 150 Kilometers
CHINA
NORTH VIETNAM
LAOS
GULF OF TONKIN
UDORN
11 RF-101C
2 B57B
NAKHON PHANOM
2 HH-43
TAKHLI
39 F-105D
2 HH-43
DEMILITARIZED ZONE
DA NANG
36 F-100D
6 F-102A
14 F-104C
14 C-123B
3 HH-43
16 HU-16
THAILAND
UBON
18 F-4C
KORAT
36 F-105D
2 HH-43
2 HU-16
SOUTH VIETNAM
DON MUANG
4 F-102A
4 KC-135
CAMBODIA
NHA TRANG
18 C-123B
TAN SON NHUT
6 F-102A
13 RF-101C
2 B-57B
3 RB-57E
34 C-123B
2 EC-121D
6 RB-66B
BIEN HOA
51 A-1E
17 B57B
7 C47D
23 O-1F
4 U-10B
3 HH-43
GULF OF THAILAND
SOUTH CHINA SEA

embassy and was granted through the air attaché. Operating rules required the aircraft to be under a forward air controller when striking targets selected by the roadwatch teams. To avoid wasting sorties, air attache's would designate secondaries if pilots could not find their primary targets.[22]

BANGO aircraft made their debut on May 9 in support of an RLAF attack on an armored column of enemy tanks, trucks, and jeeps in the Plain of Jars region. After the T-28s reportedly destroyed two tanks and five trucks, RLAF pilots, hoping for a bigger kill, asked for USAF assistance. An hour later the BANGO Phantoms arrived and, with the T-28s marking the targets, destroyed two more tanks and damaged two. Pilots reported heavy ground fire with one hit on an RLAF aircraft which returned safely to its base. The chief air attaché considered the USAF response, coordination, and mission results excellent. The first WHIPLASH F-105 strike took place on May 23 against an enemy village. A VICTOR CONTROL C-123 with a Lao observer aboard served as forward air controller. Expending fifteen 2.75-inch rockets and 20-mm ammunition, the Thunderchiefs set two buildings afire and inflicted other damage on about thirty percent of the target area.[23]

As BANGO and WHIPLASH strikes continued, operating strictures lessened. In addition to hitting fleeting and RLAF-designated fixed targets, the on-call aircraft were scheduled for close air support (for FAR and General Vang Pao's ground troops), and search and rescue. Only certain U.S. and Lao military officers and officials could request fast-reacting aircraft. Thai government officials, as noted earlier, monitored these and other Thai-based operations closely, demanding one-day advance notice of the number of USAF aircraft on strip alert and prompt reports on strike results. They also insisted on strike control by the air support operations center (ASOC) at Udorn rather than by the 2d Air Division's headquarters in Saigon. The WHIPLASH F-105s had been earmarked chiefly for infiltration targets in the STEEL TIGER sector. During the ensuing weeks, however, more of them flew in the BARREL ROLL area at the request of officials in Vientiane.[24]

On May 19, Ambassador Sullivan approved CINCPACFLT's request to fly its carrier-based aircraft over North Vietnam while en route to Laotian targets. The aircraft were already engaged over the North for the ROLLING THUNDER program, and the overflights shortened flying distance to Laotian targets by 60 to 160 miles. This reduced the number of aerial refueling tankers required for these missions and afforded additional air routes into and out of Laos. The latter advantage promised to complicate air defense for the communists, and allow pilots, when unable to hit their primary targets in Laos, to hit secondary targets in North Vietnam.[25]

Another change promising to enhance the anti-infiltration effort was State and Defense concurrence on June 25 of Sullivan's request to rescind the two-mile buffer zone in Laos along the North Vietnamese border. After Prime Minister Souvanna Phouma agreed, the requirement was deleted on July 19. The buffer zone had been mandated by the JCS in December 1964 at the prime minister's request to avoid linking military operations in Laos with North Vietnam, and to preclude accidental bombing of the North by aircraft flying over Laos.* As with other operating rules, earlier caution was giving way to the practical demands of expanded aerial warfare.[26]

The gradual relaxation of air operational rules in the spring of 1965 unfortunately was accompanied by several short-round incidents. On May 11 two Navy aircraft struck two civilian buses west of Muong Phalane in the Laotian panhandle. Fourteen Lao citizens, principally women and children dependents of Lao military personnel of *Group Mobile* (GM)-15,† were killed and forty-one wounded. Ambassador Sullivan ordered COMUSMACV to halt all STEEL TIGER operations immediately until "all our gears are meshed," and to prepare condolence messages for Lao authorities.

Because the strike occurred in excellent weather on 2 clearly marked buses (one painted white and blue), 40 miles beyond the westernmost authorized air operations boundary, Sullivan attributed the error to inadequate pilot briefings rather than to navigational miscalculation. After conferring with Souvanna Phouma and receiving fresh assurances from Admiral Sharp that air strikes would be more carefully controlled, he permitted the resumption of STEEL TIGER operations 8 days later. Meanwhile, he asked air commanders to impress on their pilots the sensitivity of the air programs, instruct them to abort their missions if they became disoriented, and arrange more thorough briefings for American airmen by General Thao Ma and other RLAF officers on Laotian terrain and the location of friendly troops and inhabitants. Sullivan reduced somewhat the STEEL TIGER boundary for U.S. aircraft.[27] He assigned exclusively to the RLAF the area closest to the Vietnamese border until 0600 daily, with U.S. aircraft allowed to operate there the remainder of the day. Operations in the northern part of the STEEL TIGER area remained unchanged. The ambassador reminded all commanders of the pertinent STEEL TIGER operational rules which prohibited air strikes beyond 200 yards on either side of a road, and on fixed and secondary targets and roads unless specifically approved.[28]

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*See Chapter II.

†A FAR military unit.

Unfortunately, Sullivan's admonitions did not end the short rounds. Two more took place on May 22, also in clear weather. The first was again committed by Navy jets near Muong Phalane in the panhandle where they struck the same Laotian military unit victimized only eleven days before. Two personnel were killed (including the company commander) and eight wounded. Expressing loss of confidence in the ability of pilots to identify their positions by terrain navigation, Sullivan once more halted all STEEL TIGER operations in the area pending the establishment of new air control procedures. He was informed that some high-ranking FAR officers were beginning to suspect treachery or blamed General Thao Ma, the RLAF Commander, for failure to assure bombing safety. The danger of reprisal against Americans was sufficient to impel Thao Ma to post security forces temporarily around some U.S. installations.[29]

The second short round that day was committed by Air Force jets flying combat air patrol in northern Laos near Muong Nga during a search and rescue operation for a downed USAF pilot. The pilots erroneously opened fire on a building occupied by FAR and other personnel, leaving thirteen dead and nineteen wounded—the worst aerial mishap thus far in Laos. Sullivan determined quickly, however, that blame lay not with the USAF pilots but with another officer whom he had assigned to the rescue effort and who, without authority, ordered the attack on the buildings "to strike fear in the heart of the enemy." The ambassador accepted full responsibility for the incident.[30]

Nevertheless, Sullivan halted all STEEL TIGER reconnaissance missions from May 22 until June 7 and used the interval to work out more stringent operational rules with U.S. air commanders and General Thao Ma. Afterwards, Sullivan set more constricted boundaries for the STEEL TIGER area. Armed reconnaissance pilots could attack "clearly identifiable" military convoys, vehicles, and troops within 200 yards on either side of the road. Strikes on fixed installations, however, were prohibited unless associated with an attack on troops or similar military targets. Targets to the north, west, and south of the new boundaries could be struck only after obtaining Vientiane's consent. Sullivan also placed off limits a segment of Route 9 where there were friendly troops.

The ambassador laid down other rules. Unless scheduled otherwise, all American aircraft overflying Laos had to maintain a minimum altitude of 10,000 feet and avoid the friendly towns of Savannakhet, Pakse, Saravane, Vientiane, and Paksane. Within the STEEL TIGER boundary, YANKEE TEAM reconnaissance aircraft were ordered to observe a minimum of 5,000 feet with requests for lower altitude missions to be determined by the ambassador and his staff on a case-by-case basis. Finally, when STEEL TIGER operations resumed on June 7,

PACAF and PACFLT pilots were given further instructions. Upon entering Laotian air space, they were to check in with the radar aircraft control station at Nakhon Phanom using the code word INVERT, stay in contact throughout their missions, and keep their identification beacons turned on.[31]

As an additional precaution, Sullivan told all air commanders and operational personnel to review 2d Air Division Operation Plan 502-55. The plan forbade firing on inhabited areas by aircraft flying combat air patrol for rescue operations until it was "reasonably clear" that the enemy intended or was taking hostile action. To assuage the concern of Lao government officials, Colonel Tyrrell, the air attaché, flew General Thao Ma, and the FAR commander of the area that included Muong Phalane, to Nakhon Phanom to show them the "positive control" of the aircraft radar control station there. The Lao generals were also flown to PACFLT's carriers in the Gulf of Tonkin where they discussed air control procedures with Navy aircrews.[32]

On June 5, 1965, Ambassador Taylor dispatched to Washington another report on the deteriorating political and military situation in South Vietnam. Warning that the Viet Cong still retained the initiative in the war and were getting stronger through recruitment and infiltration, he asked for more U.S. ground and air reinforcements to contain their advances. This and other assessments pointed to an unabated military decline. STEEL TIGER air operations, now in their third month, had not yet slowed the DRV's manpower and supply transfusions to the Viet Cong through Laos.[33]

Clearly, the obstacles to successful interdiction in the Laotian panhandle were more formidable than military commanders foresaw. STEEL TIGER, like its predecessor BARREL ROLL, was a limited and politically controlled air program, and the gradual relaxation of its operating rules in the preceding weeks was partially offset by the restrictions which followed the short rounds. Pathet Lao troop strength in Laos, like the Viet Cong in South Vietnam, was growing and totaled nearly 30,000 by June 1965. With allied North Vietnamese Army forces, it controlled larger areas of north, central, and southern Laos than before, facilitating infiltration movements. The jungle terrain hid most of the enemy's activities, and the worsening drizzle, rain, and overcast as the annual southwest monsoon arrived in late April further reduced pilot visibility. Air Force and Navy commanders and officials in Vientiane deliberated constantly over ways to surmount these problems.[34]

In their studies of U.S. air operations in Laos, PACOM's analysts reviewed the BARREL ROLL and STEEL TIGER programs from January 1 through June 18, 1965. They noted that of 325 PACAF and PACFLT missions flown, 156 performed armed reconnaissance with 78 of these

also striking secondary targets such as bridges, military areas, or chokepoints. Eight missions concentrated on military areas only. A summary of air attacks on enemy trucks, prepared by the analysts, disclosed that in one month (April 24–May 24) 179 trucks were sighted and attacked with an estimated 51 destroyed or damaged. If compared with the aggregate antitruck sorties flown, it took an average of 6 sorties to destroy or damage a truck. The analysts were uncertain why truck sightings dropped after May 24, attributing this to either more successful communist evasion tactics or to fewer movements—though the latter could not be squared with reports of continued infiltration into South Vietnam. (Inexplicably, they neglected to mention the impact of monsoon weather.) Nor had the tactic of cutting roads and creating transportation chokepoints produced truck lines or supply stockpiles that could readily be interdicted. Yet PACOM's analysts were far from disheartened. They were convinced the daily air strikes were forcing the communists to divert more and more manpower for road and bridge repairs to sustain their vital logistic movements through Laos into South Vietnam.*[35]

A PACAF analysis emphasized how monsoon weather handicapped pilots in detecting targets and observing secondary fires after an attack. In sixty-one Air Force missions flown over one two-week period, pilots sighted and attacked only three trucks. PACAF candidly admitted that the amount of supplies destroyed, while unknown, was probably limited. This, plus the enemy's propensity to travel mostly at night, made STEEL TIGER's efficacy "questionable," suggesting it might be wiser tactically to concentrate on striking supply areas rather than trucks.

As first priority, PACAF believed that, along specified routes, U.S. air assets should systematically destroy known and validated RLAF fixed targets, such as truckstop, vehicle maintenance, and supply points. The strikes should start in the south, move toward northern Laos, and be conducted over two or three weeks to frustrate communist resupply from rear areas. Second priority should stress, in coordination with the RLAF, more quick reaction and close support missions against targets of opportunity based on the best intelligence possible. The strip alert

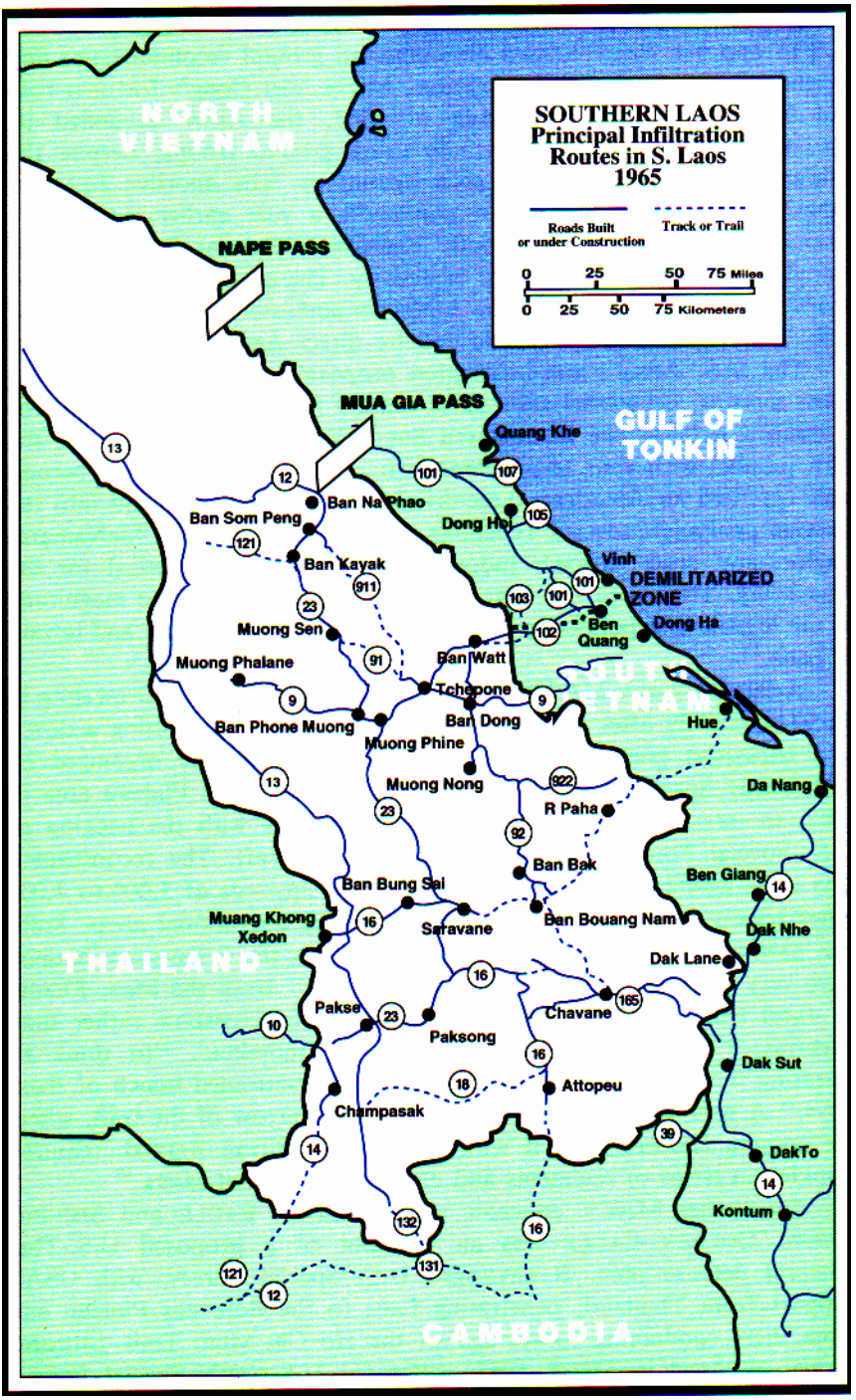
*Defense Intelligence Agency analysts in Washington were convinced that aerial operations had numerous indirect benefits. In June 1965 they had concluded that air strikes had kept the PL/DRV from taking their annual "bite" of government territory in northern Laos and enhanced Lao and Thai morale. The strikes forced the communists to dismantle, disperse, and camouflage many infiltration-supporting facilities, to move trucks more slowly and at night over roads, to employ more human portage, and to levy manpower requirements on the local populace to repair roads and trails (thus creating an abrasive relationship with the workers). [DIA Bul 109-65, Jun 7, 1965, pp F(1) and F(2).]

BANGO F-4Cs, presently using only twenty-five percent of their potential flying time, were available for this purpose. Finally, third priority missions should be earmarked for armed reconnaissance and chokepoints, with the former limited to roads and rivers as follow-on strikes against fixed targets, and the latter conducted after attacking bridges, fords, and ferries. At bottom, of course, PACAF strongly adhered to the Air Force view that the military situation in South Vietnam could be turned around most easily by heavier bombing of North Vietnam rather than by introducing more American troops into the jungles and mountains of South Vietnam.[36]

Ambassador Sullivan wondered if radically new measures might not be justified against infiltration, due to poor weather and the impenetrable tree canopy in the panhandle "which high-speed, high-flying jets literally cannot see through." While on an inspection visit to Savannakhet about June 20, Sullivan and Tyrrell visited a segment of the Ho Chi Minh Trail captured recently by FAR Maj. Gen. Phasouk Somly. During a one-mile ride down the trail, the ambassador averred he was "astounded" by its two-truck width and the heavy jungle canopy overhead. He said it was a "thoroughly passable road," even as the rainy season began, and open to the skies only in two small places. To find and interdict enemy trucks under such conditions, he observed, might require massive defoliation, infrared rather than visual reconnaissance for bombing, and saturation strikes to create major chokepoints.[37]

Admiral Sharp believed Sullivan's suggestions would prove relatively ineffective against fleeting targets such as trucks. He was inclined to agree with PACAF's recommendation that the most useful tactic in the monsoon season was to hit fixed targets and allocate fewer sorties to armed reconnaissance, road cratering, and chokepoints. Generally, he took a glum view of achieving much by air strikes because of the monsoon weather and the difficulty of finding enemy bivouac areas, truck parks, and supply dumps under jungle growth—agreeing with Sullivan on the dimension of the problem.

In contrast, General Westmoreland, while conceding that armed reconnaissance had not yet accomplished much, wanted to continue the missions as an adjunct to striking RLAF fixed targets. This would assure daylight surveillance of enemy lines of communication, enemy harassment, and sortie economy. Unlike PACAF, he wished to strike all validated RLAF targets first, regardless of location, rather than along a geographical south-to-north direction over a two-week period. Until unrestricted aid and ground operations were authorized in Laos, he said it was necessary to follow a "preplanned controllable track" and be as responsive as possible to available intelligence.[38]


SOUTHERN LAOS
Principal Infiltration Routes in S. Laos 1965
Roads Built or under Construction
Track or Trail
0 25 50 75 Miles
0 25 50 75 Kilometers
NORTH VIETNAM
NAPE PASS
MUA GIA PASS
GULF OF TONKIN
Quang Khe
Ban Na Phao
Ban Som Peng
Dong Hoi
Ban Kayak
Vinh
DEMILITARIZED ZONE
Dong Ha
Ben Quang
Muong Sen
Muong Phalane
Ban Watt
Tchepone
Ban Dong
Ban Phone Muong
Muong Phine
Hue
Muong Nong
Da Nang
R Paha
Ban Bak
Ben Giang
Ban Bung Sai
Muang Khong
Xedon
Saravane
Ban Bouang Nam
Dak Nhe
Dak Lane
Pakse
Chavane
Paksong
Dak Sut
Attopeu
Champasak
DakTo
Kontum
THAILAND
CAMBODIA

Simultaneously, Westmoreland kept pressing Admiral Sharp and the JCS to approve Army-devised air-supported ground reconnaissance and ground operations against infiltration. As the Viet Cong's fortunes rose and Saigon's fell in the spring of 1965, the Army expanded its anti-infiltration planning to include using ground troops, despite the military and political risks in such operations. The abortive LEAPING LENA venture into the Laotian panhandle a year earlier, using only Montagnard tribesmen and South Vietnamese Special Forces, underscored the difficulty of this type of activity. The consensus was that any renewed effort sanctioned by the American ambassador in Vientiane and high Washington officials would require direct American participation.

The U.S. Army's anti-infiltration proposals, under preparation for many months, demanded substantial ground forces. One plan called for a manned defense line in northern South Vietnam and in Laos at the 17th parallel with four to six American and allied divisions. A second plan specified an American three-division thrust from Thailand into the Laotian panhandle toward Tchepone. In the spring of 1965, McNamara, Taylor, and other officials judged both proposals impractical for the time being. They cited the huge manpower requirements, the magnitude of the logistic and political problems, and the hostile weather and terrain in Laos.[39]

A relatively new MACV idea, reviewed at a SEACOORD meeting in Bangkok shortly after mid-April 1965, called for reconstituting a dozen Kha tribesmen guerrilla companies. These were initially organized by U.S. Army Special Forces for activity in the Bolovens Plateau area in 1962, to interdict the PL/DRV in the panhandle with the backing of U.S. Special Forces and Thai-based USAF aircraft. The reconstituted Kha units would serve as a nucleus to recruit upwards of 3,000 to 4,000 other tribesmen in designated guerrilla warfare operational areas. Sullivan deemed the project "totally unrealistic," as the Bolovens tribesmen were very primitive and "civilizations removed" from the Meo, Rhade, or Jarai tribes in Laos, and accustomed to the crossbow rather than firearms. "It is far-fetched," he told Westmoreland, "to think of storming the Ho Chi Minh Trail, with a bare-bottomed bunch of these boys." A serious intent to break up the real marrow of the trail, where the communists protected it with battalions, Sullivan warned, required thinking in terms of regiments and divisions, not tribal assets.[40]

Two other MACV concepts were GOLDEN EAGLE and SHINING BRASS. GOLDEN EAGLE was an offshoot of a proposed U.S.-Thai bilateral defense plan. It envisaged U.S. Special Forces, with USAF support from Thailand, penetrating Laos to the Bolovens Plateau and from there conducting forays against the Ho Chi Minh Trail. SHINING BRASS, outlined in March 1965, called for U.S./GVN Special Forces,

with South Vietnamese-based USAF support, to make incursions into the trail from South Vietnam. The aim would be to collect hard intelligence on infiltration, designate targets for air strikes, and harass the enemy. Westmoreland considered the capability of the tribal roadwatch teams in Laos, already engaged in intelligence collecting and targeting, too limited. He observed that the teams were assigned to just a few key areas, furnished very little data on fixed enemy targets, and did not reconnoiter Lao territory contiguous to South Vietnam.[41]

Sullivan was inclined to support SHINING BRASS if the teams entered by land rather than being paradropped by aircraft or helicopters (as provided by the MACV concept), restricted their activity initially to two specified zones, advanced no farther into Laos than six miles, and stayed no more than ten days. He also opposed any paradrops of American advisors in the upper part of Route 9, because it was strongly controlled by the communists.

Although Westmoreland needed the ambassador's support, he believed the latter's strictures would gut the SHINING BRASS concept. The physical obstacles to sending teams into Laos on foot were so great that the teams would have virtually no time for reconnoitering and targeting in an infiltration zone. Consequently, he advised Admiral Sharp and the JCS on May 12 that unless Sullivan accepted his basic concept and withdrew his objections to helicoptering cross-border teams with U.S. advisers in and out of Laos, the entire project should be scrapped. If approved, he would limit entry initially to two zones as desired by Sullivan.[42]

Admiral Sharp endorsed Westmoreland's concept as did the joint chiefs. Hoping to expedite a favorable decision on the matter, the chiefs sent McNamara a modified SHINING BRASS concept (called Phase I) as a basis for further planning. But the Defense secretary, the State Department, and other high officials remained wary of authorizing SHINING BRASS until convinced that Sullivan fully accepted the principle of employing joint American and South Vietnamese Special Forces teams for obtaining target intelligence and possibly attacking the enemy on the ground.[43]

Westmoreland, trying another tack, sent Admiral Sharp and the JCS on July 5 a detailed Phase I SHINING BRASS plan. This called for using at first only two Special Forces teams (each consisting of eight ARVN personnel and two U.S. Army advisers) launched from Kham Duc airstrip in South Vietnam to Dak Prou and Dak To, both on the edge of the Laos border. The teams would enter Laos from these two bases and pick out enemy targets for air strikes, reporting them by special radios hooked into a complex Air Force-Army communications system. The operations would be sufficiently small-scale to make aerial resupply

unnecessary. The MACV commander saw the project as low risk and likely successful, thereby instilling confidence in team members. Additional SHINING BRASS teams would follow. He thought of organizing initially about ten teams.

However, State and Defense officials continued to feel uneasy about the political and military ramifications of SHINING BRASS. Two more months of discussions took place between Sullivan, Westmoreland, and the State and Defense Departments. Finally, the JCS was allowed to flash the "go-ahead" for the first limited SHINING BRASS missions. In the interim, the energies of administration authorities were focused on planning for and beginning direct U.S. combat intervention in South Vietnam. There, the Viet Cong were threatening to overwhelm the RVNAF and prevail over most of the country.[44]

Chapter IV

Expansion of the Aerial Anti-infiltration Campaign July–December 1965

On June 7, 1965, General Westmoreland warned Admiral Sharp and the joint chiefs that only American and third-country reinforcements could check the rapidly rising Viet Cong/North Vietnamese Army strength in South Vietnam. Administration authorities, however, were not yet ready to "bite the bullet" and order more large-scale deployments of men and materiel. After the Saigon government's travails mounted in the ensuing weeks, Ambassador Taylor on July 11 insisted on the immediate dispatch of more American air, ground, and naval units to prevent the government's collapse. Underlying Taylor's request was MACV's latest estimate of enemy strength. This credited him with a force of 175,000 to 195,000 men in the following principal categories: combat troops, 47,000;* regular combat support forces (including guerrillas), 18,000; irregular support personnel, 80,000; and political activists, 30,000. About 20,000 men were not identified.[1]

With delay no longer possible, President Johnson sent Secretary McNamara, Gen. Earle G. Wheeler, USA, JCS Chairman, and their aides to Saigon on July 16 to review with Westmoreland and Taylor† the military situation and determine deployment schedules for additional U.S. units. In their briefings for the McNamara party, MACV officials attributed recent enemy success to a large influx of Hanoi's troops among the estimated 5,000 northerners who entered the South in the first half of 1965. Intelligence analysts had confirmed the presence of the 101st Regiment of the NVA's 325th Division in Kontum Province. They expected to verify shortly the presence of the 18th Regiment in the same

*Taylor raised this figure to 48,500 men, calling them "main and local force" combat personnel that included 68 confirmed battalions.

†Also present was Ambassador-designate Henry Cabot Lodge, Jr., who succeeded Taylor as Ambassador to Vietnam after Taylor left Saigon on July 30. This was Lodge's second tour as ambassador there.

province, and assumed the 95th Regiment was in the South, though no member had been captured thus far.*[2]

With respect to enemy logistic activities, MACV officials noted that in the first half of 1965, American and South Vietnamese troops had uncovered about thirty-seven tons of military supplies in several caches. The discoveries suggested that the VC/NVA had hidden in secure areas about a year's supply of small-caliber ammunition. The enemy had also introduced a "new family" of 7.62-mm weapons with repair parts and ammunition. Another sign of his bountiful combat stores had been illustrated during a two-day battle at Dong Hoi in South Vietnam, where three Viet Cong battalions fired an estimated eighteen or more tons of ammunition.

MACV and Office of the Secretary of Defense (OSD) officials were uncertain, however, about the quantity of Viet Cong (VC) supply shipments from outside of South Vietnam. One estimate, prepared in the OSD, indicated less than nine tons per day entering the South through Laos, but General Wheeler guessed the daily total to be about fourteen tons. McNamara accepted the latter figure. The Viet Cong's ability to fight with limited resources was perplexing. "It is amazing to me," said Ambassador Taylor, "how the VC [Viet Cong] can bring all their people into the country and support them with so little effort when we have such a hell of a time supporting ours." The Defense secretary agreed.[3]

In their assessment of STEEL TIGER operations, MACV officials believed that the bombings had restricted overland infiltration of men and supplies only to a "limited degree." Still, the bombings, together with air-supported tribal roadwatch activities, ROLLING THUNDER, and American support of South Vietnam forces, might convince Hanoi's leaders they could not win. Only the creation of "this frame of mind," the officials believed, would eventually end the infiltration.

McNamara, conversely, remained skeptical about air power's capability to cut off much of the enemy's supply flow into South Vietnam. The Viet Cong's supply needs, he observed, few in the past, were not large at present and probably would not be substantial in the future. Consequently, aerial attacks would not cut into VC logistics "to a damaging degree." Nevertheless, he did not advocate stopping the bombing and underscored again the importance of winning the war in

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*Later, Westmoreland would claim that the first North Vietnamese Army regiment to enter South Vietnam (the 95th) arrived in Kontum Province in December 1964, and was joined within the first two months of 1965 by the 32d and 101st Regiments. In the same period, the North Vietnamese 6th Regiment was activated in Quang Tri Province. [Adm U. S. G. Sharp, USN, and Gen W. C. Westmoreland, USA, *Report on the War in Vietnam (As of 30 June 1968)* (Washington, 1969), p 107.]

the South where the United States would have to send "a lot more men." He insisted that there should be "no bombing in Laos or North Vietnam if we can use that sortie effectively in the South."[4]

General Westmoreland believed that the United States should step up in the ensuing months the BARREL ROLL and STEEL TIGER programs from about fifty to sixty-eight sorties per day. He also favored reducing the restraints on pilots by creating a number of free-strike zones, wherein they could attack any suspected enemy stronghold, and allowing them to search for targets in either Laos or North Vietnam while flying a single mission. McNamara made no immediate decision on these proposals.[5]

On July 20, upon his return from Saigon, McNamara sent the president his recommendations for augmenting American military forces in Southeast Asia. He had little to say about the war in Laos but observed: "There are no signs . . . we have throttled the in-flow of supplies . . . or can throttle the flow while [Viet Cong] materiel needs are as low as they are; indeed, more and better weapons have been observed in VC hands."

Eight days later the president announced that American strength in South Vietnam would rise almost immediately from 75,000 to 125,000 men and include appropriate air and logistic units. More would be sent as requested. Additional Air Force, Army, Marine, and Navy units began deploying quickly to the war theater.[6]

Meanwhile, monsoon weather kept anti-infiltration operations in Laos at a moderate level. In the STEEL TIGER area, air commanders directed numerous missions against 9 major chokepoints with Mu Gia and Nape Passes on the North Vietnamese border receiving the lion's share. In a typical strike, PACAF's F-105s on July 16-17 dumped 18,000 pounds of ordnance on each of the passes (comparatively, PACAF's larger aircraft were able to drop considerably more ordnance in Laos than carrier planes). Mu Gia Pass bore the brunt of the chokepoint attacks. Besides creating new or reseeding old traffic chokepoints with bombs, U.S. pilots struck many small bridges (there were hundreds in Laos ranging from 16 to 60 feet in length),* scores of military and supply areas, structures, and antiaircraft sites. As previously, pilot reports were the main source of strike results, the jungle terrain and weather precluding much timely and usable poststrike photography.

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*Bridges in Laos do not fit the western concept of bridges. Most were of flimsy construction, short, footpath-wide, and easily replaced or bypassed. In subsequent months Air Force, Navy, and Marine pilots claimed they destroyed or damaged hundreds of bridges. Because of the difficulty of poststrike verification, bridge statistics must be viewed with caution.

The monsoon weather prevented many PACAF pilots from reaching their targets. In addition, poor weather often forced pilots to abort their missions after launch or to seek secondary targets, and thus hampered KC-135 refueling operations for strike aircraft.[7]

In contrast with other PACAF pilots, those flying the BANGO F-4Cs and WHIPLASH F-105s on strip alert in Thailand managed to increase several-fold their sortie pace. They had trouble finding good targets, however, and beginning in August relied mostly on tribal roadwatch target selections in the BARREL ROLL sector. Thus few WHIPLASH missions were flown along infiltration routes in the STEEL TIGER sector as originally intended.[8]

As scheduling and target verification procedures for BANGO-WHIPLASH missions were unduly complex, Colonel Tyrrell and Col. Paul A. Pettigrew, who succeeded him in July 1965, simplified the procedures where possible. They arranged, for example, for the deputy commander, 2d Air Division, at Udorn to order immediate photo-reconnaissance missions to verify targets selected by the roadwatch teams.[9]

The roadwatch teams were providing important information on enemy infiltration. They reported, for example, no traffic north of Muong Phine on Route 23 between May 26 and mid-July nor on a southern stretch of Route 92 northeast of Saravane since May 5. On the other hand, they spotted truck movements on another segment of Route 92 from where supplies were believed portered into South Vietnam. In one instance, they saw cargoes of foodstuffs and ammunition (for 62-mm and 82-mm mortars). Between June 1 and August 19, the teams counted about 22,000 troops traveling on the Muong Sen-Muong Phine segment of Route 23, two-thirds of whom appeared to be North Vietnamese who entered Laos presumably through the Mu Gia Pass. Yet the aggregate of the teams' reports over 2 1/2 months suggested that most of the troops were probably Pathet Lao.*[10]

There was other evidence, however, suggesting more North Vietnamese were traveling south or worked in concert with the Pathet Lao to resupply the Viet Cong than met the eyes of the roving roadwatchers—or friendly villagers who also provided information.

At the end of August, analysts at the Defense Intelligence Agency were mystified by intelligence indicating PL/NVA work on roads and trails along a portion of Route 12 south of Mu Gia Pass. Because this

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*The tribesmen were possibly in error, unaware that certain elite North Vietnamese units assigned to duty in Laos were issued Pathet Lao uniforms as they entered Laos. [See Michael Horrocks and David A. McCormack, "Distinguishing the Pathet Lao from the North Vietnamese in Laos," manuscript (Washington, 1976).]

area was bombed by Air Force and Navy planes about three times per week and considered "impossible for vehicles . . . and dangerous for those on foot," the analysts at first believed that the enemy was engaged in a ploy to keep air strikes focused on the roads and trails while they used other new bypasses for moving men and materiel southward.

In September, however, DIA and PACOM intelligence reports confirmed the existence of more road and trail construction, preparatory, it was clear, for expanded supply movements at the end of the monsoon season. On the basis of this and other data, PACOM judged that the NVA infiltration system, presently comprising more than 4,000 military personnel (organized into quartermaster and transportation units) and about 6,000 porters, could maintain a flow of 3 to 6 tons of supplies per day over a steadily improving road and trail network.[11]

Besides fragmentary ground intelligence reports, most knowledge of the enemy's doings in the panhandle depended on Air Force and Navy YANKEE TEAM tactical and LUCKY DRAGON U-2 photo-reconnaissance missions. But reconnaissance needs for the ground war and better flying weather in Laos's BARREL ROLL area combined to restrict reconnaissance of the roads and trails in southern Laos. As in recent months, Air Force RF-101s of the 15th Tactical Reconnaissance Squadron at Udorn and Tan Son Nhut flew most of the tactical sorties.[12]

To obtain more data on the enemy's infiltration routes, General Westmoreland in late July asked higher authorities to allow more U-2 photography for the STEEL TIGER area. The U-2 photos, he said, were generally superior in resolution to those taken by tactical aircraft, and if the aircraft were allowed to fly at a lower altitude, say about 30,000 feet, photography would be even clearer.

PACOM and Washington officials jointly approved the MACV commander's request but forbade missions as low as 30,000 feet lest the aircraft be detected. By late August the U-2s were covering more MACV-designated target areas in STEEL TIGER. Personnel at the National Photographic Interpretation Center furnished the data readouts.*[13]

Meanwhile, Admiral Sharp asked PACAF, MACV, and the United States Army, Pacific, for further recommendations to improve detection of communist movements in the Laotian panhandle. The struggle in South Vietnam, he said, made the anti-infiltration STEEL TIGER opera-

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*Competing needs for U-2 and tactical reconnaissance missions over Laos, North Vietnam, and South Vietnam were resolved in meetings in PACOM's Photo Requirements Intelligence Board. Established in May 1965 with membership from all service reconnaissance agencies, the board met monthly or oftener to review all Southeast Asia reconnaissance coverage and requirements. [Hist, CINCPAC, 1965, II, 434.]

tions vitally important. "We must not allow the relatively well-defined targets along established routes," he said, "to divert us from the difficult and frustrating task of finding and destroying the concealed Communist logistic and personnel pipeline through southern Laos."[14]

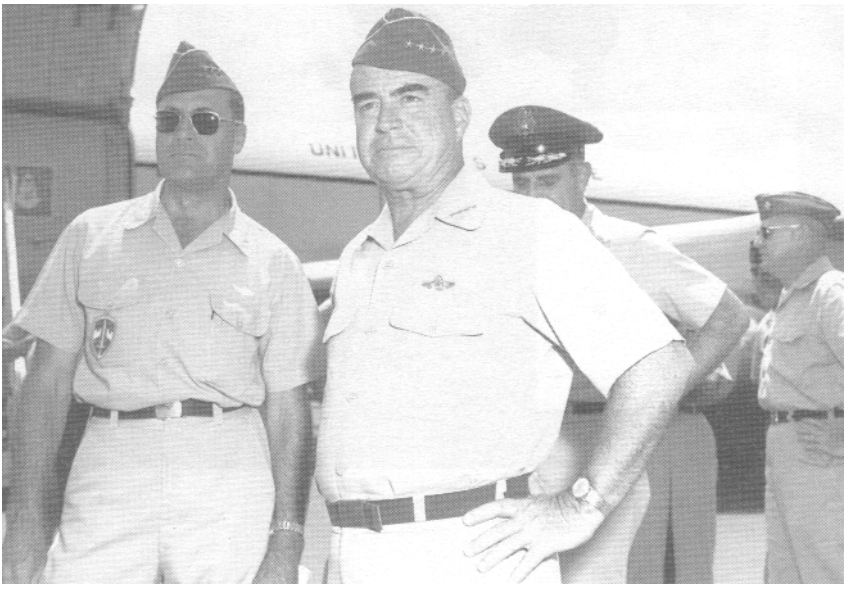
PACAF proposed using more of its RF-101s to obtain visual reconnaissance. By dispatching the aircraft from dawn to dusk, pilots would familiarize themselves with the terrain and become more selective in finding and photographing targets. To avoid alerting the communists to the special visual reconnaissance effort, other Voodoos would concurrently fly over important lines of communication. BANGO-WHIPLASH aircraft would conduct strikes, accompanied by an RF-101 to serve as forward air controller and obtain bomb damage assessment. This arrangement would ensure more use of the fast-reacting USAF BANGO/WHIPLASH fighters whose current 2.34-sortie-per-day rate, in PACAF's opinion, was much too low.[15]

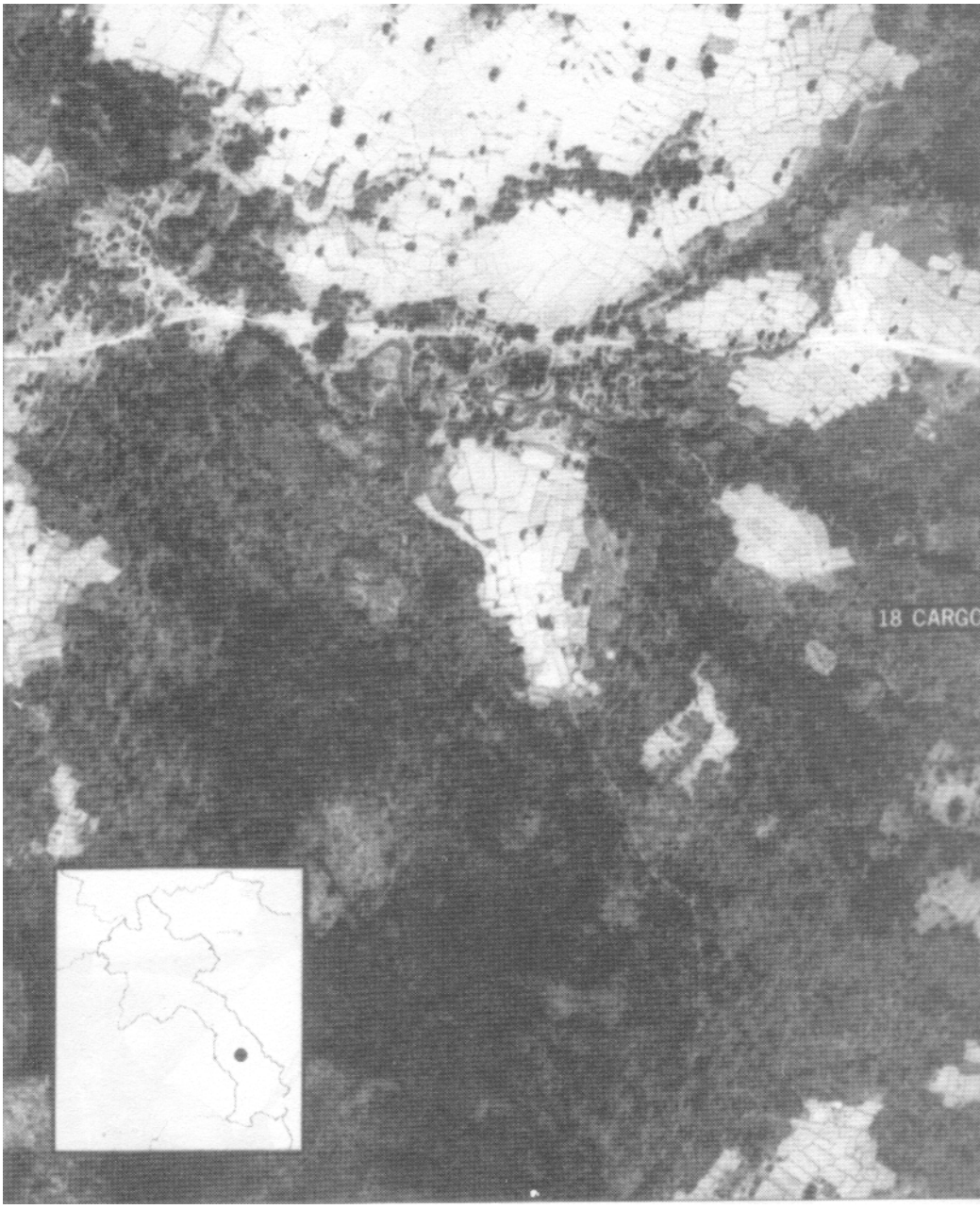
General Westmoreland dismissed PACAF's proposals outright, asserting that visual reconnaissance over dense jungle canopy could be performed best by light, slow-flying aircraft rather than by fast jets. During a SEACOORD meeting on July 23-24, 1965, the MACV commander again stressed the need for small, nonjet aircraft and said he planned to request five O-1E Bird Dogs which appeared admirably suited to conduct "eyeball" reconnaissance.

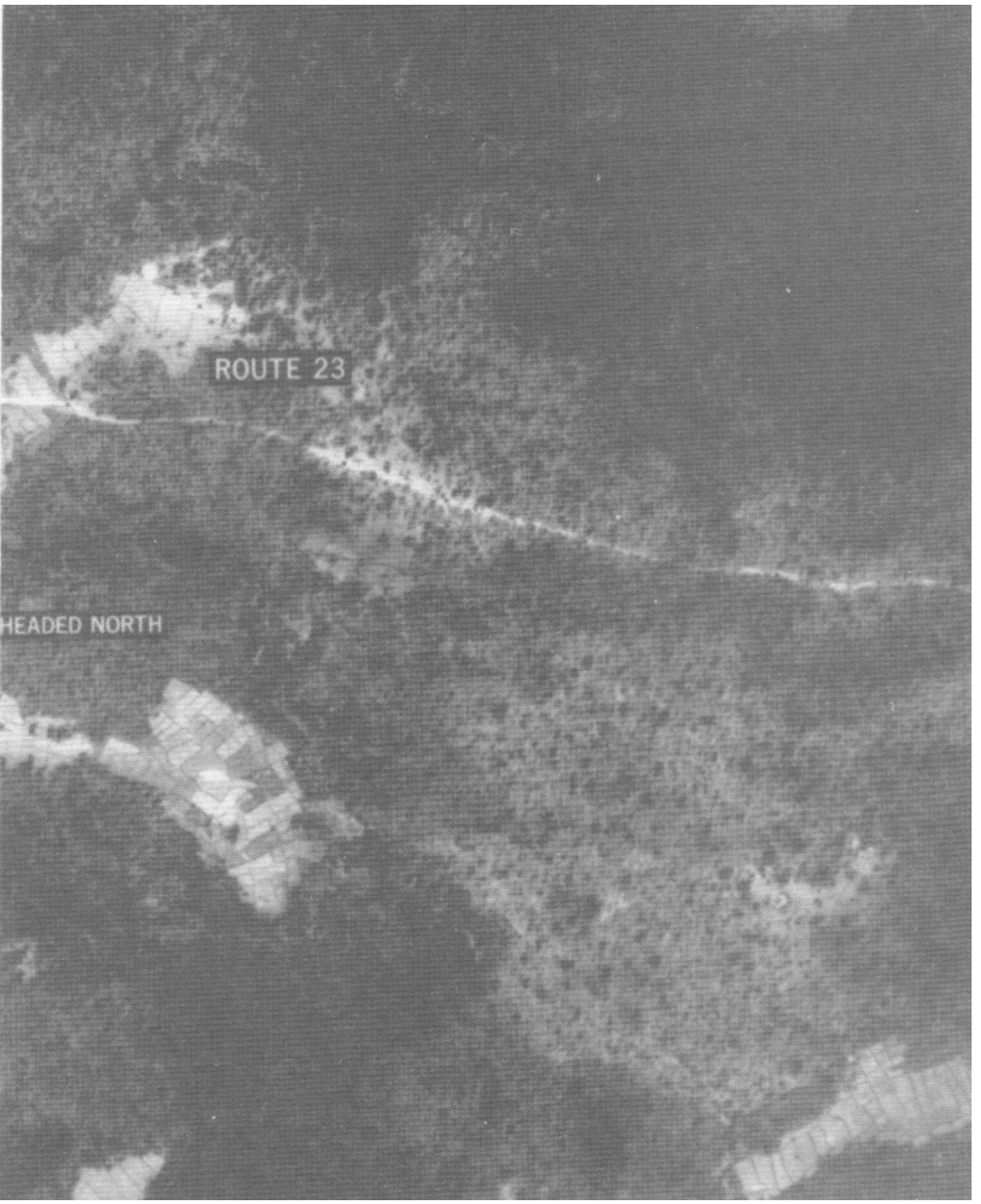
However, Westmoreland's plan to use Bird Dogs, supplied largely from Army stock in the States but flown by Air Force pilots, at once ran aground of objections from General Thao Ma and his fellow RLAF officers. They insisted the designated areas for O-1 operations were so heavily forested U.S. pilots would see little of the enemy, certainly not more than Laotian T-28 pilots, and the aircraft would be vulnerable to small-arms fire. Thao Ma was convinced his pilots adequately covered the areas, and after the monsoon weather abated in four to six weeks he planned to step up day and night missions. Further, the general had to contend with the skittishness of FAR ground commanders about having fast-flying jets bomb targets discovered near FAR troops by the O-1s. The RLAF commander stressed repeatedly, "We can't afford any more [bombing] mistakes." Efforts by Colonel Tyrrell to change Thao Ma's mind about using the aircraft failed. The RLAF commander did make one concession. He would let American officers debrief his pilots to elicit, if possible, more details about enemy sightings along the routes presently covered by his air force.[16]

In view of Thao Ma's stance, representatives of MACV, 2d Air Division, and the American embassy in Vientiane met on September 17 at Udorn to determine how to introduce the Bird Dogs in the southernmost sector of the panhandle so as to accelerate the tempo of air

KEY DECISIONMAKERS. *Above:* **Defense Secretary Robert McNamara (center) reported to President Johnson after his 1964 trip to Vietnam. At the meeting were (left to right) Gen. Maxwell Taylor, JCS Chairman; Dean Rusk, Secretary of State; and (standing) John McCone, CIA Director.** *Below*: **Lt. Gen. Joseph Moore, Commander of 2d Air Division, and Gen. Hunter Harris, Commander of PACAF, 1965.**




18 CARGO



NORTH VIETNAMESE CONVOY. This reconnaissance photo shows eighteen cargo trucks heading north along Route 23 near Ban Nafilang, Laos, on March 15, 1964. Repetitive recon missions over the open stretches of the road confirmed its use as an infiltration route during 1964.

Camouflaged trucks from North Vietnam are hidden alongside a highway in Laos. Trucks can be seen at lower left and center. (RF-101 reconnaissance photo, February 1966.)

strikes on enemy targets there. The solution, they agreed, was to station the aircraft at South Vietnamese bases near the Lao border, employ USAF pilots as forward air controllers, but leave target verification to Lao observers who would occupy the rear cockpit of the O-1s. The task of enlisting Laotian airmen for this duty was left to the Vientiane embassy. Thao Ma was eventually persuaded to accept this arrangement, and it was put into practice upon the inauguration of a new air program (known as TIGER HOUND) on December 5.

Further, to simplify somewhat its complex target validation procedures, the American embassy in Vientiane placed all RLAF-approved targets in three categories: First were targets to be struck as soon as possible and militarily important targets previously struck but only partially damaged. Next came targets that would require prior Vientiane approval, consisting of targets under construction or nearing completion; minor targets previously bombed, abandoned, or dismantled; and targets not in any of the above types but retained on the target list. Finally, there were "hold" targets that could not be struck under any circumstances. If their status changed, they would be placed in one of the other two categories.[17]

To maintain proper records of the embassy's different target categories, the 2d Air Division in late July set up an automated targeting system using an IBM 407 printer and associated equipment. The division also formed on September 15 a target information center (TIC) in its intelligence directorate to handle the expanding flow of photography on Laos and North Vietnam from all of the services. Staffed by personnel of the 13th Tactical Reconnaissance Squadron and the 2d's intelligence directorate, the TIC was soon producing a large volume of target nominations for Vientiane.

Nevertheless, targeting problems remained. One was the inordinate amount of time—roughly ten days to six weeks—to obtain fixed-target approval from Vientiane, despite frequent PACAF and MACV entreaties to speed up the process. Another was the distribution by different agencies of annotated target prints or target descriptions, thereby creating diverse target lists. As a remedial measure, CINCPAC directed the 2d Air Division to assume full responsibility for target annotations, publishing weekly updated lists of target nominations and approvals, and distributing them to seventeen agencies. This eased but did not cure the problem, for the root cause was the rapidly changing status of enemy lines of communication, and the plethora of agencies engaged in gathering and interpreting targeting data. Therefore, CINCPAC in September arranged for the publication in Washington of a national *Joint Operation Graphic* to serve as the authoritative map of Laos. Distribution of the *Graphic* began in November 1965.[18]

Vientiane also decided in midyear to make additional infiltration targets available to Air Force and Navy pilots by authorizing more armed reconnaissance over several routes in both the BARREL ROLL and STEEL TIGER sectors. Within the STEEL TIGER sector, pilots were allowed to hit Route 92 from its junction with Route 9 southward. The region east of Route 9 and south of 92 to the DRV border had been interdicted previously, but was placed off limits to U.S. aircraft in May 1965 after an accidental (short-round) strike against friendly Laotian troops. Since then, General Thao Ma and his RLAF pilots had photographed the route more frequently and attacked the area with T-28s. In re-sanctioning American air operations along Route 92, the RLAF commander warned that he wanted no more bombing errors and, as a precondition to resuming their missions, he insisted U.S. airmen take a familiarization "Cook's tour" of the heavily jungled route in an RLAF C-47. After some delay the tour was conducted in the first half of October with the 2d Air Division and PACLFT each selecting one photo interpreter and one photo and five armed reconnaissance pilots experienced in flying YANKEE TEAM and STEEL TIGER missions.[19]

Another change agreed to by representatives of the air attaché's office, embassy, and MACV on September 7 allowed pilots flying armed reconnaissance to begin random cratering of roads and road segments except those running through villages or in off limits areas. The air attaché would apprise the PACAF and PACFLT commanders of the prohibited targets and areas.[20]

In September, at General Thao Ma's request, American embassy officials agreed to furnish additional firepower for the RLAF's close support and anti-infiltration operations. Air commanders would make available some of USAF's BANGO, WHIPLASH, or STEEL TIGER aircraft with the latter diverted as necessary from their regular missions. Under the procedures worked out by the U.S. air attaché and RLAF representatives, some RLAF T-28 pilots would specialize in marking targets and others, flying T-28s in a PATHFINDER role, would lead U.S. strike aircraft to a target or cancel a proposed strike if circumstances dictated.[21]

The services did not agree on the wisdom of this and some other changes. Nor did they agree among themselves on the value of armed reconnaissance. Whereas the Navy and MACV considered it very useful, PACAF insisted that the most economical use of each sortie occurred whenever pilots struck targets of opportunity while on the way to and from a fixed prebriefed target.

It was also PACAF's view that first priority should be assigned to destroying fixed targets such as enemy supplies, parked vehicles, maintenance equipment, and ammunition (relying chiefly on BANGO/WHIP-

LASH aircraft). Second priority would go to the systematic destruction of bridges, ferries, and improved fords. And last priority was to encompass armed reconnaissance of roads, rivers, and trucks in conjunction with and after strikes on other fixed targets.[22]

Armed reconnaissance could be improved, PACAF advised PACOM, if the enemy's supply lines could be viewed as "a total entity rather than [as] an individual country problem." ROLLING THUNDER pilots should reconnoiter the entire length of enemy routes from North Vietnam into Laos rather than attack a few preselected Laotian routes or fixed targets as at present.* Although PACOM was sympathetic to this suggestion, it was evident that Washington officials were still firmly committed, for political reasons, to keeping Laotian air programs separate from those in South and North Vietnam.[23]

In a separate but related debate on improving interdiction against infiltration, Westmoreland again tried to persuade Ambassador Sullivan and administration officials of the merits of his ground-oriented SHINING BRASS and GOLDEN EAGLE concepts. As noted earlier, the first called for intelligence-gathering and air-targeting forays against the Ho Chi Minh Trail from South Vietnam, the second from Thailand. Both concepts obviously required substantial U.S. Army and Air Force support.

Sullivan still entertained deep reservations about launching large-scale ground incursions into Laos as did administration officials with whom he conferred during a visit to Washington in July. The incursions, he said, would be contrary to Souvanna Phouma's policy of not allowing foreign troops on Laotian soil, and could lead to a collapse of the 1962 Geneva accords on Laos's neutrality. There was also danger of the incursions ballooning into an endless American and allied troop commitment in Laos. The airlifting of U.S.-led South Vietnamese teams into a selected infiltration zone and their resupply and withdrawal appeared to be very hazardous. The capture of team members, the ambassador feared, would "leave egg on our face." Shallow air-ground probes, on the other hand, would be less fraught with political problems.[24] In view of Westmoreland's persistence on the issue, Sullivan finally agreed to support limited cross-border, resupply, and evacuation missions with BANGO F-4Cs providing air strike support. This enabled SHINING BRASS planning to move slowly toward approval in Vientiane and Washington.[25]

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*PACAF's proposal was not unlike General Westmoreland's recommendation of February 1965, also rejected in Washington, for combining BARREL ROLL, YANKEE TEAM, and ROLLING THUNGER operations into a single air program.

GOLDEN EAGLE, despite its approval for "planning purposes" by SEACOORD representatives in Bangkok on July 23–24, 1965, could not overcome its larger political and logistical handicaps. Besides the previously cited objections, Sullivan saw that the FAR generals in southern Laos disliked the Thais. Furthermore, the ambassador expressed irritation over the apparent efforts by the commander, United States Military Assistance Command, Thailand (COMUSMACTHAI) and COMUSMACV to convert GOLDEN EAGLE from a contingency plan into an operational plan without his approval. He characterized the concept as a "nonstarter" except in case of an extreme military urgency in Laos or until there was a vast change in the political complexion of Southeast Asia. After several more months of debate, GOLDEN EAGLE was abandoned, although discussion of it surfaced periodically in subsequent years.[26]

Meanwhile, Sullivan and his staff in Vientiane decided to obtain more intelligence on enemy strength and infiltration as well as uncover more air targets by organizing and fielding more local roadwatch teams. The teams would extend their road and trail watches cautiously to avoid any strong North Vietnamese counteraction in Laos. Admiral Sharp recommended making the surveillance teams more mobile, as opposed to the current practice of assigning them largely to static positions to observe enemy units. He wanted the teams in Laos, especially those north and south of Route 9 and east of Route 92, to uncover more targets for U.S. and RLAF aircraft. The obstacles to sending them there were formidable. This was a very rugged area under tight communist control, and the teams would be quite far from their supply bases. Nevertheless, Sharp in September asked General Westmoreland to send the initial SHINING BRASS teams into the area (after they received their go-ahead), even though the initial operations would probably be quite small.[27]

Meanwhile, a photo readout on September 12 disclosed more enemy troops and activity in a sector near the South Vietnamese border. Alarmed, MACV, 2d Air Division, and Vientiane embassy officials decided to unleash 50 to 100 strike sorties against the targets in the first half of October. They further agreed to form four free-strike zones in enemy-held sectors and recommended the launching of several newly organized SHINING BRASS teams into Laos to reconnoiter segments of the Ho Chi Minh Trail near the South Vietnamese border.[28]

However, the proposed air strikes, approved in Washington on September 24, were canceled because of several more bombing errors. On the 29th, two PACFLT A-1H Skyraiders, off-course about thirty miles for undetermined reasons, struck a target southeast of Thakhek. The next day PACAF airmen committed a more serious error. Four F-105

Thunderchiefs, mistaking fish traps across a river for a pontoon bridge, strafed a prohibited area near the South Vietnamese border, wounding two villagers and some buffalo. On October 1, because of improperly annotated maps, several Thunderchiefs erroneously made three separate strikes on a bridge,* also in a prohibited area.[29]

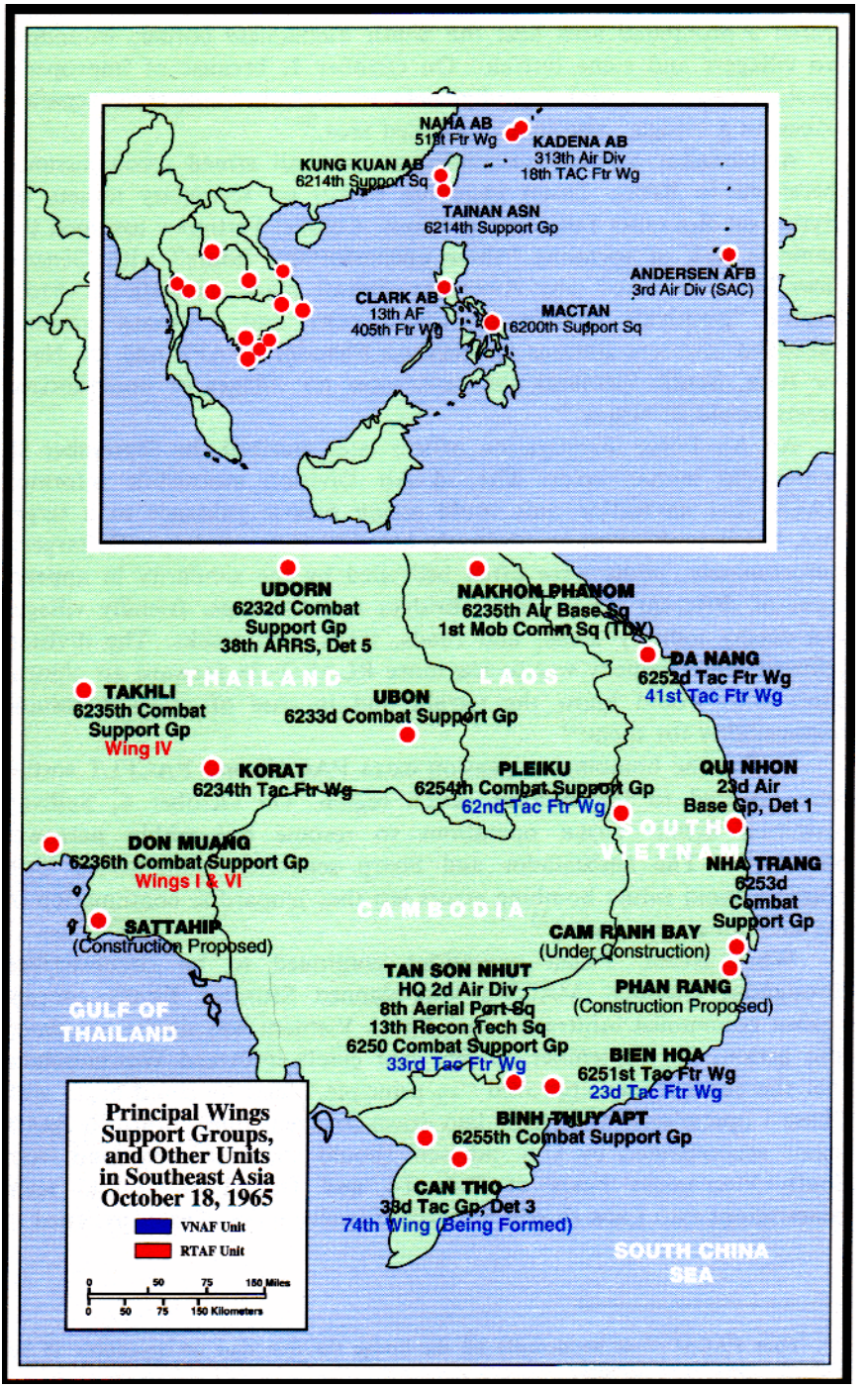
Ambassador Sullivan suspended at once all armed reconnaissance operations in STEEL TIGER including strikes on secondary targets by aircraft on ROLLING THUNDER missions. Colonel Pettigrew assumed the thankless task of spending "three uncomfortable hours" with General Thao Ma who asked why American aircraft made navigational errors despite "positive" control by the INVERT and PANAMA ground-controlled intercept stations (at Nakhon Phanom RTAFB and Da Nang Air Base, South Vietnam) and assurances no villages or unauthorized targets would be struck.[30]

An Air Force investigation officer later ascribed the September 30 incident to human error. The 2d Air Division meanwhile informed MACV that navigation aids could assure precise guidance to a target area, but it took pilots to positively identify routes and specific targets. Unfortunately, pilots were often bedeviled by the similarity in appearances of different jungle areas, bridges and fishtraps, friendly villages and enemy military areas, and roads, trails, and tracks. The division believed that a remedy was to use more RLAF T-28 forward air control pilots who would know the terrain and in case of mishaps assume responsibility for them.[31]

During the bombing suspension extra PACAF and PACFLT sorties were diverted to the BARREL ROLL region. On October 6, Sullivan permitted STEEL TIGER operations to resume but within narrower boundaries. The ambassador and Sharp separately admonished U.S. pilots to avoid future bombing errors lest they jeopardize continuation of the Laotian air programs.[32]

When STEEL TIGER operations continued to be circumscribed throughout October, MACV's long-planned SHINING BRASS concept against communist infiltration into South Vietnam was finally translated into action. On September 20 the joint chiefs informed Westmoreland that the concept was approved "in principle," and he could begin with Phase I operations. The chiefs laid down stringent rules. SHINING BRASS teams accompanied by U.S. advisers should enter Laos by land from South Vietnamese bases at Dak To and Dak Prou. Initial team penetrations into Laos should not exceed twelve miles. Teams assigned to

*Four PACAF F-4s accidentally hit the bridge the first time on September 15 but without serious repercussions.


NAHA AB
51st Ftr Wg
KADENA AB
313th Air Div
18th TAC Ftr Wg
KUNG KUAN AB
6214th Support Sq
TAINAN ASN
6214th Support Gp
ANDERSEN AFB
3rd Air Div (SAC)
CLARK AB
13th AF
405th Ftr Wg
MACTAN
6200th Support Sq
UDORN
6232d Combat Support Gp
38th ARRS, Det 5
NAKHON PHANOM
6235th Air Base Sq
1st Mob Comm Sq (TDY)
DA NANG
6252d Tac Ftr Wg
41st Tac Ftr Wg
THAILAND
LAOS
TAKHLI
6235th Combat Support Gp
Wing IV
UBON
6233d Combat Support Gp
KORAT
6234th Tac Ftr Wg
PLEIKU
6254th Combat Support Gp
62nd Tac Ftr Wg
QUI NHON
23d Air Base Gp, Det 1
SOUTH VIETNAM
DON MUANG
6236th Combat Support Gp
Wings I & VI
NHA TRANG
6253d Combat Support Gp
CAMBODIA
SATTAHIP
(Construction Proposed)
CAM RANH BAY
(Under Construction)
TAN SON NHUT
HQ 2d Air Div
8th Aerial Port Sq
13th Recon Tech Sq
6250 Combat Support Gp
33rd Tac Ftr Wg
PHAN RANG
(Construction Proposed)
GULF OF THAILAND
BIEN HOA
6251st Tac Ftr Wg
23d Tac Ftr Wg
BINH THUY APT
6255th Combat Support Gp
CAN THO
33d Tac Gp, Det 3
74th Wing (Being Formed)
SOUTH CHINA SEA
Principal Wings Support Groups, and Other Units in Southeast Asia October 18, 1965
VNAF Unit
RTAF Unit
0 50 75 150 Miles
0 50 75 150 Kilometers

enter two designated areas should not try to link up. Helicopters were to be used solely for ferrying in additional needed personnel, and for resupply and evacuation. Only USAF BANGO F-4 Phantoms on strip alert should be employed to strike targets uncovered by the teams. The JCS requested forty-eight hours' advance notice of a team launch plus progress and final reports of each team's accomplishments.[33]

CINCPAC's order implementing the SHINING BRASS operation, dispatched on September 29, spelled out the broad service responsibilities. The Air Force would provide most of the aerial support for the teams as they entered or were lifted out of designated areas, and for resupply and search and rescue missions. The specific assignments of the Air Force and other agencies were listed in 2d Air Division Operation Order 433-65. The document specified a very complex melding of Air Force and Army communication and air support systems. Team requests for an air strike would pass by voice and telegraphy through Kham Duc, the forward operating base, to the Military Assistance Command Studies and Observations Group (MACSOG) command and control center and an Air Force direct air support center (DASC), both at Da Nang. The DASC would establish a time on target (TOT) based on the time the request was received plus one hour, flashing the information to the tactical air control center (TACC) at Udorn. The latter would instantly solicit the Vientiane embassy's approval and inform the TACC at Ubon, where USAF BANGO F-4Cs were on strike alert. After receiving Vientiane's approval, the TACC at Ubon would issue the "execute" order.

The BANGO fighters would rendezvous near the target area, then contact a USAF O-1 forward air controller. While maintaining communication with the SHINING BRASS team, the FAC would mark the area with a smoke bomb. After the BANGO aircraft made their strike, the FAC would ask for team confirmation if the bombs fell near—within 100 yards—of the target. If the aircraft could not make a strike for any reason, they would hit an alternate target somewhere in the STEEL TIGER sector.

Only airmen briefed at MACV headquarters on October 11 on the SHINING BRASS concept were permitted to fly the first FAC and BANGO missions. Subsequent missions required the use of airmen briefed on, or conversant with, SHINING BRASS's aims. General Moore in Saigon exercised command and control, while his deputy at Udorn would scramble and control the BANGO fighters.[34]

The first SHINING BRASS team launches into Laos were preceded by three training missions to the edge of Laos's border with South Vietnam. These were conducted in mid- and late September and the second week in October. Each team, composed of three to six U.S. Army and about

eleven South Vietnamese Special Forces personnel, was airlifted into a designated location by two VNAF CH-34 helicopters from an airstrip at Kham Duc, just inside South Vietnam. Reconnoitering their respective areas, the teams found ample evidence of the enemy's presence: food, supply caches, bivouac areas, buildings, personnel, and trails. When one team called for a strike, Vietnam-based USAF aircraft quickly hit targets selected by the team and marked by an airborne USAF FAC. The results were adjudged "excellent" with buildings and storage caches destroyed. The coordination between ground and airborne FACs and between an airborne FAC and the strike aircraft also proved highly satisfactory. After an initial strike, the ground FAC made a fifty-yard correction of a target for other aircraft.[35]

Phase I of SHINING BRASS was scheduled to begin on October 15, but bad weather postponed the first launch. Clear weather returned on the 18th. A team of eleven South Vietnamese and several U.S. Army advisers then flew by VNAF CH-34 helicopter to a landing zone about two and a half miles from the designated target area. They were accompanied by an Air Force forward air controller and two USAF strike aircraft. Scouting enemy territory on foot, the team found an extensive encampment and supply storage base. During a brief skirmish with some communist troops, the South Vietnamese scout leader was killed. Nonetheless, the SHINING BRASS unit stayed in the target area for three more days before being heli-lifted out early on the 22d.[36]

During its three-day foray, the team made several requests for air strikes, but weather canceled all air operations in the vicinity until November 1. Then, because the communists appeared to have firm control of the territory and the support of local Montagnards, MACV ordered a special, large-scale STEEL TIGER attack on team-designated target areas. This was carried out by thirty-eight USAF F-4Cs and F-105s from Thailand with a USAF O-1 FAC controlling the assault. About half of the bombs of sixteen aircraft were fuzed for delayed exlosions upwards to thirty-six hours. Strike pilots observed numerous fireballs and explosions, and the FAC pilot reported many of the enemy were killed. Trees and jungle foliage, however, obscured most of the results. Bomb damage assessment eventually confirmed some destruction in about ten percent of the target area including six underground bunkers, but the photos also revealed that eight nearby bunkers were undestroyed. Ambassador Sullivan, who had not been enthusiastic about the SHINING BRASS program, now informed Washington that the initial operations were "a good beginning." As team tactics were perfected, he said, the incursions promised to make the Laotian panhandle "rather uncomfortable for the Viets."[37]

The second SHINING BRASS team, with launch delayed by weather until November 2, was airlifted to an area just within South Vietnam for reconnoitering a border target area. A brief skirmish with the communists erupted in which two enemy were killed. The team asked for a strike, flashing the coordinates to a USAF forward air controller, and was then swiftly airlifted out.

The first strike, again controlled by an Air Force FAC, was made by three USAF aircraft. On the basis of quick visual reconnaissance, the controller reported the destruction of one bridge and six buildings, damage to two buildings, and two secondary explosions. In an attempt to destroy what proved to be a major enemy installation with bivouac areas, buildings, troops, bunkers, vehicles, weapons, and motorable roads, MACV ordered 2d Air Division to make a special STEEL TIGER strike. This was executed by B–57s on November 5. Between November 3 and 11, eighty-three sorties were flown against the target located by the SHINING BRASS team. No interpretable poststrike photography was obtained, but USAF FAC pilots reported four weapon positions, two caves, and thirty structures destroyed, twenty-one structures damaged, and eight secondary explosions.[38]

To MACV's analysts, the air-supported SHINING BRASS operations confirmed the NVA's substantial and menacing presence near the South Vietnamese border. There was more supporting evidence of the expanding infiltration threat in a Defense Intelligence Agency study, completed in late October, describing 150 miles of roads flanking South Vietnam's border for 90 miles south of the demilitarized zone. This distance was about 55 more miles of road than a year earlier, and included the extension of most of the infiltration routes such as 23, 92, and 165. These and other routes had also been repaired and camouflaged during the rainy season just ending.

The foregoing and other intelligence data obviously portended stepped-up VC/NVA military operations in South Vietnam in the coming dry season by combat and supporting units whose aggregate strength now appeared to range from 216,000 to 236,000 personnel. About 58,500 were considered combat troops, about 10,000 more than estimated 4 months earlier. Although the bulk of manpower, as always, consisted of the Viet Cong, MACV believed it included 3 regiments of the NVA's 325th Division and elements of possibly two other regiments. Apprising Ambassador Sullivan of the communist strength, Westmoreland stressed the importance of striking hard 7 main routes if the NVA's manpower and supply movements into South Vietnam were to be reduced.[39]

Sullivan readily agreed with Westmoreland's assessment. The principal difficulty, however, was convincing General Thao Ma to remove air restrictions near the South Vietnamese border imposed after the aerial

short round of September 30, 1965. The general insisted on seeing photographic evidence of the enemy's buildup, although detailed proof in some instances could be discerned only by a trained photo interpreter.

On November 3, during a meeting with Colonel Pettigrew, Thao Ma relented and agreed to permit U.S. air strikes again in the former off limits areas on several conditions. Airmen must bomb with "extreme care," inform him sufficiently in advance to preclude U.S. and RLAF aircraft from striking the same areas at the same time, and establish a communication net to enable the RLAF to inform PACAF and PACFLT units of the location of friendly forces. He also asked for USAF and USN liaison officers at Savannakhet who could communicate directly with their respective headquarters, and the right to review plans for air operations prior to reaching a final agreement. Except for stationing liaison officers at Savannakhet (Pettigrew hoped to persuade Thao Ma otherwise), American officials believed they could meet the RLAF commander's numerous requests.[40]

Another meeting between the general, Pettigrew, and Sullivan on November 7 resulted in a decision to conduct joint U.S./RLAF reconnaissance and strike operations. The RLAF commander said he would move his aerial staging base for attacks on the Ho Chi Minh Trail from Pakse to Saravane. The latter was closer to important target areas and would permit him to double the T-28 sortie rate. PACAF would assist in enlarging the airfield at Saravane. Sullivan quickly solicited Westmoreland's support for these arrangements, asserting they were necessary to attain American objectives in Laos.*[41]

Although General Thao Ma was the principal negotiator for the above changes, final approval rested with Souvanna Phouma. This was obtained on the 14th after Sullivan showed him maps, photos, and other materials on the enemy's buildup. The prime minister also sanctioned defoliation along several key enemy routes. Sullivan and Thao Ma, in another meeting, agreed to let the U.S. Air Force and Army attachés and representatives of the RLAF and FAR General Staff work out the details on expanding U.S./RLAF air activities. Before the day was over the ambassador informed Westmoreland, Sharp, and the Air Force and Navy air commanders that, with one exception, previous restrictions on STEEL TIGER operations were lifted "effective immediately" and directed them to conduct aerial attacks around the clock. Only a segment of Route 9

*U.S. officials, it is clear, believed that giving the general some O-1Es and improving Saravane airfield, with PACAF providing about $100,000 for its upgrading, was not an exorbitant quid pro quo for obtaining his permission to resume bombing in the formerly prohibited area.

from the junction of Route 92 to the South Vietnamese border, controlled by friendly forces, remained off limits to U.S. aircraft. "Previous attacks here," Vientiane warned, "caused the suspension [of STEEL TIGER operations] and, if attacked again would probably jeopardize operations indefinitely."[42]

There was an immediate spurt in STEEL TIGER interdiction. With the abatement of poor weather, strike operations increased in scope and tempo during the ensuing weeks.[43]

Concurrently, the Vientiane embassy, MACV, and 2d Air Division officials took several actions to enable pilots to identify more easily armed reconnaissance routes and target areas, strengthen the RLAF, and prepare for B-52 operations. One significant change was MACV's creation of six armed reconnaissance zones in eastern Laos. BARREL ROLL was divided into A, B, and C sectors, and STEEL TIGER into D, E, and F. The F sector was shortly subdivided into an F and G sector.* The A through G sectors left about half of western Laos, north to south, outside of the approved armed reconnaissance areas. Validated RLAF targets, such as small bridges and supply sites, however, could still be struck in Laos regardless of location.[44]

On November 20, MACV directed the transfer of five O-1E Bird Dog aircraft (of a total of ten desired by General Thao Ma) from Army holdings to USAF's Detachment 6, 1st Air Commando Squadron, at Udorn. The squadron's pilots would first train a number of Lao airmen to fly visual reconnaissance and serve as forward air controllers. Later the squadron would equip the RLAF with several of the Bird Dogs.[45]

To bring more air power to bear against infiltration, especially on areas adjacent to the five northernmost South Vietnamese provinces, Westmoreland in early November proposed saturation bombing by SAC B-52s. Sullivan concurred, providing Washington authorities gave "iron clad" assurances of no publicity. The joint chiefs backed the proposal. Accordingly, the MACV commander submitted his first request for a B-52 strike in Laos on November 23, designating an enemy-infested jungle area on the border of the provinces of Thac Hiet in Laos and Quang Tin in South Vietnam. There were no known villages or friendly troops within two and six miles, respectively, of the target area. Although hit previously by tactical aircraft, the enemy redoubts were very extensive and appeared suitable for a saturation attack. However, State and Defense did not flash their approval until early December, and the first attack followed shortly thereafter.

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*In airman's parlance, these sectors were called Alpha, Bravo, (briefly Cocoa) Charlie, Dog, Echo, Foxtrot, and Golf.

Westmoreland also proposed striking the VC/NVA in Cambodia border areas with B-52s, tactical air, and artillery, taking precautions not to hit Cambodian troops. He said the display of enemy strength during a recent battle in South Vietnam (SILVER BAYONET) and intelligence data assembled by the DIA made it "perfectly clear" the Cambodian sanctuary contained motorable infiltration routes, command centers, and training and supply bases similar to those in Laos. The State Department weighed the possible political repercussions of an attack, then deferred a decision on the matter until it received "more concrete evidence" of enemy infiltration through Cambodia.[46]

Another plan under study by the MACV commander and his staff would concentrate more tactical air strikes against enemy routes, trails, and redoubts in the southeasternmost section of Laos next to the South Vietnamese border. The plan was translated into a new concept christened TIGER HOUND by General Westmoreland. The "TIGER" connoted aggressiveness and "HOUND" for smelling out the enemy. The concept would extend the "in-country" or South Vietnamese war into this small sector of Laos and rely on Navy and South Vietnam-based Air Force and Marine aircraft.[47]

TIGER HOUND would try to combine in one program the air tactics and techniques developed thus far in Laos and South Vietnam. USAF-piloted, low-flying, O-1 Bird Dog FACs, with Lao observers aboard, would control the air strikes. There would be a concerted effort to uncover more enemy targets from the air visually and by photography, and by use of Air Force and Army aircraft equipped with infrared and side-looking airborne radar; by defoliating jungle growth along selected routes; and by sending more data-gathering MACV SHINING BRASS teams into the trail. The O-1 FAC pilots would gather much of the visual information and by frequent missions become familiar with the enemy's route and trail structure and supply bases. A highly sophisticated communication system between the forward bases in South Vietnam and the 2d Air Division's facilities at Udorn, Savannakhet, and Vientiane would assure fast air strikes on targets.[48]

General Moore, concerned that Westmoreland's concept would superimpose a new air program upon an existing complex command and control system in Laos, suggested employing only the 2d Air Division's tactical air control system (TACS) for the impending TIGER HOUND program. The TACS, he said, had the expertise, communications, and other assets to handle the operations and to coordinate Air Force and Army aircraft in the search for new targets. After considering Moore's proposal and the views of Army Brig. Gen. John K. Boles, Jr., Director of the Joint Research and Test Activity in Vietnam, the MACV

commander decided to rely on a meld of Air Force and Army command and control systems, using the best features of both.[49]

Meanwhile, TIGER HOUND planning was jolted by another spate of short rounds, all but one in southern Laos. Two flights of USAF F-105s accidentally dropped ordnance close to Khangkhai near the Plain of Jars on November 20 but caused no significant damage.* More serious was a strike the next day by USAF B-57s attempting to hit a bridge over the Kong River near Attopeu in the panhandle. In 2 passes ordnance hit a jeep station wagon, destroyed several houses and a Buddhist temple, killed a monk, and injured civilians. Further mishaps in the panhandle took place on November 24 and 30 and December 1, 1965. Navy jets aimed at an automatic-weapons site at Pak Bong but destroyed several buildings and killed another monk. The November 20 incident was attributed to target misidentification because of broken cloud cover, the B-57 mis-strikes to unknown causes, and the Navy mishaps to efforts to strike a RLAF-designated target too close (about 500 feet) to buildings.

Issuing his customary warning about jeopardizing the air war in Laos, Sullivan moved the bombline away from Pak Bong and informed Moore and Westmoreland that "someone is not getting the word or else [the] word is being conspicuously ignored." Brig. Gen. George B. Simler, the 2d Air Division's Chief of Plans and Operations, likewise warned airmen of the sensitivity of Laotian operations, the importance of not expending munitions outside of approved areas, and said there was "no excuse" for doing so.[50]

The short-round incidents did not halt TIGER HOUND planning. On November 28-29, while conferring in Saigon with MACV and embassy officials on the war's progress, McNamara endorsed the program.† MACV briefers informed him there was no abatement of enemy infiltration and that in October, as monsoon weather was ending, an estimated 1,500 enemy personnel passed through Laos on their way to South Vietnam. The figure was expected to soar to 4,500 monthly during the dry season. The briefers offered no estimate of enemy supply tonnage entering the South but believed it was substantial. The DRV's capability, they said, was about 234 tons per day with about 195 tons moving on Laotian routes, 25 tons through Cambodia, and 14 tons by sea.[51]

After McNamara departed for Washington, TIGER HOUND preparations moved into high gear. The Air Force and Army agreed to provide ten O-1E's each for FAC operations. Army offered to make available

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*This was not far from the Plain of Jars and was the site of Pathet Lao headquarters and a Chinese mission that were erroneously attacked once before in November 1964.

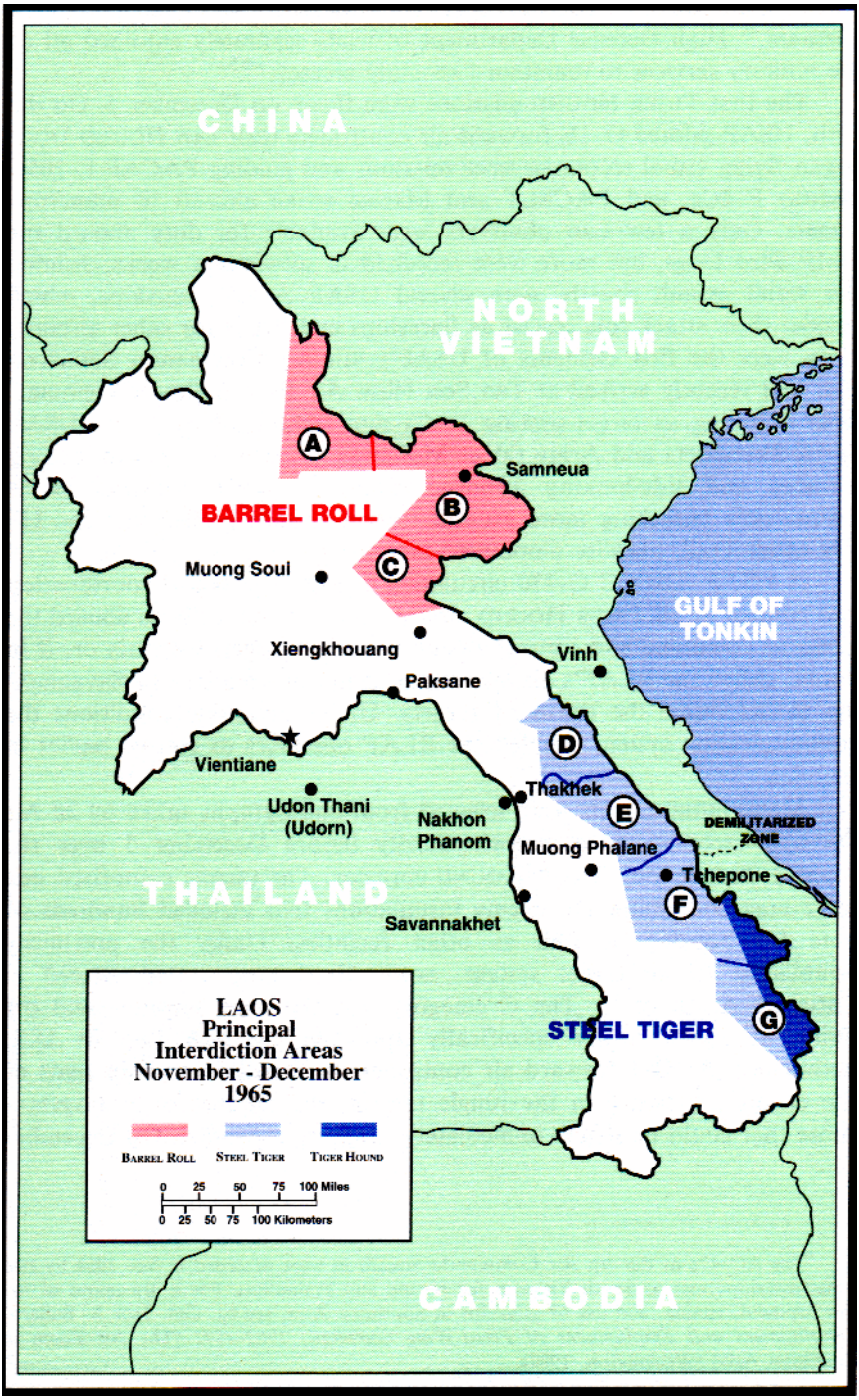
†Officially, the administration approved TIGER HOUND on December 3, 1965, after McNamara returned to Washington.

thirteen OV-1 Mohawks fitted with forward-looking infrared and side-looking airborne radar to search for lucrative enemy targets at night. Also, the Air Force planned to introduce for the first time in Laos a C-130 airborne battlefield command and control center (ABCCC) to assist in controlling and coordinating air strikes. Because of the presence of friendly Lao and tribesmen in parts of the TIGER HOUND zone, Sullivan promised Lao officials that the United States would maintain stringent controls over air strikes. Only RLAF officers assigned to the Savannakhet air operations center or as observers aboard a C-130 ABCCC and USAF-piloted O-1E's would possess strike authority. The arrangement was patterned roughly after the control system in South Vietnam where a province chief or his representatives officially authorized air strikes within a province.[52]

On December 4, Westmoreland assigned to General Moore "complete responsibility for the planning, scheduling, and conduct of STEEL TIGER and TIGER HOUND operations" (in contrast, YANKEE TEAM reonnaissance would remain a MACV/2d Air Division coordinated effort). He also directed Moore to establish an Air Force/Army/Marine Corps TIGER HOUND Task Force to complete the planning and to coordinate all of the air resources for the new anti-infiltration air program. On the same day, Souvanna Phouma assented to the use of all available American aircraft to counter communist infiltration but, as in the past, insisted on no publicity. He likewise approved the installation of two new mobile USAF tactical air navigation (Tacan) systems, one near Saravane in southern Laos and the other near Na Khang in northern Laos. Both Tacan systems were installed in early 1966.[53]

General Moore quickly appointed Air Force Col. John F. Groom to head the TIGER HOUND Task Force. Colonel Groom established one headquarters at Tan Son Nhut and another at Da Nang, assigning FAC, communications, and intelligence personnel to the latter. FAC pilots (all Air Force) would fly from Da Nang and from four Army Special Forces airstrips: Dong Ha, Khe Sanh, Kham Duc, and Kontum. Air Force C-130 ABCCCs would be stationed at Da Nang Air Base. Capt. Roy C. Dalton, an assistant air attaché, was assigned to RLAF headquarters at Savannakhet to serve as liaison officer. His duties were to advise General Thao Ma on air operations, ameliorate his difficulties with local FAR ground commanders, arrange for USAF strikes and other support for the RLAF, and teach RLAF officers FAC procedures and T-28 gunnery tactics.[54]

Concealment from public purview of what promised to be the largest air program in Laos thus far would not be easy. Sullivan counseled his Washington superiors to exercise prudence in their statements. Disclosure of the American air activities, he warned, could result in their suspension


CHINA
NORTH VIETNAM
A
B
C
D
E
F
G
Samneua
BARREL ROLL
Muong Soul
Xiengkhouang
Vinh
Paksane
GULF OF TONKIN
Vientiane
Udon Thani (Udorn)
Thakhek
Nakhon Phanom
DEMILITARIZED ZONE
Muong Phalane
Tchepone
THAILAND
Savannakhet
STEEL TIGER
LAOS
Principal
Interdiction Areas
November - December
1965
BARREL ROLL
STEEL TIGER
TIGER HOUND
0 25 50 75 100 Miles
0 25 50 75 100 Kilometers
CAMBODIA

"with imponderable consequences for the lives of U.S. forces in Vietnam." High Defense Department officials separately enjoined all of the military services to maintain "absolute secrecy."[55]

The first TIGER HOUND missions were flown on December 5. On the 16th, USAF-piloted O-1E forward air controllers (call sign HOUND DOG) began flying visual reconnaissance missions and guiding PACAF F-105s, BANGO F-4Cs, and PACFLT and Marine strike aircraft to numerous targets. Only a few Lao observers were available for duty aboard the O-1E Bird Dogs, but more were recruited in subsequent weeks. Joining the aerial assault shortly were several USAF AC-47 gunships, which besides their attack role served as flareships and FACs for other aircraft. They were the first elements of USAF's 4th Air Commando Squadron that had recently arrived at Tan Son Nhut Air Base in South Vietnam.* Also doubling as target-seeking FACs and fighter aircraft were USAF A-1E Skyraiders and Army OV-1 Mohawks fitted with forward-looking infrared and side-looking airborne radar. MACV's SHINING BRASS teams, now launching more ground reconnaissance probes into the Ho Chi Minh Trail, likewise pinpointed targets.

A USAF ABCCC C-130 circulating overhead provided coordination and control of all TIGER HOUND aircraft. Two RLAF officers aboard the airborne command and control airship validated targets instantly or, if in doubt, called the RLAF's air operations center in Vientiane or Savannakhet to determine the status of targets. Under favorable conditions the communication system enabled the RLAF observers to receive replies in minutes.

Many initial targets were selected from photography taken by 2d Air Division reconnaissance aircraft shortly before December 5 over the roughly 90-mile-long TIGER HOUND corridor. The targets comprised one large area containing 110 enemy installations that included hundreds of huts for housing as well as other facilities. Under the previously established RLAF target system, newly fixed targets were placed in Category A, B, or C. The C category was the most sensitive and off limits to attack unless specifically approved by high Lao or U.S. authorities. As O-1 forward air controllers learned how to spot signs of the enemy's presence in the jungle terrain, the number of A targets—those that could be struck immediately—rapidly expanded. On December

*The AC-47s of the 4th Air Commando Squadron were preceded in late 1964 by two other gunships sent to South Vietnam for testing and evaluation. For a discussion of the development, testing, and use of gunships in Southeast Asia, see Lt. Col. Jack S. Ballard, *Development and Employment of Fixed-Wing Gunships, 1962-1972* [The Air Force in Southeast Asia] (Washington, 1982).

5 there were 29 and by January 12, 1966, there were 69, of which 56 had been struck.[56]

To improve visibility, 2d Air Division began on December 6 to defoliate selected routes and trails in the TIGER HOUND sector. Two RANCH HAND UC-123s did the spraying.* On the 10th, twenty-four B-52s from the 3d Air Division on Guam carried out their first strike on suspected infiltration targets contiguous to the South Vietnamese border. Refueled by SAC KC-135 tankers, the aircraft dropped BLU-3B bomblets† and 750-pound general purpose bombs. As there were no followup ground patrols of the bombed area, results were undetermined.[57]

American efforts to keep a veil of secrecy over TIGER HOUND operations failed. On December 13 the *New York Daily News* reported that U.S. day-and-night air operations over Laos had risen fifty percent, would be stepped up shortly, and aircraft were spraying defoliants along the Ho Chi Minh Trail. A week later, *The Washington Post* disclosed the first B-52 strike in Laos and predicted there would be more. Washington officials had "no comment" and Prime Minister Souvanna Phouma characterized the news reports of heavier bombing against infiltration as "fabrications." Embarrassed by the news leaks, Ambassador Sullivan asked Washington not to sanction further B-52 strikes until he could assure the prime minister there would be no publicity.[58]

From December 6 through 31, 1965, the services flew 809 tactical strike sorties in the TIGER HOUND program, the Air Force flying 384 (333 in daytime, 51 at night), the Marines 325, and the Navy 100. The Air Force's principal nightime weapon remained the C-130/B-57 combination. Marine and Navy aircraft likewise flew numerous night missions. Overall, TIGER HOUND operations at first produced few verifiable results, although pilots believed their strikes were occasionally successful. Colonel Groom, the TIGER HOUND Task Force chief, summed up the first few weeks of the campaign:

> During . . . December and part of January, we concentrated most of our efforts on . . . fixed RLAF targets. Frankly, we weren't getting a lot out of them—we were getting many secondary explosions, indicating that we were getting supplies and ammo. However, we didn't see much truck traffic or evidence that the Viet

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*For a discussion of defoliation operations in Laos, see Capt. William A. Buckingham, Jr., *Operation Ranch Hand: The U.S. Air Force and Herbicides in Southeast Asia, 1961-1971* (Washington, Office of Air Force History, 1982).

†These were small bombs in a cluster bomb unit. About 62,836 bomblets were dropped in this first mission. [Hist, SAC, Jul-Dec 65, II, 284-85.]

> Cong were using the Ho Chi Minh Trail for this purpose . . . . The FAC's were discovering during the day evidence of this traffic . . . tire prints along the roads, dust . . . on the trees, but we did not see any traffic at all. If you look at the statistics you'll find out that, probably in December, we saw or hit something like a dozen trucks.
>
> It became readily apparent to us that the enemy was moving everything at night, so we started a night program with fighter aircraft using their own flares. However the fighters [were] limited to the number of flares they [could] carry, the time they could stay on target [so the] program at night was more a harassment type of thing rather than [finding] good targets and hitting them.[59]

Concurrently, MACV's SHINING BRASS teams made occasional shallow forays into the Laotian border area from South Vietnam to uncover targets for TIGER HOUND aircraft. By year's end, eight teams were available, and others were in training. Westmoreland considered the ground probes into Laos sufficiently effective to warrant aligning the authorized SHINING BRASS geographical area with the larger TIGER HOUND boundary. He also wished to begin airlifting SHINING BRASS teams into Laos by helicopters (presently, helicopters were authorized solely for lifting out or resupplying the teams). Authorities in Vientiane and Washington considered both requests premature.

In the STEEL TIGER area west and north of the TIGER HOUND boundary, Air Force and Navy aircraft in late 1965 also flew an ascending number of sorties against RLAF-validated and armed reconnaissance targets. In October the total was 471, in November 901, and in December 2,088.

To intercept more enemy night traffic, the Air Force gradually assigned more aircraft to nocturnal operations: flare-carrying F-4Cs and B-57s, and combinations of C-130s/B-57s and B-66s/F-105s. The latter, in which the B-66s carried the flares, were first used earlier in the year in the ROLLING THUNDER program in North Vietnam. More night-capable reconnaissance planes were flown in Laos. The nine RF-4Cs that arrived at Tan Son Nhut on October 30 featured side-looking airborne radar, forward-looking infrared, and day and night cameras. They flew their first mission over Laos on December 16. In the same month, four RB-57s and three RB-66s used their night photo and infrared equipment over the trail. Plagued by poor weather or equipment malfunctions, these aircraft in the beginning secured little usable data on the enemy's dispositions or infiltration.[60]

TIGER HOUND as well as other air and ground operations throughout the war theater were halted by President Johnson at 1800 on December 24, 1965, to permit the observance of a thirty-hour Christmas truce. The order sanctioned combat only if a critical situation arose. In

Laos, just USAF F-4C BANGO and F-105 WHIPLASH aircraft and Navy carrier planes could respond to an emergency.

Ambassador Sullivan and air and ground commanders vigorously opposed the bombing halt, which soon stretched to thirty-seven days while American officials, in a blaze of public and private diplomacy, tried to entice the Hanoi regime to the negotiating table. Sullivan particularly objected to linking a bombing halt in North Vietnam with military operations in Laos "where Hanoi never admits it is fighting anyway." Persuaded, the president allowed BARREL ROLL, STEEL TIGER, and TIGER HOUND operations to resume in Laos on Christmas Day. By December 28, Air Force, Navy, and Marine pilots were again flying regular missions for all three programs, averaging about one hundred strike and armed reconnaissance sorties per day for the TIGER HOUND sector.[61]

What had the Air Force and Navy aircrews accomplished against infiltration in Laos by the end of 1965? An assessment was not easy. As has been stressed, weather and jungle terrain made it difficult for pilots and photo analysts to determine the results of most air strikes. Nonetheless, a rough estimate was compiled by Air Force statisticians on DRV attrition in three target categories in the BARREL ROLL, STEEL TIGER, and TIGER HOUND programs as of December 23, 1965:

AIRCREWS	VEHICLES	STRUCTURES	BRIDGES
		Destroyed	
USAF	67	494	143
US Navy	41	218	58
Total	108	712	201
		Damaged	
USAF	44	328	60
US Navy	71	143	114
Total	115	471	174

The air operations further took an undetermined number of enemy lives in both northern and southern Laos.[62]

There was no reliable evidence, however, that the air programs had reduced the movement of enemy manpower toward South Vietnam. On the contrary, MACV's analysts reported that infiltration was not abating

but increasing. An estimated 26,188 new personnel* had arrived in the South in the past 12 months to augment Viet Cong units. This was slightly more than twice the 1964 total. Ninety percent were believed to be North Vietnamese, the remainder southern returnees. More and more were members of regular NVA regiments. Most of the infiltrators entered through southern Laos, the rest crossed the demilitarized zone, used Cambodian routes (although "hard" evidence was lacking), or arrived by sea.[63]

In South Vietnam the battle tempo underscored the elusiveness of victory. Despite losses estimated at 35,000 killed and 6,000 wounded, the VC/NVA combat and combat support forces and other support personnel totaling about 229,700† waged conventional, guerrilla, and political war against a formidable array of air-supported South Vietnamese, American, and allied troops and paramilitary units. These numbered about 674,000 at the end of 1965.* The fact the communists were not wanting in weapons, ammunition, and other supplies attested to their ability to transport large quantities of war materiel to battlefield areas, although the amount was very difficult to determine.† Laotian roadwatch teams and other intelligence sources reported a rising number of supply-laden trucks moving southward along key Laotian routes. Although Air Force, Navy, and—beginning in December 1965—Marine Corps pilots were beginning to find and destroy more trucks and structures, the extent of the enemy's supply losses could only be guessed.[64]

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*Months later, MACV and RAND analysts reviewed more data. They boosted the 1965 infiltration total to more than 36,000, a 3-fold increase over 1964. [M. G. Weiner, J. R. Brom, and R. E. Koon, *Infiltration of Personnel from North Vietnam: 1959–1967* (RM-5760-PR, Santa Monica, 1968), pp 43-45.]

†About 39,000 of this total were believed to be political cadre. [Hist, MACV, 1965, p 268.]

*At the end of December 1965 the Saigon government's regular forces totaled about 197,600 and the Regional, Popular, and Civilian Irregular Defense Group personnel about 297,000. American forces numbered around 184,300 and allied troops about 22,300. [Hist, MACV, 1965, pp 269, 272.] Additionally, there were some 14,000 American military personnel in Thailand, mostly Air Force, and 205 aircraft. There was in addition the Seventh Fleet's carrier task force in the Gulf of Tonkin. [Van Staaveren, *USAF Plans and Operations in Southeast Asia, 1965*, pp 90, 92.]

†A study by the Defense Intelligence Agency in 1967 speculated that during the Laotian dry season (September 1, 1965, to March 31, 1966) the Democratic Republic of Vietnam succeeded in moving into South Vietnam through the Laotian panhandle a daily average of about thirty truckloads of supplies weighing around ninety tons. [*Effects of Air Operations, Southeast Asia* (Hickam AFB, Hawaii, 1967), p 79.] This was far above earlier MACV tonnage estimates.

Nevertheless, Air Force and other military commanders were far from disheartened. They believed a further increase in air sorties and the adoption of new air programs, tactics, and weapons in the ensuing months would inflict sufficient pain on the communists in Laos and South and North Vietnam to impel them to end their "aggression" against the South Vietnamese government and people.

Chapter V

New Aerial Programs and Tactics Against Infiltration January–June 1966

The first half of 1966 witnessed continued expansion of the anti-infiltration campaign in Laos. As the year began, an administration-directed bombing moratorium over the North was under way to induce Hanoi's leaders to begin negotiations on ending the war. The moratorium released many Air Force and Navy aircraft for additional missions in Laos. From 3,023 attack sorties flown in December, the total rose to 8,000 in January with most strikes against targets in the central and southern panhandle. When ROLLING THUNDER operations resumed on January 30, the Laotian attack level declined to 5,232 attack sorties in February, a figure still considerably higher than in December.

Drier weather along the Ho Chi Minh Trail and the inauguration of new air programs combined to increase the pace of the air and air-ground assault against enemy movements. During January the Air Force, in coordination with the American embassy in Vientiane, launched a CRICKET program against truck traffic and other targets in central Laos. In March the Air Force and MACV teamed up to interdict a newly discovered east-west infiltration artery in southernmost Laos designated Route 110. Commonly called the Sihanouk Trail because it ran through the northeastern tip of Cambodia, the route ended near the South Vietnamese border. In May the southernmost sectors of Laos and North Vietnam came under a special air assault known as GATE GUARD. In addition, the Air Force began a psychological leaflet program and integrated SAC B-52 and defoliation operations into the overall anti-infiltration effort in Laos.[1]

The CRICKET program, which began on January 21, 1966, evolved from discussions among representatives of 2d Air Division, MACV, and the Vientiane embassy's air attaché. CRICKET witnessed the first meshing of Thai-based USAF O-1 forward air controllers and tribal roadwatch teams. Pilots of the low- and slow-flying O-1 Bird Dogs had demonstrated in TIGER HOUND their superiority over speedy jets in spotting targets

in jungle terrain and in directing Air Force, Navy, and Marine strike aircraft to them. The tribal roadwatch teams would augment the search for enemy trucks, truck parks, and supply sites underneath the jungle canopy. Team reports of targets would be sent to the O-1 FAC pilots for verification and, if found valid, marked for attack.[2]

By the beginning of 1966, eight roadwatch teams were reporting on enemy movements between Mu Gia Pass and Route 9. Vientiane speeded the flow of roadwatch data and embassy requests for interdiction and close support to the deputy commander's headquarters at Udorn, now headed by Maj. Gen. Charles R. Bond, Jr.*[3]

The Air Force's O-1 aircraft belonged to Detachment 1 of the 505th Tactical Control Group at Nakhon Phanom, established at this Thai base on January 17, 1966. Commanded by Capt. Harry J. Pawlak, Jr., the detachment initially possessed five Bird Dogs, five pilots, and thirteen maintenance, communication, and administrative personnel. The pilots flew their first combat surveillance mission the next day. As in FAC operations in the TIGER HOUND program, an English-speaking RLAF observer sat behind the USAF O-1 pilot to assist him in verifying targets and to authorize air strikes.[4]

The Cricket boundary was roughly 200 nautical miles from Nakhon Phanom, the range dictated by the capability of the small, single-engine O-1s. The forward air cont ollers flew their early missions mainly along routes that extended south of the Nape and Mu Gia Passes. As a secondary mission, the FACs flew support for FAR troops engaged in their see-saw battles with the PL/NVA in the northern sector of the STEEL TIGER zone.[5]

By February 3, slightly more than two weeks after they began flying visual reconnaissance and FAC missions, the forward air controllers had tallied 118 sorties. Pilots reported killing scores of the enemy, destroying or damaging many trucks, antiaircraft positions, and structures, and triggering numerous secondary explosions. PACAF intelligence judged the initial operations "exceedingly effective" and expressed confidence that the assignment of more O-1s, greater pilot and observer familiarity with the jungle terrain, and faster strike aircraft reaction to O-1 and roadwatch targeting promised "even greater impact against infiltration of materiel and supplies into the lower panhandle of Laos and . . . RVN."[6]

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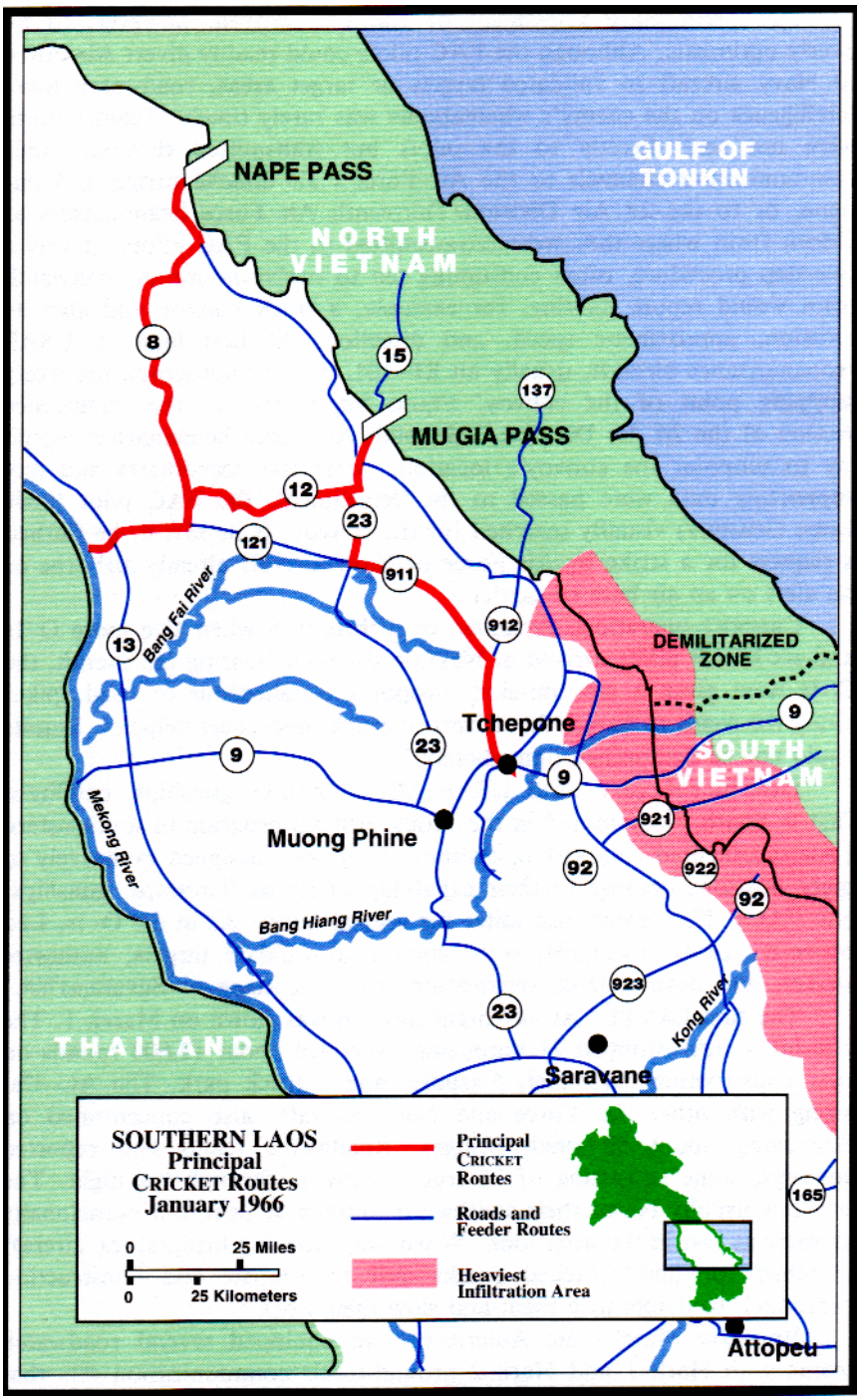
*General Bond assumed his post on January 7, 1966, with Brig. Gen. John R. Murphy becoming Assistant Deputy Commander, 2d Air Division/Thirteenth Air Force. When the Seventh Air Force succeeded the 2d Air Division on April 1, 1966, Bond became Deputy Commander, Seventh Air Force/Thirteenth Air Force.


NAPE PASS
NORTH VIETNAM
GULF OF TONKIN
8
15
137
MU GIA PASS
12
23
121
911
912
Bang Fai River
13
DEMILITARIZED ZONE
Tchepone
9
23
9
9
SOUTH VIETNAM
921
Muong Phine
92
922
92
Mekong River
Bang Hiang River
923
23
Kong River
THAILAND
Saravane
165
Attopeu
SOUTHERN LAOS
Principal
CRICKET Routes
January 1966
0
25 Miles
0
25 Kilometers
Principal CRICKET Routes
Roads and Feeder Routes
Heaviest Infiltration Area

This preliminary assessment of CRICKET proved, however, to be overly optimistic. Although the FAC pilots could readily divert Air Force or Navy aircraft to validated targets or target areas, roadwatch team intelligence on the enemy's whereabouts was rarely timely. Team reports were not sent directly to the pilots but transmitted through other communication channels to the Air Force's air attaché office in Vientiane, or to the 2d Air Division/Thirteenth Air Force headquarters at Udorn from where they were retransmitted to the FAC pilots. It was a five-step procedure, often consuming ten to twelve hours. A roadwatch team would report sighting, for example, a truck convoy and give its location, approximate speed, and direction. At first light, a USAF reconnaissance aircraft, usually an RF-101, would photograph the likely stopping point of the convoy. Photo interpreters in the intelligence section of the 2d Air Division/Thirteenth Air Force headquarters would try to pinpoint the convoy's location. After the coordinates and any supporting data were passed to the detachment, the FAC pilot (code name GOMBEY) visually searched for the convoy. If he saw it, he flashed a request for a strike by Air Force or Navy aircraft already airborne or on alert on an air base or carrier.[7]

CRICKET operations expanded on February 8 when five more O-1s and six USAF pilots arrived at Nakhon Phanom. During the month, the O-1s were given a new mission: dropping tetrahedrons or road spikes along the roads to harass the drivers of trucks and other vehicles. Results could not be determined immediately.[8]

Late in February, four USAF AC-47 Spooky gunships, employed first in South Vietnam and in the TIGER HOUND program in southeastern Laos, augmented CRICKET operations. They were assigned exclusively to night missions because of their capability to fly as flareships, gunships, and FACs. They could also loiter for several hours. As in the O-1s, Lao observers (when available) were aboard to validate targets, authorize strikes, and obtain strike verification from Vientiane or Savannakhet.[9]

The first CRICKET AC-47 night mission was flown on March 1. The gunship's crew dropped 21 flares and expended about 13,000 rounds on road-construction personnel, 5 trucks, and a truck park. The AC-47s, along with other Air Force and Navy aircraft, also concentrated on destroying about 50 small bridges. Roadwatch teams had reported convoys, some consisting of 25 trucks, moving through the night. The truckers usually began their southward journey at dusk but occasionally as early as two in the afternoon. When not attacking bridges, the aircraft searched for and attacked trucks and road-repair and construction personnel, to demoralize them and slow their work.[10]

By early March, the Americans had equipped several roadwatch teams with Hark-1 and Hark-2 ground-to-air communication sets that

permitted direct reporting to either O-1 or AC-47 FACs if the aircraft had a bilingual native observer aboard. Although the system promised to expedite calling in flare and strike aircraft, it was plagued at first with communication problems. There was also confusion about the use of the right frequencies. Intelligence personnel of 2d Air Division/Thirteenth Air Force managed a partial solution to the problem for night operations when the enemy was most active. The ground teams were given a time schedule for flashing twice nightly a report on enemy dispositions or activities to an overhead gunship (the O-1s normally did not fly at night). The observer translated the data for the gunship's gunners who would then attack the target. In addition to shortening strike reaction time, the ground-to-air communication system was expected to boost the morale of the roadwatchers, improve their motivation, and make them feel useful. Some teams were known to have sent false reports on enemy movements after having withdrawn from their assigned routes to less hazardous areas and more comfortable quarters. The Air Force strove to make the ground-to-air system more efficient in the ensuing months.[11]

The gunships did not confine themselves exclusively to the CRICKET area but also flew over roads and trails in other sectors of STEEL TIGER. To permit full nighttime operations, one gunship took off at 1800 each evening, a second at midnight. To acquire a target, aircrews dropped flares in a suspected area, turned around to conduct an attack or, reverting to a FAC role, called in Air Force or Navy strike aircraft.[12] A typical CRICKET daily intelligence summary of March 29, 1966, illustrates the multipurpose role of the Spooky AC-47s:

> On night of 27 Mar Cricket AC-47 (Spooky 41/43/42) flew armed recce in [Cricket]. A. Spooky 41 was unable to establish contact with roadwatch teams. 6000 rounds 7.62 were expended on RLAF Tgt Nr [target number] 109. No damage was visible. 6000 rounds was expended on a truck sighted at XD 0205 and over surrounding area. No BDA [bomb damage assessment]. B. Spooky 43 did not attempt team contact. RLAF Tgts [targets] 109 and 548 received 7500 and 3000 rounds. No BDA. Flares were dropped over RLAF Tgt 527, truck park, but no probable tgts were sighted. C. Spooky 42 was unable to contact first 2 teams on prearranged schedule. Acft then went to area where Spooky 41 had sighted a truck. Upon arrival a 2 mile convoy was sighted moving south on Rt 911. 6000 rounds were expended. Many trucks pulled off highway. Spooky and Blindbat (C-130 flareship) directed AF and Navy fighters onto tgts. No BDA from Spooky (who has requested API [armor piercing incendiary] ammo be provided). Several secondary explosions from fighter strikes.[13]

Since the O-1s were the backbone of both CRICKET and TIGER HOUND operations, PACAF, MACV, and other officials quickly wanted more of them for the counterinfiltration program. Ambassador Martin in

Bangkok obtained State Department and Thai government approval to station a complete USAF tactical air support squadron at Nakhon Phanom.[14] As a result, the 2d Air Division on April 1 sent twelve more O-1s and twelve pilots to the air base, bringing Detachment 3's aircraft total to twenty-three O-1s and three AC-47s. The detachment was inactivated and the 23d Tactical Air Support Squadron activated on June 1 with twenty-two aircraft, twenty-five pilots, and associated maintenance personnel.[15]

In the meantime, USAF O-1s, AC-47s, and roadwatch teams continued their search for enemy trucks, truck parks, suspected or known troop and supply areas, and other RLAF-validated targets. Air Force and Navy pilots believed they were inflicting considerable attrition on the southward-moving communists. General Moore was especially encouraged by forward air controller performance both in CRICKET and in TIGER HOUND. In March 1966, he urged CRICKET O-1s to request strike aircraft directly from the TIGER HOUND ABCCC whenever USAF aircraft were not on ready-alert at Thai bases.[16]

Nonetheless, a variety of problems continued to mar CRICKET's effectiveness. The Lao observers who flew with USAF O-1 and AC-47 FACs were often of marginal value in verifying targets or securing strike authority. Most had no previous air training, suffered from air sickness, and spoke poor English. The last was a major shortcoming. As a consequence, American officials in Vientiane made arrangements to substitute twelve pilot-trained translators more fluent in English. The changeover was time-consuming.[17]

The vulnerability of the AC-47 gunships to stepped-up enemy antiaircraft fire was also a serious matter. Lt. Gen. Hewitt T. Wheless, Assistant Vice Chief of Staff, USAF, suggested introducing a small number of recently modified, more durable, twin-engine B-26s. He said their range, speed, endurance, and their capability to carry flares and several types of ordnance, made them unusually suitable for a hazardous air environment. General Harris, the PACAF Commander, agreed. After obtaining the approval of Sullivan, Westmoreland, Sharp, and the JCS, the B-26Ks replaced the gunships in June 1966.[18]

For many FAC pilots, the O-1 Bird Dog's performance in the CRICKET area likewise left much to be desired. The aircraft weighed about 2,800 pounds, 400 in excess of original design. It climbed slowly, flew at low speed, possessed short endurance and, like an AC-47, was quite vulnerable to enemy ground fire. Armor-plating around the engine was not possible because of the aircraft's excessive weight. The automatic direction finder was unreliable and the communication system inadequate for the assigned task of communicating with tribal roadwatch teams.

Unlike the AC-47s, the O-1s could not be replaced at once. A successor aircraft, the O-2A, would not become available until late 1967.*[19]

The aerial tactics in CRICKET and other counterinfiltration air programs were found wanting. Col. James P. Hagerstrom, the director of the air control system at Udorn saw in CRICKET's execution a propensity by Air Force and Navy pilots to "drop a few bombs here, a few bombs there, a few bombs over there." He proposed concentrating tactical bombing where it would do the most good—in the areas directly south of the Nape and Mu Gia Passes in Laos, before supplies along the Ho Chi Minh Trail spread out into a maze of roads and trails. "Unless it's done here," he said, "[we're] never going to succeed," for

> once the supplies get out of the [supply] arteries and into the capillaries, it becomes literally impossible to get them. And as long as you have "X" amount of airpower to apply, you ought to apply [the] airpower at the point where you get the greatest return . . . right adjacent to where the passes come in from North Vietnam.

He was confident twenty-four-hour bombing and strafing attacks on supply areas against trucks, truck parks, and supply-carrying natives was possible. This meant combining all air- and ground-targeting intelligence and finding targets at night by infrared and starlight-scope† reconnaissance. But such an approach was not possible until an Air Force, rather than an Army commander (i.e., COMUSMACV), headed the air programs and determined how and where air power could be used most profitably. Without this command change, he feared the Air Force would be blamed for not being able to interdict the communist logistic system successfully. The Army might then employ more ground troops to "do the job."[20]

Finally, as in other interdiction efforts, CRICKET's efficacy was eroded by the speed with which the enemy's crews repaired bomb damage. FAC pilots estimated 1,000 local workers (in addition to NVA construction units) were in the CRICKET zone, constantly improving and extending infiltration routes and trails. Pilots observed an expanding network of trellises over segments of Route 911. After the jungle vines

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*Despite the O-1's shortcomings, the demand for FAC aircraft in Southeast Asia remained so high that upon arrival the O-2As supplemented rather than replaced the O-1s. The more versatile OV-10 FAC aircraft would not get to the war theater before 1968.

†The starlight scope was an image intensifier that used reflected light from the stars or moon to identify targets. The scope was originally used by ground forces in night operations in South Vietnam. It was first used in Laos in an AC-47 gunship during the defense of Attopeu in early March 1966 (discussed later).

and foliage interwove with the trellises, they noted, it would be very difficult to find the routes, especially after monsoon weather began to subside in September 1966.[21]

Painfully aware of the foregoing problems, Lt. Col. Robert L. Johnson, Detachment 3 Commander—who would head the 23d Tactical Air Support Squadron upon its activation on June 1—convened a CRICKET tactics board to determine if operational improvements were possible. The board's findings were endorsed by Colonel Johnson and General Bond, Deputy Commander at Udorn, and sent to Headquarters Seventh Air Force. They confirmed that the CRICKET air program was considerably less effective than at first believed. This was ascribed to poor air targeting procedures, the insufficiency of delay-fuze bombs, the communists' ability to repair quickly its roads, trails, and bridges, and other previously enumerated reasons. The board recommended nearly a dozen remedial measures such as more judicious selection of traffic chokepoints and other targets, twenty-four-hour aerial surveillance of important routes, the use of more delay-fuze bombs, defoliation of jungle growth along routes and trails, and expanded tribal roadwatch targeting and air strike operations. As all had been previously tried or were under consideration, Brig. Gen. Rockly Triantafellu, Seventh Air Force intelligence chief, replying on behalf of his headquarters, found nothing original in them. He said that some problems, like the insufficiency of delay-fuze bombs, were obviously contingent on greater production.[22]

Colonel Johnson meanwhile encouraged his Bird Dog pilots to employ tactics as commensurate as possible with the board's recommendations. The CRICKETS made a major truck "kill" on June 16 when they found and directed strikes on a convoy of enemy trucks trying to cross through a traffic chokepoint. Fourteen trucks were destroyed. Although the pilots believed that their revised tactics were significantly slowing the movement of enemy supplies and manpower, the evidence was hard to confirm. For the annual monsoon rains were now sweeping through the CRICKET zone and elsewhere in Laos, compelling the North Vietnamese to make their seasonal infiltration shift into South Vietnam eastward through southern North Vietnam and the demilitarized zone.[23]

As in the CRICKET and STEEL TIGER operations, the TIGER HOUND assault against North Vietnamese infiltration intensified in the early weeks of 1966. By the end of January, the services were flying slightly more than 100 sorties a day against fixed targets and on armed reconnaissance. Combat sorties totaled 4,283 since the program's inception on December 5, 1965, with the Air Force flying about 40 percent, the Navy 38 percent, and the Marines 22 percent. The TIGER HOUND Task Force had been augmented. In the task force headquarters at Tan

Son Nhut there were now 17 officers and airmen (9 USAF, 7 Army, 1 Marine), and at Da Nang and the airstrips at Kontum, Kham Duc, Khe Sanh, and Dong Ha there were 78 officers and airmen (73 USAF, 4 Army, 1 Marine).[24]

Since the beginning of TIGER HOUND, Air Force and Navy pilots made a concerted effort to fly more sorties at night, when the enemy's travel was heaviest. Although the Navy in the beginning flew more night sorties than the Air Force, the latter gradually enlarged its nocturnal operations. Early in January, it began scheduling one rather than several B-57s at a time with longer loitering C-130 Blindbat flareships, thereby stretching out route coverage time, and it boosted from six to ten the number of flare-equipped B-57s dispatched on single armed reconnaissance missions. After mid-January, more flare-equipped F-4Cs began to fly regular night armed reconnaissance. However, a shortage of C-130s and flares, because of their higher-priority use in South Vietnam, prevented the Air Force from scheduling uninterrupted dusk-to-dawn missions.[25]

Most Air Force, Navy, and Marine strike sorties, as previously, remained under FAC control. An Air Force ABCCC C-130 coordinated and controlled all of the aircraft in the TIGER HOUND operational area. With two Lao observers aboard, the aircraft communicated by single sideband radio with the India and Mohawk air operations centers at Vientiane and Savannakhet. When the C-130 was grounded for repairs, an EC-121 based at Tan Son Nhut served as a substitute control ship.[26]

The additional air resources assigned to TIGER HOUND operations inevitably swelled reported strike results. In January 1966, for example, pilots hit 72 RLAF-validated targets and 182 others. Cratering and seeding 180 road segments, they caused 22 landslides and 120 secondary explosions. Huts and other structures in enemy territory were major targets, with pilots claiming 361 destroyed, 202 damaged, as well as 28 bridges destroyed and damaged. The much-sought enemy supply-laden trucks continued to be elusive, with just 14 claimed destroyed and 5 damaged despite their frequent detection by night photography and roadwatch teams. The statistical compilations included a fair number of restrikes on targets where the communists appeared to be quite active or where they had rebuilt or restored a bombed area.[27]

As TIGER HOUND sorties expanded, they drew more enemy fire. On January 5 a Viet Cong mortar attack destroyed an O-1 at the TIGER HOUND forward operating base of Khe Sanh. Ten airborne aircraft were hit during the month with four downed. On the 14th, gunners bagged an Army OV-1B, and so seriously damaged a Navy A-4C that the pilot was forced to eject near his carrier. Fortunately he was rescued. On the 16th, small-arms fire destroyed an Air Force F-4C, but the two-man crew was

picked up. On the last day of January, a Navy A-1H, having sustained battle damage, made an emergency crash landing at the Saravane airstrip in the panhandle. Although the pilot survived, the Skyraider's unexpended ordnance created a hazardous political as well as military situation. Consternation reigned among Vientiane embassy personnel lest newsmen discover and report the plane's presence on Laotian soil, thereby jeopardizing the July 1962 Geneva agreements on Laos's neutrality. Eventually, the ordnance was safely unloaded, the plane quietly dismantled, and its parts flown out of the country without publicity.[28]

In February, after more C-130 Blindbats and flares were allocated to Laos, the Air Force's TIGER HOUND night missions rose steeply. The Blindbats and accompanying strike aircraft were put on two 6-hour shifts, the first from 1800 to 2400, the second from 2400 to 0600. In the first 2 weeks of February, 117 of a total 704 USAF strike sorties were flown at night. The FACs and strike aircraft quickened their night surveillance of segments of Routes 9 and 92 and those running south of Tchepone. Both Navy and Marine Corps sorties were also mounted. All 3 services were now claiming more trucks and other enemy targets destroyed and damaged.[29]

With the assignment of further aircraft to TIGER HOUND operations (about seventy percent of all strike sorties in southern Laos were soon allocated to the program), and with round-the-clock coverage of infiltration routes, the Air Force ebulliently believed it could at long last seriously curb DRV vehicular infiltration into South Vietnam. It was all a matter of tactical innovation with a variety of aircraft.[30] The chief of the TIGER HOUND Task Force described the operations:

> Recognizing that the photo ships [i.e., Air Force and Navy Yankee Team reconnaissance aircraft] were going over [the routes] at random and getting trucks, we . . . followed the same tactics. We would have F-4C's, for example, with CBU's [cluster bomb units], make straight and level runs along roads that we knew were open and were being traveled. And we would drop flares, and have them drop in the areas, and we got many secondary explosions . . . the following day there was evidence that we had gotten quite a few trucks that way.
>
> We still weren't satisfied with this kind of . . . program. We refined it further by adding the [Army] Mohawk—OV-1B aircraft—which is SLAR [side-looking airborne radar]-equipped. . . . It has immediate read-out capability for moving targets. So at the present time we have a team, consisting of the C-130 with flares, the OV-1B with a moving target capability, and strike aircraft operating as a package. The SLAR aircraft [pilot] will move up and down the roads, if he gets a moving target indication, he will mark the target with a flare. In turn, the C-130 will pick up this particular coordinate, light up the area, and call in aircraft to hit

the targets. We try to keep almost a 24-hour pressure—surveillance and attack—on the area, route 9, 92, Tchepone [and] down south.

In addition, we are using the AC-47's in Tiger Hound.[31]

Service claims, particularly Air Force, of enemy trucks destroyed and damaged continued to soar. In March the total was 344 and in April 673, with the Air Force claiming 540, the Navy 31, and the Marine Corps 102. On April 27 the Seventh Air Force "celebrated" its 1,000th truck destroyed since the inauguration of TIGER HOUND on December 5, 1965. Impressed by the reported high truck "kills," Ambassador Sullivan opined that the enemy could "ill afford to take losses of this magnitude on a regular basis." Concurrently, the 3 services were also destroying and damaging numerous structures, bridges, and antiaircraft sites, and making hundreds of road cuts.[32]

General Westmoreland took a more somber view of TIGER HOUND's combat statistics and achievements. He saw no significant abatement of DRV infiltration into South Vietnam or serious casualties among road and trail repair crews in Laos. Claiming the campaign was "somewhat less" than fifty percent effective, he sent Chief of Staff Gen. John P. McConnell in early May a summary of air "lessons learned" in southern Laos. The principal lesson was one long obvious to U.S. airmen—the need for twenty-four-hour interdiction regardless of terrain or weather. To achieve this, he suggested that the Air Force improve the training of pilots flying armed reconnaissance (presently accounting for twenty-five percent of all enemy attrition in Laos), and of forward air controllers, air liaison officers, and photo interpreters. Westmoreland further suggested the coordination of data from target acquisition radars, sensors, and starlight scopes and the use of general purpose, napalm, cluster bomb unit (CBU), and "route denial" ordnance.[33]

McConnell, who needed little advice on the subject, replied that more than a third of current O-1 pilot training was devoted to visual and photo reconnaissance, and forward air controllers and air liaison officers generally received considerable training in mapreading. To enhance night air interdiction, he noted, the Air Force was engrossed in OPERATION SHED LIGHT, an "umbrella" for three separate but related research programs. One was PROJECT TROPIC MOON, using four TV-equipped A-1Es, and the second was PROJECT LONESOME TIGER, using a B-26K fitted with forward-looking infrared. Operational testing of both would begin in October 1966. The third was OPERATION BLACK SPOT which employed two radars and TV- and infrared-equipped C-123s carrying special cluster bomb unit ordnance dispensers. McConnell cautioned that

target acquisition in bad weather was "one of the most difficult problems we face." Although better radars were under development and a new Loran D navigation system would improve interdiction, more research was necessary to acquire the technology for hitting fleeting targets at night. Until it became available, the Air Force would use existing systems, including the recently installed MSQ-77 COMBAT SKYSPOT radar.*[34]

Concurrently with the CRICKET operations in the northern STEEL TIGER sector, the Air Force and Navy on May 1 inaugurated a GATE GUARD aerial program that overlapped the Laotian boundary to include part of the Route Package I area† of southern North Vietnam. The rationale for GATE GUARD was to set up interdiction "gates" to block, if possible, enemy traffic at strategic road points. The geographical area extended from the demilitarized zone at the 17th parallel northward roughly to a line running just below Vinh (between the 18th and 19th parallel) and across into the northern STEEL TIGER sector. The major target was enemy truck traffic. Important roads earmarked for GATE GUARD included segments of Routes 23, 911, and 912 in Laos and Routes 1A, 101, 102, and 103 in southern North Vietnam.[35]

Patterned after the TIGER HOUND program, GATE GUARD operations began along the Laotian routes and, as the southwest monsoon intensified in Laos, moved eastward into Route Package I. The Air Force employed C-130 ABCCCs, A-1Es for visual reconnaissance, RF-101s for flash photography, plus other reconnaissance aircraft equipped with infrared and side-looking airborne radar. Also used were C-130 Blindbats working with F-105 and other aircraft. The proliferation of enemy antiaircraft guns (some radar-controlled) and possible SA-2 missile sites in Route Package I prompted the Air Force to use F-100Fs and RB-66s as well. These planes carried equipment for detecting or neutralizing gun and missile radars.[36]

Even though pilots believed they destroyed or damaged a fair number of enemy trucks at night, especially in Route Package I, several unanticipated problems led to GATE GUARD's early termination. FAC pilots found reconnoitering over some of the major roads too hazardous for their slow-flying O-1s, and strike pilots discovered that cratered

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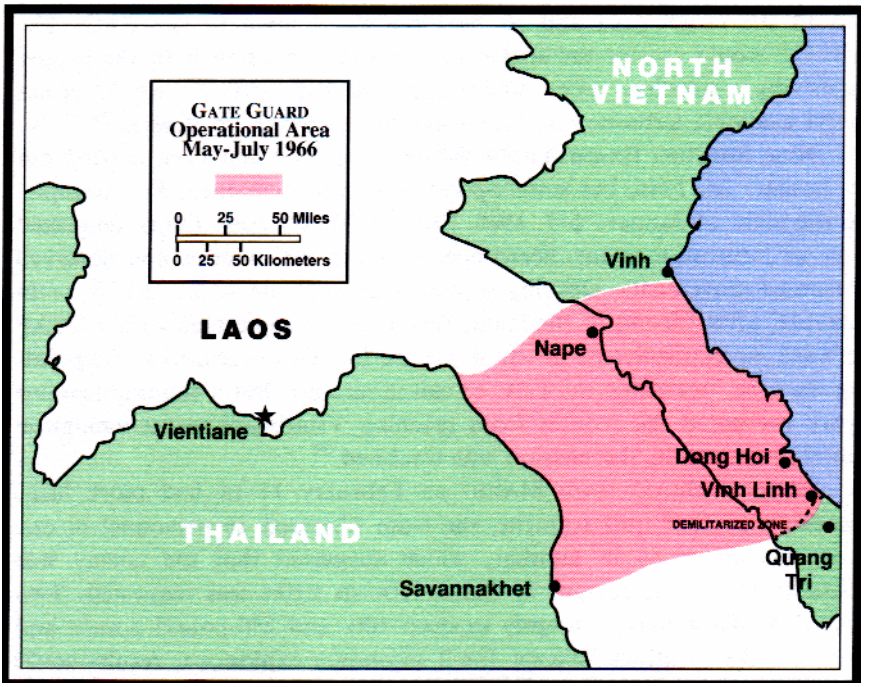
*See Chapter VI for a discussion of the MSQ-77 radar system and its installation at South Vietnamese and Thai sites.

†To improve Air Force and Navy coordination in the ROLLING THUNDER operations in North Vietnam, Admiral Sharp in December 1965 divided the North into six Route Packages. Route Package I consisted of the southernmost sector of the North Vietnamese panhandle. [*Air Operations Against North Vietnam* (Washington, 1966), Annex D to App A to Sec II, pp 8-10, 190.]



roads, especially along the flat coastal plain, were easily repaired or bypassed. Few truck parks could be attacked as the NVA usually left their vehicles inside of towns and villages, aware that American pilots were prohibited from striking civilian targets. Most important, a sudden shift in NVA infiltration through a corner of North Vietnam and across the demilitarized zone indicated that another specialized air program was needed against this sector. Known as TALLY HO, it would be launched on July 20, 1966.*[37]

Meanwhile, Seventh Air Force and MACV worked to improve the coordination between TIGER HOUND operations and the air-supported SHINING BRASS forays into the Ho Chi Minh Trail. By a new procedure a SHINING BRASS team would send its request to the Air Force's C-130 ABCCC (call sign HILLSBORO) via a supporting forward air controller. The request would include the statement, "This is a GOLDEN EARRING mission, I am in contact." "GOLDEN EARRING" meant the SHINING BRASS team had selected a target and had confirmed the enemy's

*See Chapter VII.

presence at the given coordinates. "I am in contact" signified the team was in the target area and its position was known to the FAC. The ABCCC would receive the strike request and retransmit it to the proper approving authority. After strike approval the ABCCC would either divert available airborne aircraft or ask for a special air mission.[38]

Nine SHINING BRASS/TIGER HOUND missions had been carried out by January 24, 1966, but some operational kinks remained. For example, on the night of January 6–7, 1968, SHINING BRASS team OHIO, emplaced near an infiltration point, heard enemy voices and vehicles and observed personnel movements. Desiring to assure an accurate strike, a U.S. team member, after lift-out of the team, flew over the same area with a USAF forward air controller to obtain a precise fix. He succeeded in pinpointing the area, instructed the FAC to call in aircraft, but a communications break prevented the request from reaching Vientiane's target validation center. As a result, the mission was scrubbed.[39]

SHINING BRASS team MAINE on February 17–18 had more luck. Reaching another trail segment, the team observed 16 personnel in one area and about 50 in another, which suggested that the enemy was concentrated in the region. A TIGER HOUND strike was requested. Two USAF A-1Es arrived promptly to drop 100- and 250-pound bombs and to strafe the locations. Except for 2 secondary explosions, results could not be determined, however.[40]

Between February 27 and March 1, SHINING BRASS teams IDAHO and DAKOTA reconnoitered separate but adjacent areas in Laos across from Kontum Province in South Vietnam. They sought to determine the extent of a strike on a "Kontum 2" target but found only a few craters and no discernible damage to the enemy. Most of the B-52 bombs had detonated in the overhead tree canopy, with but a few striking the intended target area.

Encountering the NVA, both teams called in TIGER HOUND aircraft. IDAHO's request brought in 6 Navy and 4 USAF planes that bombed the area and strafed it with 20-mm cannon fire. DAKOTA came upon an NVA waystation with about 15 to 20 huts, 15 bundles of punji sticks (30 to a bundle), and spotted about 10 personnel. In a brief firefight, the team wounded 2 members of the enemy unit, which withdrew. Before NVA reinforcements arrived, the DAKOTA team burned several huts including one holding more than 600 pounds of rice, then just before leaving called in TIGER HOUND aircraft. Eight Air Force and 4 Navy planes responded with bombs and rockets, but the results were unknown.[41]

By March, other SHINING BRASS teams, (IOWA, TEXAS, KANSAS, and OREGON) were entering select areas of the Ho Chi Minh Trail. The

earlier extremely long time lapses between a team's request for TIGER HOUND aircraft and a strike had been reduced to 30 to 40 minutes. The month's major operation was triggered by SHINING BRASS team MAINE, which stumbled upon several huts containing, variously, several wrapped 75-mm pack howitzers, binoculars, six 100-foot lengths of rope, and other items. The team found more huts, structures, and a well-built trail in 2 other nearby locations. Guided by a fire set by the team, 20 aircraft blasted the area with 500-pound bombs and strafed it, destroying an estimated 6 unpacked 75-mm howitzers, 2 huts, and causing one secondary explosion. Judging that the area was probably a major enemy installation, the team recommended it be targeted for a B-52 ARC LIGHT strike.[42]

At times SHINING BRASS teams engaged the enemy accidentally or by design. Some officials, however, believed that the teams should not provoke firefights, which usually ended their high-priority intelligence gathering and targeting missions. Aware of the team incursions, the NVA began lying in wait for them, coordinating their patrols, using decoy tactics, and stepping up their automatic-weapons fire. Upon helicopter lift-out of team MAINE on March 19, for example, heavy automatic-weapons fire was aimed at a forward air control aircraft and the departing helicopters. An accompanying Army UH-1B helicopter that returned fire believed it succeeded in silencing one of the automatic-weapons positions.[43]

By April, May, and June 1966, SHINING BRASS operations had become routine with the teams reconnoitering and targeting about six locations a month for air strikes, and gathering more data on the enemy's infiltration activities. Aircraft destroyed numerous huts and other structures, grain and other supplies and suspected supply areas, troop rest or encampment areas, and similar targets. There were occasional firefights resulting in enemy casualties. The exact amount of destruction and damage inflicted during the TIGER HOUND air strikes remained, as usual, difficult to assess, although the presumption was that it was considerable. The operations were believed worth the effort. Usually, no prisoners were taken, but team IOWA at the end of May succeeded in capturing and bringing back two members of an NVA regiment.[44]

As the tempo of SHINING BRASS/TIGER HOUND operations rose in the first half of 1966, General Westmoreland urged Vientiane and Washington to sanction airlifts of larger, U.S.-led battalion-size SHINING BRASS "exploitation forces" into selected areas of the Ho Chi Minh Trail. In addition to intelligence gathering and air targeting, the exploitation forces would aggressively attack and harass the enemy along the trail with Air Force and other TIGER HOUND aircraft in support. The

proposal touched off another abrasive argument with Ambassador Sullivan.[45]

Developed in late 1965, Westmoreland's exploitation force concept envisaged training and equipping 540-man battalions composed of South Vietnamese Nung tribesmen. The MACV commander directed in December 1965 the equipping of 1 battalion and in January 1966 recommended equipping 2 more. He desired to activate all 3 battalions on March 3, June 1, and June 30, respectively. Until Sullivan as well as State and Defense officials in Washington approved, the battalions would attack infiltration solely within South Vietnam near the Laotian border.[46]

General Harris, the PACAF Commander, supported the exploitation force concept to uncover new targets for tactical air strikes. Admiral Sharp likewise backed it and solicited Joint Chiefs of Staff endorsement.[47]

Sullivan's initial reaction was totally negative. Never enamored of SHINING BRASS activities, which he characterized essentially as "an eagle scout program devised by some extremely well-motivated young men," he construed the TIGER HOUND air and the SHINING BRASS ground reconnaissance programs as inherently incompatible. The first, he said, attempted to saturate a designated enemy area by air; the latter desired to cover the same area by patrolling foot soldiers. They were competing concepts that often generated interservice rivalry. In one instance, he observed, a SHINING BRASS representative complained to him about giving their target to the Air Force, thus depriving SHINING BRASS personnel of their "brownie points."

Sullivan had other objections. Each 540-man exploitation force required the leadership of 30 to 40 U.S. Army Special Forces personnel, a number that would run head on into Souvanna's well-known aversion to having foreign troops on Laotian soil. He doubted if the prime minister could withstand the "international heat" if the size of the force and the number of accompanying Americans became publicly known. The ambassador predicted that the chances of Souvanna approving the battalions were "absolute zero." He warned Washington against using them without Souvanna's approval and the danger of some Americans being captured by the NVA. This would seriously undermine the prime minister's credibility and make it very difficult to secure his consent later for more significant military programs.[48]

The State Department supported Sullivan's position but left the door ajar for a final decision pending further discussion of the exploitation force concept at the JCS/OSD level and at a SEACOORD meeting scheduled for January 24–25 in Bangkok.[49]

At the Bangkok conclave, Westmoreland and Sullivan sparred again over the exploitation force proposal with the ambassador raising new objections. He stressed the need to "play square" with Souvanna, the likelihood of lesser DRV military and political repercussions arising from the use of small SHINING BRASS teams rather than large exploitation forces, and the recent furor in the United States created by reports the administration contemplated sending ground troops into Laos. However, if the MACV commander insisted on using the Nung tribesmen against infiltration, Sullivan urged that they be trained in Laos, be nominally attached to FAR Maj. Gen. Phasouk Somly's Military Region IV, and attack the Ho Chi Minh Trail from the west. Westmoreland considered these conditions unworkable.[50]

As the two officials were unable to make a joint recommendation, Washington let the exploitation force concept languish in the ensuing months. The impasse lasted until May 24 when Sullivan finally assented to the use of Nung tribesmen if they were organized into platoon rather than battalion-size units, and accompanied by no more than three American Army Special Forces advisers. He laid down other strictures on the use of the platoons: no more than four missions per month, a maximum six-mile penetration into Laos, a limit of five days on operations in enemy territory, and employment of the same helicopters for delivering the platoons to and from a target area. Further, Westmoreland would have to send to the Vientiane embassy a forty-eight-hour advance notice of intent for a platoon launch, abstain from the first launch until June 7, abide by the existing rules, and include platoon incursion plans in the regular monthly SHINING BRASS operations schedule.[51]

Admiral Sharp and the JCS endorsed the agreement which would signify the beginning of Phase II of the SHINING BRASS program. McNamara consented on June 16, stipulating that he and Secretary Rusk should be informed of all MACV Phase II, intent-to-launch messages to Sullivan. Until the results of the platoon-size operations could be evaluated, Westmoreland's planning for still larger air-supported cross-border units, designated Phase III of the SHINING BRASS program, was put on the shelf.[52]

With Vientiane's and Washington's approval in hand, Westmoreland sent his first platoon exploitation force to the Ho Chi Minh Trail on June 26. Entering a predesignated area that had been reconnoitered, as required, by a SHINING BRASS team, the platoon quickly destroyed twenty-five huts and other structures. The only strike support was provided by four UH-1B Army armed helicopters that destroyed forty-two water buffalo. Thus began another air-ground program to

augment the intelligence gathering, targeting, and harassing operations against enemy infiltration in southeastern Laos.[53]

The period also witnessed the beginning of limited U.S. air and covert ground reconnaissance operations against a new west-to-east infiltration route beginning in the southernmost STEEL TIGER sector. Brig. Gen. Oudone Sananikone, the FAR Chief of Staff, informed American officials of the new route in late March. It ran from the southern extremity of Route 96, part of the Ho Chi Minh Trail, east for about sixty miles connecting with roads in the northernmost tip of Cambodia, thence into Kontum Province in South Vietnam's II Corps Tactical Zone. General Thao Ma christened the new artery the Sihanouk Trail, and U.S. intelligence designated it Route 110.[54]

General Thao Ma's T-28s quickly began flying over the Laotian portion of the route. General Westmoreland also wanted to use U.S. aircraft for route surveillance on the Cambodian as well as the Laotian segments. Higher authorities swiftly approved missions in Laos but not in still-neutral Cambodia. In late May, USAF AC-47s flew their first night missions over the Laotian segment of Route 110. U.S. guidelines forbade the gunships from venturing closer than four nautical miles of the Cambodian border or endangering FAR troops encamped near the road.[55]

Because of a paucity of information about the DRV's truck movements and other logistic activities along and near Route 110, General Westmoreland also ordered limited ground reconnaissance of the route. Special guerrilla units of MACV's Studies and Observations Group were tapped to make the ground survey. The first guerrilla penetration into the area on May 26 was stymied by bad weather and the presence of too many enemy troops, but that same day a unit reached a segment of Route 110 between Kong My and Muong May to look for truck traffic and to mine the road. Seeing no traffic, the guerrillas planted eight antivehicular and thirty-two antipersonnel mines on the road segment, booby-trapping them to prevent their removal without exploding. The unit was then whisked out by helicopter.[56]

Air reconnaissance in subsequent days failed to confirm if any of the mines had been disarmed or exploded. A second guerrilla unit was therefore sent into the area and reached Route 110 on June 2. The unit detected no evidence of exploded mines and destroyed trucks, but discovered a new wooden bridge and corduroy surfacing on a nearby trail.[57]

A Laotian roadwatch team was likewise sent into the route's mined area and saw no truck traffic. Nor did further U.S. air reconnaissance detect any. Westmoreland's plan to have the RLAF fly daily missions

over the same route segment did not pan out when General Thao Ma, the Laotian air chief,* became embroiled in a local political and military controversy. Some FAR high command members accused Ma of using his T-28s more frequently for the convenience of the Americans than for FAR ground forces. With the RLAF T-28 strike force temporarily unavailable and U.S. reconnaissance unprofitable, Westmoreland suspended aerial action against Route 110 until October 1966. Then on the basis of fresh reports of extensive logistic movements along the route and a nearby supply buildup, Seventh Air Force tactical aircraft and Strategic Air Command B-52s conducted their first two air-ground SLAM (Select, Locate, Annihilate, Monitor) strikes against the area.[58]

Not all operations in the STEEL TIGER area were scheduled strictly for anti-infiltration armed reconnaissance and against RLAF-approved fixed targets. Air Force and Navy aircraft at times flew in support of FAR units encamped near the Ho Chi Minh Trail.

In early March, Generals Thao Ma and Phasouk Somly requested special USAF assistance to defend the city of Attopeu which was being threatened by the NVA. The North Vietnamese already controlled Muang Kao and Ban Fangdeng, two towns east of the city. The two generals were convinced the foe planned to capture Attopeu and the surrounding area to set up an alternate supply route using the Mekong River's tributaries through Cambodia to southernmost Laos and the delta region. RLAF T-28s and Air Force and Navy aircraft had made intermittent daylight attacks on the communist positions near Attopeu, but the enemy troops were veterans, unafraid of daytime attacks and well dug-in. Their propensity to attack FAR troops mostly at night alarmed Thao Ma and Phasouk who wanted special Air Force night strikes to stop them.[59]

The two Laotian officers initially appealed for aid to Capt. Jack B. Ryan, an assistant air attaché at Savannakhet, who instantly relayed their request to the headquarters of the 2d Air Division deputy commander in Udorn. Advised of the threat to Attopeu, General Westmoreland asked Sullivan to allow the use of some TIGER HOUND aircraft in the area, but the ambassador held up the request and refused to solicit the approval of FAR authorities in Vientiane. While Westmoreland was perplexed, it appeared that Sullivan was unhappy with the trend towards employing more and more sorties for the counterinfiltration program in the

*For further details of Gen. Thao Ma's political problems in May and early June 1966, see Anthony, "A Military History of the War in Northern Laos, 1945-1968," Chap IX.

panhandle at the expense of adequate support for BARREL ROLL. Hence he was not about to permit the diversion of many aircraft to the south, whatever the crisis.*[60]

After pondering the problem, the American ambassador authorized some token air support. This consisted of the temporary deployment to Savannakhet of two AC-47 gunships from Tan Son Nhut Air Base for night operations, and of two O-1Fs from Nakhon Phanom for daytime visual reconnaissance. The aircraft were requested by Col. James R. Carter, the Director of Operations, and Col. James P. Hagerstrom, the TACC Director, both at Udorn.[61]

The military forces around Attopeu at the beginning of March consisted of about 3 FAR battalions in a defensive posture, and 6 NVA battalions. The FAR troops were demoralized. In a recent firefight with the NVA, a FAR unit had been badly mauled, losing 200 soldiers killed and 100 wounded. The killed included 2 majors, both assistant battalion commanders.[62]

As the threat to Attopeu seemed imminent, RLAF T-28s, again available, began striking enemy positions on March 3. The first USAF AC-47 gunship (Spooky 41) went into action the next evening. The crew included two RLAF officers serving as observers and mission coordinators. Also aboard the gunship was a newly developed starlight scope, a light-intensifying four-power scope previously used by American ground troops in South Vietnam for night operations. Colonel Hagerstrom wanted the scope tested in Laos.[63]

The gunship pilot began his initial mission at 1650 on the 4th, but encountering radio problems and uncertain about the disposition of friendly and enemy troops, he landed at an airstrip for further briefings. At 2005 the gunship was airborne again and crewmembers shortly found some of the enemy along the road between Attopeu and communist-held Muang Kao, ten miles east. The gunners strafed the road but were unable to assess the results of the attack. As the plane continued to orbit, its navigator spotted something interesting. According to the pilot, Maj. George W. Jensen:

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*As noted earlier, Westmoreland and Sullivan were constantly at loggerheads over the relative air priorities in the war. As Westmoreland put it in a message to Admiral Sharp, "I've pointed out to Ambassador Sullivan . . . it must be clear that . . . SVN [South Vietnam] and the contiguous areas of Tiger Hound, Steel Tiger, and [Route Package] I [in southern North Vietnam] remain as higher priority commitments." [Msg, MACV to DIA, CINCPAC, 101440Z Mar 66; Anthony, "A Military History of the War in Northern Laos, 1945-1968," Chap IX.]

> While we were orbiting, after hitting the road, the navigator, who was in the rear at the main cargo door, sitting there—he was tied in by rope—spotted between 150 and 200 VC [Viet Cong], or what we found out to be VC, in the rice paddies between the two known areas of the friendlies and the unfriendlies. Kind of in a no-mans land. . . . he was using the Starscope. We did not drop flares: there was a good moon out. There was a minimum of haze at that time and the Starscope really worked to full advantage. He saw these personnel moving on the ground. I called back and asked if they by chance had an operation out there that was utilizing these people and if they were friendlies. They came back and said that they had no operation, that these people were fair game—so we hit them!

The navigator was surprised to see enemy movements so well through the starlight scope. As the troops appeared to be marching toward Attopeu, the minigunners opened up. After they had expended 1,500 rounds, 2 of the miniguns aboard Spooky 41 jammed. On the ground, the troops had darted from the road and hid in nearby trees which were also sprayed by the working miniguns. About 100 troops were seen entering a pagoda, forcing the aircrew to withhold fire. Upon receiving clearance to attack the pagoda and surrounding area, they poured in another 3,000 rounds. The gunship kept orbiting and began attacking various targets, experiencing all the while electrical problems that did not interfere with the firing. Flares, dropped by the aircrew, lit up the battle area.[64]

The minigunners expended about 13,500 rounds before Spooky 41 left for Nakhon Phanom and was replaced at 2215 by another gunship (Spooky 43). The latter, minus a starlight scope, orbited over the battle area for the remainder of the night, dropping flares and firing into suspected enemy positions. Uncertainty over what gunship fire achieved during the night was dispelled early on the morning of March 5 when Capt. Benn H. Witterman, Commander of Detachment 3 of the 505th Tactical Control Group at Nakhon Phanom, and Capt. Gary D. Cool flew over enemy positions in an O-1 Bird Dog. They counted no less than 52 dead troops. Captain Witterman described the scene around the rice paddy and in the nearby ditches:

> So Captain Cool and I went up, and we went around and we found the original 26 bodies, and then by God, we found another 26 bodies, all laying out in a relatively open area, in a paddy. Uh . . . these paddies are kind of divided up by small shallow canals, and of course in the dry season they were all dried up, so they were just like ditches, and these people were strung out in the ditches, and that's where they apparently had been spotted . . . and about a half dozen were right in the open in the paddies, sprawled out, and in several places you could see spots where obviously a body had been laying, and bled a lot, and then they pulled it away.[65]

Witterman and Cool flew over the region for 45 minutes without drawing enemy fire, suggesting that the previous night's operations had also knocked out local air defenses. Additional daytime U.S. and RLAF strikes on the 5th virtually destroyed Ban Fangdeng and other buildings in the area.[66]

Generals Thao Ma and Phasouk, the assistant air attaché at Savannakhet, and USAF commanders and officers associated with the air defense of Attopeu were extremely pleased with the air operations, especially the performance of the two gunships. The threat to the city was contained. General Thao Ma claimed that the USAF strikes had boosted the morale of local FAR troops. General Bond, Deputy Commander, 2d Air Division/Thirteenth Air Force, praised the gunships' performance and informed the 14th Air Commando Wing commander that poststrike data indicated no less than 100 enemy troops were killed by air—possibly as many as 250—and many others were wounded. Colonel Hagerstrom was particularly elated over the performance of the Spooky 41 gunship which, he believed, had broken the back of an estimated 800-man enemy force. He saw in the operation a lesson, "not to fight a war of attrition, infantryman versus infantryman, but to let air power destroy the enemy."[67]

The importance of close air support for FAR and Lao guerrilla forces had been demonstrated frequently, of course, in the vicinity of the Plain of Jars and elsewhere in northern Laos. But the battle for Attopeu underscored the potential of starlight scope-equipped AC-47 gunships at night where enemy ground defenses were not too lethal. Over the long run, however, the air-to-ground attacks near Attopeu were only a brief costly interlude in the DRV's expanding use of infiltration routes and trails in southern Laos and northern Cambodia.

Inevitably, the rising tempo of STEEL TIGER, CRICKET, and TIGER HOUND operations over Laos's jungles and forests produced another series of aerial mishaps. On December 31, Air Force planes struck a civilian target near Saravane, causing civilian damage and casualties. In the first week of January 1966, unidentified propeller aircraft hit several nonapproved targets and target areas. They destroyed the village of Ban Kagnak, damaged the village of Ban Kengxai, and dropped bombs north and south of the village of Ban Sok. Many villagers of these bombed areas in Military Region IV sought refuge in nearby forests and caves in the daytime. Some headed toward Attopeu hoping to find safety there. Later in the month there were more serious mis-strikes against friendly personnel in Military Region IV. Presumably, jet aircraft killed three and wounded seven in one strike, and in another killed four and wounded nine. The latter occurred during an accidental attack on a small FAR airfield designated as a short-takeoff-and-landing (STOL) site.[68]

Investigations launched by 2d Air Division, Seventh Fleet, and embassy officials established that the December 31 mis-strike southeast of Saravane resulted from the transmission of the wrong target coordinates to the AC-47 FAC, and because the target resembled the validated one. Responsibility for the other short rounds could not be fixed immediately. Air Force and Navy flight records could not be correlated with the incidents, suggesting that reports on the day and time of the strikes, type of aircraft, coordinates, ordnance employed, and extent of damage were not entirely accurate. Other possibilities were that jet and AC-47 pilots unknowingly committed navigation errors, or engaged in unauthorized attacks.[69]

In conjunction with the investigations, Emory C. Swank, the Deputy Chief of Mission in Vientiane, and Colonel Pettigrew met on January 11 with Lao military and civil officials in Saravane, Attopeu, and Pakse, all near the villages or areas where the short rounds took place. Although the Lao officials appreciated the American aerial effort, they expressed deep concern about the safety of the populace. General Thao Ma personally asked the 2d Air Division and Seventh Fleet air commanders through Colonel Pettigrew to avoid striking villages not clearly marked as friendly.[70]

Perturbed as always by mis-strikes, Ambassador Sullivan on January 14 narrowed the STEEL TIGER operational boundary to the southernmost sector of Laos. He believed this would minimize navigational errors while keeping the most important military areas open to bombing. He looked forward to the full activation in southern Laos of a new tactical air navigation system that had been recently installed at Phou Kate south of Saravane.* This would let him cancel the temporary aerial restrictions in a vital infiltration sector.[71]

Although tactical air navigation systems in northern and southern Laos were indispensable, they could not prevent human error. On February 5, 1966, a flight of two Air Force F-4Cs, diverted from a BARREL ROLL mission, accidentally struck the town of Muong Hiem in Xiengkhouang Province in northern Laos, the headquarters of one of neutralist Brig. Gen. Kong Le's battalions. The strike killed twelve friendlies and wounded thirty-seven. Investigation disclosed that the pilots believed they were attacking moving vehicles on a road, an error

*An Army helicopter lifted the tactical air navigation system from Ubon Air Base to the Phou Kate site on January 9, 1966, and testing got under way two days later. The site was manned by USAF technicians [Msgs, AIRA Vientiane to CINCPACAF, 020800 Jan 66; 2d AD to 1st Mbl Comm Gp, Clark AB, 060911Z; AmEmb Vientiane to CINCPAC, 060545Z Jan 66; CINPAC to JCS, 110340Z Jan 66.]

attributed to the flight leader's failure to update area targeting data and to secure target confirmation.[72]

More serious politically were two mis-strikes in the panhandle on February 23. The first was committed by a flight of several Air Force F-105 Thunderchiefs about 30 miles west of the authorized western STEEL TIGER boundary in Military Region III. They attempted to crater with 750-pound bombs a segment of Route 9 within 5 miles of Muong Phalane. Shrapnel from about 10 bombs dropped by 2 Thunderchiefs demolished the command post of the FAR's *Group Mobile* 15, the same unit struck accidentally by Navy aircraft in April 1965. Surprisingly only 1 soldier was killed and several wounded, although considerable weapons, ammunition, clothing, and other materiel were destroyed. Shortly afterwards, about 10 miles northeast of the first incident, 3 more F-105s, apparently aiming at a ford across a small stream, struck near Ban Na Ka Pat village, killing a woman, injuring a boy and girl, and destroying 15 dwellings including a rice storage building.[73]

Because of the attack on the FAR command post, General Thao Ma requested and Sullivan agreed to suspend all armed reconnaissance and strikes on RLAF-validated targets in the STEEL TIGER sector except those under FAC control. On February 25 he modified the restriction, barring all flights below 18,000 feet within a 35-mile radius of Muong Phalane except for attacks on prebriefed, RLAF-validated targets. All aircraft, including those assigned to YANKEE TEAM missions, were instructed to avoid Muong Phalane by as great a distance and at the highest altitude practicable. Two RLAF fixed targets near the town were placed off limits.[74]

An investigating team that included Colonel Pettigrew and 2d Air Division and RLAF officers visited the former *Group Mobile* 15 command post. To their chagrin, they found a placard in front of a bombcasing that roughly translated read: "This material, while meant for the Communists, is being used in practice on us." The FAR command post commander and his fellow soldiers were anything but friendly. Colonel Pettigrew expressed the usual condolences and assurances that mis-strikes would not occur again. The investigators left behind an American forward air controller with a radio as insurance against another air strike in the area, to ease tensions, and rebuild confidence among the Lao troops. Efforts were undertaken quickly to make restitution to* and win the allegiance of the villagers of Ban Na Ka Pat who had recently been associated with the Pathet Lao.[75]

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*To Ambassador Sullivan's considerable irritation, making quick U.S. restitution for Laotian lives lost and property destroyed and damaged because of air strikes was a political "ball of wax." He wanted the Air Force and Navy to have authority to make solatium

Although he decried the bombing of wrong targets, General Westmoreland was highly disenchanted with Sullivan's decision truncating STEEL TIGER operations. "We cannot . . . afford to stop a major portion of our operations," he said, "while conducting an investigation." He warned that a slowdown or halt in STEEL TIGER interdiction would encourage the enemy to step up infiltration of men and supplies.[76]

Sullivan responded only partially to the MACV commander's concern. He lifted the ban against armed reconnaissance within a thirty-five-mile radius of Muong Phalane, but stipulated future air operations within the area had to be FAC-controlled. The main problem, he said, was how to persuade Souvanna Phouma and General Thao Ma that the benefits derived from armed reconnaissance in the STEEL TIGER sector outweighed the loss of life, property damage, and psychological burden of repeated attacks on friendly villages and positions. Souvanna was "at a loss to understand" why bombing errors took place after the new tactical air navigation system at Phou Kate became operational.

The ambassador further informed Westmoreland that he and other embassy personnel had "growing misgivings" about the efficacy of armed reconnaissance without forward air controllers in the STEEL TIGER area west of the TIGER HOUND boundary. A cursory review of such missions—in contrast with TIGER HOUND operations and attacks against validated fixed targets in the STEEL TIGER area—revealed that most ordnance was used for road cratering and seeding and "may have at best a marginal impact on enemy operations."[77]

There were two more short-round incidents in March. On the 2d, unidentified aircraft hit a restricted area near a small FAR airstrip (called STOL Site 48),* and on the 5th, two USAF A-1Es accidentally attack a Laotian army site while bombing along a route in the panhandle. The incident was ascribed to failure of the pilots to recognize landmarks and their belated discovery after expending ordnance that they were in a restricted area. Ambassador Sullivan quickly halted further air operations in a ten-mile radius around STOL Site 48.[78]

At this juncture, the State Department's deep concern lest the short rounds undo the entire American air program in Laos impelled U. Alexis

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payments as necessary to war victims with the Air Force serving as executive agent. But the Air Force insisted it could not do so as the war in Laos was only technically a "combat situation." In early February 1966, State finally set aside 18 million kip from counterpart funds to be administered by the Lao government for payment by provincial governors to claimants and waived auditing requirements. [Msgs, AmEmb Vientiane to SECSTATE, CINCPAC, 080500Z Feb 66; SECSTATE to AmEmb Vientiane, CINCPAC, 527, 081452Z Feb 66.]

*In the early 1960s numerous small FAR airstrips or short-takeoff-and-landing sites were numbered to assist in identification.

Johnson, Deputy Under Secretary of State for Political Affairs, to bring the problem directly to the attention of Cyrus R. Vance, Deputy Secretary of Defense. Despite strict rules of engagement and the installation of navigational aids in Laos (including the new system at Phou Kate), Johnson observed, "the number of serious incidents of air strikes on friendly and [other] targets seems to rise." "Aside from the loss of life and property," he said, "we have to consider [the] problem of loyalty of Laos military units and continued loyalty of villagers to Souvanna Phouma." While acknowledging the difficulties and risks facing pilots, State's deputy secretary nonetheless hoped Vance could find some way of "sharply reducing" the costly mistakes "so that their continuation does not jeopardize our larger interest." He solicited any suggestions or actions that might prove helpful.[79]

The joint chiefs, asked to comment on the State Department's concerns, were less alarmed. "It is a lesson of history," they informed Secretary McNamara at the end of March, "there will be some friendly casualties in an active combat area, and no feasible restrictions or rules or procedures could guarantee this." In fact they forecast more short rounds, although the short-round rate in the past 6 months showed a "substantial downward trend." The rate per 1,000 sorties had been reduced from about 5 in the first quarter of 1965 to about 0.4 at present—a 35-fold improvement.[80]

Harold Brown, Secretary of the Air Force, also requested an accounting of the air mishaps from the Air Staff. In mid-April, Gen. William H. Blanchard, Vice Chief of Staff, submitted a list of incidents blaming the Navy for nine and the Air Force for seven. The investigations disclosed, said Blanchard, that no causes could be found for seven of the ten incidents prior to November 1965 and that some alleged mis-strikes were in approved target areas. The chief cause for short rounds was misidentification of targets, followed by navigation errors (the latter were being reduced by the installation of more navigation aids). The transmission of erroneous target coordinates caused one short round.[81]

Sullivan's tightening of the air rules and the glare of high-level attention had their impact. In the ensuing weeks, they injected more caution into strike planning and operations in Laos. Mis-strikes could not be completely avoided however. The reason lay in pilots' being constantly enjoined to hit many small fixed and fleeting targets in jungle terrain under adverse weather and atmospheric conditions. In the months to come, there would be more mis-strikes followed by new restrictions.

Supportive of the tactical STEEL TIGER, CRICKET, and TIGER HOUND counterinfiltration operations in southern Laos were B-52 strikes. Because the Lao government had not been officially informed of

American intent to use the superbombers, publicity engendered by the first strike on December 12, 1965, impelled Ambassador Sullivan to cancel temporarily plans to conduct more.

By January 1966, U.S. planning to resume B-52 strikes on targets contiguous to South Vietnam's five northernmost provinces had resumed with caution. Sullivan wished to avoid official waffling with a simple "no comment" from Washington as in the wake of the strike of December 12, 1965. Unless bombing secrecy was assured, the ambassador saw no alternative but to frankly ask Souvanna Phouma's approval of B-52 operations " with . . . considerable prospect . . . [his] concurrence will be withheld." After the press flap about the December 12 bombing subsided, Sullivan was hopeful he could persuade Souvanna to accept the bombers to supplement the tactical air programs in Laos.[82]

General Westmoreland agreed and relayed to Admiral Sharp the request for "appropriate assurances" from State and Defense officials to conform with Sullivan's adamant insistence on B-52 bombing secrecy in Laos. In the days that followed, the MACV commander sent to Washington a list of proposed B-52 targets astride the Laotian-South Vietnamese border.[83]

Like tactical operations, those of SAC B-52s were far from simple, with the Air Force largely excluded from substantive decisionmaking. The superbombers had been conducting strikes in South Vietnam since June 18, 1965. Their targets were selected by MACV's Combined Intelligence Center, Vietnam (CICV), reviewed by MACV's J-2 (Intelligence) and J-3 (Operations), submitted to the MACV commander for approval, and then sent to Washington for final review by the JCS, State and Defense, and more often than not by the White House. While the target selection was under way, the ARC LIGHT section of the combat center, which included USAF personnel, determined the size of mission, train length of bombs, axis of attack, and other operational details for prospective targets recommended by ground commanders and Air Force and Army targeting analysts. However, the system bypassed 2d Air Division and Strategic Air Command as well as a five-man SAC liaison office assigned to 2d Air Division early in 1965 to schedule KC-135 refueling tankers for USAF tactical aircraft. Final approval of all SAC strikes was vested in Washington but on March 15, 1966, was given jointly to PACOM and SAC.

From the inception of B-52 operations in Laos on December 12, 1965, controls were very tight. Westmoreland and his CICV normally recommended the targets, but the ambassador and his staff exercised final target approval. The ambassador and the Joint Chiefs of Staff jointly shared final strike authority. Upon strike approval, SAC's 3d Air Division secured the concurrence of the SAC commander in chief before

dispatching the B-52s from Andersen Air Force Base, Guam, and KC-135 refueling tankers from Kadena Air Base, Okinawa. SAC bombing of North Vietnam that began on April 12 was equally sensitive, with Admiral Sharp and the JCS playing the dominant decisionmaking roles. They coordinated, of course, with the State and Defense Departments and the White House. The eventual arrival in Saigon on January 8, 1967, of a nine-man SAC advanced echelon* would not basically alter SAC's limited authority in approving targets for its own bombers.[84]

To resume B-52 bombing in January 1966, Westmoreland picked a target area bisecting the borders of Laos and Quang Nam Province in South Vietnam. The area (designated QUANG NAM 10) contained known and suspected enemy troops, supply depots, and rest areas. Sullivan recommended and the State Department approved an ARC LIGHT strike with time on target set for 0345 on January 14. Overflights of Cambodia were forbidden. Operation OCEAN WAVE was flown as planned by 24 B-52s. Each carried twenty-four 750- and twenty-seven 500-pound bombs (napalm was still prohibited in Laos), with refueling by Okinawa-based KC-135s. Four F-4C Phantoms from the 390th Tactical Fighter Squadron at Da Nang Air Base furnished combat air patrol, and 2 others stood 5-minute ground alert. Some of the bombers flew cover strikes on targets on the edge of Quang Nam Province. All aircraft returned unscathed. There were no news leaks. Strike results were unavailable, however, because the target was in a communist-controlled jungle area which precluded ground reconnaissance.[85]

In February, two more ARC LIGHT missions were flown astride the Laos-South Vietnamese border. The first (WEST STREAM) had twelve bombers strike target Quang Tri 5 situated opposite the province of the same name. A cover strike followed within the province an hour and a half later. The second mission (BACK ROAD) took place on February 27. Twenty-seven bombers attacked targets contiguous to Kontum Province. The results of the first mission were unknown, but after the second mission, MACV at once dispatched a SHINING BRASS team into the struck area. Team members found little sign of damage. The bombs had landed in only about thirty percent of the intended target area. While some craters were noted, most bombs had detonated in the trees above. In another target area, team members detected evidence of previous tactical as well as some B-52 damage.[86]

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*Assigned to Headquarters Seventh Air Force, SAC ADVON absorbed the initial five-man SAC liaison office. The SAC ADVON's principal task was to provide technical advice on B-52 bombing and KC-135 refueling tanker operations. [Hist, SAC, Jul-Dec 66, I, 183.]

The Guam-based B-52s in March flew five missions against enemy concentrations near the South Vietnamese border. Three consisted of twelve aircraft each, and two of fifteen aircraft each. As with most other strikes, there was no ground followup, and the results of the attacks could not be assessed. Nevertheless, Westmoreland and other MACV officials again assumed that the missions contributed to the U.S., RVNAF, and allied military effort against the VC/DRV units in the neighboring South Vietnamese provinces.[87]

The fact that SAC bombings in Laos had elicited little publicity encouraged Westmoreland, at a conference of Sullivan and military commanders at Udorn on March 8, to recommend a B-52 assault on both sides of Mu Gia Pass on the Laos-North Vietnamese border above the 17th parallel. He said that about 75 percent of all truck traffic into Laos rolled through Mu Gia, and Air Force and Navy tactical air strikes had been unable to reduce it. The DRV was energetically defending the pass, having emplaced close to 300 antiaircraft sites in the area. Finally, U.S. intelligence indicated that the Soviets were about to unload truck-mounted 140-mm rocket launchers for the first time from their ships in Haiphong harbor. Boasting a range of 4 to 5 miles, these weapons were undoubtedly destined for South Vietnam and in all likelihood would be transported through the Mu Gia Pass. If the launchers reached the enemy in the South, they would pose a new threat to American bases.[88]

In response to Westmoreland's proposal Maj. Gen. William J. Crum, the 3d Air Division Commander, soon sent to the MACV commander a plan for conducting a series of B-52 strikes on road segments on both sides of the pass. Noting the inability of tactical aircraft ordnance to prevent DRV and Lao road crews from making repairs or creating bypasses in a few hours after an attack, the plan proposed using the B-52s to drop large numbers of variable fuzed bombs at irregular intervals. The location of the road segments would permit bombing by MSQ-77 radar.[89]

Westmoreland found General Crum's plan satisfactory, but securing the approval of Ambassador Sullivan and Washington officials to strike the North Vietnamese as well as the Laotian side of the pass was another matter. In the coming week the MACV commander explored his proposal further with Admiral Sharp, SAC Commander Gen. Joseph J. Nazzaro, and General Wheeler. Sharp strongly backed the proposed bombings. Observing that MACV had reported at least 800 enemy trucks in February moving through the pass, he was convinced that a B-52 attack on the North's Route 15 leading to Mu Gia would cause heavy landslides and block traffic. He further believed that 4 near-simultaneous attacks on targets near South Vietnam's Quang Tri Province would

afford sufficient "cover" for bombing the routes on the Laotian side of the pass. Wheeler, after conferring with high administration officials, obtained tentative approval for the dual assault but noted 2 troubling problems. One was domestic and international opinion that would likely construe the first ARC LIGHT bombing of North Vietnam as an escalation of the war. The other was uncertainty whether the attack on the Laotian routes, about 75 miles above the demilitarized zone, could be kept secret despite cover strikes somewhat farther south.[90]

Ambassador Sullivan doubted if Sharp's suggested cover strikes for the Laotian routes would prove credible. More important, he noted that Souvanna Phouma was still in the dark about ARC LIGHT operations in Laos near the South Vietnamese border. The ambassador informed Washington that in this instance the prime minister should be consulted. Although his response could not be predicted, it could possibly be adduced from his position on the evening of March 30 when he "reacted negatively" to a suggestion that B-52s should be used in defense of Attopeu in the Laos panhandle.[91]

Wishing to accede to Westmoreland's urgent request for saturation bombing of Mu Gia Pass, high administration authorities decided to "let sleeping dogs lie" and not consult Souvanna Phouma (he would not be informed of ARC LIGHT operations in Laos until September 1966).* And, at the ambassador's insistence, the strikes would be limited only to targets on North Vietnam's side of the pass. On April 8, the JCS dispatched an ARC LIGHT execution message to Admiral Sharp and General Nazzaro, although the bombing did not occur until four days later.[92]

Thus, on April 12, under the program ROCK KICK II, the ARC LIGHT bombers flew their first mission against the pass in North Vietnam. A total of 30 bombers and 30 KC-135 refueling tankers—the latter had been weathered out on their home base on Okinawa—took off from Andersen Air Force Base, Guam. Each bomber carried twenty-four 1,000-pound bombs internally and twenty-four 750-pound bombs externally. All bombs were set for subsurface burst except thirty 1,000-pounders affixed with long-delay fuzes. Upon reaching their targets, 29 bombers (1 bomber's radar malfunctioned) released their ordnance from 35,000 to 37,000 feet over DRV territory on both sides of the pass. The ARC LIGHTERS carpeted a 3-mile segment of Route 15.[93]

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*As indicated earlier, with the exception of the first B-52 assault in Laos on December 12, 1965, later ARC LIGHT sorties in the country were officially added to those flown in South Vietnam. Separate ARC LIGHT sortie reporting for Laos did not begin until January 1967. [USAF Management Summary Southeast Asia, Jan 7, 1967, p 24, and Feb 3, 1967, p 40.]

American newsmen, citing official briefings in Saigon, characterized the attack as the biggest single bombing mission of the Indochina war and the largest since World War II. Observing this was the first use of the superbombers in the North, newsmen predicted more strikes. A few, quoting "usually reliable sources," reported that the superbombers had hit the Laotian side of Mu Gia Pass. In this instance the sources, unaware that a closely held decision was made not to bomb Laos territory opposite the pass at this time, were unreliable.[94]

Saigon press spokesmen publicly claimed the raid was a "marked success," having caused huge landslides leading to the pass. Barely twenty-four hours after the attack, however, visual and photo reconnaissance confirmed the communists were again shuttling traffic through the historic gateway into Laos. On the 17th, upon receiving reports of more traffic sightings, Westmoreland asked higher authorities to permit Air Force and Navy tactical attacks immediately following the next ARC LIGHT assault. To assure accuracy, he recommended using the Air Force's B-66/F-105 "buddy-bombing" technique developed over North Vietnam. Admiral Sharp and Ambassador Sullivan supported the request, the latter noting reports of another step-up in DRV infiltration through the emplacement of more antiaircraft weapons in the Mu Gia Pass area.* The antiaircraft threat was underscored on April 19 when enemy gunners near the pass shot down two more American fighters.

General Crum in Guam also wanted another crack at the infiltration target. Because of a blurred radar image induced by the accident of terrain, ROCK KICK II had been marred somewhat by bombing inaccuracies. Crum assured Westmoreland the SAC pilots would do better on a second try. Even the slight off-target bombing on the first mission had left road slides and some temporarily trapped trucks vulnerable to follow-on tactical aircraft.

Washington wished to defer sanctioning immediately a second ARC LIGHT attack until the outcome of ROCK KICK II could be properly evaluated. But on April 20, Westmoreland recommended shelving further study of ROCK KICK II, because current Air Force and Navy tactical attacks on Mu Gia Pass had obscured its results. With some reluctance, Washington agreed and finally approved another ARC LIGHT strike for April 27.[95]

This second B-52 operation against the pass went more smoothly than the first. SAC crewmen possessed better targeting data, the

*By the spring of 1966, there were 300 antiaircraft sites in and around Mu Gia Pass. [*PACOM Weekly Intelligence Digest* 38-65, Sep 17, 1966, p 13; msg, COMUSMACV to AmEmb Vientiane, 100009Z Jun 66.]

operational aiming points were more easily identified, and all aircraft delivered their ordnance as planned. Westmoreland sent SAC personnel a congratulatory message. The only untoward incident occurred when two SA-2 missiles launched from a site not far from the pass scored a hit on a USAF tactical escort but did not down the plane.[96]

Poststrike aerial photography showed thirty-two craters along North Vietnam's Route 15 near the pass. But commanders were chagrined to note that after a lapse of only eighteen hours, all of the craters were filled and enemy trucks were again able to use the road into Laos.[97]

To Westmoreland the rapidity with which the communists reopened the pass signaled the importance they attached to this traffic artery and fully justified further U.S. bombing to keep it closed. He urged a new series of B-52 bombings on both sides of the Mu Gia entry point. These would be followed quickly by tactical attacks on backup traffic and road crews and by airdrops of leaflets warning road-repair gangs of the danger in continuing their labors. With the annual southwest monsoon approaching, the MACV commander believed the pass should be struck frequently while weather permitted. Then heavy rains would fill bomb craters and frustrate truck travel.[98]

Sullivan and Sharp, however, now interposed objections against further ARC LIGHT strikes on the pass. Sullivan fretted about the danger of publicity in striking the Laos side of Route 15 and whether he should consult Souvanna Phouma. He questioned the efficacy of the B-52s, their waste of scarce munitions on not very lucrative targets that could be readily struck by FAC-controlled tactical aircraft, the safety of a roadwatch team near one of several newly proposed targets, and the accuracy of the bombers. He noted that on the night of April 25/26 along the Laos-South Vietnam border, B-52s had bombed through a Navy mission apparently working over an identical target.[99]

Sullivan's denigration of ARC LIGHT effectiveness raised the hackles of military officials. Vice Adm. Lloyd M. Mustin of the JCS relayed the ambassador's dispatch to USAF Lt. Gen. Paul S. Emrick, PACOM's Planning Chief, asserting that it "gives you a rough idea of how the amateur field marshal is doing." Westmoreland took personal umbrage, finding Sullivan's views "disturbing" by their "inference on judgment, decisions, and execution of military operations" concerning the B-52s, and were "obviously" based on inaccurate assumptions and misinformation. He stoutly defended his proposal to unleash the superbombers again on Mu Gia, insisting among other things they would come no closer than four miles to the nearest roadwatch team. He noted SAC bombers occasionally had bombed safely within one mile of friendly huts and villages and within two miles of friendly maneuvering troops.[100]

Admiral Sharp opposed further B-52 bombings of Mu Gia Pass for three reasons: their cost, especially in the use of ordnance now in short supply; their demonstrated ineffectiveness in cratering roads and blocking traffic; and their vulnerability to SA-2 missiles apparently now being installed in the vicinity of the pass. Clarifying his second objection, he said that by traveling only ten miles-per-hour at night, the DRV could readily send through Mu Gia an average of fifty trucks with one hundred tons of supplies to and from distant points in minimum time. As for the missile threat, the PACOM commander observed that available tactical aircraft were unable to give B-52 pilots adequate warning of an SA-2 firing, thus leaving the superbombers, which had limited maneuvering capability, without adequate protection. The major success in countering the SA-2 missiles to date in North Vietnam, he said, had not been the result of finding and destroying them on the ground nor because of electronic jamming. Rather, it was due to the defensive tactics of tactical aircraft who were able to "evade missiles either as a result of ELINT [electronic intelligence] warning or alert eye-ball vigilance." Further, Sharp believed that the primary B-52 mission should consist of finding and destroying war-making materials, not blocking routes.[101]

Westmoreland remained unpersuaded. In the following weeks he and Sharp remained locked in a verbal battle over the issue. The MACV commander marshaled various arguments for resuming the bombing of Mu Gia Pass. Among them was the rising number of enemy personnel in Laos, South Vietnam, and Cambodia, and thus the need to attack before the heaviest monsoon rains began in June. He believed the bombers could avoid SA-2 missile radars if they flew to their targets at low altitude, taking advantage of terrain shielding.[102]

Considering low-level B-52 missions out of the question because of the enemy's heavy antiaircraft concentrations in the target areas, Admiral Sharp reaffirmed his objections against employing the bombers for road cratering. Ambassador Sullivan adhered to his earlier view that cover strikes for ARC LIGHT bombing of Laotian routes so far above the demilitarized zone could not be concealed indefinitely. Hence Souvanna Phouma should be consulted if the routes were to be rebombed. Persuaded by Sharp's arguments and still disinclined to discuss ARC LIGHT bombing with the prime minister, Washington authorities refused to accede to Westmoreland's request. Mu Gia Pass would not be struck again by the bombers until December 12, 1966.[103]

Meanwhile, no major debate arose over continuing the unpublicized B-52 strikes on communist troop bivouacs, rest areas, truck parks, road-construction and supply sites, and other targets opposite the 5 northernmost South Vietnamese provinces. For the first 6 months of 1966, the ARC LIGHT bombers flew 406 sorties in Laos, mainly in April

through June. An average mission consisted of 9 to 12 aircraft, sometimes as many as 18. The tropical terrain as usual prevented most strike damage assessment, but some prisoner-of-war reports suggested the heavy bombings hurt enemy morale. Since these operations were covered by near-simultaneous strikes on targets just inside the South Vietnamese border, they drew little attention from the news media. Secrecy within the services was kept by adding the ARC LIGHT Laotian sorties to those flown within South Vietnam.[104]

Ambassador Sullivan and his staff continued their close oversight of the B-52 operations in Laos, often nonconcurring in Westmoreland's strike requests. Between May 27 and July 5, for example, the ambassador vetoed for various reasons 25 proposed ARC LIGHT missions totaling 216 sorties. In most instances, the targets were too far (9 to 25 miles) from the South Vietnamese border, too close to population centers or tribal roadwatch teams, or of doubtful validity. That Washington authorities upheld Sullivan's objections irritated Westmoreland. He believed that the B-52 requirements in Laos were overriding, and the arguments for disregarding them were invalid or unimportant. The disagreement over the use of the bombers intensified in the succeeding months.[105]

In addition to their frustrations over tactical and B-52 restraints on attacking enemy infiltration in Laos, air commanders were deeply concerned about dwindling supplies of certain types of ordnance and fuzes. The problem was theater wide.

The most compelling need was for area-denial ordnance. A short-term remedy, widely employed, was to use time-delay fuzes on available ordnance, but there was a fuze shortage. New types of area-denial ordnance, such as antipersonnel mines (nicknamed DRAGONTOOTH and GRAVEL) were months away from mass production.*[106]

Interdiction was also hampered by a shortfall of CBU-2s and 500- and 750-pound bombs. The huge B-52s in particular had a voracious appetite for the 750-pounders. Other reasons were the late arrival of munitions and the civil strife at Da Nang in the spring of 1966 that delayed unloading of a ship with vital ordnance supplies. Air Force planes were called upon to redistribute munitions.[107]

The impact of the ordnance shortage was manifested in various ways. The 2d Air Division† believed strike effectiveness was reduced whenever pilots could not select "optimum" bombs for particular targets. In early February, Admiral Sharp, whose headquarters was

*For a discussion of DRAGONTOOTH and GRAVEL mines, see Chapter IX.
†This unit would be replaced by Seventh Air Force on April 1, 1966.

studying the problem, set new tentative sortie levels for B-52 and tactical aircraft based on existing ordnance inventories and expected shipments. He restricted the monthly B-52 sortie level in South Vietnam and Laos to 400 through March 30; 450 through June 30; and 600 for the remainder of the year. He limited tactical attack sorties to a maximum of 3,000 a month for the BARREL ROLL, STEEL TIGER, CRICKET, and TIGER HOUND operations. However, he authorized General Westmoreland to divert more sorties from South Vietnam to the TIGER HOUND program if new suitable targets were found. The RLAF's ordnance use was also drawn down. Early in the year Ambassador Sullivan requested 5,000 more 500-pound general purpose bombs for the RLAF, but when allocated only 2,800, he had to ration the available supply.[108]

Generals Moore and Westmoreland agreed by April 1966 that the air ordnance shortage created an "emergency situation." The MACV commander informed Deputy Secretary Vance, who visited Saigon later in the same month, that the services had only 73 percent of the bombs and 33 percent of the CBU-2 munitions needed to carry on the separate air wars in Laos and South and North Vietnam. Westmoreland stressed that from April 4 through 7 the munitions pinch forced the Air Force to cancel or not schedule 233 tactical sorties, and on April 8 to withhold scheduling 134 sorties.[109]

Remedial actions were under way, however. More redistribution of bombs took place during April and May with PACFLT sharing its more ample supplies with PACAF. The administration purchased previously U.S.-sold iron bombs from Germany and shipped bombs from other American bases directly to the war theater. An Office of the Secretary of Defense/Joint Chiefs of Staff team was dispatched by McNamara to Honolulu and Saigon to work out with PACOM and MACV staffs an air sortie and munition expenditure schedule. On May 24, McNamara approved a tentative combat sortie allocation program for Laos and North Vietnam for the last 7 months of the year. Monthly sortie totals (USAF, Navy, Marines, and VNAF) would rise from 28,055 in June to 33,337 in December 1966. Service aircraft were assigned temporarily an average load of roughly 1.66 tons of ordnance per sortie using preferred ammunition. The Defense secretary questioned whether the services could expend profitably more than 60,000 tons of air ordnance per month on targets in Laos and North Vietnam. Admiral Sharp likewise believed the services often used more ordnance than targets warranted, especially in Laos.*[110]

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*Admiral Sharp had expressed such views in 1965 and was probably further influenced by the tentative conclusions of the CINCPAC Scientific Advisory Group working paper

Study of the above and related problems went on in subsequent weeks, culminating in another OSD/JCS/PACOM conference at Honolulu during July 1966 on ordnance expenditures and air sortie rates. Supported by Admiral Sharp, McNamara vetoed a proposal by Gen. John P. McConnell and the other service chiefs to allow aircraft to carry full (i.e., optimum) loads for all sorties to assure best use of aircraft. Instead, the Defense secretary in effect redefined optimum loads as meaning loads based solely on mission and target requirements. He opposed both the common practice of maximum ordnance-loading of aircraft because of their size, and light-loading them to achieve higher sortie rates.* Using this and other guidance, OSD/JCS/PACOM planners worked out a revised ordnance expenditure and air sortie rate formula for the remainder of 1966, subject to changing circumstances.[111]

From their Washington vantage points, neither McNamara nor McConnell considered the ordnance shortage as critical as did the field commanders. The Defense secretary, believing the problem was partly production but chiefly maldistribution, took steps to remedy both. General McConnell offered his assessment of the ordnance shortage before a Senate subcommittee on May 9: "In my opinion," he said, "[military commanders] did not need to cancel any sorties if they had been more diligent about what they were doing and had shown a little more imagination." They were short of certain types of bombs and bomb components on a couple of bases and "stood down" or canceled only 470 out of a possible theater-wide 29,000 combat sorties. Thus the situation did not amount to anything "except . . . a lot of excitement" that could have been remedied by better munitions management.[112]

Field commanders and pilots nonetheless found the lack of many types of bombs and bomb components severely frustrating, whether due to real shortages or maldistribution. The problem was one more encumbrance to air operations, chiefly in Laos but also in North and South Vietnam, against an elusive and determined foe who infiltrated

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issued in January 1966 that stated in part: "For all the programs in Laos, the point of diminishing returns appears to have been passed—that is—that the rate these programs are producing militarily significant results is increasing at a lesser rate than the sortie effort. It's not implied . . . more sorties will not produce increased results; rather that a large sortie increase is likely to produce a relatively small increase in results." [Ltr, Col Philip Brooks, Dir/Tac Eval Cen, Seventh Air Force, to CINCPAC, subj: CINCPAC Scientific Advisory Group Working Paper, Feb 7, 1966, Atch 1.]

*While not acknowledged, Air Force and Navy commanders were locked in a "sortie race," particularly in the ROLLING THUNDER program over North Vietnam, with each service claiming it was flying more than half of the sorties over the North. [Msg, Harold Brown, SAF, to Cyrus R. Vance, DEPSECDEF, n.d. [*ca.* Nov 66], subj: Answers to Deputy Secretary Vance's Questions Concerning the Hise Report (Nov 66).]

men and supplies into South Vietnam without abatement. By the end of May 1966 there were signs of improvement, although a shortage of bomb components persisted, mainly for USAF operations. By September 1966, shipments of ordnance to Southeast Asia were up twenty-four percent as against a rise of just two percent in ordnance expenditures. Most of the "excitement" over the ordnance problem had ended by then, but the shortfall of certain critical bomb components was not overcome for many more months.[113]

Concurrently with the "flap" over the insufficiency—or maldistribution—of ordnance in the first half of 1966, another long-simmering ordnance problem affecting air operations in Laos was quietly settled. This was the use of napalm. Except for extreme military emergencies, such as extricating FAR troops from a battle or to ensure the success of a search and rescue mission, Prime Minister Souvanna Phouma had opposed the use of napalm in Laos since the early 1960s. Ambassador Sullivan and Washington authorities upheld his wishes.*

Field commanders and the JCS, the latter as recently as January 1966, had without success urged higher authorities to persuade the Laos government to rescind its ban on the use of napalm. Finally, after Generals Moore and Westmoreland made another spirited request to use napalm as an anti-infiltration weapon, Ambassador Sullivan asked Washington in March 1966 to review its ordnance policy. He said that General Moore had proposed delivering napalm solely by FAC-controlled strike aircraft in the STEEL TIGER area against enemy targets and had assured him that villages and friendly areas would not be struck. Sullivan said that General Thao Ma, the RLAF Commander, also desired to make napalm available to his T-28 pilots.[114]

Defense and State officials reviewed ordnance policy and eventually agreed to authorize napalm if Souvanna Phouma had no objection. Sullivan shortly persuaded the prime minister to withdraw his long-standing opposition to its use. Souvanna stipulated that napalm should be used principally against enemy trucks. Following strict Washington guidelines, Air Force and Navy pilots flew their first napalm mission in Laos during the closing hours of March. They attacked RLAF-validated targets in the STEEL TIGER sector. In early April, Washington officials obtained clarification of Souvanna's views. They then authorized napalm

*Washington's basic napalm instruction, issued on July 23, 1964, stated in part that it was the ambassador's policy "to prohibit use of napalm without prior authority from [State Department] except in a situation which you consider to be an emergency or a situation in which particular offensive or defensive military action already undertaken would otherwise fail. Souvanna's concurrence of course continues to be required." [Msg, AmEmb Vientiane to SECSTATE, 140347Z Mar 66.]

attacks "on those targets of opportunity defined in the rules of engagement located by CRICKET, SPOOKY, and TIGER HOUND FACs [i.e., by USAF-piloted O-1s and AC-47s] which are jointly approved by [the] Ambassador and RLG authority." Besides RLAF-validated targets and "motorized vehicles," the targets included automatic weapons and antiaircraft positions that fired on U.S. aircraft. But several weeks elapsed before Souvanna permitted General Thao Ma's RLAF pilots to use napalm.[115]

Thus another long-imposed restriction on air operations in Laos in general and against infiltration in particular was rescinded.* Though U.S. air commanders were convinced they could do a better job with an "optimum" ordnance such as napalm, its use in the following weeks and months seemed to have little if any discernible impact on reducing the movement of DRV manpower and supplies down the Ho Chi Minh Trail.

Despite inadequate ordnance, stringent B-52 and tactical air restrictions, and other problems, there was little doubt the separate Laotian air programs were making Hanoi pay a "price" for its infiltration through Laos. But was the air impact significant? As noted earlier, some commanders were convinced it was. On the other hand, there was considerable evidence the DRV was having little difficulty in keeping its lines of communication open.†

One significant development was the DRV's rapid extension of its road and trail network. Under way since the early 1960s, Hanoi was now diverting much more materiel and manpower to this effort. In the first quarter of 1966, PACAF intelligence believed the DRV had added about 110 miles of new or improved roads to sustain truck traffic. In March and April, the MACV commander warned Ambassador Sullivan the communists would make maximum use of the Laotian lines of communication for the rest of the dry season (roughly to mid-May) and use the coming monsoon season for stockpiling materiel for later movement through Laos into South Vietnam.[116]

By the end of June, the Defense Intelligence Agency credited the DRV with having about 600 statute miles of truck-sustaining roads in the infiltration corridor. At least 200 miles of roads were believed sufficiently well built to support year-round truck operations. Road durability was constantly improved as DRV engineering units used crushed rock and log

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*See Anthony, "A Military History of the War in Northern Laos, 1945-1968," Chap IX.

†For a detailed analysis of DRV infiltration tactics see Weiner, Brom, and Koon, *Infiltration of Personnel from North Vietnam, 1959-1967.*

corduroy surfacing on many road segments, particularly along Routes 23, 92, and 911.[117]

It was far harder, however, to find out the number of trucks used by the DRV along the rapidly expanding road net in southern Laos. In early June 1966, CINCPAC informed the JCS that a special intelligence study showed the DRV had about 1,200, half of them operational, in southern North Vietnam between 19° 30′ north latitude and the demilitarized zone. Reports from roadwatch teams in Laos suggested the communists owned more than 600 trucks with 400 plying the routes in the southern panhandle. Of the latter, it appeared only 200 were operational at any one time. Admiral Sharp said these figures constituted "the best estimate from available evidence." He made no effort to square these numbers with recent service claims that "hundreds" of trucks had been destroyed and damaged in the STEEL TIGER, CRICKET, and TIGER HOUND air programs.[118]

Eventually, U.S. intelligence learned that the movement of DRV trucks, personnel, and other transportation-related activities along the Ho Chi Minh Trail was controlled by the 559th Transporation Division of the Rear Services Directorate of Hanoi's Ministry of Defense. The 559th's responsibilities were all-encompassing. It set up a system of vehicular waystations, truck parks, repair points, and shelter areas, and a chain of liaison stations, guides, food and distribution activities, and communications. It built new roads and trails and repaired old ones. Finally, it furnished security for the overall transportation system.[119]

Inasmuch as the DRV's trucks hauled the bulk of war materiel from North to South Vietnam, it was apparent that the 559th's major task was to keep them moving along improved and lengthened roads, and safe from air strikes. By mid-1966 there had emerged from prisoner-of-war interrogations and other intelligence sources a fairly clear picture of how this was done. Most truck convoys were quite small, and each truck usually had two drivers to alleviate fatigue and assure convoy security. During truck stops, drivers parked their vehicles in groups of three or four. If aircraft approached, antiair monitors by special signals halted at once all vehicles, or the drivers darted into any available alternate route away from the main one. Drivers often waited up to an hour after the last aircraft departed before resuming their journey. The air attacks appeared to slow truck movements, especially in Laos where the average truck speed was placed at five to eight miles-per-hour versus nine to twelve miles-per-hour in southern North Vietnam.[120]

At water crossings, trucks were ferried by a priority system, often from one nearby truck park to another. Most trucks were painted green or used green tarpaulins to better escape air detection. Many of them were garnished with foliage and other vegetation to break the outline of

the vehicle and reduce the chances of being seen. Truckstops and transfer points were often three miles off a main road.[121]

New radio-equipped "Polish Star 66" trucks arrived in North Vietnam in late 1965 and were first spotted on the roads in southern Laos during March 1966. Radios in truck convoys speeded warnings of an air attack and gave drivers more time to seek cover.[122]

Even though trucks transported most supplies by 1966, MACV's intelligence sources often reported supply movements by bicycles, oxcarts, riverboats, and human porters. Porters were best for short hauls when weather or bomb damage temporarily halted truck travel. Nontruck means nevertheless accounted for the movement of a very small percentage of war materiel. A RAND* study calculated that a truck could carry 20 times more than an oxcart, 100 times more than a bicycle, and 300 times more than a porter.[123]

As for infiltrating NVA personnel, they traveled mostly on foot and entirely by day along the many jungle-covered trails through Laos into South Vietnam. Moving at 1 to 3 miles an hour, they stopped to eat and rest at numerous "commo-liaison" stations along the way. The average unit was a battalion traveling by companies. Each company had a guide and sometimes runners out front of the march. Spacing on the trail varied but around 100 yards between companies was often the rule. Strict discipline prevailed. Personnel were forbidden to talk about their travel or location with those they met on the trail, or with the wounded moving northward. They were warned to avoid unnecessary noise and leaving litter. If aircraft appeared they stood still, lay down, or moved off the trail. They did not fire at aircraft.[124]

To conceal their truck and personnel movements, the North Vietnamese were expert at camouflaging their routes and trails. Their trellis construction was very extensive. Binding tops of trees together, they covered their truck, supply, and other installations. Any damaged jungle cover for trails was replaced with new foliage. Foliage was also scattered along well-worn tracks and paths that might be detected from the air.[125]

The deceptive practices of the enemy were numerous. To cross rivers and streams they used floatable spans (hidden by day) or underwater bridges. Communication workers strung telephone wires on five-foot poles along trail segments, the poles' short length creating a shadow too small to be seen from the air. After a strike, trail personnel often threw gasoline-soaked rags along the side of roads to make attacking pilots believe they had destroyed or damaged several trucks.[126]

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*Research and Development (The RAND Corporation, Santa Monica, Calif.)

Where possible, the North Vietnamese hid their supplies in caves, some large enough for trucks to enter, park, and turn around after unloading. In some areas along the trail they removed Pathet Lao troops and civilians to enhance route security.[127]

To maintain and improve their logistic routes in North Vietnam, DRV personnel relied heavily on sympathetic communist countries. For example, they used East German pontoon bridges, Soviet steel beams, and Chinese bridge-building materials. These and other resources eased the construction of underwater bridges across streams and relieved the use of ferries at key river transportation points.[128]

By 1966 the foe had also assembled a sizable engineering and labor force along the Laotian road and trail system. The U.S. on May 1 estimated there were throughout Laos 39 NVA engineering battalions and 24,800 laborers. About 16,000 laborers were assigned to maintaining the trail. This figure omitted villagers impressed into the work force. Some engineering battalions had only North Vietnamese personnel, others included Laotians. Buildings for housing workers and for construction and other supplies were widely dispersed.

Much road and trail work was done by simple tools such as shovels, hoes, and axes. But by mid-1966 there was evidence that the engineering force had on hand more heavy equipment such as bulldozers and graders. Road repair was done chiefly at night. Repair crews worked energetically after an air strike and often could reopen a road to traffic in a matter of hours. One roadwatch team located south of Mu Gia Pass reported that road and trail workers needed few outside food supplies. There was plenty of game and even in the dry season an abundance of rainfall for growing food.[129]

Protecting the trail from attack by the expanding STEEL TIGER, CRICKET, and TIGER HOUND air programs was a growing array of defense sites. The largest concentration was in and south of Mu Gia Pass. PACAF in early April 1966 listed 32 occupied antiaircraft sites and 54 automatic-weapons ones. The former contained forty-eight 37-mm (and possibly some 57-mm) guns, the latter an undetermined number of 7.62-, 12.7-, and 14.5-mm weapons. In early June the Seventh Air Force pushed the antiaircraft estimate upward to 302 sites. The second largest concentration was in the vicinity of Tchepone where 14 occupied sites held twenty-seven 37-mm guns and 21 automatic weapons. Some recently arrived 37-mm guns were emplaced in both new and formerly unoccupied sites. A third well-protected area was south of the Nape Pass where the NVA had emplaced an undetermined number of antiaircraft guns and automatic weapons. Two other important antiaircraft and automatic-weapons sites were situated in the Plain of Jars and Samneua regions in northern Laos.[130]

Compared with North Vietnam, the enemy defenses along the Ho Chi Minh Trail were relatively light. They were nonetheless lethal and by mid-1966 had downed many Air Force, Navy, Marine Corps, and Army aircraft. They had driven the AC-47 gunships out of the CRICKET program and made O-1 FAC operations in the CRICKET and TIGER HOUND programs increasingly hazardous.

The energetic North Vietnamese took full advantage of the jungle terrain, weather, and night, camouflaged many roads and trails, kept careful convoy control, and used other techniques. They not only minimized their air strike losses but accelerated the flow of personnel and supplies into South Vietnam during the first half of 1966. In late April, Brig. Gen. Joseph A. McChristian, USA, MACV Intelligence Chief, revised the infiltration rate from 6,000 to 7,000 men per month for the first quarter of the year. He observed that this was the equivalent of 11 1/2 battalions. He predicted that the communist force would contain 140 battalions by mid-1966 and 159 battalions by the end of March 1967, figuring in Viet Cong locally recruited as well as losses. Alarmed by the enemy's manpower buildup, General Westmoreland warned Ambassador Sullivan that the 3 and possibly 5 regimental formations in Quang Tri and Thua Thien Provinces posed "an immediate threat" to the security of the area.[131]

Determining the extent of DRV supplies entering South Vietnam was far harder. General McChristian believed the enemy could move 308 tons of supplies a day, with 269 tons transiting the trail, 25 tons through Cambodia, and 14 tons by sea. Assuming the VC/NVA fought an important battle 1 day in 7, these supplies seemed sufficient to sustain 140 battalions. McChristian assumed (wrongly, events would show) that the DRV could not support a force of 159 battalions, for at that level personnel and logistic losses would surpass input. The intelligence chief ascribed Hanoi's accelerated infiltration to its need to maintain "strategic mobility" in the face of a larger buildup of U.S., RVNAF, and allied forces in South Vietnam, and to assure a military and psychological victory. He was sure Hanoi thought a drawn-out war of attrition would add to America's war weariness and willingness to negotiate on more favorable terms.[132]

McChristian was not at all sanguine about halting enemy use of and infiltration through Cambodia, if and when Washington authorities lifted the ban on interdicting that country's lines of communication and other targets. He cited Cambodia's 460 miles of delta coastline and its numerous rivers and canals on which extensive commerce flowed towards South Vietnam. Moreover, the local populace appeared passively to accept the presence of North Vietnamese in the border areas. Therefore, North Vietnam's present 35-ton-per-day logistic flow through the country

would no doubt rise. He believed the United States could do little to curb the enemy's Cambodian activities in support of the insurgency in South Vietnam.[133]

Chapter VI

Further Increase in Enemy Strength and Additional Air Programs July-December 1966

By July 1966, the military situation had not basically altered. There was no sign that the evolving air and air-ground anti-infiltration programs had weakened communist forces in South Vietnam. In fact the latest special national intelligence estimate showed that the influx of enemy manpower and supplies into South Vietnam was still exceeding losses. Deeply concerned, American air and ground commanders devised new anti-infiltration programs and expanded several already under way.

A shift in enemy infiltration from southeastern Laos eastward towards the demilitarized zone and southern North Vietnam into the South's I Corps impelled MACV and the Seventh Air Force to commence on July 20 a TALLY HO air campaign. Manpower, aircraft, and command-and-control resources of the Seventh Air Force's TIGER HOUND Task Force were enlisted for this program. In October the two commands launched a SLAM air-ground operation that witnessed the use of more SHINING BRASS units with supporting U.S. and RLAF tactical and SAC B-52 strikes against enemy concentrations farther west into the Ho Chi Minh Trail opposite the south's I Corps. Concurrently, CRICKET and other air operations in the STEEL TIGER sector were stepped up. Under prodding by the Seventh Air Force, MACV, and PACOM commanders, the Vientiane embassy and Washington relaxed somewhat the air rules in Laos.

Although the services remained doggedly optimistic about the anti-infiltration programs in Laos and the war's progress in general, resiliency of VC/NVA forces in South Vietnam—despite frequent and heavy losses—was indisputable. The size of combat units and the intensity with which they fought pitched battles—when they chose to fight—increased rather than diminished. As a consequence, the United States continued to deploy more air, ground, and navy units into the country to support the embattled South Vietnamese services. After months of debate, Washington permitted Air Force and Navy aircraft

from the end of June through July to attack the major petroleum, oil, and lubricants (POL) storage facilities in North Vietnam. The aim was to inflict more "pain" on the country and persuade its leaders to reduce infiltration and negotiate an end to the war.

Despite the POL strikes and repeated interdiction of the North's routes elsewhere in North Vietnam and Laos, Hanoi signaled no change in its infiltration activities or military policy. At the end of July, an intelligence report indicated that the DRV appeared to believe "that its transportation system will be able to withstand increased air attacks and . . . maintain an adequate flow of men and supplies to the South." This judgment would not be seriously challenged in the months to come.[1]

The magnitude of the DRV's infiltration shift eastward and along the southern portion of North Vietnam's Route Package I was not fully appreciated until July 12, 1966, when General Westmoreland and the RVNAF chief of staff visited South Vietnam's I Corps. There they reviewed intelligence on the enemy threat with Gen. Hoang Xuan Lam, the I Corps Commander, and Lt. Gen. Lewis W. Walt, USMC, Commander of the III Marine Amphibious Force (MAF) at Da Nang. All agreed there was "ample evidence" that major units of the NVA's 324B Division, composed of 8,000 to 10,000 men, had crossed the western and central sectors of the demilitarized zone. These units were now in Quang Tri Province and threatening Thua Thien Province. Nearby in the vicinity of Tchepone, Laos, was an additional sizable enemy force encompassing 6 battalions, 2 regiments, and many supply redoubts. Despite the poor weather in the area, it seemed this force stood ready to reinforce the 324th B Division.[2]

Westmoreland attributed the DRV's decision to enter the South through the demilitarized zone to the current southwest monsoon weather in Laos and the "successful TIGER HOUND program" launched in December 1965. Though recently doubtful of TIGER HOUND'S value,* he now thought the program had disrupted truck and other enemy movements along routes and trails in the southeasternmost part of the country.[3]

However, the MACV commander believed the new enemy threat needed a modified TIGER HOUND program. With his staff he devised a new concept (TALLY HO) and asked Lt. Gen. William W. Momyer, the new Seventh Air Force Commander,† for an operational plan. Momyer's staff quickly prepared one and briefed Westmoreland on July 19. The

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*See Chapter V.

†General Momyer succeeded General Moore as Seventh Air Force commander on July 1, 1966.

plan called for using the TIGER HOUND Task Force, its USAF and Marine Corps air units based in South Vietnam and, if available, U.S. Navy and VNAF aircraft. The principal interdiction area would be the southernmost sector of Route Package I in North Vietnam between the demilitarized zone and a point about thirty miles north at the Dai Giang River, just below Dong Hoi. It was a more constricted boundary than drawn for the short-lived and recently terminated GATE GUARD program.

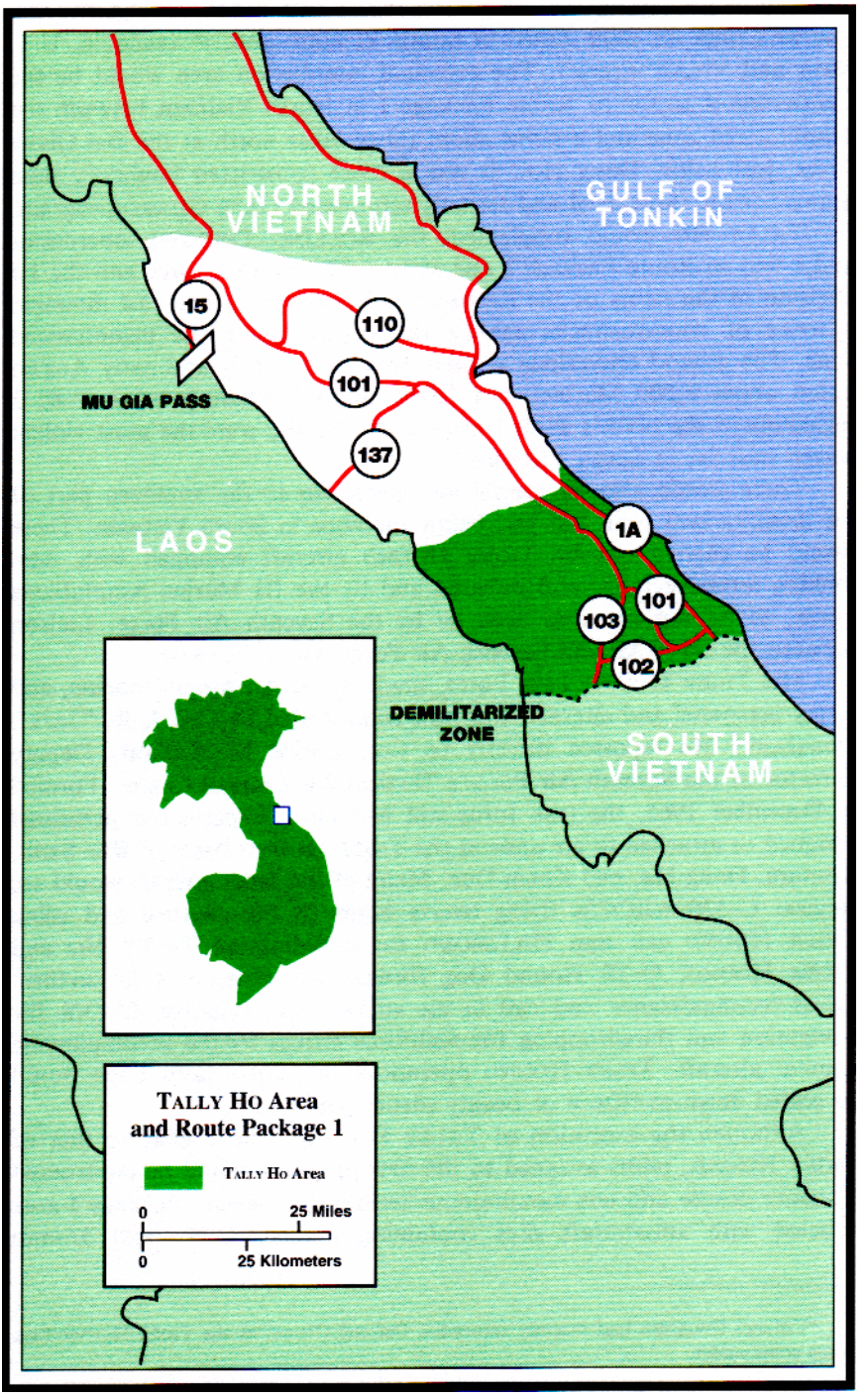
TALLY HO would supplement the ROLLING THUNDER operations under way in Route Package I and assist a Marine task force and the 1st Division of the Army of the Republic of Vietnam that had just mounted a series of counterattacks against the enemy below the demilitarized zone. The ground operations at their peak in late July and early August pitted about 8,000 Marines and 3,000 South Vietnamese against all 3 regiments of the NVA's 324B Division. The battles were the most violent waged thus far in South Vietnam.[4]

There would also be special air operations in the southern part of the demilitarized zone and just below the zone in South Vietnam. These would be carried out by TIGER HOUND aircraft equipped with side-looking airborne radar and infrared and by the III Marine Amphibious Force, to be supported as need be by the Seventh Air Force. Liaison between the III MAF and Seventh Air Force would be close.[5]

The TIGER HOUND Task Force, made up of Air Force, Marine, and Army personnel and aircraft, was now commanded by Col. I. B. "Jack" Donalson.* He reported directly to Col. Carlos M. Talbott, Deputy Director of the Seventh Air Force's Tactical Air Control Center. Formed in December 1965, the task force still had many experienced personnel assigned or attached to air units at the TIGER HOUND bases of Khe Sanh, Kontum, Dong Ha, and Kham Duc. Many of the same aircraft would see service: C-130 ABCCSs flying twelve hours in the daytime and using TIGER HOUND call sign HILLSBORO for coordinating TALLY HO and TIGER HOUND, O-1E Hound Dog forward air controllers to perform visual reconnaissance and call in air strikes, and Blindbat C-130s for navigation and flaredropping for nighttime strikes by the accompanying combat aircraft. TIGER HOUND operations in southeastern Laos would be scaled down to fifteen or twenty sorties per day.[6]

Although the execution of TALLY HO would be similar to that of TIGER HOUND, pilots assigned to the new program would be confronted by more hostile and less mountainous terrain. The Route Package I area bristled with antiaircraft sites containing numerous 37- and 57-mm

*Colonel Donalson had recently succeeded Colonel Groom as the TIGER HOUND Task Force commander.


NORTH VIETNAM
GULF OF TONKIN
15
110
101
137
MU GIA PASS
LAOS
1A
101
103
102
DEMILITARIZED ZONE
SOUTH VIETNAM
TALLY HO Area and Route Package 1
TALLY HO Area
0
25 Miles
0
25 Kilometers

radar-controlled guns, and there were several suspected SA-2 missile sites not far above the demilitarized zone. The many roads running along or near the flat coastal plain promised to lessen the results of road cutting and cratering. The region was also dotted with many small towns and villages. These were frequently used as truck, supply, and troop sanctuaries by the North Vietnamese who were aware that American pilots were forbidden to attack civilian targets. Nonetheless, Westmoreland was optimistic about TALLY HO's prospects, with round-the-clock surveillance of, and strikes on, enemy targets, continued TIGER HOUND attacks in Laos, and American and South Vientamese patrols of major rivers and waterways in South Vietnam.* He forecast that the new air program could have a "decisive effect" on the enemy's ability to sustain his present level of military activity.[7]

TALLY HO operations began on July 20. The initial Air Force and Marine missions soon averaged eighty-two daylight and night sorties every twenty-four hours. Supplementary TALLY HO strikes often came from USAF and Marine aircraft diverted from their primary ROLLING THUNDER, BARREL ROLL, and STEEL TIGER targets due to bad weather.[8]

Beginning with their first day of operations, USAF's O-1E forward air controllers experienced considerable poor weather. One of them, Capt. John R. Clyde, had difficulty in determining his position, and soon discovered he was flying north and northwest of his designated area. He further encountered, as did other FACs, intense antiaircraft fire and a problem not heretofore experienced in TIGER HOUND—turbulence. He explained it as follows:

> This is some of the worst turbulence I've experienced in the O-1. You get all sorts of crazy currents coming down off the mountains. You have a lot of trouble trying to climb. You add climb power to the aircraft, try to pull the nose up, and you have 500 feet per minute descent with climb power on and nose pulled up at a 50 degree angle. In some of these areas, it's awfully hard to FAC. It affects the A-1s and a lot of other aircraft, too.[9]

Despite the bad weather, some FACs found lucrative targets. Capt. Calvin C. Anderson, another O-1E FAC pilot, recalled his first TALLY HO target:

> We started out at a minimum altitude of 1500 feet, using binoculars. We didn't use binoculars in Tiger Hound but they . . . proved very effective in Tally Ho. On

*Inaugurated on December 18, 1965, and designated GAME WARDEN, the program of river and waterway patrols consisted largely of intercepting watercraft suspected of carrying personnel or supplies to the VC/DRV forces in South Vietnam.

> the first day out Capt Don Curtiss, Hound Dog 72, and myself flew up to fragged target 412, and we looked the target over. There was a well-used trail coming down to the river, and it seemed like smaller trails were diverted to foot trails. So we put a flight in—Hound Dog 72 did—and we uncovered a lot of stores, actually just south of 1412, and we decided to open it on up further to the south. After putting in a couple more flights, we uncovered numerous stores. We also got two structures and two trucks. As it turned out, we didn't realize that we had found such a large number of stores and didn't really concentrate the rest of the days [sic] activity on this target, which we should have done. The recce mission next day showed they had moved most of it out, including the part we had destroyed.

As with all new air programs, a web of restrictions bound Air Force and Marine pilots. These curbs were slowly relaxed as the days and weeks passed. USAF forward air controllers, for example, were at first prohibited from conducting visual reconnaissance and calling in air strikes within the demilitarized zone—even if fired upon. When this ban was lifted, the FACs to no one's surprise detected many signs of the NVA's presence within the demilitarized zone, and confirmed that the enemy's north-south Route 102 was a key infiltration artery. The route and adjacent trails running into the demilitarized zone sported extensive trellises, and there were numerous huts and structures in the area. Several were attacked on July 24 and 25.[10]

TALLY HO airmen scored a major success on July 25-26. Lt. Col. Edward G. Abersold, the TALLY HO Advanced Commander at Dong Ha, who now and then flew as a FAC, had seen several revetted storage crates and stacks in the open about 4 miles above the demilitarized zone. He therefore reconnoitered more thoroughly north of the zone along with Maj. Robert T. Smyth, chief of a FAC detachment at Dong Ha. Spotting what looked like 3 trucks, they called in an air strike. The bombs blew the foliage off the suspected target, revealing a stack of supplies about 200 feet long, 10 feet high, and 10 feet wide. It turned out to be an ammunition dump. Abersold and other FACs at once called in more Air Force and Marine strikes—about 50 during the day—from bases at Da Nang, Chu Lai, Cam Ranh Bay, and Pleiku in South Vietnam. Major Smyth reported:

> This was by far the largest ammo dump that I have ever seen. All FACs put strikes in on this area, an extremely large one. A very lucrative target. We put air in on it all day long up until 1900 or 1930 hours. We were getting large secondaries. One secondary every 15 or 20 seconds. On the next day, we went back and found another part of the dump and it was also extremely lucrative.

During a day and a half of bombing, an estimated 200 secondary explosions were tallied as 100 or more tons of ammunition blew up.[11]

Concurrently, in OPERATION HASTINGS the III Marine Amphibious Force with Seventh Air Force support was routing the 324B Division near the demilitarized zone. The operation ended on August 3, and remnants of the division withdrew across the zone. With the 324th presumably dependent on the destroyed ammunition, airmen believed that their strikes contributed to the withdrawal. This could not be conclusively proved, however. Shortly afterwards, Captain Anderson called in air strikes to destroy a dozen or so communication shacks and poles running into the zone.[12]

TALLY HO night operations were held in abeyance until the second week of the program. Then six O-1E sorties were flown on three nights, but further flights were canceled when the TIGER HOUND command and control system (a meld of Air Force and Army systems) failed to track all aircraft. As the moving force behind using O-1s at night, Colonel Abersold believed the aircraft had great night potential if pilots used binoculars or a starlight scope (the latter by an observer in the rear cockpit). During their few night missions the FACs could discern sizable nighttime enemy travel along the routes. But Abersold found too many fighters, armed reconnaissance, and flaredropping aircraft "flying around" without proper coordination. He said, "A couple of times I was flying along at night over Route 101, and a fighter came along and dropped six flares right over me. I made a pretty good target. So that's why we discontinued it [i.e., the O-1 night missions]."[13]

Colonel Abersold's efforts to get the O-1 night program reinstated proved unsuccessful until August 28 when Colonel Donalson once more allowed use of the O-1s but solely for night visual reconnaissance. An initial O-1 night report covering August 28-September 1 showed that the pilots had spotted twenty-nine trucks—only one moving with lights on. Most appeared to be traveling at speeds up to thirty miles an hour.[14]

As originally planned, the VNAF's A-1Es were injected into TALLY HO operations in late July and tasked to hit targets in the western sector. Yet after just twenty-eight sorties, General Momyer withdrew VNAF participation, since the A-1Es were not under forward air control and complicated the already tangled command and control system over the TALLY HO area. Beginning August 3, some B-52s likewise struck the TALLY HO region, but these strikes were confined to the demilitarized zone. They were not strictly in support of TALLY HO but of the Marine Corps's OPERATION HASTINGS then coming to a close. The superbombers during August flew a total of six sorties in and around the demilitarized zone. The Marines meanwhile pushed their "spoiling" operations in I Corps to frustrate an obvious communist bid to move in force into South Vietnam and maybe capture Dong Ha and Quang Tri.[15]

Even so, the expected huge enemy offensive did not materialize in subsequent weeks. By October the annual northeast monsoon weather began to sweep over North Vietnam and turned the TALLY HO area into a big "mud-puddle." Conversely, in Laos the southwest monsoon was abating. With clearing skies and drier roads, air commanders started to shift most of their resources back to the TIGER HOUND region in Laos.[16]

In spite of deteriorating weather, some TALLY HO operations went on. By November 30, 1966, air analysts had recorded the results of the program since its inception on July 20:

	Destroyed	Damaged
Trucks	72	61
Structures	1,208	624
Watercraft	85	132
AA artillery/ automatic weapons positions	22	92

In addition, the airmen figured they had killed 139 North Vietnamese troops by air; cut, cratered, and seeded 339 roads; created 6 landslides; and caused 1,414 secondary explosions.[17]

At the same time, a Seventh Air Force status and analysis report of sundry U.S. air programs disclosed that "high speed" vehicular traffic along the lines of communication in the TALLY HO, Route 1, and TIGER HOUND areas was no longer possible. On the other hand, the report said the flow of enemy troops and supplies through the demilitarized zone and into South Vietnam was far from arrested. In fact the communists displayed "considerable determination and ingenuity" in using bypasses and fords, making minimum road repair, and traveling under the cover of night and bad weather. Trucks still carried the bulk of supplies through southern North Vietnam to the demilitarized zone thence to the STEEL TIGER area in Laos.[18]

Nonetheless, General Westmoreland and other commanders deemed the TALLY HO program sufficiently worthwhile to warrant its continuance. The tempo of operations lessened as expected because of monsoon weather, while it quickened in the TIGER HOUND and STEEL TIGER sectors of Laos where drier weather prevailed. Then in early 1967, TALLY HO gradually lost its identity when it merged into the regular interdiction campaign in the demilitarized zone and in Route Package I of southern North Vietnam.[19]

As the heavy rains abated in Laos and the enemy shifted his infiltration from the TALLY HO region to the Ho Chi Minh Trail, Seventh Air Force and MACV decided to try the SLAM interdiction program. SLAM envisaged a concentration of greater force against elements of the North's 324B Division in Quang Tri Province and the

southwest corner of the demilitarized zone. Included would be Air Force, Navy, and Marine tactical aircraft as well as SAC B-52s, Army and Marine artillery, and Navy gunfire. But changing circumstances forced Westmoreland to first experiment with SLAM in southernmost Laos along the west-to-east Route 110. Known as the Sihanouk Trail, it ran eastward through the northern tip of Cambodia into South Vietnam.[20]

The SLAM scenario comprised three overlapping phases. Phase I was to be devoted to intelligence collection using reconnaissance aircraft fitted with infrared, side-looking airborne radar, and forward-looking infrared. Visual reconnaissance would stem from O-1s and other FAC aircraft and from Meo roadwatch and MACV SHINING BRASS teams. Phase II would consist of more reconnaissance to pinpoint the enemy's engineering and construction sites, supply points, staging areas, waystations, and other targets. Also included would be air-ground strikes on the targets. In Phase III the key target areas would be designated "SLAM," triggering large-scale tactical and B-52 attacks. These were to be followed by intensive aerial photo and visual reconnaissance together with reconnoitering of the struck area by SHINING BRASS teams. The Air Force would furnish air support for these teams which upon lift-out would leave behind landmines and boobytraps. In addition the USAF strike aircraft were to sow the SLAM zone with more landmines. If possible, air-supported SHINING BRASS platoons or special guerrilla units might be inserted in a SLAM area to assault the enemy.

The first SLAM strikes came in October with Ambassador Sullivan and his staff exercising their usual close oversight of the targeting. The first mission was preceded by USAF air photo and MACV SHINING BRASS ground reconnaissance of a sector near Route 110, about two miles in radius. On the ground team's recommendation after lift-out, the B-52s made a SLAM I attack. This was swiftly followed by Seventh Air Force tactical strikes and propaganda leaflet drops. As no team entered the bombed area, results of SLAM I were unknown, but commanders were convinced that the enemy lost men and supplies.[21]

The second SLAM strike took place on October 13, again close to Route 110 where SHINING BRASS teams had observed the bivouacs of two battalions and two enemy companies repairing a bridge and building a bunker. One team secured useful information by wiretapping enemy communications. After this team airlifted out on October 7, a second team was inserted in the same area on the 11th, its arrival supported by six USAF and two armed Army UH-1B helicopters. Following further reconnoitering, the second team judged there were sufficient communists in the area to warrant a SLAM II strike, which was quickly executed. Once more the B-52s led off and plastered the enemy position as did Seventh Air Force tactical aircraft. A SHINING BRASS team penetrated

the area the same day to perform bomb damage assessment. It failed to reach the struck area but found nearby an active bunker, unused trenches, and eighty-five live enemy troops. Responding to the team's request, four USAF and two armed Army helicopters attacked with undetermined results. Suddenly finding its position hazardous, the team was airlifted out the same day.[22]

In diverse ways the TALLY HO and SLAM operations augmented the CRICKET, STEEL TIGER, and TIGER HOUND programs, with the Seventh Air Force supplying most of the supplemental air power. By the summer of 1966, about ninety percent of the Seventh's strikes in central and south-central Laos were flown by its Thai-based aircraft. In contrast, operations in southernmost STEEL TIGER, TIGER HOUND, and TALLY HO relied chiefly on South Vietnamese-based Air Force and Marine aircraft as well as Navy carrier planes. Together, the Air Force and Navy were flying many more sorties against infiltration and fixed targets throughout North Vietnam. All of the services, and especially the Air Force, took part in interdiction and close support operations in South Vietnam.[23]

As in previous months, the bulk of surveillance sorties were carried out by USAF O-1 FACs who called in and controlled hundreds of Air Force, Navy, and Marine strike aircraft. The majority of the night missions were flown by USAF A-26Ks (call sign NIMROD),* F-4C Phantoms, and C-130 flareships. Around-the-clock operations saw greater use of the MSQ-77 COMBAT SKYSPOT radar when a new site opened at Nakhon Phanom RTAFB in June.†[24]

Air strikes, despite the heavy monsoon weather, appeared to be taking a steady toll of enemy resources, leading some Air Force officials and analysts to believe the anti-infiltration campaign was beginning to "pay off." From July through September, USAF strikes in STEEL TIGER reportedly destroyed and damaged seventy-three vehicles, twenty-one huts and other structures, twenty-seven rivercraft, and twenty-two antiaircraft sites. Strike pilots also made eighty-six important road cuts and reported

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*Redesignated A-26K for political reasons. The World War II B-26 Marauder was built by Martin. After the war, a Douglas-built plane was similarly designated B-26. Then after extensive modification for counterinsurgency operations, the aircraft was designated B-26K. Because the "B" for "bomber" signified to Thai authorities an offensive-type aircraft, Air Force Secretary Harold Brown ordered the aircraft to be redesignated A-26K. The "A" designation, along with "0" and "F" on other USAF aircraft, could signify defensive-type operations. [Melvin F. Porter, *Interdiction in SEA, 1965-1966* (Project CHECO, Hickam AFB, Hawaii, 1967), p 58.]

†As noted earlier, MSQ-77 radar enabled pilots to navigate more accurately to their targets at night or in bad weather. For details on USAF night operations in Laos and South and North Vietnam, see Maj. Victor B. Anthony, *Tactics and Techniques of Night Operations, 1961-1970* [The Air Force in Southeast Asia] (Washington, 1973).

about sixty-one secondary explosions. A high point of the operations occurred on August 19-20 when TIGER HOUND pilots attacked a truck park on the Sihanouk Trail. Aided by USAF O-1 forward air controllers, the pilots destroyed or damaged seventeen trucks.[25]

The enemy came under closer surveillance and heavier attack during the better weather of late September and early October. From October 10 to 14, Secretary McNamara and other high Defense and State Department officials visited Saigon. In briefing them, Brig. Gen. Carlos M. Talbott, Deputy Director of Seventh Air Force's Tactical Air Control Center, praised the achievements of the TALLY HO program in southernmost North Vietnam. He said, "the combination of intensified [USAF] aerial reconnaissance flown from Thailand and [the] measured interdiction efforts have stalemated the enemy in his efforts to move through STEEL TIGER into his LOC [lines of communication] network further to the south in Laos."

Highest praise was reserved for TIGER HOUND, begun in December 1965. Air strikes under this program plus those flown in STEEL TIGER seemed to explain why the DRV abandoned the Ho Chi Minh Trail as the main supply artery and shifted more infiltration through the demilitarized zone.[26]

Seventh Air Force analysts also saw a favorable trend in the decline in truck sightings and trucks destroyed and damaged in the DELTA and ECHO sections of STEEL TIGER during the last two months of 1966. They attributed reduced enemy truck movements to stepped-up day-and-night aerial surveillance, offering this data for the DELTA and ECHO sectors:[27]

	Sorties flown	Trucks sighted by air	Trucks destroyed	Trucks damaged
November 1966	1,311	285	9	82
December 1966	1,587	268	85	69

Despite the operational problems involved, the STEEL TIGER and TIGER HOUND areas absorbed an unusually large number of strike aircraft diverted from the BARREL ROLL and ROLLING THUNDER programs. No less than 1,500 of these sorties were used in southern Laos during November and December 1966. About 950 of them were USAF diverts and the rest Navy, mostly from ROLLING THUNDER.[28]

The stiffest challenge for the USAF O-1 forward air controllers was to quickly find targets for the surplus aircraft arriving at random over the two areas. Time and again the FAC pilots had to cease their own

target searches in order to guide the suddenly arriving fighter-bombers to suspected enemy truck, troop, and supply sites. Navy aircraft were especially carried less fuel, and thus had lower loiter time than Air Force planes. Many of the diverted missions had unsuitable ordnance or ordnance fuzes for their secondary targets. Consequently, the damage-per-sortie ratio dropped steeply and much ordnance was wasted.[29]

The problem of too many diverted aircraft seeking too few worthwhile targets in Laos* persisted and placed a heavy strain on all USAF FAC pilots. Another short-round strike in subsequent weeks resulted in tightened forward air control, adding to the FAC workload. This led the Seventh Air Force to request substantially more FAC aircraft to meet its expanding needs in Laos.[30]

The satisfaction air commanders derived from having sufficient strike forces—except specialized aircraft—was tempered, because they could not use them as they desired. To be sure, Vientiane and Washington slowly rescinded or rendered less onerous some of the restrictions. In mid-September, for example, Vientiane's air attaché office eased the rule on hitting rivercraft on Laotian rivers and streams. Pilots under FAC control could strike certain types of boats and barges suspected of hauling military cargoes, if they were on a waterway or beached within the STEEL TIGER armed reconnaissance boundaries. But attacks on long narrow-beam boats, presumably engaged in nonmilitary traffic, were still prohibited.[31]

With strong support from General Momyer and other Air Force commanders, General Westmoreland constantly entreated Vientiane and Washington to reduce aerial constraints and give commanders more flexibility in conducting their tactical and B-52 missions. To the MACV commander, Sullivan was the major obstacle to granting more military freedom of action in Laos. Their relationship was often abrasive. The ambassador would brook no diminution in his authority as the chief American military as well as political authority in Laos. Yet he gradually acceded to Westmoreland's "aerial flexibility" arguments.[32]

Westmoreland usually submitted single-item requests to reduce restrictions in the CRICKET, TIGER HOUND, or STEEL TIGER areas. In

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*The problem also highlighted the fact that, unlike the experience of World War II or the Korean War, the United States by late 1966 possessed a surfeit of tactical strike aircraft. General Momyer, for one, had no complaints on this score. During a briefing at an Air Force commanders' conference in December 1966, he observed: "Our air forces are adequate for the job. This may sound surprising that any field commander says that he has enough because generally he wants to fight for the record, and in fighting for the record, he wants to be sure that history doesn't stand him short." [PACAF Commanders' Conference Summary, Dec 66.]

late September, however, he proposed an overall relaxation of air prohibitions:

> At the beginning of Tiger Hound . . . operations in Dec 1965, restrictions on air operations in the Laotian panhandle were compatible with the situation then existing. The locations of enemy troops and friendly indigenous personnel often were in doubt; the technique of systematic visual recce [by USAF FAC's] and air control by airborne FAC's was just beginning; and the necessary aids to navigation were in the process of installation. At about the same time, a change in restrictions permitted strikes on targets of opportunity within 200 yards of an identifiable motorable route or trail. In Apr 66, rules of engagement were changed to allow use of napalm against specified targets under FAC control.
>
> In Jun 66, authorization was received to conduct Sky Spot strikes during all weather conditions, day or night, and to drop the air-delivered land mine Gravel against specified targets and areas.
>
> The latest relaxation of restriction [during September 1966] was clearance to strike, under positive control, large military type boats and barges on rivers or beached on shores within the [Steel Tiger] armed recce area.

The loosening of restrictions in the past 9 months, Westmoreland noted, led to "increased effectiveness" of air operations. Even so, the enemy was taking advantage of American restraint by placing truck parks, storage facilities, and other installations more than 200 yards from motorable trails, and moving supplies by bicycles and porters on trails. Furthermore, the evolution of new interdiction concepts such as SLAM dictated more frequent revision of STEEL TIGER air rules. The MACV commander suggested many rule changes. He wanted special operating areas set up where pilots could strike at the enemy without obtaining prior target validations or being under FAC control (the recent installation of more navigational aids made FACs unnecessary in some areas). He asked for authority to strike closer to roadwatch teams or other friendly Laotian units, and to extend the permissible strike area along each side of motorable roads from 200 to 500 yards. He also recommended the creation of several bombing zones for napalm jettisoning, and more latitude for pilots to return hostile ground fire.[33]

Sullivan's initial response sounded negative. "We cannot," the ambassador said, "expect to obtain concurrence of this non-belligerent [Laotian] government to procedures that are less specific than those required in [the] belligerent territory of SVN [South Vietnam]." He insisted on retaining the "greatest degree of safeguard" against bombing errors, then with minor modifications approved several of the proposed changes and suggested alternate ways of giving strike pilots more latitude in attacking the enemy. Sullivan vetoed, however, the proposal to extend

the permissible strike area beyond 200 yards on either side of a motorable road. He left to further study the establishment of napalm jettisoning areas but suggested where they might be located.[34]

The Seventh Air Force and MACV swiftly translated Sullivan's guidelines into more flexible revisions in STEEL TIGER rules of engagement. Briefly, the revised rules established several new operational areas for armed reconnaissance over roads, trails, and rivers without requiring FAC control (after radar or tactical air navigation confirmed aircraft were in the designated areas). Strikes were authorized on villages in designated areas if they were RLAF validated targets or the source of hostile ground fire. Also allowed were strikes within one nautical mile of friendly Meo roadwatch teams or other units within designated areas.[35]

In mid-November, after two instances in the TIGER HOUND area where the absence of USAF FACs prevented strike aircraft from attacking "fleeting" trucks, Westmoreland again asked Vientiane to waive the forward air control requirement for such targets. With drier weather along the Ho Chi Minh Trail and faster communications between Meo roadwatch teams and USAF aircraft, he forecast more instant truck-sighting reports. The Seventh Air Force, he said, needed "maximum flexibility" to respond immediately against fleeting "trucks, trailers, bulldozers, and . . . mobile construction [items] found on or within 200 yards of a motorable road within the STEEL TIGER area." Emory C. Swank, Deputy Chief of Mission (acting for Sullivan who was hospitalized) acceded to the request. On November 16 the Seventh Air Force flashed to all units concerned the waiver for forward air control strikes against vehicles "on or within 200 yards of a motorable road."[36]

Both Vientiane and Washington nonetheless insisted on retaining a "pro forma" requirement for RLAF observers aboard USAF C-130 ABCCCs and USAF FAC aircraft to verify targets and authorize air strikes.* Instituted when TIGER HOUND started in December 1965, the observer requirement aboard the ABCCCs lapsed for a while in July 1966 apparently due to General Thao Ma's (and thus the RLAF's) deepening difficulties with the Royal Laotian Army generals. The Air Force agreed to the withdrawal of the two observers normally aboard the aircraft, if they would be returned on short notice after the monsoon weather abated and more targets appeared in TIGER HOUND and STEEL TIGER. September brought better weather and more targets, so the Seventh Air Force sought Vientiane's help in getting the observers back

*In practice the RLAF and other Asian observers on USAF aircraft did little "verifying" or "authorizing" of target strikes. When competent in English, they were useful in translating intelligence data from tribal roadwatch teams or FAR patrols.

aboard the ABCCCs. But still preoccupied with the army chieftains, Thao Ma proved unresponsive. Absence of the observers caused cancellation of several SHINING BRASS operations.[37]

The observer problem remained unresolved in the first part of October as General Thao Ma's position in the Royal Laotian military command grew uncertain. A coup against the FAR General Staff on October 21 by Thao Ma and twenty-five of his pilots failed, and they fled with most of their planes to Thailand. All RLAF activities were suspended for about three weeks.* During the interval, some of the SHINING BRASS and CRICKET WEST operations were cut back or canceled for want of observers for the USAF C-130 ABCCCs and the O-1s of the 23d Tactical Air Support Squadron.[38]

After the dust settled on October 27, Seventh Air Force once more sought Vientiane embassy assistance to obtain observers for the O-1s and the C-130 ABCCCs. In mid-November the FAR General Staff on behalf of a newly reconstituted RLAF, headed by Brig. Gen. Sourith Don Sasorith, approved their reinstatement. This followed an agreement between the embassy and the FAR generals assuring observer accommodations and pay at Da Nang Air Base, where the USAF C-130 ABCCCs were based.[39]

In mid-July the fear of U.S. air and ground commanders that the VC/NVA planned a "monsoon offensive," spearheaded by Hanoi's 324B Division with troop and supply support from Laos, spurred MACV to step up SHINING BRASS operations. Despite monsoon weather, nine air-supported SHINING BRASS teams probed enemy positions along the HO CHI MINH TRAIL between July 11 and 30.[40]

As previously, the teams were airlifted into and out of the SHINING BRASS operating area by VNAF pilots flying CH-34 helicopters. Air Force TIGER HOUND aircraft and Army UH-1B armed helicopters provided cover.[41]

August witnessed twelve SHINING BRASS team forays. While reconnoitering from August 7 to 9, Team IOWA triggered a large air response by twenty-three TIGER HOUND aircraft and fourteen Army armed helicopter sorties. The attacks destroyed fifty-nine huts or structures, caused an unknown number of enemy casualties, and set off four secondary explosions. The team took part in several ground actions, killing three of the enemy. In what was now standard practice, the team emplaced many M-14 antipersonnel mines along road and trail segments.

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*For a discussion of General Thao Ma's ill-fated coup, see Maj. Victor B. Anthony, "A Military History of the War in Northern Laos, 1945-1968."

Still fearing an enemy "monsoon offensive," MACV sent another dozen air-support SHINING BRASS teams into the trail area during September.[42]

To ensure team safety or for intelligence reasons, SHINING BRASS teams occasionally captured personnel for interrogation about enemy dispositions and infiltration activities. As noted earlier, Team IOWA at the end of May returned with 2 members of an NVA regiment. During July 30–August 1, Team TEXAS brought back 2 local women, who revealed that about 100 communist troops were transporting southward supplies produced in a nearby valley. At some point, the Viet Cong picked up the supplies and moved them to a redoubt. Probing from August 7 to 9, Team IOWA bagged 2 prisoners.[43]

Platoon-size exploitation forces augmented the intelligence-gathering and collection of the regular nine-to eleven-man SHINING BRASS teams.* These platoons launched their first mission in late June 1966. Like the teams, they ambushed the foe, destroyed huts and materiel, and planted antipersonnel mines before being airlifted out.[44]

In the last three months of 1966, nine to eleven SHINING BRASS (SPIKE) teams and two or three HORNET FORCE platoons were airlifted each month into and out of the authorized operating areas. Many probes and the accompanying air strikes directly supported American and allied operations just across the border in South Vietnam. Others concentrated solely on gathering intelligence and emplacing antipersonnel landmines. Not all targets were struck by Air Force, Navy, and Marine TIGER HOUND aircraft. In October, B-52s began to be used in the SLAM program. The maiden mission followed a ground reconnaissance probe of enemy redoubts by SPIKE Team COLORADO from October 3 to 7. Concluding it had chanced upon a large enemy area, the team recommended a B-52 saturation attack which was conducted as SLAM I immediately after the team's lift-out on the 7th.[45]

To assist in resolving a drawn-out debate on the value of B-52 saturation strikes, HORNET FORCE platoons completed bomb damage assessment of areas struck by the B-52s. As in earlier cases, there was scant evidence that bombs injured humans or animals. Surveying the struck area just thirty minutes after the B-52 bombing, one platoon found craters less than a foot in diameter. It noted that bombs had impacted widely at the northern end and narrowly at the southern end of the target area. Heavy brush blowdowns measured five feet in diameter

*On October 3 the U.S.-led SHINING BRASS teams were renamed SPIKE teams, and on November 7 the exploitation-force platoons were redesignated HORNET FORCE. Also on the 7th, the MACV commander assigned the code names HAVOC FORCE and HAYMARKET FORCE to company- and battalion-size probes into Laos if and when they were undertaken. [Msg, COMUSMACV to CINCPAC, 071018Z Nov 66.]

and light brush blowdowns up to seven feet in diameter. The platoon discovered three bomb duds but was not sure when they were dropped.[46]

A second platoon was inserted between September 2 and 5 near an area saturated by 576 BLU-3 bomblets dropped by 5 B-52 ARC LIGHT bombers. The platoon found 2 types of craters. Some were round shallow holes with vegetation blowdown extending 3 to 6 feet among trees and 12 to 14 feet in grass or bamboo. Others were banana shaped. Trees 3 feet from bomb craters sustained shrapnel scars up to 9 feet above ground. Those 12 feet distant had scars running upward to 12 and 18 feet. Shrapnel damage could be seen 66 feet from the point of impact. All of the CBUs seemed to have penetrated the jungle canopy and exploded on the ground. The platoon found one CBU dud. Again, there was no evidence the bombing had harmed the enemy.[47]

On October 13 a third platoon reconnoitered an area after a B-52 SLAM strike but saw few signs of enemy attrition. The platoon did discover an active bunker and a network of unused trenches near the bombed area. Six TIGER HOUND aircraft and two Army armed UH-1B helicopters responded to the platoon's request for a tactical strike. They blasted the bunkers and trenches where eighty-five of the enemy were dug in.[48]

The stepped-up SPIKE and HORNET incursions into the trail area were challenged by NVA troops lying in ambush. This triggered more firefights and friendly casualties, forcing many teams to withdraw quickly. Hurriedly lifted out on July 30, Team MONTANA left missing in action two U.S. Army Special Forces team leaders and three tribesmen after a fast exchange of fire within thirty feet of an enemy force. Eight of nine SPIKE probes in October required emergency lift-out from enemy fire, and delivery helicopters were hit more often. Early in the month, a team was sent to the trail to secure intelligence and search for targets in support of General Walt's III MAF operation in Quang Tri Province in South Vietnam. Probing about three and a half miles from the South Vietnamese border, this team was ambushed by the NVA. It lost three Americans and three tribesmen killed or captured. An interpreter survived. In November a team tribesman was wounded during a confrontation with the enemy, and in December two tribesmen were wounded in another engagement.[49]

Supported by TIGER HOUND aircraft, USAF search and rescue operations often brought out dead or wounded SHINING BRASS, Air Force, or other personnel shot down or killed on the ground by the enemy. On November 8 a USAF O-1 with a FAC pilot and a SHINING BRASS observer aboard (to help pinpoint an enemy target) was downed by ground fire. A USAF search and rescue aircraft saved the observer while a SPIKE team recovered the body of the pilot. The largest rescue of

the year was undertaken early in December when a DELTA* ground reconnaissance team accidentally wandered from South Vietnamese territory into Laos. A clash with the communists left two U.S. Army Special Forces personnel and two South Vietnamese tribesmen dead or missing. Two tribesmen were rescued. During the search for DELTA team survivors, the foe shot down an Army UH-1B helicopter on the Laotian side of the border, killing all five American crewmen aboard. A SPIKE team supported by TIGER HOUND aircraft eventually recovered all the bodies.[50]

Meanwhile, the bullets-and-bombs anti-infiltration activities were enlivened by the psychological warfare tactics of the antagonists. A SHINING BRASS platoon saw signs in Vietnamese above the HO Chi Minh Trail reading, "Chase Americans from Vietnam." The MACV-directed units kicked off a counteroffensive in December. They stuck banners and posters above or next to certain routes, warning the NVA that travel along the trail "meant certain death." The war of signs made no discernible difference in the trail operations of either side during the following months.[51]

The Army's growing use of armed UH-1B helicopters for close support of SHINING BRASS units continued to fan the argument over roles and missions between the Air Force and Army. The Seventh Air Force tried to resolve the problem by telling subordinate commanders that the use of armed helicopters was justified by the unique trail operations—so long as they flew in "a permissive environment" (that is, where the ground-fire threat was minimal). Many USAF personnel nonetheless remained convinced that the Army helicopters preempted the Air Force's close support role.[52]

A typical mission allowed two hours for team insertion with an Air Force forward air controller and two USAF A-1Es flying cover. If the mission was forced to cancel, the aircraft were released for other operations. If team insertion was rescheduled for later in the day, the armed helicopters flew escort and suppressed enemy ground fire. After the team landed in a designated area, the transport and armed copters returned to a base camp—usually fifteen to twenty minutes flying time away—and stayed on alert to evacuate the personnel in case of an emergency. If the team remained in place, a USAF FAC flew over their positions twice daily or more often, if necessary, to coordinate any team strike requests. The armed copters were also available if no Air Force TIGER HOUND combat aircraft were nearby. SHINING BRASS personnel

*Similar to the SPIKE teams, DELTA teams operated solely within South Vietnam's borders.

showered the Air Force with praise, characterizing the support into and out of enemy territory as "excellent."[53]

By the end of 1966, MACV had sent into the trail 124 small- and 13 platoon-size SHINING BRASS units. TIGER HOUND planes, largely Air Force, flew 970 direct support sorties. MACV analysts judged that these operations killed 104 enemy personnel, destroyed 58 supply caches, destroyed or damaged 740 huts and other structures, and triggered 80 secondary explosions that undoubtedly took a further toll of enemy lives and supplies. The SHINING BRASS units selected targets for more than 100 B-52 ARC LIGHT sorties that inflicted undetermined but presumably considerable attrition on communist troop and supply concentrations.[54]

Were the foregoing operations worth the resources put into them? As with preceding anti-infiltration programs in Laos, judgment was divided. Generally, the service commanders, the JCS, the DIA, and some high Department of Defense (DOD) officials believed the SHINING BRASS-TIGER HOUND program was essential. They backed its continuance, since it obviously inflicted losses on the enemy and forced him to divert manpower to defend himself against these air-ground intrusions. The DIA stressed the program's intelligence value, informing the president's Foreign Intelligence Advisory Board in September 1966 that SHINING BRASS "is the only DoD . . . activity effectively operating in the Laos panhandle and [is] extremely important in the collection effort against NVA/VC infiltration routes through South Vietnam." This enabled the agency and MACV to obtain more precise data on enemy facilities and dwellings in the panhandle, and assisted both organizations in making better estimates of enemy strength, the status of infiltration routes, the location of assembly points, and the kind of tactics used to bring supplies and weapons into the South. The DIA, MACV, and the services all backed deeper air-ground probes into the trail.[55]

Ambassador Sullivan, conversely, was unimpressed by SHINING BRASS'S claimed achievements. Skeptical of the program since its inception in late 1965, he considered the air-supported ground probes into the trail unprofitable. He was deeply concerned about the political consequences if the North Vietnamese captured American or South Vietnamese personnel and helicopters deep within Laos. Leonard Unger, Deputy Assistant Secretary of State for Far Eastern Affairs, was more supportive and acknowledged the intelligence and harassment value of the program. But he agreed with Sullivan on the political risks entailed with extending SHINING BRASS farther into Laos. Such operations not directly related to the safety of American forces in South Vietnam outweighed their military justification.[56]

In early 1967, however, the results of SLAM III in southernmost Laos (the largest Air Force supported SHINING BRASS operation thus far)

would change Sullivan's and Unger's minds about the need for attacking enemy infiltration targets deeper in the panhandle.*

Like SHINING BRASS, CRICKET operations in central Laos over the last half of 1966 expanded despite the manifold problems encountered during the early months of the air-ground program. Two small, new CRICKET zones were formed, CRICKET WEST and CRICKET WEST FRINGE. A small unit of Douglas A-26K light bombers, recently based at Nakhon Phanom, began on July 1 a ninety-day night combat test against communist trucks. A new MSQ-77 radar bombing system at Nakhon Phanom became operational. And Vientiane commenced to field more tribal roadwatch teams, to obtain more intelligence on enemy truck movements and supply sites for use in air strike planning.

As expected, FAC and other pilots found that from July through September NVA logistic movements had slowed because of the heaviest annual monsoon rains during these months. Although the magnitude of communist infiltration southward was hard to ascertain, there was enough intelligence to show it was not small. MACV in time proved that the enemy's personnel and supply flow towards South Vietnam's I Corps was greater than it appeared.[57]

The roadwatch teams regularly counted porters, pack animals, and trucks along roads and trails. They noted war traffic, believed to consist of enemy supplies, moving along the Ngo River south and east along the Bang Fai River toward Mahaxay in south-central Laos. The teams detected the heaviest truck traffic in and near the Mu Gia Pass and along Routes 911 and 912.[58]

As in the past, the results of air strikes on trucks and other targets were hard to pin down. Still, there was a consensus that daily air surveillance and strikes along the routes and trails slowed if it did not stop the NVA's logistic flow and caused some attrition of personnel, trucks, and supplies. The size of air surveillance and strike operations in the CRICKET zone can be seen in the sortie statistics from January 1966 (when the program began) through September 1966. Air Force O-1 forward air controllers of the 23d Tactical Air Support Squadron flew 2,292 visual reconnaissance sorties and 1,415 strike control sorties. Each USAF FAC flew about 90 hours a month. As in all air programs, CRICKET had its cost. The Air Force in roughly 9 months lost 7 planes and 5 pilots with 5 of the aircraft downed by enemy gunners. The losses included one of the Douglas A-26Ks that began operations in late June. Aircraft malfunctions downed 2 other planes, one an A-26K.[59]

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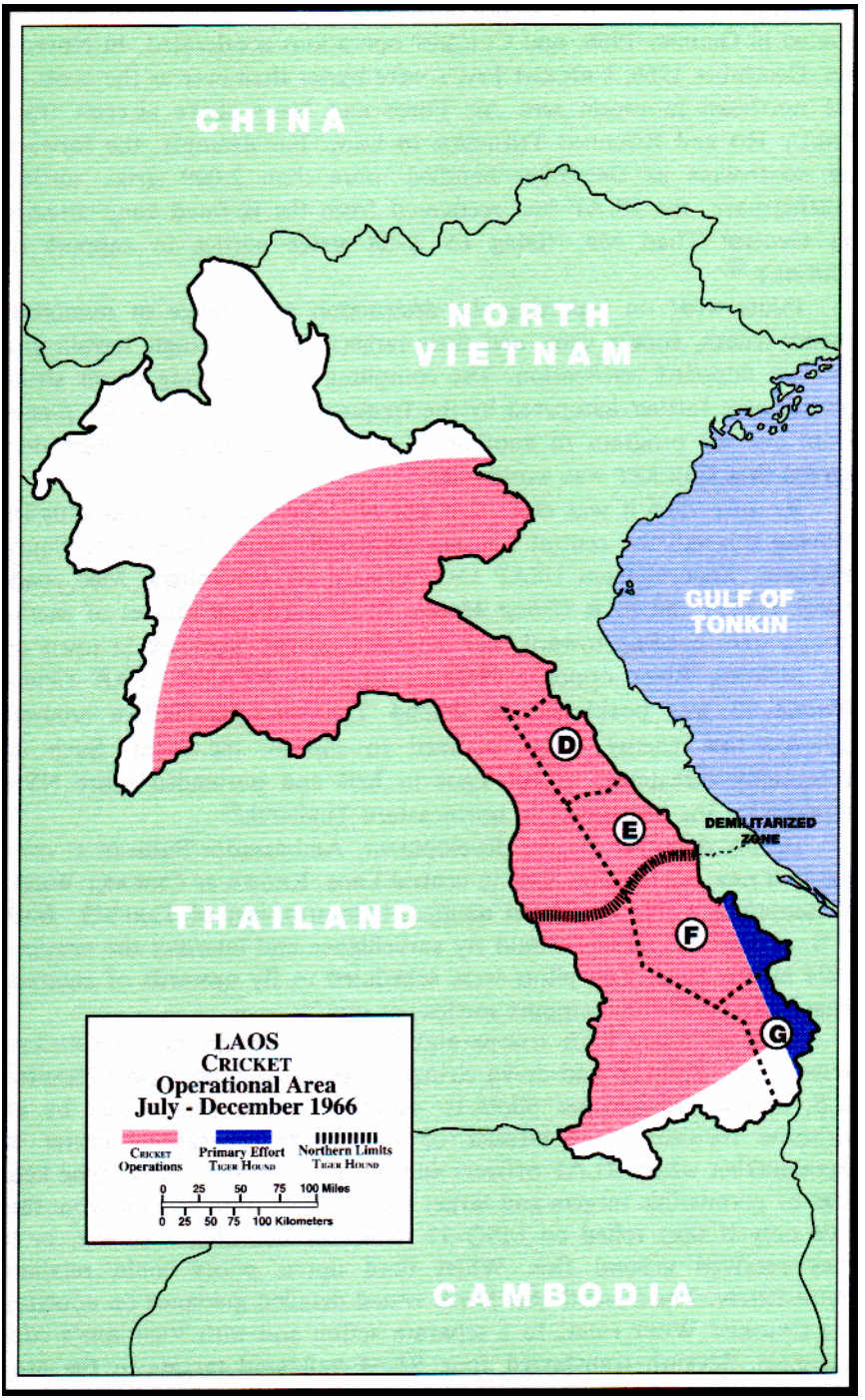
*See Chapter VII.


CHINA
NORTH VIETNAM
GULF OF TONKIN
DEMILITARIZED ZONE
THAILAND
CAMBODIA
D
E
F
G
LAOS
CRICKET
Operational Area
July - December 1966
Cricket Operations
Primary Effort Tiger Hound
Northern Limits Tiger Hound
0 25 50 75 100 Miles
0 25 50 75 100 Kilometers

More Meo roadwatch teams were fielded when the monsoon weather abated in October 1966, and CRICKET operations accelerated. In November–December 1966, CRICKET FACs were busier than ever as the onset of the northeast monsoon sent Air Force and Navy strike aircraft from TALLY HO and ROLLING THUNDER to Laos. For example, the forward air controllers in December handled more than 2,000 strike sorties. Furthermore, the RLAF had recovered from the ill-fated coup attempt by General Thao Ma, flying 65 T-28 strike sorties in support of CRICKET.[60]

Pilots went on reporting the destruction or damage of numerous enemy trucks, supply sites, and their targets; but the jungle terrain and weather impeded verification. The compiling and assessing of air strike results were further hampered by the frequent diversions of strike planes from one air program to another. Yet in general the air commanders agreed that CRICKET was worthwhile.[61]

By July 1966 it was clear that not all NVA personnel and supplies moving through the central Laotian panhandle were destined for South Vietnam. Reports from USAF O-1 forward air controllers, Meo roadwatch teams, and FAR *Group Mobile* 12 revealed that masses of enemy troops were heading toward Mahaxay and nearby Thakhek [a town on the Mekong River opposite Nakhon Phanom RTAFB]. FAR *Group Mobile* 12 was positioned to defend Thakhek. Intelligence analysts believed that enemy forces planned to capture the town. Such an eventuality threatened to cut Laos in half and portended more NVA support for the insurgency in northeastern Thailand.[62]

Deeply disturbed by the development, Ambassador Sullivan at once set up a new interdiction zone in central Laos. Known as CRICKET WEST, it comprised a five by fifteen nautical mile area east of Thakhek. Both U.S. and RLAF airmen would fly surveillance and interdict the communists in this zone. Lao pilots were scheduled to fly upwards of eighteen interdiction and close support sorties per day.[63]

With so many FAR troops and friendly Laotians in the CRICKET WEST zone, Sullivan laid down stringent operating rules. These required U.S. and RLAF combat pilots to validate their targets, either by an airborne forward air controller or by the air operations center at Savannakhet where RLAF officers and the assistant U.S. air attaché kept logs of permissible targets and target areas. Pilots were exempt from this rule only if they relied on MSQ-77 radar for bombing accuracy, or if they received ground fire. When fired upon, pilots could retaliate immediately. The Seventh Air Force issued detailed guidance on applying the CRICKET WEST rules. In a separate action and with Vientiane's concurrence, Seventh transferred four RLAF-validated targets in the area

formerly assigned C priority (off limits to attack) to A priority, which permitted pilots to hit them instantly in accordance with the air rules.*[64]

As CRICKET WEST operations got under way, RLAF observers flew with USAF FAC O-1 pilots to help verify targets and call in air strikes. As in other air programs, there was a chronic language problem. The first two assigned observers could not communicate with USAF pilots aside from giving simple "yes" and "no" answers to questions. Hence several observers better versed in English were put in USAF aircraft or sent to ground sites. They communicated by mobile radio with the non-English-speaking Laotians.[65]

The initial major CRICKET WEST operations started on July 24 after communist gunners downed one of several Laotian T-28s supplying close support to a FAR unit trying to protect Thakhek. The unit flashed a request for Air Force assistance to the Savannakhet air operations center. Two USAF O-1s arrived on the scene and saw the FAR confronted by about 2,000 PL/NVA troops. An appeal for more aircraft, approved by a CRICKET control officer, brought numerous USAF fighters to the battle area. Thirty-eight F-105s and one A-26K dropped about 150,000 pounds of munitions and strafed with 20-mm fire. The RLAF T-28s completed 19 combat sorties. The results appeared very promising. The FAR commander reported at least 35 enemy personnel killed, 50 wounded, and heavy destruction of weapons and positions.[66]

When new enemy troops were detected in the vicinity of the CRICKET WEST zone, Ambassador Sullivan hastily authorized fresh USAF/RLAF attacks in the area, at once named CRICKET WEST FRINGE. The RLAF flew the majority of the sorties, about eighteen a day. Air Force forward air controllers of the 23d Tactical Air Support Squadron as a rule flew two sorties a day, one in the morning and one in the afternoon.[67]

If extra air support were needed, the Air Force could respond with alacrity. On September 27, for example, about 400 communists near Thakhek again threatened to overrun the *Group Mobile* 12 unit defending the area. Several A-26Ks under O-1 forward air control dropped general purpose bombs and bomblets and strafed the enemy positions including a cave where many had hidden. The air assault saved the FAR unit from possible defeat. An after-action FAR estimate suggested that up to 80 percent of the communists were killed.[68]

During late October, in the aftermath of General Thao Ma's failed coup that stopped RLAF operations, Lao observers on USAF FAC

*For a discussion of guidelines for establishing A, B, and C priority targets, see Chapter IV.

aircraft were withdrawn. The absence of Laotian funds precluded quick reinstatement of the observers, so CRICKET WEST and CRICKET WEST FRINGE operations were suspended. The financial and other troubles were not overcome until December 6, when the observers went back into USAF aircraft and flights in the two sectors resumed.[69]

Together with CRICKET and CRICKET WEST FRINGE activities, a USAF A-26K tactical bomber unit started supporting CRICKET operations in central Laos. The unit's 8 aircraft, 12 pilot-navigators, and 142 support personnel arrived at Nakhon Phanom from England Air Force Base, Louisiana, in early May to replace USAF AC-47 gunships that had become too vulnerable to antiaircraft fire. The unit was attached to the 603d Air Commando Squadron on March 8, 1966, to train Lao and Thai pilots and airmen for counterinsurgency in Laos and Thailand.* Commanded by Lt. Col. Albert R. Howarth, the men were designated Detachment 1 of the 603d Air Commando Squadron, and their aircraft became known as Big Eagle.[70]

The long-loitering, twin-engine A-26Ks carried a large assortment of rockets and bombs as well as 7.62-mm and .50-caliber machineguns. These aircraft began flying largely combat orientation missions on June 21, using call sign NIMROD. (This quickly became the popular name for the heavily modified bomber.) In the first ten days, enemy antiaircraft fire shot down one of the A-26Ks and damaged two others. This led to the bombers being switched to night operations.† Then General Harris and other USAF commanders decided, and promptly secured permission, to night-test the bomber (which could carry its own flares) for ninety days beginning July 1. Test operations would focus on enemy trucks, but troop and supply concentrations would not be immune. When not searching for their own targets, pilots would rely on target intelligence generated by other Air Force sources or Meo roadwatch teams.[71]

The NIMROD night combat tests proceeded through the end of September under unusually adverse conditions. The pace of enemy truck movements had slowed sharply due to the monsoon weather, providing fewer targets. Flying conditions were at their worst in midyear. Between July 29 and August 12, for example, the rain or overcast canceled forty-six sorties.

Nonetheless, the light bombers flew virtually every night throughout the CRICKET operational zone, bombing and strafing known or suspected

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*The 603d Air Commando Squadron incorporated the initial USAF WATER PUMP training detachment deployed to Udorn RTAFB in March 1964. See Chapter I.

†For more technical details of A-26 operations, see Anthony, *Tactics and Techniques of Night Operations, 1961-1970*, pp 97-107.

truck and other enemy concentrations. At the end of the test, Colonel Pettigrew concluded that the A-26Ks had achieved an "excellent degree of success." Whether flying reconnaissance or loitering, they possessed distinct advantages over faster-flying Air Force and Navy jets. Test analysts calculated that a single NIMROD could cover the same target area as six jets, as each jet was limited to about forty minutes loitering time. For combat stretched out over twelve hours (at night), they believed six A-26Ks could cover the same target area as thirty-six separately launched jets. Moreover, not one bomber was lost during the ninety-day test.[72]

Ambassador Sullivan was also impressed by the night tests and the general versatility of the light bombers. Earlier, he had relaxed CRICKET strike rules somewhat to permit the A-26Ks to attack targets without FAC control, the only combat aircraft free to do so in the CRICKET zone. Anticipating an upturn in communist night truck traffic now that monsoon weather was abating, the ambassador wanted eight more of the bombers for night operations. He offered in return to release eight AC-47 gunships, still performing night interdiction over the Ho Chi Minh Trail, because of their vulnerability to heavier ground fire. Four had already been shot down.[73]

Praise for the NIMROD bombers was not unanimous, however; General Momyer, Seventh Air Force Commander, objected to the dispatch of more A-26Ks. Taking the long view, he claimed that the progressively intense enemy antiaircraft fire made no prop planes safe in Laos, and he wished to replace them all with jets. He expressed reservations about the findings of the recently completed combat night tests. Entering the debate, Admiral Sharp sided with Sullivan. Conceding that the test results were probably preliminary, he still deemed them sufficiently valid to justify deploying more of the bombers to Nakhon Phanom. He asked the Joint Chiefs of Staff to obtain higher-level authority to do so. Supportive of Sharp's request, the chiefs programmed five more A-26Ks for deployment in January 1967, but McNamara withheld his approval, siding in effect with Momyer. Yet at Sullivan's repeated urgings—with support from lower-level Air Force tactical commanders—the Defense secretary in mid-1967 let several additional bombers deploy. The Sullivan-Momyer controversy over prop versus jet aircraft would continue.[74]

In the meantime, the NIMROD bombers remained at Nakhon Phanom to satisfy the needs of commanders appreciative of their performance. Confronted by a sudden PL/NVA buildup in the BARREL ROLL area, Colonel Pettigrew, General Bond (Seventh Air Force/Thirteenth Air Force Deputy Commander at Udorn), and Vientiane agreed on October 25 to divert some A-26K sorties from CRICKET to BARREL ROLL. They arranged for a temporary quickening of BARREL ROLL

operations using four A-26K, twelve A-1E, and eighteen F-105 USAF sorties daily. At the same time, the conferees decided to cancel on November 1 the Air Force's BANGO/WHIPLASH strip alert operations from Thai bases that had begun in April 1965. The decision was based on the premises that "dedicating" strip alert aircraft for targets in Laos was unnecessarily expensive, and that aircraft diversions or quick re-scheduling of missions could furnish enough fast-reaction strikes.[75]

Thus, by the end of 1966, the A-26Ks were still flying chiefly night missions in the BARREL ROLL and CRICKET programs, their future status to be determined in 1967.

The virtually exclusive use of A-26K NIMRODs fornight missions was just one measure for improving the CRICKET program. Another was greater employment of the tribal roadwatch teams. Convinced of their importance in intelligence gathering and targeting, American officials began fielding more teams in anticipation of expanded NVA infiltration through central Laos in the next dry season (October 1966-May 1967).[76]

By the end of October, the Americans possessed about 40 deployable teams, and the goal for the end of January 1967 was about 50. Team infiltration surveillance was being extended to areas and routes heretofore not covered. In addition, American intelligence personnel were recruiting and training Laotian tribesmen for paramilitary operations in the CRICKET as well as other panhandle sectors. Some units were trained for firefights while searching for aerial targets, enemy documents, or taking prisoners of war for interrogation.[77]

Some FAR units likewise patrolled the CRICKET area, and American officials encouraged the FAR to enlarge such ventures. There were separate American and Laotian activities as well, to extract added information on enemy locations and movements from refugees and returnees around Thakhek, Savannakhet, and Pakse farther south.[78]

The expansion of roadwatch operations as well as other anti-infiltration programs in Laos made closer coordination between all of the concerned agencies mandatory. During September, representatives from Vientiane's air attaché office, the deputy commander, Seventh/Thirteenth Air Force, MACV, and Vientiane agreed to hold weekly meetings to discuss targeting, the distribution of air resources, and related matters. The first meeting, on October 11, was chaired by the director of intelligence, Seventh Air Force/Thirteenth Air Force. Representatives of Seventh Air Force tactical units engaged in Laos, and the RLAF were added shortly as attendees.[79]

In November 1966, Hark-1 and Hark-2 ground-to-air communication sets were furnished the ground teams. They enhanced the coordination of roadwatch targeting and Seventh Air Force strike operations in Laos. Hark-1 was for sending communications, Hark-2 for receiving.

The sets were of two basic types. One used voice code that enabled a team reporting from a route segment to relay its findings to an English-speaking Laotian agent at an observation post. The agent in turn would relay the findings to one of several Americans stationed at various panhandle sites, who would direct FAC, flare, or strike aircraft to a target or target areas. The second type (PEACOCK) used an electronic code and enabled illiterate team members to send reports of truck sightings or other targets directly over their Hark-1 sets to aircraft. To better receive the data sent by voice or electronic code, Seventh Air Force on December 5—in the absence of sufficient C-130 ABCCCs—introduced into Laos a specially equipped RC-47 communication relay aircraft. The RC-47 flashed the data through the Savannakhet air operations center to the Seventh Air Force/Thirteenth Air Force. The tactical air control center then contacted USAF FAC, flare, or strike aircraft.[80]

Much to the chagrin of Vientiane's officials, operational shortcomings persisted in spite of the closer meshing of roadwatch team targeting with Seventh Air Force tactical aircraft. "Real time" reporting still lagged. In theory the ground-to-air communication contact was possible in two minutes. But in practice, it was fifteen to seventeen minutes or more before Seventh Air Force aircraft arrived over a targeted area to confirm a target visually, then conduct a strike.

Another persistent problem was too few English-speaking Laotians aboard FAC, flare, ABCCC, or strike aircraft to translate roadwatch team findings. In fact most aircraft still had to fly without them. Lastly, the Seventh Air Force/Thirteenth Air Force deputy commander and the STEEL TIGER Task Force commander (who assumed his post at Udorn in January 1967) were both required to refer a final decision on aircraft allocations to General Momyer's Seventh Air Force headquarters in Saigon. As MACV Deputy Commander for Air, Momyer had to weigh daily Vientiane's strike requests against higher priority targets in South and North Vietnam. The competing needs of roadwatch targeteers and Seventh Air Force's strike priorities defied solution.[81]

Inevitably, the expanded roadwatch team activities in the CRICKET program imposed heavier airlift demands on USAF UH-1F and CH-3C helicopters based at Nakhon Phanom or Udorn in Thailand. Though originally earmarked for counter-insurgency training of the Royal Thai Air Force, these helicopters were often diverted to ferry roadwatch teams to and from designated areas and to do the same in southern North Vietnam under the aegis of an Operation Plan 34A program. However, as roadwatch activities expanded, the use of USAF Thai-based copters was caught up in a highly complex and controversial debate.

At the same time, CRICKET operations in central Laos during the last half of 1966 were highlighted by the inauguration of MSQ-77 radar strikes. Designed to allow greater bombing accuracy at night and in bad weather, the radar system COMBAT SKYSPOT* was introduced in South Vietnam in April 1966 and at Nakhon Phanom where it was activated on June 3.† At the end of the month, the Vientiane embassy authorized Air Force and Navy aircraft to use the radar in striking targets validated by the RLAF, FACs, or the embassy air attaché. The first MSQ-77-directed strike in Laos was made by USAF aircraft on July 6. With a maximum line-of-sight range of 200 nautical miles at 30,000 feet, aircraft could also use the system to strike a number of BARREL ROLL and STEEL TIGER targets above and below the CRICKET zone.[82]

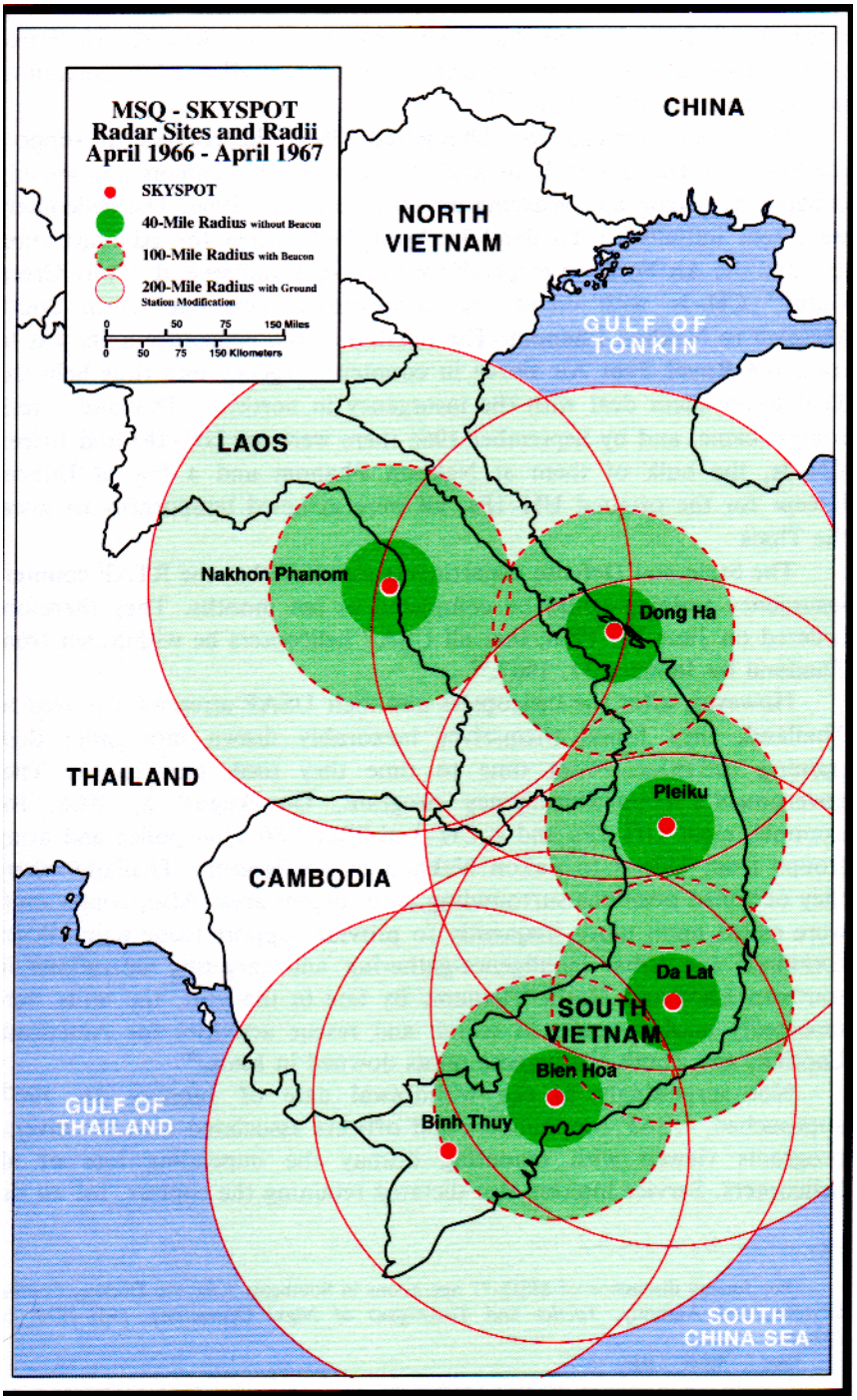
Hailed as a significant navigation aid for finding and striking with more accuracy jungle and weather-hidden targets (especially at night), USAF and Navy airmen lost no time in adopting COMBAT SKYSPOT. By August 18, a total of 350 ordnance-dropping SKYSPOT sorties had been flown in CRICKET and other STEEL TIGER areas. But there was a paucity of bomb damage assessment of the radar-directed strikes.

Concerned, Admiral Sharp asked General Harris to furnish comprehensive data on MSQ-77 strike results. He was especially interested in forty-four sorties aimed at RLAF-validated Target 79, a narrow road segment on Route 912, one of the key infiltration routes in the Laotian panhandle. PACAF analysts, after reviewing numerous CRICKET FAC visual reports, concluded that the new radar system still fell short of assuring pinpoint bombing.[83]

Nonetheless COMBAT SKYSPOT surpassed other bombing radar systems. By the end of 1966, experience acquired through 10,000 MSQ-77-controlled strike sorties in Laos and South and North Vietnam disclosed that bombing misses were averaging 300- to 350-feet, with larger misses occurring only rarely because of human error or radar malfunction. SKYSPOT'S greatest advantage was the intended one: to assure more bombing accuracy at night and in bad weather than previously. It thus complemented rather than replaced visual or other airborne bombing

*The system was first called SKYSPOT then COMBAT PROOF and finally COMBAT SKYSPOT. It was basically an MSQ-35 bomb scoring radar converted into a strike-directing radar system.

†The first two units were activated at Bien Hoa and Pleiku in South Vietnam in April and May 1966, respectively; at Nakhon Phanom, Thailand, and Dong Ha, South Vietnam, in June 1966; and at Da Lat and Binh Thuy, South Vietnam, in September 1966 and April 1967, respectively. [Maj Richard A. Durkee, *Combat Skyspot* (Project CHECO, Hickam AB, Hawaii, 1967), p 6.]


MSQ - SKYSPOT
Radar Sites and Radii
April 1966 - April 1967
SKYSPOT
40-Mile Radius without Beacon
100-Mile Radius with Beacon
200-Mile Radius with Ground Station Modification
0 50 75 150 Miles
0 50 75 150 Kilometers
CHINA
NORTH VIETNAM
GULF OF TONKIN
LAOS
Nakhon Phanom
Dong Ha
THAILAND
Pleiku
CAMBODIA
Da Lat
SOUTH VIETNAM
Bien Hoa
Binh Thuy
GULF OF THAILAND
SOUTH CHINA SEA

systems.* In the wake of several unfortunate short rounds or bombing errors in early 1967, the Air Staff, PACAF, and Seventh Air Force would redouble their efforts to improve night and all-weather operations in Laos and North Vietnam.†[84]

The rising demand for Thai-based USAF helicopters to support roadwatch operations in Laos and southern North Vietnam was warmly debated by Saigon and Washington officials in late 1966. The helicopters were sent initially to Thailand in April 1966, when the administration directed the Air Force to dispatch four UH-1Fs and several "Jolly Green Giant" CH-3s with crews and maintenance personnel from South Vietnam to Nakhon Phanom. The mission of the helicopter units was to train the Royal Thai Air Force in counterinsurgency and thus help the Thai government deal with the insurgency in northeast Thailand. Fresh copters came, and by September 1966 there were ten UH-1Fs and fifteen CH-3s, the bulk of them at Nakhon Phanom and a few at Udorn. Except for the original UH-1Fs, all were assigned temporarily to assist the Thais.

The State and Defense departments assumed that the RTAF counter-insurgency training could be completed in ten months. They therefore ordered on June 16, 1966, that all USAF helicopters be withdrawn from Thailand by January 31, 1967.[85]

However, after the helicopters and their USAF aircrews deployed to Thailand, they found themselves inexorably drawn into more than training activities. From time to time they took part in the Thai government's counterinsurgency program. On August 8, 1966, for example, eight UH-1Fs and a CH-3 airlifted 350 Thai police and army troops from Udorn to Sakon Nakhon in northeastern Thailand where they occupied positions surrounding an insurgent area. Also, copter units were called upon more frequently to provide support (code name PONY EXPRESS) for tribal intelligence-gathering and targeting operations in southern Laos and North Vietnam. By late in the year, the units were repeatedly used to assist in search and rescue activities for American, Laotian, and South Vietnamese pilots downed in Laos.[86]

Not surprisingly as the withdrawal date of January 31, 1967, approached, USAF commanders and officers associated with the diverse programs viewed with mounting dismay the impending loss of all helicopters. Service interest also dictated retaining the copters, for all the

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*For further discussion of MSQ-77 operations in Southeast Asia, see Durkee, *Combat Skyspot*, and Anthony, *Tactics and Techniques of Night Operations, 1961-1970*, pp 203-06.

†See Chapter VIII.

officers believed that the Air Force deserved a larger role in the currently Army-dominated special air warfare field. Ambassador Sullivan, intent on expanding CRICKET operations, backed the Air Force position. "All this augmentation [in roadwatch activity] has been possible," he said in a personal appeal to McNamara, "[because of] CH-3 Pony Express helicopters." If the copters were withdrawn, he warned, "we [will] have to revert to our previous [lower] levels of activity in the [Laotian] panhandle." He sent a similar message to Secretary Rusk.[87]

Notwithstanding the "military necessity" argument, there were countervailing views. In Bangkok, Ambassador Martin thought it unwise for the United States to involve itself more deeply in the Thai government's counterinsurgency program. He said that "with some struggle" the Thais could manage their own helicopter training and counterinsurgency. There was the further sensitive issue of using Thai bases as a springboard for covert copter operations in Laos and North Vietnam.[88]

At the same time, Ambassador Sullivan's spirited insistence on retaining the helicopters impelled McNamara to back off from his original withdrawal order. He said he would be "receptive" to detailed justification for retaining helicopters in Thailand for special operations in Laos and North Vietnam. After studying the Air Staff paper on the matter, the Joint Chiefs of Staff at once offered arguments to keep nine or ten CH-3s in Nakhon Phanom. General McConnell, in a personal memo to McNamara, adopted Admiral Sharp's tactic of urging as a minimum the retention of the original UH-1Fs at Nakhon Phanom for "out country" airlift.[89]

On January 19, 1967, the Defense secretary made his decision. He accepted the Sharp-McConnell recommendation to keep the four UH-1Fs at Nakhon Phanom for use in Laos and North Vietnam and barred their use in any fashion for Royal Thai Air Force counterinsurgency training or operations. As a consequence, the twenty-one remaining helicopters were returned at the end of the month to their parent organizations in South Vietnam. But their departure would prove only temporary. Late in the year, a dozen CH-3 Jolly Green Giants were once again in Nakhon Phanom, this time to support the new IGLOO WHITE sensor-oriented anti-infiltration program.[90]

With the onset of the TALLY HO program in southern North Vietnam on July 20, General Westmoreland wanted to step up B-52 ARC LIGHT bombings in southern Laos and spread them into the western demilitarized zone and DRV territory just above the zone. His justification was the same as for launching TALLY HO operations: the infiltration of major elements of the NVA's 324B Division through the western demilitarized zone into South Vietnam's northern I Corps, and the

presence of large, unidentified enemy troop and supply resources near Tchepone, poised to reinforce the 324B Division. He believed a communist "monsoon offensive" was imminent.[91]

A year of B-52 close support and interdiction bombing in South Vietnam* and limited strikes in Laos had convinced Westmoreland (but not Seventh Air Force)† that the SAC bomber was the most pivotal, single weapon in the American arsenal for waging jungle warfare. Ground commanders in particular were impressed by the bomber's firepower and wanted more of it. As a SAC assessment noted: "An infantryman could always use more heavy artillery and to him that is what the B-52's were." By mid-1966, the MACV commander had become highly assertive in his requests for more ARC LIGHT sorties in South Vietnam, Laos, and border areas. His desire to extend the bombings westward in Laos on targets uncovered by MACV SHINING BRASS units conflicted, however, with the Vientiane embassy's and Washington's policy to restrict SAC missions close to South Vietnam's border to assure concurrent cover strikes in that country. B-52 bombing of the demilitarized zone and North Vietnam posed separate political problems.[92]

To help blunt the expected enemy monsoon offensive in South Vietnam's northernmost Quang Tri and Thua Thien Provinces, Westmoreland singled out eleven targets near Tchepone for the ARC LIGHT bombers. They were part of a lengthier list of MACV targets Ambassador Sullivan previously refused to approve because all were six to sixteen miles west of South Vietnam's border. Such distances made questionable the ability to maintain the secrecy of the B-52 operations in Laos by flying cover strikes inside South Vietnam. The ambassador also objected to several targets because they were near populated areas or roadwatch teams. In a few cases the target data was outdated. The most sensitive issue, however, was Souvanna Phouma's official ignorance of the secret ARC LIGHT operations in Laos.[93]

Convinced that none of the above factors were very compelling, the MACV commander cited military reasons why the Tchepone targets should be struck:

> A route traffic analysis shows that the rainy season has had a decided impact on the load capacity of the roads which, in turn, has caused the pile up of supplies

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*SAC ARC LIGHT bombing of South Vietnam began June 18, 1965.

†As noted earlier, all substantive decisions on targeting for and use of SAC B-52 bombers in Laos were made by General Westmoreland, in coordination with Vientiane and Washington. The Seventh Air Force commander had no voice in these decisions, and CINCSAC's role was heavily circumscribed. See Chapter V.

> stored in the target areas. Without exception, visual reconnaissance has provided additional information on supply storage in each target [area]. In addition, fording is very difficult, if not impossible [at] the Xe Bang Hieng River at Tchepone and the Xe Pon River at Ban Dong. Ferry systems are in use at both locations which further reduces supply flow and as a result increases storage requirements along the routes.

Keeping restrictions on the use of B-52 bombers in this area, Westmoreland said, gave the enemy a "safe sanctuary" in Laos close to South Vietnam's Quang Tri and Thua Thien Provinces in I Corps. Even though he could use tactical air on the Laotian targets, it was "beyond the capability of tactical air" to destroy them. Only the SAC bombers could impede the supply flow into I Corps and thwart the NVA from opening another offensive in that sector.[94]

Having received no favorable response from his superiors, Westmoreland asked for and Sullivan assented to a meeting at Udorn on July 19. There the MACV commander underlined again the value of saturation bombing of the enemy troops and supplies near Tchepone that threatened the security of Quang Tri and Thua Thien Provinces. He stressed the "outstanding" accuracy of the B-52s day or night from about 32,000 feet. The only significant political fallout from an ARC LIGHT attack, he said, would consist of Pathet Lao propaganda blasts and protest letters to the International Control Commission.

Sullivan was unpersuaded. He asserted that any extension of the bombing into Laos needed Souvanna Phouma's consent. The ambassador agreed to ask Souvanna (Washington willing) but warned that the latter's negative response could halt the surreptitious ARC LIGHT bombings. Souvanna was abroad at the moment but was expected to return to Vientiane about July 25.

In summarizing the Udorn meeting for State, Sullivan said he was willing to solicit the prime minister's permission to attack the Tchepone targets solely because of "Westy's strong presentation" of their importance and conviction that tactical air was not adequate for the task.[95]

After consulting with his administration colleagues, Secretary Rusk still frowned on a Sullivan-Souvanna meeting on the subject, thus leaving the Tchepone targets unapproved for SAC bombing. Also left hanging was a sensitive ARC LIGHT request to bomb supply and other targets adjacent to the North Vietnamese border, about nineteen miles above the demilitarized zone. A concurrent strike in South Vietnam seemed unrealistic, and a concurrent strike on DRV soil opposite the Laotian targets raised another political question. Up to now, Washington had allowed just two ARC LIGHT missions on the North, both in April 1966 on road and trail approaches to the Mu Gia Pass.[96]

Westmoreland persisted. On August 2 he revalidated the 11 Tchepone targets and proposed striking them with 216 ARC LIGHT sorties. This type of saturation bombing, he averred, was crucial to the continued success of allied air and ground operations underway in South Vietnam's I Corps. He said no target was closer than 4 miles to a Laotian roadwatch team or 3 miles to a populated area.[97]

In the briefings and messages that followed, Westmoreland kept underscoring the danger of a monsoon offensive by the North's 324B Division, and the need to blunt it with B-52 strikes. More air power was a must. He credited recent TIGER HOUND strikes and monsoon weather with preventing the communists from developing a serious offensive and resupplying their units adequately in South Vietnam through the demilitarized zone. The launching of the TALLY HO program on July 20 against routes in North Vietnam just above the demilitarized zone had also been helpful in checking the enemy. The 324th posed a greater challenge, and the likelihood of the division's beginning a monsoon offensive was "no myth." It was solidly based on intelligence from a recently defected Viet Cong lieutenant colonel who had held a "a key planning assignment" and forecast a VC/NVA drive to capture Dong Ha and Quang Tri in the northern I Corps region. The next two months promised to be "critical" with American forces "strained to the utmost" in sustaining spoiling operations. The B-52s would play a paramount role if restrictions on their use—in Laos, the demilitarized zone, and the DRV area just above it—were relaxed.

ARC LIGHT operations, Westmoreland said, were "a major innovation of the war," giving a ground commander "an unprecedented advantage over the enemy and a means to deter or counter the Asian tactic of employing mass formations on the battlefield." Their psychological impact, while not precisely measurable, was impressive. VC and NVA captives and returnees repeatedly stated that "they fear B-52 strikes more than anything else." This alone attested to "far more effective results than are generally realized."[98]

Westmoreland's urgings on behalf of more B-52 bombing in Laos, the demilitarized zone, and North Vietnam had by now become deeply intertwined with plans to beef up the current 30-bomber force in Guam, presently generating 400-plus sorties a month largely in South Vietnam. Tentatively, the next increment would boost the bomber force to 50, then to 70 bombers, the latter number to support an 800 monthly sortie rate throughout the war theater. Also being considered was forward basing of some bombers to shorten the approximately 12-hour round-trip flight

between Guam and targets in Southeast Asia. A decision to base part of the ARC LIGHT fleet in Thailand would be made in early 1967.*[99]

In late August, Vientiane and Washington officials gradually acceded to the bombing of four new formerly sensitive infiltration targets in Laos. Sullivan first approved two targets opposite Thua Thien Province, the area of greatest concern to Westmoreland. The ambassador did not approve two targets farther south opposite Kontum Province and astride the Sihanouk Trail (Route 110), since they were around fifteen and a half miles from the South Vietnam border. The Sihanouk Trail targets, Sullivan said, were within "bombing earshot" of Attopeu, making it difficult if not impossible to deny a B-52 strike. Then, too, a strike posed a danger to a roadwatch team set to conduct surveillance near the town. Yet a few days later he suddenly gave the green light for an ARC LIGHT assault on the targets. He specified that it be carried out before September 1, the embassy be informed forty-eight hours in advance to make sure no roadwatch or other special teams were in the area and only BLU-38B munitions be dropped. SAC swiftly struck the targets.[100]

Then at the beginning of September, officials in Washington signaled a possible change in mind about ARC LIGHT bombing of the demilitarized zone and the DRV area above it. Secretary Rusk explained that SAC bombing of the two areas had been forbidden until now lest it be construed "in some circles" as military escalation and maybe a "softening up" for more direct allied ground attacks. B-52 bombing of the zone was especially sensitive. It could jeopardize the Saigon government's current diplomatic initiative to have the International Control Commission take up the issue of the DRV's use of the zone, and to form a special joint commission to oversee the zone's neutrality (as intended by the 1954 Geneva agreements). Rusk was nonetheless willing to consider employment of tactical air in the zone's northern sector if there were "positive lucrative targets." McNamara endorsed Rusk's decision and left open the possibility of B-52 strikes in this area in the event of military developments of a "highly critical nature."[101]

A greatly encouraged Westmoreland in mid-September sent Admiral Sharp and the JCS the latest intelligence on the communist threat in the demilitarized zone and the Laotian border area closest to South Vietnam's two northernmost provinces. He set forth his plans on how to deal with it. With the danger at "flash point" in and right above the zone, he would have B-52s "open up" the jungle canopy then send in more ARC LIGHT bombers and tactical aircraft to pound the foe's troops

*See Chapter VII.

and supply redoubts. In Laos, just west of the Quang Tri and Thua Thien Provinces, he would try to beat the enemy by bringing to bear all available B-52s and fighter-bombers in the SLAM air-ground plan.* SLAM operations could likewise be applied to other targets in Laos opposite South Vietnam's I Corps boundary. He foresaw a probable VC/NVA attempt to "liberate" the provinces of Quang Tri and Thua Thien, and to inflict heavy casualties on the allies.[102]

Westmoreland also warned Vientiane and Washington of the chance of another major communist infiltration push through the Laotian panhandle as the southwest monsoon abated and the condition of roads for truck traffic improved. To blunt the drive, the MACV commander wanted closer coordination between MACV and Vientiane's military planning and programs. The working relationship between his headquarters and the Vientiane embassy, he noted, was inadequate. For example, without informing MACV, Vientiane sometimes emplaced roadwatch teams in areas already targeted by the TIGER HOUND Task Force in southeastern Laos.[103]

To talk over these and other matters, Westmoreland, Ambassadors Sullivan and Martin, Momyer, and Vientiane's air and army attaché met at Udorn on September 16. Sullivan agreed at the meeting to send an embassy delegation to MACV headquarters. It would work on bettering coordination of the multiple anti-infiltration programs in Southern Laos—CRICKET, TIGER HOUND, roadwatch teams, SHINING BRASS teams, and the new SLAM program when approved. The need for additional ARC LIGHT sorties in Laos was intensively debated. Westmoreland and Momyer predicted that the DRV would begin in mid-October to send a "high volume of goods" through central and southern Laos and speed repair of roads. The logistic effort would be blunted in part by bombing big supply stockpiles just inside the North Vietnamese border with B-52 and tactical aircraft. The heaviest strikes would center on the approaches to Mu Gia Pass in North Vietnam (two B-52 missions had been flown in this area in April 1966) and along Route 912 barely below the pass in Laos. Of course this meant overcoming Washington's general aversion to ARC LIGHT bombing and in particular its fear of SA-2 sites in and around Mu Gia Pass. Sullivan backed these proposals in his summary of the meeting for the State Department, but said he was aware of the "many factors" inhibiting the use of bombers.[104]

The Udorn meeting turned out to be another showdown of sorts between Westmoreland and Sullivan. The question was who should have preeminent command authority over the proliferating U.S. air and

*The first SLAM strike took place on October 7, 1966.

ground programs in Laos. The MACV commander well knew how Sullivan jealously guarded his ambassadorial prerogatives and took great pride in his military as well as diplomatic responsibilities in the war. Since the ambassador's return from Washington in July 1966 he had, in Westmoreland's view, involved himself more deeply than previously in military matters, appearing at times to be "going off [on] a tangent." The MACV commander was convinced his authority should extend to programs "involving routes of communication through Laos leading into the battlefield in South Vietnam." When Sullivan dissented from this view, Westmoreland replied it would be "amazing" if the United States won the war in Southeast Asia in view of the diffused military responsibilities and warned that if the MACV-Vientiane command relationship worsened, he might have "to make representation" at the highest governmental levels. The solution, he said, might lie in appointing a military commander for Southeast Asia with ambassadors serving as political advisers. He believed he could live with the problem for the time being, but the question was, "how long?"[105]

While Sullivan's military views were more often than not pivotal, final approval for loosing the ARC LIGHT bombers on new Laotian targets reposed in Washington. After a far-reaching interagency review, Secretary Rusk on September 13 gave the go-ahead for the ambassador to seek Souvanna Phouma's sanction to bomb several targets near Tchepone. All lay nine or more miles west of South Vietnam's border. Rusk counseled Sullivan to accent certain points in his talk with the prime minister. The B-52s would fly only at high altitude; use the same type ordnance as tactical aircraft; avoid villages, towns, and other populated areas; and bomb safely within one to two miles of friendly troops or civilians (as had been consistently done in South Vietnam). In addition the United States would stick to its "no comment" policy concerning other military operations in Laos.[106]

Upon meeting with the prime minister in mid-September, Sullivan asked permission to bomb eight of the original eleven key targets in the vicinity of Tchepone. Souvanna assented, provided that American pilots made "no mistakes," that the bombing was accurate, and that it not be disclosed publicly. He planned to conceal for the present his decision from General Thao Ma and the FAR General Staff. To allay Souvanna's concerns, the ambassador portrayed the "general operating accuracy" of the MSQ-77 bombing system presently used in South Vietnam. He affirmed there would be cover strikes on South Vietnamese targets and promised to give advance notice of all missions.

Summarizing his meeting for Washington's officials, Sullivan said Souvanna doubted that the United States could keep SAC bombings secret but was willing to test the security effort. Agreeing with this

observation, the ambassador said that preventing bombing leaks "will be of major importance in determining whether or not there will be subsequent permission for other strikes of this nature." To assure security, he recommended keeping separate categories for the ARC LIGHT strikes in Laos: Category I for strikes conducted near South Vietnam's border without Souvanna Phouma's knowledge, and Category II for strikes approved by the prime minister. "I need not stress," Sullivan concluded, "how sensitive these strikes will be, not only in relation to [the] future of our program but also in terms of Souvanna's international posture on [the] eve of his appearance at [the] U.N. General Assembly."[107]

When incorporated in a basic ARC LIGHT operations order issued by CINCPAC, Category I targets were defined as those having prior approval of the Saigon government and the American embassy at Saigon for attacks in the vicinity of the South Vietnam border. Such targets were to require no more than a three-nautical-mile penetration of Cambodia* or the slightest feasible penetration of the demilitarized zone, North Vietnam, and Laos. The targets were to be located no closer than two miles to friendly combatants and no nearer than one mile to any noncombatant dwelling. All targeted areas should be free of monuments, temples, or other landmarks likely to cause political problems if hit. COMUSMACV would have operational authority over Category I targets. Category II targets and target areas were those in the northern demilitarized zone, Route Package I of North Vietnam, and those beyond three nautical miles into Laos and Cambodia. COMUSMACV had to request strike permission at least twenty-four hours in advance, and only higher authorities in Washington could approve such operations. The foregoing guidelines would not vitiate the right of the American ambassador in Vientiane to approve or oppose planned strikes in Laos.[108]

Meanwhile, Sullivan immediately advised Westmoreland and Sharp of Souvanna's clearance to strike eight targets near Tchepone, and authorization to do so was shortly received. An area normally occupied by a roadwatch team posed the sole problem. Since the absent team would be reinserted by October 1, the target should be struck before that date.[109]

At about the same time, Washington officials acceded to Westmoreland's frequent requests to commit the SAC bombers against the 324B Division's troop and supply redoubts and movements in the demilitarized

*Surreptitious ARC LIGHT bombing of Cambodia was contemplated at this time but not authorized until March 1969.

zone and the DRV area just above it. The bombings began quickly. From September 15 to 26, SAC flew eight missions in the southern half of the demilitarized zone. One was astride the zone, two were in the northern half of the zone, and four were in North Vietnam proper. The bombings supplemented the current TALLY HO air strikes in the southernmost sector of the North's Route Package I and the heavier operations of ARC LIGHT, Seventh Air Force, and III MAF just below the demilitarized zone.[110]

When a special International Control Commission team finally investigated violations of the demilitarized zone's "neutrality," MACV suspended ARC LIGHT strikes within the zone on September 26. The investigation failed to slow the North's infiltration through the zone and into South Vietnam's Quang Tri Province. Hence American officials approved on October 13 a resumption of B-52 and tactical bombing. Then ten days later, after intelligence reports showed SA-2 surface-to-air missiles emplaced in the area, ARC LIGHT bombing was suspended. Tactical bombing was allowed to continue.[111]

By the end of September, Generals Westmoreland and Walt still looked for a major communist offensive right below the demilitarized zone, but it failed to materialize. This was ascribed to the constant B-52, Seventh Air Force, and Marine spoiling operations in I Corps, Laos, the demilitarized zone and the DRV area just above it. A remarkable dual ARC LIGHT bombing policy prevailed in Laos. There were deep bomber penetrations inside the country conducted with Souvanna Phouma's concurrence, while bombing near South Vietnam's border continued to be carried out without his official consent.[112]

During the remaining months of 1966, B-52 bombing rules underwent no substantive changes. Monthly bombing sorties in Laos were as follows: July, 18; August, 40; September, 49; October, 66; November, 77; and December, 42.* Sullivan maintained hawk-eyed scrutiny of all target requests. He enjoined commanders and Washington officials again to keep strict bombing secrecy, a policy that surprisingly appeared quite successful, since in recent months the press seldom alluded to Laotian ARC LIGHT missions. But in early 1967 the news media would give unwanted publicity to the Laotian B-52 strikes.[113]

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*There were 406 ARC LIGHT sorties flown in Laos during the first half of 1966 and 111 reported for January 1967. Thus, it appears that probably for security reasons the sorties for the last half of 1966 were underreported. This assumption is further based on the worsening military situation in South Vietnam's I Corps in the last half of the year, requiring more SAC sorties in the Laotian border areas. The sorties were presumably added to B-52 totals for South Vietnam.

Washington approved no more B-52 bombing of the demilitarized zone or North Vietnamese border areas until December 1966. Then nine missions were flown in the zone and four on DRV soil a bit above it. On the 12th, SAC received the green light to bomb the approaches to Mu Gia Pass, sixty miles above the zone. Nine sorties were flown immediately to slow the flow of NVA personnel and supplies through this major infiltration artery feeding into the Ho Chi Minh Trail. In contrast to the missions in Laos, those flown in the demilitarized zone and North Vietnam were fully publicized.[114]

Thus, by year's end, Westmoreland had wrenched from Sullivan and Washington officials permission to extend ARC LIGHT bombing deeper into Laos and nearby border areas. He had in addition convinced the ambassador of the need for closer MACV-embassy coordination. Still wanting was authority for the MACV commander to deploy the B-52s in various geographic areas as often and as swiftly as he desired.

What did the ARC LIGHT strikes accomplish in Laos and border areas during the last half of 1966? How many troops were killed? How many tons of supplies were destroyed? Could not Air Force, Navy, and Marine Corps tactical aircraft have achieved the same results—and with less ordnance? Similar questions were being asked about the B-52s in South Vietnam that performed both interdiction and close support.[115]

The use of B-52s in Laos kept alive within the Air Force the issue between "saturation" bombing by strategic-type bombers and bombing by smaller, tactical aircraft. The debate had arisen in early 1965 when the administration ordered SAC bombers deployed to Guam and began using them in South Vietnam and Laos in June and December respectively. By mid-1966 the debate had escalated as General Westmoreland—ironically an Army commander—became the B-52's leading advocate. He demanded more of these bombers to step up the strikes on communist troop and supply redoubts in Laos and in South and North Vietnam.[116]

As in the past, the Air Force was not of one mind on the usefulness of SAC bombers in jungle warfare. In July 1966, Col. Francis R. Cappelletti, Chief of the Targets Division in Seventh Air Force, analyzed 371 SAC missions including 50 in Laos. He discovered little hard evidence to support the alleged damage inflicted on the communists by the bombers. Although numerous poststrike ground sweeps of SAC-bombed areas had been completed in South Vietnam and Laos (with MACV's SHINING BRASS teams doing the Laotian ones), the troops detected limited data because of heavy jungle vegetation and the danger from booby traps and other hazards. At best the data commonly disclosed a certain number of enemy trenches or bunkers (of an unknown total) destroyed or caved in, and a certain quantity of rice and other supplies (again of an unknown total) destroyed or captured. Aerial bomb

damage assessment was likewise hampered by the jungle terrain and aircraft altitude. Typical reports read, "Visual reconnaissance indicated no visible military damage," "fog and weather delayed visual reconnaissance," or "no significant military damage was noted." Aerial photography produced even less evidence, as a rule showing just the number of bombs hitting inside or outside of a target area.[117]

Colonel Cappelletti's analysis also cast doubt on Westmoreland's claim that ARC LIGHT bombings had an important psychological impact on ralliers, captives, and refugees. The targeting chief found no statistical basis for attributing defections or bombing fear to B-52s as against tactical bombing because

> evaluation of the effectiveness of B-52 strikes remains an unknown quantity. The merits of employing such a strategic weapons system against the types of targets that have been selected are still debatable. The expenditure of ordnance by B-52's does not appear to be justified either on the basis of target selection . . . or on the basis of BDA [bomb damage assessment] which presumably should provide justification for subsequent B-52 strikes.

Colonel Cappelletti concluded that

> several hundred tons of bombs are dropped into a small area, and are perhaps wasted, whereas the same tonnage could be parceled out among a greater number of fighter bomber sorties tailored and directed against a wider spectrum of targets. Furthermore, in the latter instance, there is a much better probability of acquiring meaningful BDA, and thus rendering a more substantive evaluation of effectiveness of tactical air forces in this theater.

Once, many targets such as base camps were considered suitable for B-52 bombing, he noted. Now they were so small as to warrant solely tactical attacks. Few good B-52 targets were left in South Vietnam.[118]

General Momyer, Westmoreland's Deputy Commander for Air, agreed. "I think you would have to conclude the B-52's have been relatively ineffective," he informed General Harris,

> I have flown over many B-52 strike areas and looked at the results in detail. There has been no killing of large bodies of enemy troops, no destruction of quantities or enemy materiel, and no denial of territory to the enemy. . . . How many troops they had in the area when they departed and what their mission may have been is a good question.
>
> There has been a continuous follow-up of B-52 strikes with visual reconnaissance and photographic coverage on the target area . . . . We have yet to uncover any major target complexes for exploitation.[119]

Thus "from an airman's view" he considered B-52 targets of questionable worth. He conceded only that from Westmoreland's perspective the bombers should be used in the same manner as the long-range artillery "to suppress what may or may not be a suspected enemy concentration or supply area. That the bombers "spoiled" a would-be attack was only a presumption.

Momyer opposed a further buildup of the SAC force to boost the B-52 sortie rate. He desired to hold the line at the present 2 squadrons (30 aircraft) to fly about 150 sorties a month. Nor did Westmoreland deem it essential to reduce ARC LIGHT "reaction time" for strikes, since the bombers were no substitute for faster-reacting tactical aircraft or artillery. He supported basing some bombers closer to the war theater simply to cut flying hours and tanker refueling needs.[120]

There was, however, an opposite USAF view that generally supported Westmoreland's desire to quicken the tempo of ARC LIGHT bombing. Brig. Gen. George B. Simler, Seventh Air Force Deputy Chief of Staff for Plans and Operations from April to July 1966, believed the superbombers had a role to play in Southeast Asia. He underscored their need in Laos against storage areas which lent themselves to area bombardment, judging it inefficient to use tactical aircraft for such targets.[121] Maj. Gen. Lucius D. Clay, Jr., Air Force Director of Plans, likewise favored more ARC LIGHT bombing in the war theater. It came as no surprise to him that Westmoreland thought the SAC bombers to be the "greatest single innovation of the war." ARC LIGHT bombing, Clay said in September 1966, "has given ground forces a kind of fire support . . . no other Army has ever had."

> By way of example, the smallest flight of B-52's, three aircraft, can deliver 188,068 pounds of ordnance with a 500-foot CEP [circular error probable] within two minutes from start to finish—anywhere in Southeast Asia. By way of comparison, all fifteen U.S. 175-gun battalions in the U.S. Army (176 guns total) could only deliver 81,000 pounds of ordnance within two minutes. There are only two of these self-propelled 12-gun battalions in all of South Vietnam. They are limited to 30 n.m. range, and can fire a projectile which weighs about 150 pounds. It is also easy to see that naval gunfire, with its limitations, could not begin to compare with even a minimum Arc Light mission.

General Clay suggested the use of more SAC bombers in Southeast Asia—and not merely for interdiction. It was his belief that the bombers also constituted "the best case that can be made to demonstrate the versatility, flexibility, responsiveness, and unique lethality of the manned strategic force and the need for a follow-on advanced strategic aircraft."[122]

By late 1966, there was no longer any question whether ARC LIGHT bombing would be beefed up in Laos and South and North Vietnam. While visiting Saigon in October to review the war's progress and plan for additional U.S. and allied military needs, Secretary McNamara said he would back Westmoreland's desire to augment the bomber force. He sanctioned an increase in the bomber fleet on Guam from 30 to 50 aircraft and the deployment of more refueling tankers to support 650 ARC LIGHT sorties monthly. The Defense secretary seemed to have been convinced by MACV briefers that B-52s, like tactical aircraft, could provide effective close support for ground troops. But he was less certain about the bomber's interdiction impact on the enemy, asking the Air Force to devise a more sophisticated way of measuring it. Despite this reservation, he further approved in November a B-52 force of 70 bombers on Guam to assure an 800 monthly sortie rate by February 1, 1967. And he endorsed planning for forward basing of some of the aircraft, although the final decision to emplace them at Sattahip, Thailand (later U-Tapao RTAFB) was not made until early 1967.[123]

Chapter VII

Renewed Hope in the Anti-Infiltration Effort January–May 1967

In truth, the debate over B-52 effectiveness as well as other anti-infiltration programs was academic to McNamara. In contrast to Air Force, Military Assistance Command, Vietnam, Pacific Command, and Joint Chiefs of Staff assessments, he did not expect the programs to seriously reduce VC/NVA capability or induce Hanoi to come to the negotiating table. Yet, he did not go against military and other domestic pressures by recommending an end to B-52 or tactical bombing in the North.

The Secretary of Defense believed that pressures to escalate the bombing in Laos and North Vietnam could be lessened by proceeding with a combined linear and limited air-supported anti-infiltration barrier that had been under Defense Department study for many months. The linear portion would be built in western South Vietnam just below the demilitarized zone. The air-supported portion consisting of enemy-identifying acoustic and seismic sensors would be placed at key points on the Ho Chi Minh Trail in southern Laos. Convinced that the barrier concept was superior to existing air programs, McNamara in September 1966 ordered the military services to start the project.*

Air Force commanders at first opposed the barrier concept and defended present anti-infiltration programs. They faulted the latter mainly because of the curbs placed on air power that augured for a more protracted conflict. "As long as we fight within the current dimensions of [existing] policies," said General Momyer at an Air Force commanders' conference near the close of 1966, "we are going to have to look at results produced over a long period of time rather than any dramatic accomplishment that will come from the single employment of the force."[1]

*See Chapter IX.

Brig. Gen. Rockly Triantafellu, Seventh Air Force Director of Intelligence, had a blunter explanation of why aerial results were limited and American forces were not doing better in Southeast Asia. The reason, he said, was the

> steady-by-jerks charter we are operating under, whereby the number, quality, and location of targets are metered out by targeteers employing a unique set of thought processes, the essence of which is: give the enemy the maximum time to think out his counteraction, the maximum time to solicit outside help, and permit no action that would prevent [the enemy] from receiving such help.[2]

Air Force commanders and pilots of course realized they had to fight the war within the established air rules. This they continued to do while frequently recommending ways to improve current programs, such as employing new tactics, developing better munitions, and flying more vigorous and less restrictive operations against enemy infiltration.[3]

General McConnell urged his Southeast Asia commanders to use area-denial ordnance whenever possible, and to maintain round-the-clock surveillance of and strikes against infiltration roads and trails in both Laos and North Vietnam. The Air Force chief also said he planned to install more COMBAT SKYSPOT MSQ-77 radar facilities to perfect theater-wide air navigation and bombing, and to test POPEYE, a cloud-seeding, rain-inducing program in Laos. McConnell hoped that all of these actions would eventually mesh with the anti-infiltration barrier system presently under development. Despite opposition to the system at the outset, all USAF commanders were now supporting it.[4]

During a meeting at Udorn on January 14, 1967, attended by Generals Momyer and Westmoreland, Ambassador Sullivan and others, Momyer and his aides said that despite many air constraints, the current anti-infiltration effort was making headway. For example, air attacks destroyed and damaged more enemy trucks between December 6, 1966, and January 10, 1967, than in the same thirty-five-day period during 1965-66. The Seventh Air Force commander unveiled a new, seven-day, ARC LIGHT B-52 interdiction plan for Laos. It called for two B-52s to fly nightly against a pair of targets in the STEEL TIGER or TIGER HOUND sectors, in conjunction with USAF tactical strikes and photo and side-looking airborne radar reconnaissance. Both Sullivan and Westmoreland evinced keen interest in the plan but withheld immediate approval. They wanted to clarify the decisionmaking process, obtain assurances that no friendly Laotians would be in the proposed target areas, and determine how the requirement for cover strikes in South Vietnam could

be met. The ambassador further believed that the proposal should be discussed with Prime Minister Souvanna Phouma.

The conferees did agree to conduct more SHINING BRASS intelligence-gathering and targeting probes, SLAM air-ground operations, and to expand tribal roadwatch team targeting now that more teams had the Hark-1 and Hark-2 communication sets. Largely at Ambassador Sullivan's insistence, the conferees decided to retain the A-26Ks for night strikes on enemy trucks and other infiltration targets. General Momyer nonetheless felt that the aircraft were obsolescent, too vulnerable to enemy ground fire, and should be replaced by jet fighters.[5]

The need for greater air and air-ground operations was highlighted on January 21 when the Saigon embassy informed Sullivan that an estimated 7,000 North Vietnamese were now entering South Vietnam monthly, mostly through Laos.* Admiral Sharp added a gloomy prognosis. He told the JCS on the 25th that no single measure could stop infiltration as the DRV had too many alternate land, river, and sea lines of communication available in the war zone. He said infiltration could most readily be checked by striking the North's key targets and closing its ports. Since high administration officials were still loathe to take this oft-repeated recommendation seriously, theater commanders had no alternative but to expand the operations already under way. During the first 6 months of 1967, they intensified SLAM operations, SHINING BRASS probes, night interdiction, and other new programs.[6]

The discovery on January 25 that east-west Route 110 (the Sihanouk Trail) in southern Laos had become a major supply artery for the South Vietnamese insurgents afforded an opportunity to enlarge the SLAM concept, first used in October 1966.

In forwarding this finding to the joint chiefs, Admiral Sharp believed that a target complex near the Sihanouk Trail (about fifteen miles west of South Vietnam's Kontum Province) met the SLAM criteria. Urging approval of SLAM III, he asserted that it offered "the most extraordinary and golden opportunity rarely presented to inflict severe damage on the enemy."[7]

Vientiane and Washington quickly signaled their go-ahead for SLAM III. Seventh Air Force performed extensive prestrike photo reconnaissance of the target complex, then on January 30 and 31 commenced a coordinated B-52 and tactical air assault. A TIGER HOUND C-130 ABCCC controlled the planes. The B-52s flew two fifteen-aircraft

*Later, MACV intelligence analysts concluded that the total confirmed, accepted, and possible DRV infiltrators into South Vietnam had totaled only 4,100 in December 1966, 5,000 in January 1967, and 5,200 in February 1967. [Msg, COMUSMACV to CINCPAC, SECSTATE, *et al*, 010626Z Dec 67.]

missions with separate, concurrent cover strikes in South Vietnam. Poststrike USAF reconnaissance followed at once. Meanwhile, three separate HORNET platoons were heli-lifted into the target complex, one on the 30th and two on the 31st. They did bomb damage assessment and pinpointed more targets for air strikes.[8]

In the ensuing days, VNAF helicopter pilots inserted several SPIKE teams to reconnoiter the area and call in additional USAF aircraft. For example, SPIKE Team MAINE was airlifted in on February 2. Spotting eighty-five enemy troops carrying AK-47 automatic rifles, the team requested a strike, and five USAF planes responded. On February 3 and 5, HORNET platoons DELTA and ECHO entered the bombed area and found numerous 60- and 90-mm mortars and 12.7-mm (.50-caliber) ammunition. After destroying part of the ammunition cache, they asked for air support. Three USAF aircraft further blasted the cache, setting off thirty-five secondary explosions. The ECHO unit ran into trouble, becoming trapped temporarily by two communist companies. It was saved by the timely arrival of Air Force planes that plastered the foe with napalm, killing and wounding an unknown number. This stemmed the assault long enough for helicopters to extract the unit. The operation cost ECHO one American and two Vietnamese killed and two Americans and nine Vietnamese wounded.[9]

By February 7, pilots had observed more than 180 secondary explosions following bomb drops, and there were more HORNET reconnoitering forays into the struck area during the next 2 days. By now, the aggregate intelligence from USAF photo and visual reconnaissance (the latter by USAF O-1 FACs) and the SPIKE and HORNET units fully confirmed the existence of a widely dispersed enemy troop and supply complex, considerably larger than first realized. In fact the target area extended farther south of Route 96 than expected, well beyond the reach of probing Meo or FAR roadwatch teams. Westmoreland meanwhile informed Sharp: "The results of the operations thus far indicated SLAM III has severely damaged the enemy supply system in southern Laos."[10]

SLAM III officially ended on February 13, but air-supported HORNET platoons kept up their reconnoitering. During February 10–27, 8 platoons were heli-lifted into and out of the target complex by VNAF CH-34s augmented at times by USAF CH-3s of the 20th Air Commando Squadron. These air-ground operations apparently slowed North Vietnamese Army movements along Route 110, but by March 23 there was ample evidence that the infiltration tempo was again rising. Seventh Air Force accordingly stepped up its attacks, pounding the complex with 110 sorties between March 23 and April 4.[11]

After HORNET platoons reported virtually "no end to the supplies," Westmoreland kept pressuring Washington officials to extend perma-

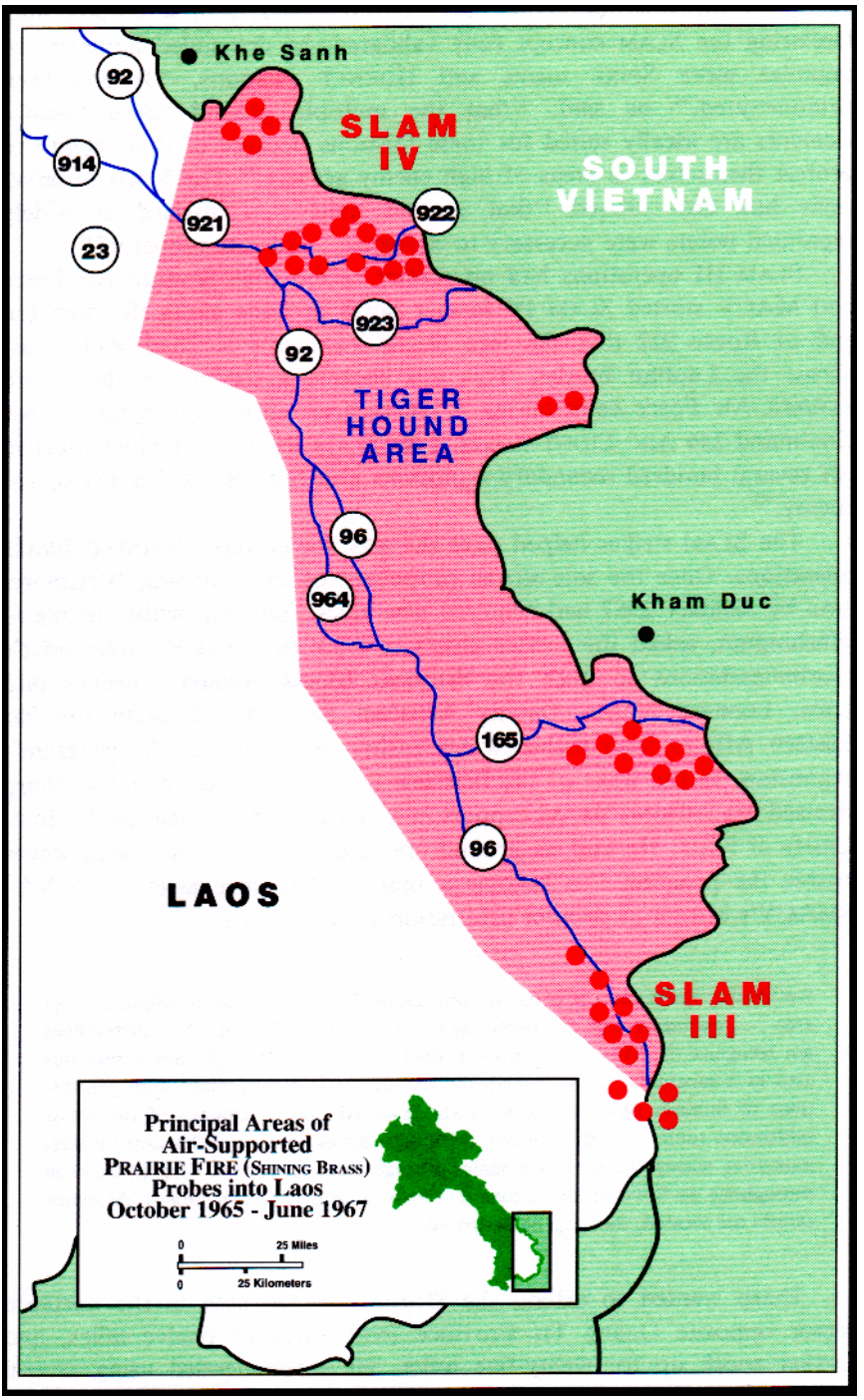
nently the SHINING BRASS boundary beyond the present seven-mile line. Declaring the SLAM concept fully validated, he demanded authority to organize more SPIKE teams and HORNET platoons. "It has been demonstrated," he said, "that the multiple ground reconnaissance elements are ideally suited for these missions because of their ability to protect themselves in areas of high enemy activity." The SLAM observations had also proved "that ground units . . . inserted at widely separated points were necessary to develop . . . targets properly."[12]

SLAM III operations had no sooner ceased than Seventh Air Force and MACV started SLAM IV farther north in Laos along the northern end of Route 922 that ran into South Vietnam's A Shau Valley just across the Laotian border. This too became a sizable air show with Seventh Air Force contributing 1,526 tactical sorties and Strategic Air Command 256 ARC LIGHT strikes. Like SLAM III, the bombings touched off several hundred secondary explosions and fires and killed 177 of the enemy.[13]

The SLAM strikes helped pave the way for enlarged SHINING BRASS operations. Once the sole strong proponent of the program, Westmoreland by January 1967 had acquired new allies. Sullivan, while visiting in Washington, asked the service chiefs to back the MACV commander's recommendations to push the SHINING BRASS boundary deeper into Laos. Leonard Unger, Deputy Assistant Secretary of State for Far Eastern Affairs, also withdrew his earlier objections to the program's expansion. In the wake of the first few SLAM III strikes, Admiral Sharp stressed his SHINING BRASS support in a vibrant endorsement to the Joint Chiefs of Staff. He said air-ground operations into a greater area would enable the program "to become a major intelligence asset to COMUSMACV's efforts to counter infiltration through Laos," for

> the Shining Brass concept is based upon detailed need to obtain intelligence in an area . . . extremely vital to operations in SVN [South Vietnam]. The enemy does not recognize the SVN/Laos border as does the U.S.; in fact, the enemy uses this area as a sanctuary. Only through the recent, specially authorized deep penetrations of SHINING BRASS teams [i.e., via SLAM III] has a terminus of the major infiltration route through Laos into SVN been discovered . . . . This area includes numerous enemy troops and a major storage area. Continued deep penetration throughout the SHINING BRASS zone is certain to uncover similar targets. As major targets are located, they can be destroyed.

Sharp wanted to extend the SHINING BRASS area in the northern sector opposite Quang Tri Province from three to twelve miles, and farther south up to twenty-five miles. He recommended using several


Khe Sanh
92
914
921
23
SLAM
IV
922
SOUTH
VIETNAM
923
92
TIGER
HOUND
AREA
96
964
Kham Duc
165
96
LAOS
SLAM
III
Principal Areas of
Air-Supported
PRAIRIE FIRE (SHINING BRASS)
Probes into Laos
October 1965 - June 1967
0
25 Miles
0
25 Kilometers

HORNET platoons in a single reconnaissance mission to gather "hard" target intelligence for SAC B-52 and Air Force and Navy tactical aircraft.[14]

Administration officials—notably President Johnson—were intent on keeping the war in Laos at low boil. They were therefore reluctant to sanction deeper SHINING BRASS probes into the trail. Yet in February the president changed his mind. The catalyst was another remarkable display of Hanoi's logistic skill during a bombing truce to celebrate the annual Vietnamese lunar holiday Tet from February 7 to 11.*[15]

The United States agreed to a truce of four days; the VC/NVA wanted seven. Once the truce began, however, it was extended to five days and eighteen hours. This was out of deference to Soviet Premier Aleksei N. Kosygin, who visited London in February to confer with British Prime Minister Harold Wilson on the war and other matters. Not until the Soviet leader was airborne for Moscow and after Hanoi again signaled it was in no mood to talk or negotiate did President Johnson permit Air Force and Navy bombers to renew their strikes on North Vietnam.[16]

Taking advantage of the bombing respite, the DRV set out on a day-and-night logistic push toward South Vietnam. Seventh Air Force analysts figured that the North Vietnamese were hauling supplies overland at the rate of about 200 trucks a day. Allowing 3 tons per truck, this would let the present 4 Viet Cong combat divisions fight for 4 more years, and the North Vietnamese Army's 4.3 divisions for more than a year.[17]

Three days after the DRV's prodigious supply movement began, the Seventh's analysts drew two contrasting conclusions. First, the supply movement attested to the extent the air campaign in North Vietnam and Laos had hurt the enemy badly, "probably to a far greater degree than we have previously estimated." Second, the magnitude of the resupply task and "the energy and determination" with which Hanoi carried it out signified it had "no intention of giving up its support of the war in the foreseeable future." Both conclusions, the Seventh said, punctuated "the importance of continuing and, if possible, intensifying the current programs of air strikes against DRV, and [pointed] up the futility of a . . . cessation of the bombing program without an equivalent deescalation by the other side."[18]

As planned, Air Force and Navy visual and photo reconnaissance, U.S. and Vietnamese observers aboard boats and ships, and scattered

*Washington and Hanoi since May 1965 had declared periodic bombing truces for political and propaganda purposes.

roadwatch teams were busy. They closely monitored Hanoi's supply flow along key roads and trails, rail lines, waterways, and through the Mu Gia Pass on the North Vietnamese-Laotian border. Their principal focus was on the area from the 19th parallel southward to below the 18th parallel. Seventh Air Force aircraft radioed reconnaissance findings periodically to MACV and PACOM, the latter consolidating the data for the JCS and Washington's intelligence and other agencies.[19]

PACOM's "wrap-up" of the DRV's bomb-truce logistic push highlighted how poor weather often hampered visual and photo observation. Thus, many reports were sketchy. Duplicate enemy truck, watercraft, and other data was eliminated insofar as possible. Significantly, there was virtually no information on the cargo of DRV trucks and watercraft. This did not deter PACOM analysts from concluding that the DRV had transported between 22,300 and 25,100 tons of supplies* from the North to points below the 18th parallel. Around 4,300 to 7,100 tons probably went by truck with the remainder going by watercraft. Analysts also decided that the DRV had coordinated its waterborne logistics with truck movements in 2 areas—the Mu Gia Pass and the coastal routes. There seemed to have been large-scale offloading and onloading between trucks and watercraft along the coastal routes. It was clear that the DRV had planned carefully its logistic "free ride" beginning February 8, by positioning watercraft, pontoon bridges, and equipment, and by repairing its roads and bridges.[20]

President Johnson and his chief advisers were dismayed by the magnitude of Hanoi's transportation capability and its continued rejection of all proffered peace overtures until bombing stopped "unconditionally." Predictably, the joint chiefs, field commanders, and Sullivan sharpened their requests for authority to apply heavier air pressure on the NVA in Laos and North Vietnam. Westmoreland complained bitterly about the restrictive airpower rules. He especially scored the prohibitions against attacking construction or road-repair crews beyond 200 yards on either side of a road, bombing targets without the use of MSQ-77 radar, using napalm except on RLAF-designated targets, employing B-52 strikes in daytime, and a wider boundary for the SHINING BRASS air-supported ground forays into the Ho Chi Minh Trail.[21]

Impressed by Hanoi's logistic strength and transportation resourcefulness, President Johnson finally assented on February 22 to a series of

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*MACV's initial report estimated more than 2,200 enemy trucks and 702 watercraft were sighted heading south between the 19th and 17th parallels and that the DRV may have moved 6,600 tons by truck and 30,000 tons by watercraft. As in PACOM's report, there was "no evidence" as to the nature of the cargoes. [Msg, COMUSMACV to CINCPAC, 141155Z Feb 67.]

new SHINING BRASS and other military measures. For SHINING BRASS he approved an overall western extension of the boundary to twelve miles (from three miles in the northern and seven and a half miles in the southern sectors of the boundary). The president also allowed the use of Army and Air Force helicopters to ferry upwards of three separate HORNET Force platoons simultaneously, if needed to reconnoiter and attack enemy troop, truck, or supply redoubts. He further partially redelegated authority from State and Defense jointly to CINCPAC and Vientiane for air-supported SHINING BRASS missions, and he gave a tentative go-ahead for a rain-making POPEYE program initially tested in late 1966 and again in early 1967.

Concurrently, the president approved more targets for Air Force and Navy bombing against North Vietnam. These were in conjunction with a new ROLLING THUNDER Program 54 plus several unbombed targets in Program 53. Included were four powerplants and one steel plant, selective mining of inland waterways and estuaries south of the 20th parallel, and naval gunfire against coastal targets and shipping between the 20th parallel and the demilitarized zone. Lastly he sanctioned South Vietnamese-based Army and Marine artillery fire on valid targets in Laos, the demilitarized zone, and in North Vietnamese territory just above the zone.[22]

With the foregoing authority, Westmoreland and Momyer quickly took steps to send stronger SHINING BRASS units deeper and more often into southern Laos. The number of seven- to nine-man SPIKE ground reconnaissance teams would grow from twenty to thirty to sustain up to forty-two missions a month. The Army's UH-1 helicopter gunship and the VNAF's 83d Squadron CH-34 copter fleets would be beefed up, the latter from eighteen to twenty-four craft. For the moment, the number of HORNET platoons would stay the same. The two commanders anticipated no basic change in tactical air support procedures. "Support provided through the [Air Force's] Tiger Hound [Task Force]," Westmoreland observed, "has been most aggressive and responsive with exceptional results, and will be a major factor contributing to the success of the . . . operations." The total number of supporting tactical air sorties would rise in proportion to the frequency of forays by SHINING BRASS teams and platoons, and the expanding need to protect them.[23]

Along with deeper air-supported SHINING BRASS penetrations, General Momyer wanted to augment the operations with a seven-day strike concept. Although he had briefed Sullivan and Westmoreland on the concept in mid-January, not until late February did he receive their qualified approval. Momyer's plan called for several missions nightly on selected trail targets by a pair of B-52s. The ARC LIGHT bombings would be interspersed with tactical air strikes and reconnaissance (USAF photo,

FAC visual, and Army OV-1B side-looking airborne radar). A third of B-52 ordnance would be bombs with time-delay fuzes. Additional missions would be flown as new targets were uncovered. There would be numerous cover strikes just across the border in South Vietnam.[24]

Through the SAC ADVON office in Saigon, the SAC commander in chief and the 3d Air Division commander urged assigning to tactical aircraft all B-52 missions requiring less than a full B-52 ordnance load, concentrating each fully loaded bomber on a single target. Westmoreland suggested reducing the number of cover strikes because of their huge cost. He believed one strike midpoint between the first and last ARC LIGHT bombing each night in Laos would suffice.[25]

Sullivan dismissed the cost argument out of hand, noting acidly that he and others in Vientiane might be harboring "the errant notion that the whole ARC LIGHT program seems to have a mighty high price tag relative to the results achieved." More concisely, he said cover strikes were a must in view of recent Pathet Lao and Soviet public and private charges that American B-52s were bombing in Laos. He nonetheless promised to consider the MACV commander's suggestion of a "mid-point strike," if the launch and recovery of all ARC LIGHT sorties (well-known to "unfriendly observers")* could be arranged to correspond with U.S.-announced or observable bomber movements from and to Guam.[26]

Trying to tie in the ARC LIGHT bombers more closely with the lines of communication interdiction program, General Westmoreland on February 24 proposed launching an initial bombing test against six targets in the STEEL TIGER and TIGER HOUND areas. He sent Vientiane a detailed description of each target, and attested none would endanger friendly troops or citizens, national monuments, shrines, or temples. After Sullivan and his staff scrutinized target photography, they signaled a "go ahead" for strikes between March 4 and 14 only. This would permit withdrawing roadwatch teams in or near some of the targets, and reinserting them promptly after the 14th. The ambassador as usual coordinated his approval with State and Defense officials in Washington.[27]

Despite approval, other air priorities and weather ruled out immediate testing by Seventh Air Force. The first test was ultimately conducted on March 10, 1967. Six B-52s and six F-4Cs made nighttime strikes; in addition, five reconnaissance sorties were flown—two USAF infrared, two OV-1B side-looking airborne radar, and one visual. In

*This was in reference to the Soviet radio- and electronically equipped trawler that monitored all SAC bombers leaving and returning to Guam.

their preliminary strike report, Seventh Air Force analysts characterized strike results as "excellent." The B-52 and tactical missions were flown as planned except where last-minute intelligence dictated modifications in the target area.

Implicitly endorsing Seventh Air Force's preliminary report, Westmoreland asked that the March 14 deadline be extended to complete the one-week test and to start a second one for eight consecutive days.[28]

Sullivan turned down the request, saying that roadwatch teams had to reenter the ECHO sector to assess initial strike results and to gather more infiltration intelligence. The data for evaluating the just-completed missions, he said, "strikes us [as] skimpy to date." He added that before pulling out the teams to permit further test bombing, he wanted to study the team reports to see if an additional series of strikes was worthwhile.[29]

In early April, Sullivan agreed to another series of B-52 bombings against two targets in STEEL TIGER's ECHO sector during April 5 through 11. The Seventh Air Force and SAC carried them out within the specified time limit. To determine if the test bombings justified a regular ARC LIGHT program in the area, Sullivan asked how many trucks were being destroyed and damaged, the impact of the bombing on infiltration, and other questions associated with the operations.[30]

Seventh Air Force and MACV analysts soon sent Sullivan an assessment based on B-52 and FAC crew briefings, photography, and data on VC/NVA activity. They said that the strikes seemed to have closed temporarily the struck lines of communication, cut truck sightings by one-third, and forced the DRV to enlarge its antiaircraft defenses in the area. The last underlined the importance of routes and trails for infiltrating supplies into South Vietnam. The assessment, however, lacked precise statistics on the number of trucks destroyed and damaged.[31]

Westmoreland promised to prepare a more thorough evaluation of B-52 bombing on enemy trucks after roadwatch teams had reconnoitered the test area. Even so, Sullivan was reluctant to open up the STEEL TIGER and TIGER HOUND sectors to more frequent and intensive ARC LIGHT operations. He desired instead more tactical reconnaissance and air strikes but found it increasingly difficult to get them from General Momyer, Seventh Air Force commander. In view of conflicting priority claims, Momyer deemed it more profitable to hit targets detected by Air Force visual or photo reconnaissance rather than Vientiane-developed targets. There was also a practical reason for not honoring many roadwatch team requests. This was the danger of striking friendly villages or personnel close to targets difficult to verify from the air, followed by official reprimands and further strictures on operations. Sullivan and his staff were nevertheless convinced that more strikes on roadwatch-

generated targets were feasible and necessary, and they fashioned a SHOCK program to persuade the Seventh Air Force to provide them.[32]

A SHOCK strike was preceded by several preparatory steps. The first consisted of assembling a lucrative target "package," for example, a road segment heavily used by the enemy and flanked by nearby truck parks and supply sites. The package was then briefed to representatives of the Seventh Air Force/Thirteenth Air Force deputy commander, Air Force attachés, RLAF, and other concerned agencies at a weekly targeting meeting, with photography and other intelligence data dramatizing the importance of the targets. Afterwards, the ambassador and Seventh Air Force/Thirteenth Air Force deputy commander signified their approval by sending a written request for strikes to Seventh Air Force and an information copy to the State Department. The Seventh Air Force commander (Momyer) was asked to include the targets in his high-priority strike list.[33]

The first SHOCK target package was based on intelligence data gathered for many weeks along the west-to-east Route 110 (Sihanouk Trail). Between January 7 and mid-March, tribal roadwatch teams had counted 130 enemy trucks shuttling along the route. On three occasions they spotted 40 to 60 cargo boats plying the Kong River and 200 drums of petroleum, oil, and lubricants, and other cargo placed along the river bank. Laotian intelligence observers stationed with a FAR artillery unit furnished further data of VC/NVA movements in the area. A windfall of intelligence came from a DRV supply officer who defected to the Americans on April 21. He confirmed the locations of many supply and truck sites previously pinpointed by U.S. and Laotian sources. He estimated that about 1,200 tons of supplies moved over Route 110 each month.*[34]

The defection expedited planning for the first SHOCK operation. Assuming the North Vietnamese would soon learn of their supply officer's defection and try to disperse their stockpiles, Sullivan obtained Souvanna Phouma's permission to lay on a special air assault. He next flashed the targets to General Momyer in Saigon, proposing about thirty day-and-night sorties for four days. "I hope you will personally clear [the request] expeditiously," Sullivan asked, "since this is some of the

*Secretary of State Rusk was highly impressed with the DRV supply officer's information. He observed that it provided some of the most convincing evidence available on North Vietnam's use of southern Laos and Cambodia as a supply route. Analysts at USARPAC later believed the defector's 1,200-per-month supply estimate was considerably overstated and that about 500 tons a month was a more accurate figure. [Msg, USARPAC to CINCPAC, 280118Z May 67; CINCPAC Command Center 0730 Briefing Notes, May 13, 1967.]

best intelligence on lucrative targets we have obtained to date." Momyer agreed to come up with the sorties and to accelerate photo reconnaissance of the area. Admiral Sharp backed the attack proposal and instructed Westmoreland to alert other air units under his control for flying additional strikes.[35]

Preparing for the assault, Seventh Air Force divided Route 110 into three targeting sectors. All would be under the control of USAF O-1 forward air controllers. Sector 1, closest to the Cambodian border, was allocated to the RLAF, Sector 2 to USAF and RLAF propeller-driven (prop) aircraft, and Sector 3 to any type of USAF or RLAF aircraft. Due to the size of the planned SHOCK I, two more USAF O-1s were deployed to Pakse airfield and a USAF command post was set up at Attopeu. The command post would keep in touch with the O-1s, a C-130 ABCCC, and the air attaché offices in Savannakhet and Vientiane. The key targets were stocks of military supplies, communist vehicles and equipment, and seventy-three known antiaircraft weapon positions along Route 110 in the designated area. Planners hoped the air strikes would disrupt traffic on the route.[36]

SHOCK I started at 0930 on April 27, and during the operation Seventh Air Force aircraft flew 164 sorties. Although conceived as an around-the-clock activity, only 34 sorties were flown at night, since darkness and terrain were inhibiting factors. Nonetheless, an initial assessment convinced the air attaché that SHOCK I was a success and presumably destroyed much of the enemy's military stocks and disrupted his lines of communication. The air attaché also believed that the operation underlined the "profitable exploitation of joint Air Attaché, and USAF intelligence" during air planning sessions.[37]

SHOCK I was not without its shortcomings. The air attaché thought that Route 110 could have been completely closed had delay-fuzed ordnance been available. The RLAF T-28s did not participate, apparently because the FAR General Staff failed to send clear-cut orders on the RLAF's proposed bombings to Maj. Gen. Phasouk Somly (Commander of Military Region IV in which Route 110 was located). Then, too, the operation would have been more profitable had it run for eight to ten days. This would have given O-1 FACs more time to learn the target area and the Meo roadwatch teams more time to evaluate strike results. (The teams had been emplaced too far west of the target area to make a fast evaluation of the bombings.)[38]

With the foregoing "lessons learned" in mind, air attaché and embassy analysts planned the next SHOCK attack to run 8 days. The same type of planes would be scheduled—USAF O-1 FACs, C-130 ABCCCs, USAF and RLAF strike aircraft, and Blind Bat C-130 flareships to assist night strikes on targets and road-repair crews. Strike aircraft would again

rely on MSQ-77 radar. SHOCK II got under way on May 20 and ended on the evening of the 27th. Air Force pilots flew 148 sorties and the RLAF 41, all without losses to enemy fire. The joint operation destroyed 23 structures, 30 boats, and 6 trucks. It made 20 road cuts, caused landslides that severed Route 110 in 3 places, created 27 secondary explosions, and 8 secondary fires. During the 8 days a FAR artillery unit, stationed on the southern tip of the Bolovens Plateau southwest of Attopeu near Route 110, claimed sinking 10 enemy boats on the Kong River.[39]

Owing to the onset of monsoon weather, SHOCK II at first was assessed less rewarding than SHOCK I. But several days later Sullivan believed otherwise and reported that air and ground observers had seen no movement on Route 110 since the operation. The combination of intensive air strikes and heavy rains, he concluded, "has at least temporarily crippled this supply artery." If the heavy rains continued, the enemy might find the cost of opening Route 110 prohibitively high and shift to pack animals, porters, and bicycles.[40]

In another attempt to slow enemy infiltration, the Seventh Air Force in early 1967 stepped up its night operations.* Although the number of night sorties in past years had gradually risen, mountainous and jungle terrain and weather remained formidable obstacles to finding and striking the elusive enemy. Night as well as day operations were further circumscribed by the complex array of air rules to prevent short rounds or mis-strikes against friendly troops, personnel, and villages. When such incidents occurred, the Vientiane embassy often imposed more stringent strike rules.

By the time of the dry season in Laos during late 1966 and early 1967, the Seventh Air Force had rapidly progressed in night flying. The Seventh possessed more and better-equipped aircraft, navigation aids, and pilots with sharpened night enemy-detection skills. Much valued for night operations was the starlight scope, a light-intensifying device for finding the foe. Developed by the U.S. Army, it was tested and adopted by the Air Force in South Vietnam starting in 1965. The scope made its debut in Laos aboard a USAF C-47 gunship during the battle for Attopeu in March 1966.† From then on, Seventh Air Force outfitted

*For a detailed account of night operations in Southeast Asia, see Anthony, *Tactics and Techniques of Night Operations, 1961–1970.*

†In May 1966, two months after the battle for Attopeu, the Air Force placed an order for 198 scopes with the Army. Hard-pressed to meet its own needs, the Army slashed the order deeply. This impelled the Air Force to begin starlight scope development on its own. Lt Col Ralph A. Rowley, *FAC Operations, 1965–1970* [The Air Force in Southeast Asia] (Washington, 1975), p 102.

more aircraft with the hand-held monocular device. By early 1967, it owned fifty-seven scopes for theater-wide use. They were being installed in various aircraft, chiefly O-1F Bird Dogs (used mostly as FACs), T-28Ds, C-123 Blindbats, and C-123 Candlesticks. Along the Ho Chi Minh Trail, the scope instantly proved its value in spotting the enemy from the air on moonlit nights. It could also detect enemy trucks traveling with dimmed headlights, normally not visible from the air.[41]

Besides the starlight scope, Air Force pilots had learned to use their A-26K NIMRODS and other propeller-driven aircraft to better advantage. First night-tested during the last half of 1966 in conjunction with the CRICKET program in central Laos,* the A-26Ks were adjudged particularly suited for finding and hitting enemy trucks. By the end of the year, they were likewise used to a limited extent for close support in the BARREL ROLL sector. When not seeking out their own targets, they turned to O-1 FACs and roadwatch teams for targeting. General Momyer, as noted earlier, had branded the NIMRODS obsolescent because of the heavier antiaircraft fire, but Ambassador Sullivan staunchly defended their usefulness. So did Col. Harry C. Aderholt, who arrived at Nakhon Phanom on December 9, 1966, to assume command of the LUCKY TIGER 606th Air Commando Squadron (Composite) to which the A-26Ks were assigned.† Aderholt urged the continued use and augmentation of the A-26K force. He also succeeded in diverting to STEEL TIGER operations a number of T-28Ds that had been assigned to the 606th for training the RTAF. The T-28Ds (call sign ZORRO) started flying daylight sorties in STEEL TIGER on January 9, 1967. The ZORRO carried two .50-caliber machineguns and several types of ordnance. It possessed communications for flying ground-controlled intercept and MSQ-77 SKYSPOT radar missions, and for contacting roadwatch teams, airborne and ground forward air controllers, and ABCCC aircraft. Aderholt believed that the ZORRO could produce about eight sorties a day without impairing RTAF training needs. After the loss of one aircraft, however, the T-28Ds were switched to night missions. Like the A-26Ks, they could carry their own flares.[42]

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*See Chapter VI.

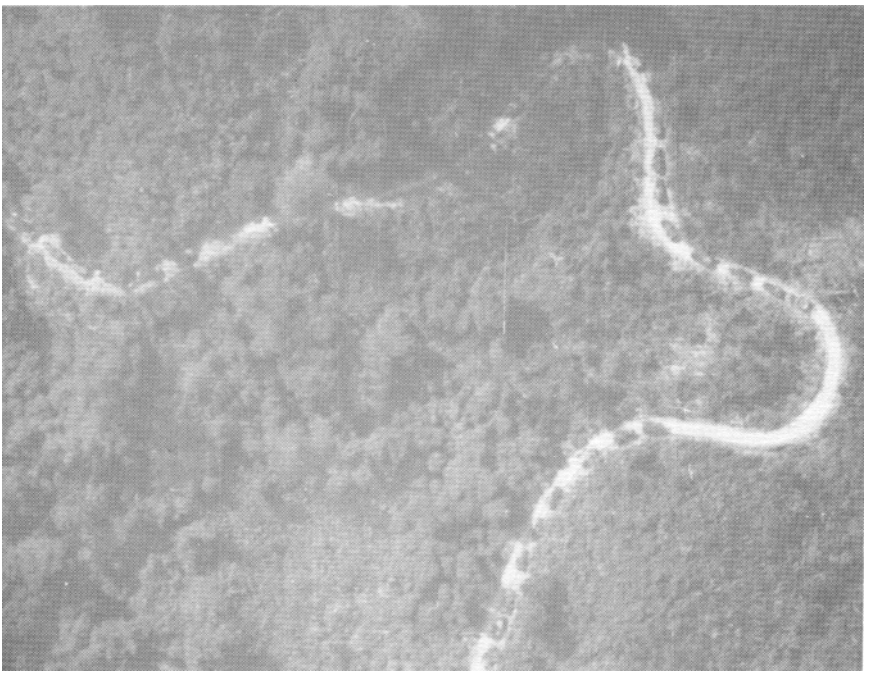
†LUCKY TIGER was the code name assigned to a high-priority USAF project approved by the JCS in January 1966 to augment the RTAF's special air warfare capability in Thailand in order to deal with a growing insurgency in the northeastern part of that country. As noted earlier, the 606th Air Commando Squadron was established at Nakhon Phanom on March 8, 1966, to consolidate and enlarge the USAF training of the RTAF, and christened the LUCKY TIGER squadron. Some of its aircraft and helicopters were gradually diverted to combat operations in both the BARREL ROLL and STEEL TIGER sectors while continuing the training of the RTAF. See Warren A. Trest, *Lucky Tiger Special Air Warfare Operations*, 2 vols (Project CHECO, Hickam AFB, Hawaii, 1967), I, Chap I.

Right: Gen. William W. Momyer, Seventh Air Force Commander (July 1966–July 1968). Responsible for allocating aircraft sorties in Vietnam and Laos, Momyer preferred to hit targets generated by Air Force reconnaissance rather than official requests from Vietiane. *Below*: An RF-101 Voodoo reconnaissance aircraft lands at its base in Thailand, December 1966.

MU GIA PASS STORAGE AREA. In this critical border zone, North Vietnamese trucks deposited many drums of gasoline for use by truck convoys headed south along Route 15, February 1967.

Gen. William C. Westmoreland, MACV Commander (*left*), and Marine Gen. Robert E. Cushman, Jr., Commander of the III MAF.

USAF F-105 Thunderchiefs, based in Thailand, flew strike, armed reconnaissance, and strip alert missions during STEEL TIGER, TIGER HOUND, and CRICKET operations.



***Above*: Within North Vietnam, a convoy of loaded trucks headed south to the rugged Mu Gia Pass and the Laotian border. *Right*: A reconnaissance photo revealed a truck target along the Ho Chi Minh Trail.**

February 1967 began, the night sortie rate in the upper part of the STEEL TIGER area—known as STEEL TIGER NORTH—had climbed from sixteen sorties per night to twenty-seven thence to thirty-one. These were mainly flown by A-26Ks and T-28Ds plus occasional F-4C night fighters. Though fitted with their own flares, the NIMRODS and ZORROS often worked with the C-130 Blindbat flareships.[43]

In another innovation, the Air Force commenced in mid-February to regularly field several hunter-killer teams consisting of starlight scope-equipped O-1 Bird Dogs and T-28Ds. All flew out of Nakhon Phanom. The black-painted O-1s had a crew of two, one at the controls and the other navigating and operating the scope. Flying ahead of the armament-laden ZORRO, the Bird Dog dropped flares when it spotted a truck, sampan, or other target. The first results against trucks were judged impressive, and estimates of truck attrition rose.[44]

By March 1967 the 606th Air Commando Squadron had 10 A-26Ks and an equal number of T-28Ds. The NIMRODS flew 2,004 sorties over 7 months (July 1966 through February 1967) and were credited with having attacked truck parks 1,223 times. Aircrews claimed to have destroyed 275 trucks and damaged 246 in the parks or on roads, and to have destroyed or damaged 47 gun positions, 227 structures, 823 bivouac areas, and 27 boats. They cut 502 roads and killed 492 troops. The various strikes touched off 1,033 explosions. Communist ground fire destroyed 3 NIMRODS and damaged 25; one was lost in an accident. In less than 2 months (January 9 through February 1967) the T-28Ds had completed 455 sorties, claiming 42 trucks destroyed and 68 damaged. The crews further claimed to have destroyed or damaged 5 enemy gun positions, 2 structures, 1 bivouac area; created 67 secondary explosions and 65 secondary fires; and made 32 road cuts. One ZORRO was lost to enemy fire and 3 received battle damage.[45]

On March 10 the 23d Tactical Air Support Squadron began assigning eight starlight scope-equipped O-1s solely to night target-hunting missions, at the same time cutting back on Bird Dog daylight operations. The O-1s had been scheduled for replacement in the war theater around June 1967 when the first of the new, twin-engine, O-2A aircraft were expected to arrive. Nevertheless, the overriding need to generate more night missions compelled the Seventh Air Force to keep the Bird Dogs and supplement their operations with the incoming O-2As. Ambassador Sullivan praised Seventh's decision.[46]

Another night concept (HUB AND WHEEL) was devised by Seventh Air Force in March 1967. It entailed several night B-52 strikes on probable chokepoints (hubs). Afterwards, USAF O-1 or other forward air controllers flew visual reconnaissance over the spokes of the wheel (the routes into and out of the chokepoint or hub area). If the controllers

saw a possible target, they called in USAF tactical air. Many times flare-carrying C-130 Blindbats and C-123 Candlesticks teamed with BIG EAGLE A-26Ks or USAF T-28D ZORROS (or both) to conduct the nocturnal missions.[47]

The Seventh Air Force attempted to improve strike responsiveness further in the proliferating air and air-ground programs in the CRICKET and STEEL TIGER sectors by establishing on March 6, 1967, a STEEL TIGER Task Force at Nakhon Phanom with Col. Walter B. Forbes as commander. Forbes and his staff at once set about coordinating more closely the activities of the intelligence-gathering and interdiction units located at the base. Included were the 56th Air Commando Wing, the 23d Tactical Air Support Squadron, the tactical unit operations center of the 432d Tactical Reconnaissance Wing. Although nominally in control of air units operating from Nakhon Phanom, Forbes usually relayed strike requests through the Seventh Air Force/Thirteenth Air Force Deputy commander to Seventh Air Force headquarters, where General Momyer worked them into his theater-wide priority list. Not infrequently, however, Forbes's task force diverted strike aircraft to suddenly discovered truck parks, supply storage sites, and other transitory targets. This was particularly true of those sighted by roadwatch teams. The task force's presence at Nakhon Phanom let the staff analyze air strike results more thoroughly than was often possible at Udorn or Saigon.[48]

Forbes's coordinating task shrank in late July 1967. By then the air-ground communications system in Laos had improved and more USAF EC-130 ABCCCs were available. Roadwatch targeting reports from southern Laos were now sent directly from the Savannakhet air operations center to the airborne EC-130s, thus bypassing Nakhon Phanom. On November 15, 1967, as the testing of an air-supported anti-infiltration system in Laos was about to begin, some of the task force's functions were merged into the recently organized TASK FORCE ALPHA Infiltration Surveillance Center at the same base. Forbes became TASK FORCE ALPHA's director of operations.* The STEEL TIGER Task Force office continued to operate under Col. John E. Madison as the new commander.[49]

The proliferation of anti-infiltration programs early in 1967 was accompanied by an increasingly strident controversy between targeteers in Laos and Momyer's Seventh Air Force over air strike responsiveness. The officials argued that the expanding, radio-equipped roadwatch teams were finding more and better targets, but Seventh too often failed to dispatch the aircraft.[50]

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*See Chapter IX.

From his Saigon vantage point, Momyer viewed the relationship differently. To him the scheduling of aircraft for higher priority targets in South and North Vietnam took precedence over air requests in Laos. Furthermore, he was concerned about the incredibly complex targeting system that had evolved in Vientiane and at Thai bases. By March 1967 there were eighteen roadwatch teams equipped with Hark radios, but they could report directly to USAF O-1s, A-26Ks, RC-47s, EC-130 ABCCCs, and C-123s only when English-speaking Laotians were aboard. Few bilingual personnel were usually available. Several teams reported solely to EC-130 ABCCCs (which the Air Force considered the best relay aircraft), and six teams continued to report through the air liaison section at Udorn through a Volpar relay aircraft. (This was a Beechcraft Super Turbo 18 used in the absence of sufficient USAF relay aircraft in Laos.) Teams with other than Hark radios still reported their target findings laboriously to stations at Savannakhet and Pakse. From there the data had to be relayed to the air liaison section at Udorn before it entered USAF communications channels. Finally, Momyer believed the Air Force—not the embassy—should control targeting in Laos.[51]

His strong conviction regarding targeting, and the availability to him by early 1967 of more and better-equipped aircraft, diminished his dependency on embassy targeting.

Laos's climate and terrain also contributed to the dispute. Too often target information was late because of atmospheric conditions or the absence of a communication channel. In addition the jungle canopy, weather, and darkness conspired against confirming visually from the air many targets detected by roadwatch teams. "It is difficult if not impossible to find trucks through the canopy in most cases," Momyer said. Terrain, weather, and darkness similarly hindered assessment of bomb damage from air strikes. Fires and secondary explosions, however, often suggested that more trucks were destroyed and damaged than were reported. No truck "kills" could be claimed without visual or photo verification. It was accordingly more rewarding for the Air Force to locate its own trucks and other targets visually or by photography to strike them, and to make its own poststrike assessment.[52]

The simmering dispute did not mean that Momyer refused to supply air resources for all air requests; rather he did not honor as many as embassy personnel wished. More roadwatch teams for intelligence gathering and targeting throughout Laos were formed. As more teams were given Hark-1 and Hark-2 radio sets, reporting improved. A new communications center at Pakse cut real-time reporting of enemy trucks and other targets to an average of sixteen minutes.[53]

In June several teams were furnished RT-2 radio packs to further reduce real-time reporting of enemy targets between the teams and

EC-130 ABCCCs or RC-47s. Carrying treetop antennas, the first teams with RT-2s worked selected areas of Route 2 in the BARREL ROLL sector and in the panhandle near Mu Gia Pass, from where DRV truck traffic moved southward despite the monsoon weather. In mid-June, eight more RT-2-equipped teams were stationed along Routes 110 and 96 in southernmost Laos to count trucks and pinpoint other targets. When in July the RC-47s flying in daytime were replaced by freshly arrived EC-130 ABCCCs, they served as communications relay aircraft at night.[54]

Accidental bombings or short rounds of friendly troops, civilians, and villages—the bane of Air Force and other U.S. airmen—were relatively few in southern Laos from mid-1966 to early 1967. The five bombing incidents investigated during this period occurred on September 29, November 2 and 25, and January 14 and 29. They elicited Vientiane's concern but no imposition of new operational rules. The bombing incident of September 29, 1966, was never resolved. Investigators could only confirm that "two white jets" dropped six bombs on the edge of two small villages, and that five injured villagers were evacuated by a "big helicopter." Bomb craters and fragments attested to the accidental strike, but intensive study of frag orders and pilot debriefings failed to fix service blame.[55]

The accidental strafing of a friendly area on November 2, causing damage and a few injuries, occurred during a night mission by two Seventh Air Force A-1Es flying with a C-130 flareship. The incident took place a short distance outside of the authorized FOXTROT area of STEEL TIGER. While obtaining a fix on moving enemy vehicles, a strong northerly wind carried the aircraft beyond the permissible strike boundary. The November 25 strafing of a friendly truck ensued on Route 13 south of Thakhek, about twenty-five nautical miles outside of the STEEL TIGER operating area. There was no damage except to trees, but the aircraft were far off course despite their nearness to the Invert radar and tactical air navigation (Tacan) aids at Nakhon Phanom. This fact brought a warning from Ambassador Sullivan to place all armed reconnaissance in the STEEL TIGER area under FAC control.[56]

Sullivan did not invoke his threat immediately or in January 1967, when several USAF aircraft mistakenly struck the village of Ban Na Muong in central Laos (on the 14th and around the 29th). The first strike killed a roadwatch team member, the second killed two villagers, wounded three, and demolished various huts and structures. Since the villagers had been very supportive of the roving teams, U.S. officials were keenly distressed over the incident. Colonel Pettigrew, the air attaché, strongly enjoined combat crews to adhere to the rules of engagement and not attack a village unless fired upon—there being many

friendly villages within the STEEL TIGER armed reconnaissance areas.[57]

Neither repeated appeals nor warnings from air commanders in Vientiane could surmount the multiple obstacles to completely error-free aerial campaigns in Laos. Among them were the hazards of weather, heavy jungle and mountainous terrain, similarity in targets, an elusive foe, too few navigational aids to handle approximately 5,500* strike sorties per month, and a spider's web of rules of engagement for certain targets and different geographical sectors. On February 13 one more unfortunate short round took place in the STEEL TIGER sector. Three USAF F-105Ds of the 355th Tactical Fighter Wing were looking for a highway bridge about 24 nautical miles northeast of Muong Phalane. They accidentally hit the town, killing 3 villagers (one a 5-year-old girl), wounding 9, destroying 11 buildings including a school, and damaging 30 other huts and structures. While USAF aircraft rushed the wounded and their families to Korat for treatment, Sullivan decided that action was warranted. He placed a 10-nautical-mile radius of Muong Phalane off limits to all U.S. aircraft and imposed a minimum 15,000-foot ceiling for all aircraft flying in the vicinity. In past major short-round incidents, the ambassador had ordered a standdown of all air operations. Since in this instance there was no publicity of the bombing, he decided to await the completion of an investigation.[58]

Sullivan explained why Muong Phalane and the surrounding vicinity should remain temporarily off limits to American planes. The "accidental bombing of Muong Phalane," he said,

> had caused considerable emotional reaction in Laos, not only among residents of [the] area concerned, but also in higher echelons of [the] RLG [Royal Laotian Government]. In part, this is because [the] same area has been bombed in error at least three times previously† and, in part, . . . because error has occurred despite our . . . elaborate assurances of positive controls by radar, TACAN [tactical air navigation aids], and other devices.[59]

An investigation by a USAF team ultimately disclosed that the 3 Thunderchiefs dropped sixteen 750-pound general purpose bombs in the middle of the town. Six exploded on impact and those with time-delay

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*This was the approximate total flown in January 1967. Specifically, 530 strike sorties were flown in BARREL ROLL and 4,959 were flown in the STEEL TIGER and TIGER HOUND sectors. The aerial tempo was only slightly below that for ROLLING THUNDER for January 1967 where 6,633 U.S. strike sorties were flown. [Hist, CINCPAC, 1967, II, 638, 667.]

†In fact Muong Phalane and vicinity had been erroneously bombed five or six times in recent years.

fuzes after impact. Two unexploded bombs were not found until July 13. Two additional unexploded bombs were discovered 5.6 miles outside of Muong Phalane.[60]

Because several bombs were not located immediately, the village stayed evacuated. As the bomb search progressed, a phalanx of American and Lao government officials descended on the village to survey the damage. In this group were Colonel Pettigrew, many Seventh Air Force/Thirteenth Air Force officials, representatives of the U.S. Agency for International Development office in Vientiane, members of Lao government ministries, and the commanders of the RLAF and the II and III Military Regions.[61]

The Seventh Air Force/Thirteenth Air Force prepared the official report of the incident. "It is apparent," the report said, that the

> flight lead made an error in his outbound tracking . . . . [A] few 360 degree turns would have caused him to stray 20 miles off course. Winds at this altitude were reported to be from the west (290 degrees) at 12 [knots] which would have moved him away from the drop area. Visibility of 3 to 4 miles should have forced him to stay near his original sighting. It is our educated guess that [the] pilot inadvertently tracked outbound on a heading of 219 to 131 [degrees] and sighted a similar type target which [by] sheer coincidence was approximately the same distance out from CH 89.* In his eagerness to destroy the bridge he failed to adequately identify the target area before proceeding to drop his bombs.

As a result, General Momyer directed General Bond, Deputy Commander of Seventh Air Force/Thirteenth Air Force to reprimand and relieve the flight commander.[62]

To protect Muong Phalane against future accidental air strikes, Sullivan shortly proposed tethering to the bridge by two 200- to 300-foot cables a metallic-coated, helium-filled balloon, 15 feet in diameter. The balloon should be visible, he opined, in daytime and detectable by radar at night or during poor visibility. For added insurance, he directed painting the bridge yellow and embossing the town's name on top of a new school being built by the bridge to replace the one destroyed by bombs. The ambassador conceded that his proposals might appear "in the far-out category" but hastened to add: "strange things occur in this land of a million elephants."[63]

General Momyer strongly objected to hoisting a balloon from the bridge of the ill-fated town, citing the lack of assurance it would fly in all types of weather and the hazard it would create for airmen during

*Tactical air navigation channel 89 at Nakhon Phanom RTAFB.

limited visibility. He proposed instead, and Sullivan readily agreed, to emplace a mobile tactical air navigation radar near the town to improve air control in the region. The unit was airlifted from Udorn to an RLAF airstrip near Muong Phalane before the end of March, becoming operative early in April. It was designated Lima Site 61. In December a NVA/PL force would destroy it.*[64]

Meanwhile, Sullivan and his air attachés and Agency for International Development officials labored to make adequate restitution to and assuage the fears of Muong Phalane's inhabitants. The most difficult task, however, was dealing with pressures from Souvanna Phouma and other Lao officials to further tighten the operational strictures on American aircraft flying in Laos. That the town and vicinity had been attacked five or six times in the past three years heightened Laotian vexation and concern. Some Lao officials wanted all air strikes in Laos controlled by FACs. But after General Momyer listed the many operational complications this would entail, the ambassador opted for somewhat less onerous rule tightening.[65]

On March 2, Sullivan rescinded the armed reconnaissance line in STEEL TIGER and realigned the 4 STEEL TIGER interdiction areas (ECHO, DELTA, FOXTROT, and GOLF) into 4 zones. Zone I was the TIGER HOUND region and required no change in the rules of engagement. It was renamed, however, the TIGER HOUND Special Operating Area. Pilots could continue to fly armed reconnaissance along all roads, paths, tracts, and rivers. Zone II remained a STEEL TIGER armed recon area where all targets of opportunity within 200 yards on each side of a motorable road or trail outside of villages could be attacked day or night. Fixed targets and targets of opportunity beyond the 200-yard limit could be struck only if they were Royal Laotian Air Force A or B targets.† Prior approval was needed by the air attaché (or his representative) in Vientiane or Savannakhet, by a forward air controller, or by a RLAF observer aboard an ABCCC aircraft. In addition, any weapon site firing on or a searchlight aimed at an aircraft could be hit without prior FAC approval, and MSQ-77 radar could be used at any time to assist strike aircraft in attacking properly approved targets. Zones III and IV were likewise STEEL TIGER controlled areas. Zone III demanded FAC or MSQ-77 control for striking either fixed or fleeting targets. Zone IV required both the approval of the ambassador and a forward air controller.[66]

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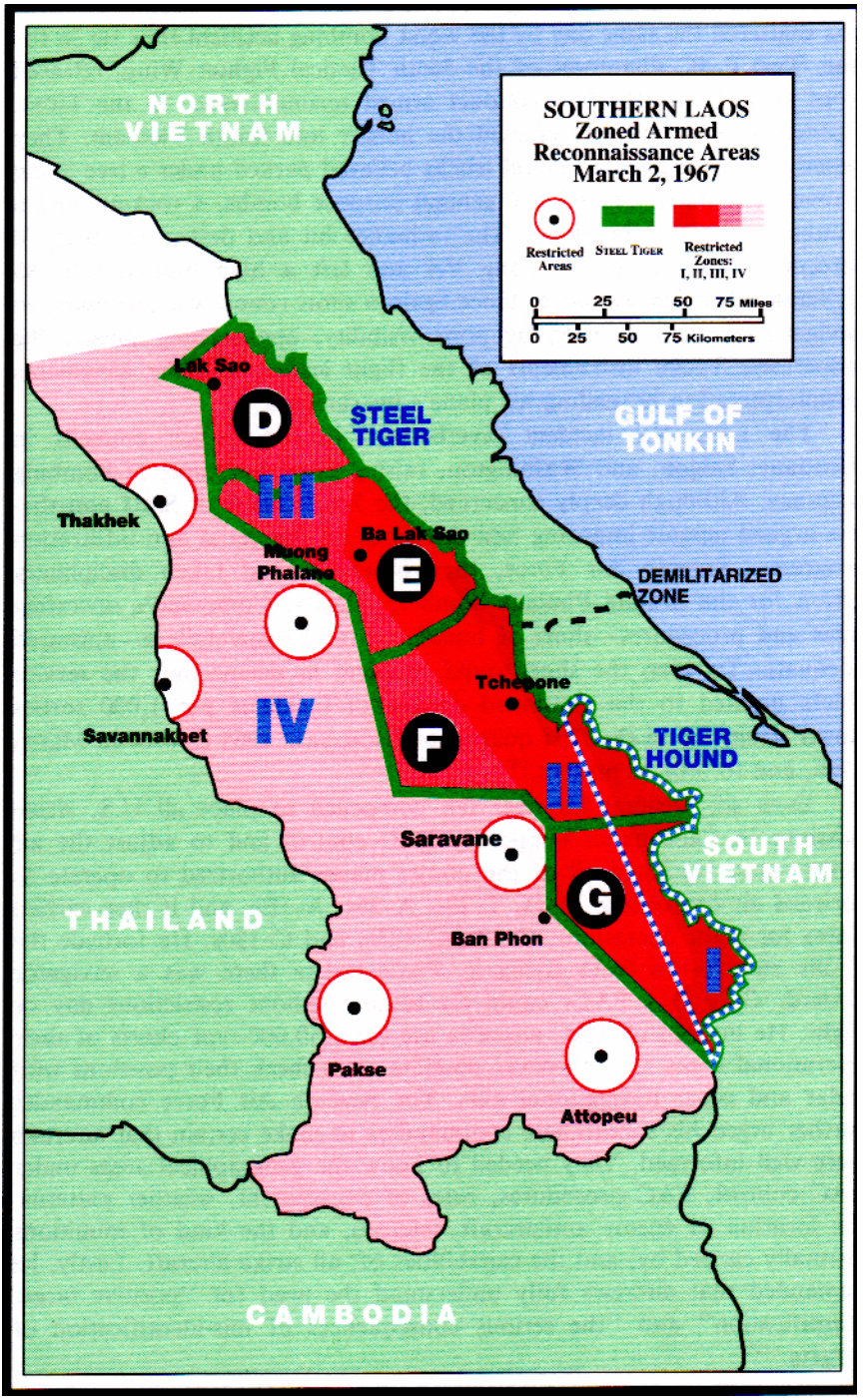
*See Chapter X.

†Priority A targets took precedence over B targets. For a discussion of Royal Laotian Air Force A, B, and C target categories, see Chapter IV.


SOUTHERN LAOS
Zoned Armed
Reconnaissance Areas
March 2, 1967
Restricted Areas
Steel Tiger
Restricted Zones: I, II, III, IV
0 25 50 75 Miles
0 25 50 75 Kilometers
NORTH VIETNAM
GULF OF TONKIN
Lak Sao
D
STEEL TIGER
III
Thakhek
Muong Phalane
Ba Lak Sao
E
DEMILITARIZED ZONE
Tchepone
IV
Savannakhet
F
TIGER HOUND
II
Saravane
SOUTH VIETNAM
G
THAILAND
Ban Phon
I
Pakse
Attopeu
CAMBODIA

Unhappily, Sullivan's hope of keeping restrictions to a minimum was shattered the same day by the worst bombing accident thus far in the war. Two F-4C Phantoms of the 366th Tactical Fighter Wing, released from an airborne FAC to conduct armed reconnaissance in the TIGER HOUND area, mistakenly crossed the border into South Vietnam. They aimed their ordnance at several trucks believed parked under a tree along a road. The pilots expended 6 general purpose bombs, 4 rockets, and a number of CBU-2 bomblets. The ordnance hit and destroyed 60 to 70 percent of the village of Lang Vei and left a high human toll—83 civilians killed, 176 wounded. Once again a short round was attributed to navigational error induced by poor visibility, approaching sunset, the inoperative Tacan instruments of the flight leader, and the wingman's misinterpretation in reading his plane's instruments.[67]

The Lang Vei incident reverberated in the highest councils in Vientiane, Saigon, and Washington, raising anew questions of bombing accuracy. Although deeply concerned, the Joint Chiefs of Staff nonetheless argued against imposing new strictures on the aerial anti-infiltration programs. Seventh Air Force, they observed, had taken disciplinary action for the Muong Phalane bombing. Pacific Command's operating rules and procedures—short of human or mechanical failure—appeared adequate. To keep the short-round problem in perspective, the service chiefs pointed to the continued decline of incidents per 1,000 sorties flown: from 5.0 in the first quarter of fiscal year 1965 to 0.14 in March 1966, and to 0.01 at present.[68]

Even so, General Momyer felt compelled to place all U.S. strike missions in Laos under temporary FAC control and to adjust the air strike rules. He listed all of the nonjet planes authorized to operate as forward air controllers: O-1s, T-28s, A-26s, A-1Es, and if they carried flares for night operations, C-47s, C-123s, and C-130s. He forbade the T-28s and A-1Es from flying as FACs unless there was a navigator aboard. Only O-1 FACs could fly totally without restrictions day or night. He insisted all FAC aircrews use the 1:50,000-type charts of their operational areas and whenever possible cross-check their positions with radar and other navigational aids. The Seventh Air Force commander further urged his subordinate commanders to make certain that aircrews were well informed. They needed to know the geographical areas under FAC control, FAC procedures, rules of engagement, weather patterns, the location of enemy antiaircraft defenses, and the kind of munitions normally carried by, and the capabilities of, all strike aircraft. Lastly, he demanded that aircrews fully understand the need for "positive target identification" and "the serious consequences of mis-identification of targets."[69]

The Seventh Air Force commander on March 18 dispatched another letter to all tactical wings, reiterating the need for the "utmost professionalism" in identifying and acquiring targets. When in doubt, he ordered, "don't drop."[70]

The anguish of air commanders, Vientiane, and Washington was far from over. Air Force jets on the 21st again accidentally dropped bombs near Muong Phalane. The flight leader was searching for a target of opportunity in North Vietnam. But weather and navigational aid problems plus low fuel prompted him to cross the border and drop his ordnance on what seemed to be an uninhabited jungle area. He did not know how close he was to Muong Phalane or that there were friendly Laotian troops near the bombed area. Fortunately, there were no casualties or bomb damage.[71]

Two days later, 6 F-105s on a North Vietnamese mission crossed the border and struck the village of Ban Chom Thong with twenty-four 750-pound bombs. A second flight of 2 aircraft dropped twelve 500-pounders. The short round killed 3 villagers, wounded 33 (3 of them seriously), and destroyed more than half the village and a bridge within. Sullivan sent his regrets to Momyer saying that the recurring errors caused "as much grief to you as to me." He tried with apparently little success to placate Souvanna Phouma. "Since this village is nearly 40 miles from the nearest authorized RLAF target," he told Momyer, "it's very difficult for [Souvanna] as a layman to understand how such an error can happen, and very difficult for me as a layman to explain it." The ambassador conveyed the prime minister's request to top military commanders, asking them to counsel their pilots to abort if they were unsure of their targets. Embassy and Seventh Air Force/Thirteenth Air Force personnel once more shouldered a familiar task. They assisted the wounded, made arrangements to rebuild homes, paid damage claims, and tried to repair the political damage (characterized by Sullivan as possibly "irreparable").[72]

With Sullivan's assent, Admiral Sharp now "lowered the boom." On April 5 he ordered total USAF FAC or MSQ-77 control for all air strikes in Laos. He said that "if there is any doubt on the part of FAC's, strike pilots, or other personnel concerning the validity and identification of a target about to be struck, the strike will be suspended until adequate verification has been established."[73]

This was not the end of the matter. Sullivan decided to impose a few more rules of his own. The ambassador observed that the last three short rounds (at Lang Vei, near Muong Phalane, and Ban Chom Thong) were committed by pilots who thought they were over North Vietnam. He accordingly asked air commanders to put off limits specific Laotian areas (north and south) harboring friendlies or devoid of enemy activity, and

to impose a 15,000-foot altitude for aircraft flying over them. The directive also restated earlier rules requiring pilots to avoid a 25-nautical-mile radius or maintain a minimum 15,000-foot altitude over Savannakhet, Saravane, Pakse, Attopeu, Thakhek—and more recently—Muong Phalane. The towns of Khangkhai and Samneua were to be strictly avoided.

In addition the ambassador placed several areas in BARREL ROLL and STEEL TIGER off limits, defining the areas by coordinates. One STEEL TIGER area was exempt if "positive radio control" was maintained between roadwatch teams and an Air Force FAC or ABCCC. The exemption was to ensure that the intelligence-gathering and targeting roadwatch teams would not have to curtail their operations. Sullivan deemed these teams, now growing in numbers and roaming in ever-wider areas along the Ho Chi Minh Trail, to be especially effective. The Seventh Air Force swiftly sent the ambassador's instructions throughout its command and to other agencies.[74]

In late April the air attaché further tightened the already formidable and complex rules of engagement. He sent commanders additional Vientiane embassy-imposed guidelines for validating targets and employing forward air controllers in both the STEEL TIGER and BARREL ROLL areas. Hereafter, only these agents or agencies were authorized to validate targets in Laos—the chief air attaché and the assistant air attaché in Vientiane and Savannakhet respectively, Lao-based BUTTERFLY FACs,* Lao observers, and Lao roadwatch team chiefs. The Lao observers were RLAF members who served aboard O-1 FAC aircraft of the 23d Tactical Air Support Squadron or C-130 ABCCCs (daytime call sign HILLSBORO).

Nor was this the end of the dizzying guidelines. The air attaché specified that the Lao observers could validate targets for prop or jet strike aircraft in the new STEEL TIGER Zones I, II, and III, in CRICKET WEST, and along Route 110. But in CRICKET WEST FRINGE they could validate targets solely for prop aircraft. The Lao roadwatch team chiefs acted as ground FACs only when they had direct ground-to-air communications with USAF FACs flying overhead. As before, all Laotian villages

*BUTTERFLY FACs were a special breed of air controllers. Unlike CRICKET FACs, they were U.S. enlisted men or nonrated officers who worked for the embassy rather than the Air Force. They sat in the right-front seat or backseat of U-6, U-10, or other FAC aircraft, using a backpack radio to try to keep in touch with friendly Laotian ground units or at least know where they were. BUTTERFLY FACs worked wholly in the BARREL ROLL area to forestall the many short-round bombing incidents that were plaguing the Air Force throughout Laos in early 1967. [Anthony, "A Military History of the War in Northern Laos, 1945-1968," Chap X, p 33.]

were off limits to air strikes unless the air attaché or embassy validated them as targets, or if pilots "positively" determined that hostile firing was coming from within the village.[75]

Meantime—and perhaps not surprisingly—Sharp and other PACOM officials wondered if the tangled skein of air rules might undo the numerous air programs in Laos. They asked the MACV commander if the April 5 directive mandating complete FAC and MSQ-77 control of all strikes had caused "some reduction of the interdiction effort." They requested a full report.[76]

Westmoreland replied that the directive had "not had a significantly adverse effect on air interdiction operations." Momyer generally concurred. He noted that prior to Sharp's April 5 edict, most TIGER HOUND strikes were already under FAC or MSQ-77 control. So were the majority in STEEL TIGER, but not to the extent they were in TIGER HOUND. Forward air controllers were scheduled "judiciously" with MSQ-77 as "backup," and ABCCC aircraft usually diverted strike aircraft from areas where there were no FACs. However, the Seventh Air Force commander had a caveat. His strike pilots could not always retaliate quickly against automatic weapons or antiaircraft artillery fire or against AA searchlight positions. The last was a fresh threat recently experienced by his pilots 1.5 miles south of Route 110, at Mu Gia Pass, and along Route 922 in the TIGER HOUND Special Operating Area. Momyer asked PACOM to waive the April 5 directive to allow pilots to counter at once the enemy's hostile actions.[77]

Admiral Sharp agreed to do so. On April 25, he permitted air strikes without FAC or MSQ-77 control when automatic weapons or AA artillery positions were "observed to be firing" within STEEL TIGER zones I, II, and III, and BARREL ROLL armed reconnaissance areas. The waiver also applied to "big intensity antiaircraft" searchlights obviously tracking aircraft. Finally, he lifted the FAC requirement for a portion of Route 110 in southernmost Laos, recently classified as a new major enemy infiltration route (running through a tip of Cambodia) into South Vietnam.[78]

The April 5 directive was modified anew in early May, following further reports from Momyer and Harris and their staffs. These underscored the difficulties the FAC and MSQ-77 requirement imposed on Seventh Air Force pilots as they attempted to keep sufficient aerial surveillance over and strike a mounting volume of enemy truck traffic pouring through the Mu Gia Pass area. The restriction likewise hampered fast diversion of ROLLing THUNDER aircraft to secondary targets in Laos, and adequate counteractions to meet the yet-expanding antiaircraft threat. As a consequence the PACOM commander, with Sullivan's approval, waived the FAC and MSQ-77 order for air operations on

Routes 23A, 1202, and 1201, from their intersection with Routes 911 and 23 north to the North Vietnamese-Laotian border. Pilots, however, had to fix their positions "positively" by radar or Tacan.[79]

As the numerous anti-infiltration programs were modified or expanded, with but limited success, high officials tried a more exotic method to slow enemy movements through southern Laos. This was rainmaking. The project had the virtue of being small and cheap.

Upon hearing about rainmaking, the joint chiefs promptly gave it their blessing. On August 10, 1966, they informed Admiral Sharp and General Westmoreland and their staffs:

> Based on results to date of a joint program conducted by the Navy and the Environmental Sciences and Services Administration (ESSA), ODDR&E* has proposed that it may be possible to markedly increase the rainfall and possibly extend the rainy season in selected portions of the TIGER HOUND area, thus causing further deterioration of vehicle infiltration routes.

The chiefs explained that the cloud-seeding materials, nontoxic to vegetation or wildlife, were available, as was equipment to dispense them from an aircraft. A small team from the Naval Ordnance Training Station at China Lake, California, could train aircrews in materials-dispensing in one or two weeks. In the war theater, cloud seeding would require two tactical aircraft and trained aircrews. The aircraft should fly twenty cloud-seeding missions per month. The annual southwest monsoon weather still sweeping over Laos would abate soon. The project should therefore begin prior to mid-October 1966, preferably as early as mid-September.[80]

Sharp speedily solicited Westmoreland's views. The MACV commander pressed for launching a test program (FLAT TIRE, renamed POPEYE) without delay. If cloud seeding extended the rainy season significantly, Westmoreland predicted that the deteriorating vehicle routes would "slow infiltration to the speed of marching troops and possibly divert [the] enemy to more extensive use of sea routes." Sharp agreed as did the joint chiefs. On September 17, Secretary McNamara gave the green light for "an operational evaluation of the concept."[81]

Inasmuch as POPEYE promised to be a small independent project, officials and commanders could move with alacrity to get it under way. The Office of the Secretary of Defense would assume responsibility for high-level coordination with the White House and State Department; the

*Office of Director of Defense Research and Engineering, Office of the Secretary of Defense.

chief of naval operations would serve as executive agent for the services; and CINCPAC was empowered to designate the air unit exercising operational control. In Laos the key U.S. official, as always, was Ambassador Sullivan who would monitor cloud seeding and coordinate the project with the Lao government. He was nonetheless reluctant to tell Souvanna Phouma about the project right away, noting that the prime minister was not likely to believe the Americans could localize rainfall. The ambassador in addition invoked a personal objection—if POPEYE worked and there were floods, he would be most reluctant to take the blame. Sullivan called for forty-eight hours' advance notice of all test flights and reports on their test results.[82]

The test scenario envisaged experiments lasting 30 to 45 days in September and October. They were to be held above the Kong River watershed that passed through parts of the STEEL TIGER and TIGER HOUND sectors. About 50 clouds would be seeded, 30 by "active" material consisting of silver iodide smoke, and 20 by inert smoke. The materials would be injected into moisture-laden clouds by a "Sweet Pea" Very Pistol using a 1.5 inch by 3.75 inch cartridge. The silver iodide fuze shot from the Very Pistol would burn during a fall of about 4,500 feet. Upwards of 3 aircraft would be used. Flying variously at 20,000 to 25,000 feet, they would release the silver iodide active and inert materials.[83]

On September 13 a PACOM conference firmed up the personnel, aircraft, and support requirements for POPEYE. These would be provided by PACAF and III MAF. CINCPAC decided to pass operational control of the project to COMUSMACV who in turn redelegated it to Seventh Air Force. According to an operational plan hastily drawn up, Seventh would among other things furnish three F-4Bs from the 35th Tactical Fighter Wing for cloud seeding, two WC-130Bs of the 54th Weather Squadron, as well as two A-1Es and two O-1 forward air controllers. The FACs would fly near seeded clouds to record weather data. If needed, the III MAF would supply up to six A-4Es for cloud seeding together with billeting for eight personnel from the Navy's test center at China Lake. The commander of the Naval Ordnance Training Station at China Lake would serve as test director. Starting in late September, the tests would be carried out in two phases with Phase IA constituting experimentation and evaluation.[84]

To run the tests, the Seventh Air Force set up a small special Seventh Air Force POPEYE task force. Test Phase IA, which commenced on September 23 and went through October 3, developed proper aircraft coordination and seeding procedures. The actual seeding tests (Phase IB) began the next day. A typical mission summary of a cloud-seeding operation read as follows:

> 6 Oct 66. Conducted Popeye flight 06. Launched C-130, two A-1Es, and one F-4B on order. Scrambled one F-4B. Test area very humid at all altitudes. Good natural cloud development to 18,000 feet. Light winds aloft. Case 1 (NW area B) and case 3 (SE area C) were seeded clouds. Both developed large towers, heavy precipitation. A target of opportunity (center area B) was seeded with two Very Pistol flare units from the C-130. It grew and precipitated. Test director correctly identified treatment in all three test cases.[85]

Fifty-six cloud-seeding tests were conducted during Phase IB that ended on October 27, six more than the planned fifty to allow for the disqualification of a few. Forty-eight of the task force tests (85.7 percent) were judged successful. The figure was based on recorded data and ground observer reports in the test area in Laos. Buoyed by the findings, the task force saw "strong evidence" of possible broader application of weather modification. Cold fronts during the *crachin* (or drizzly) periods, for example, might be interrupted. In fact the task force believed the investigation of this technique might in the end prove more important than merely seeding clouds to stimulate rainfall.[86]

Generals Momyer and McConnell supported the test results. So did the 1st MAF commander who informed McNamara the tests "exceeded expectations," and expressed "high confidence" the monsoon weather could be extended indefinitely not only in parts of Laos but in North Vietnam. Admiral Sharp likewise saw weather modification as "a valuable technical weapon." He said the Mu Gia, Nape, and Barthelemy Passes on the Laos-North Vietnam border seemed "susceptible to the cloud seeding technique" for protracting monsoon weather. The Joint Chiefs of Staff on December 5 endorsed the findings and sent them to McNamara. Simultaneously, they approved cloud seeding on a regular basis.[87]

However, Secretary Rusk's deep reservations about POPEYE led McNamara to withhold approval of the Seventh Air Force's plan. Still, he congratulated the services for carrying out the controlled experiment in "a truly professional manner," and in the best tradition of in-house laboratories.[88]

But POPEYE was not discontinued. Because President Johnson in late February had shown his support for more work on the rain-making project, McNamara instructed the secretary of the Navy to establish an interagency environmental research unit. It would play a vital role, but overall direction would rest in the Office of the Secretary of Defense under the director of defense research and engineering. At about the same time, the administration decided to begin an operational weather-making phase in Laos that would continue until July 5, 1972.[89]

Chapter VIII

Auguries of Eventual Victory Against Infiltration July 1967–January 1968

By June 1967, southwest monsoon weather again restricted enemy movements and air interdiction in central and southern Laos. The TIGER HOUND Task Force's air resources had shifted eastward to the drier TALLY HO and Route Package I area of North Vietnam, where Hanoi had stepped up its southward transit of men and supplies.

The seasonal air shift, however, did not end the search for and strikes against enemy trucks, watercraft, and other targets in the Laotian CRICKET, STEEL TIGER, and TIGER HOUND areas. But the sortie level was low. Most aircraft were controlled by COMBAT SKYSPOT MSQ-77 radar and flew armed reconnaissance along selected routes when weather permitted. Meanwhile, Seventh Air Force and MACV drafted plans for more intensive air and air-supported ground operations against heavier DRV infiltration.[1]

Still hopeful of reducing communist truck and other supply deliveries through southern Laos, the Seventh Air Force in August readied a new interdiction and assessment plan. The plan called for a heavy aerial offensive along the trail beginning November 1, 1967, when the heaviest monsoon rains would be over. Seventh Air Force expected a sharp upturn in enemy infiltration due to the recent expansion of U.S. Navy SEA DRAGON operations (including naval gunfire) against North Vietnam's coastal waterborne and other traffic, and ongoing construction of an anti-infiltration strongpoint obstacle system (SPOS) just below the demilitarized zone. Both measures would likely impel Hanoi to rely more on Laos's southern lines of communication.

To attack a larger traffic volume in STEEL TIGER and TIGER HOUND, the Seventh Air Force plan postulated the use of more and better-equipped aircraft and, for the first time, acoustic and seismic sensors to detect the enemy. There were to be additional C-130 ABCCCs (for a total of seven), new O-2A FAC planes (which began arriving in Southeast Asia in June 1967), and SHED LIGHT aircraft (long under

research and development) to afford nighttime battlefield illumination. Seventh also envisioned greater use of Army OV-1 Mohawks with their side-looking airborne radar to accompany USAF hunter-killer aircraft teams and improved starlight scopes for enemy night detection. The plan put great store in the sensor-oriented anti-infiltration system to find on a real-time basis many more targets on the Ho Chi Minh Trail. Formed at Nakhon Phanom on March 6, 1967, the STEEL TIGER Task Force would be absorbed by the new system and become TASK FORCE ALPHA. The new USAF unit set for testing in late 1967 was to be the operating agency of the infiltration surveillance center (ISC) at Nakhon Phanom.*[2]

In the meantime, Admiral Sharp and his staff had drawn up a second plan to curb enemy movements through southern North Vietnam, the demilitarized zone, the Cambodian border area, and southern Laos. This one envisaged the use of such advanced items as the starlight scope and Mk-36 Destructor munitions in stepped-up Air Force and Navy assaults on waterborne traffic, strikes against a "full spectrum of targets" in the Hanoi-Haiphong region, and the closing of Haiphong harbor to shipping from the Soviet Union and other countries. But there was no prospect of securing the plan's approval by high Washington officials who were not about to countenance a drastic change in the war's strategy.[3]

General Westmoreland and his staff, on the other hand, still desired a large, ground-oriented, anti-infiltration push into southern Laos. MACV headquarters by early 1967 had hammered out two plans for the 1967–68 dry season—PRAIRIE FIRE III and SOUTHPAW (an extension of which was called HIGH PORT).† With Sharp's approval, MACV planners proposed in PRAIRIE FIRE III to recruit and train as many as 3,000 hill tribesmen (Khas) living on both sides of the Laotian-South Vietnamese border. Familiar with the local terrain, the Khas would complement the Vientiane embassy's roadwatch team activities.[4]

There was a second reason why Westmoreland solicited the approval of his SOUTHPAW and HIGH PORT concepts. The MACV commander pointed out that small SPIKE and HORNET units could not carry sufficient ordnance for self-defense or enough landmines for emplacement on the trail. This could be remedied, he said, by employing a reinforced airborne or ranger battalion from the Army of the Republic

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*Development of this system is discussed in Chapter IX.

†On March 1, 1967, the code name of MACV's probes into the Ho Chi Minh Trail was changed from SHINING BRASS to PRAIRIE FIRE. [Msg, CINCPAC to COMUSMACV, 252107Z Feb 67.] Phase I consisted chiefly of seven- to nine-man teams that began cross-border probes in October 1965. Phase II featured platoon-size probes that commenced in June 1966.

of Vietnam. The battalion could be heli-lifted into Laos and supported by helicopter gunships, Air Force TIGER HOUND strike aircraft, and B-52s.

While engaged in search-and-destroy missions within the PRAIRIE FIRE operating boundary, the battalion would be aided by reinforced SLAM tactical and B-52 strikes. The strikes would be controlled by the senior FAC and task force commander at a forward operating base in South Vietnam, coordinating with the TIGER HOUND Task Force and a PRAIRIE FIRE liaison officer at Seventh Air Force headquarters. Phase II of SOUTHPAW (HIGH PORT) would introduce an ARVN division. Largely controlled by the South Vietnamese, the division with U.S. air assistance would focus on destroying DRV troop and supply redoubts in SLAM-designated sections of the trail.[5]

Ambassador Sullivan and his intelligence staff stoutly opposed all three concepts. They especially disliked PRAIRIE FIRE III which required the recruitment of 3,000 Kha tribesmen, despite its endorsement by the JCS and high defense officials. The ambassador was willing to let the tribesmen cooperate on their own without U.S. aid, but, if not, he believed the concept should be dropped. He scored MACV's proposed recruitment of the tribesmen as "purely out of the opium pipe." Perhaps the only way MACV and Defense officials could be convinced of the concept's folly was to "try and demonstrate . . . failure."[6]

Sullivan also thought PRAIRIE FIRE III unrealistic because of personnel shortages in the current small PRAIRIE FIRE operations. Consequently, only a fraction of the authorized missions into the Ho Chi Minh Trail could be executed. Admiral Sharp had criticized the waste of manpower in the war. The ambassador therefore urged the State Department to block the PRAIRIE FIRE III concept at the Washington level and convince the PACOM commander to convert HORNET forces into smaller SPIKE teams.[7]

There was more pulling and hauling between MACV, Vientiane, Honolulu, and Washington before the PRAIRIE FIRE III concept was abandoned. Officials meanwhile discussed the merits of the SOUTHPAW and HIGH PORT concepts. As Westmoreland was adamant about proceeding with SOUTHPAW, the talks continued well into the summer of 1967.[8]

Admiral Sharp in July and the joint chiefs in August agreed with Sullivan that the SOUTHPAW concept was not feasible. SOUTHPAW's insertion of ARVN troops into Laos, they concluded, would elicit a strong DRV military reaction, increase American involvement, overextend the RVNAF's resources, and divert substantial support from South Vietnamese programs—tactical and B-52 air, heli-lift, artillery, and logistic. Nor could American forces extricate, if necessary, an ARVN

battalion from Laos without publicity. After Secretary McNamara acceded to these arguments at the end of August, the SOUTHPAW and follow-on HIGH PORT concepts were shelved. Three and a half years later, however, a variation of the two concepts was revived when South Vietnamese troops (drawn from a ranger, airborne, and an infantry division) plus mechanized elements and U.S. air support launched LAM SON 719 into the trail. The nearly two-month campaign cost both sides dearly, but it slowed infiltration briefly and thereby aided the pacification and the Vietnamization programs then under way in the South.[9]

Although Westmoreland failed to sell his PRAIRIE FIRE III and SOUTHPAW concepts, he succeeded in September in extending the southern part of the PRAIRIE FIRE boundary slightly beyond the previous twelve miles from South Vietnam's western border, and in achieving several other new border alignments.[10]

Along with the planning for air-ground operations over the coming dry season, U.S. aircraft cut roads and hit whatever enemy targets they could find on the Ho Chi Minh Trail, the seasonal monsoon weather having induced the DRV to hold back temporarily the southbound journey of supplies (mainly by trucks and watercraft). Seventh Air Force flew the majority of strike sorties in STEEL TIGER, as the Navy and Marines had shifted most of their anti-infiltration effort to the TALLY HO section of Route Package I in southern North Vietnam. The heaviest STEEL TIGER strikes were in the ECHO and FOX sectors which contained the principal infiltration routes between Mu Gia Pass and Tchepone.[11]

The low combat tempo had no major effect on the conduct of operations. Propeller-driven aircraft as in the past accounted for many of the sorties. Participating were T-28 ZORROs, A-26K NIMRODs, C-123 Candlestick flareships from the 606th Air Commando Squadron (Composite), A-1Es of the 602d Fighter Squadron Commando, and O-1 Bird Dog forward air controllers belonging to the 23d Tactical Air Support Squadron. The aircraft also flew in the BARREL ROLL area of northern Laos and from time to time attacked targets in southern North Vietnam. The only new tactical change was Seventh Air Force's use of more Phantom F-4Cs and Ds in southern Laos. Though O-1Fs still controlled numerous strikes, the monsoon weather dictated extensive pilot use of MSQ-77 SKYSPOT radar.[12]

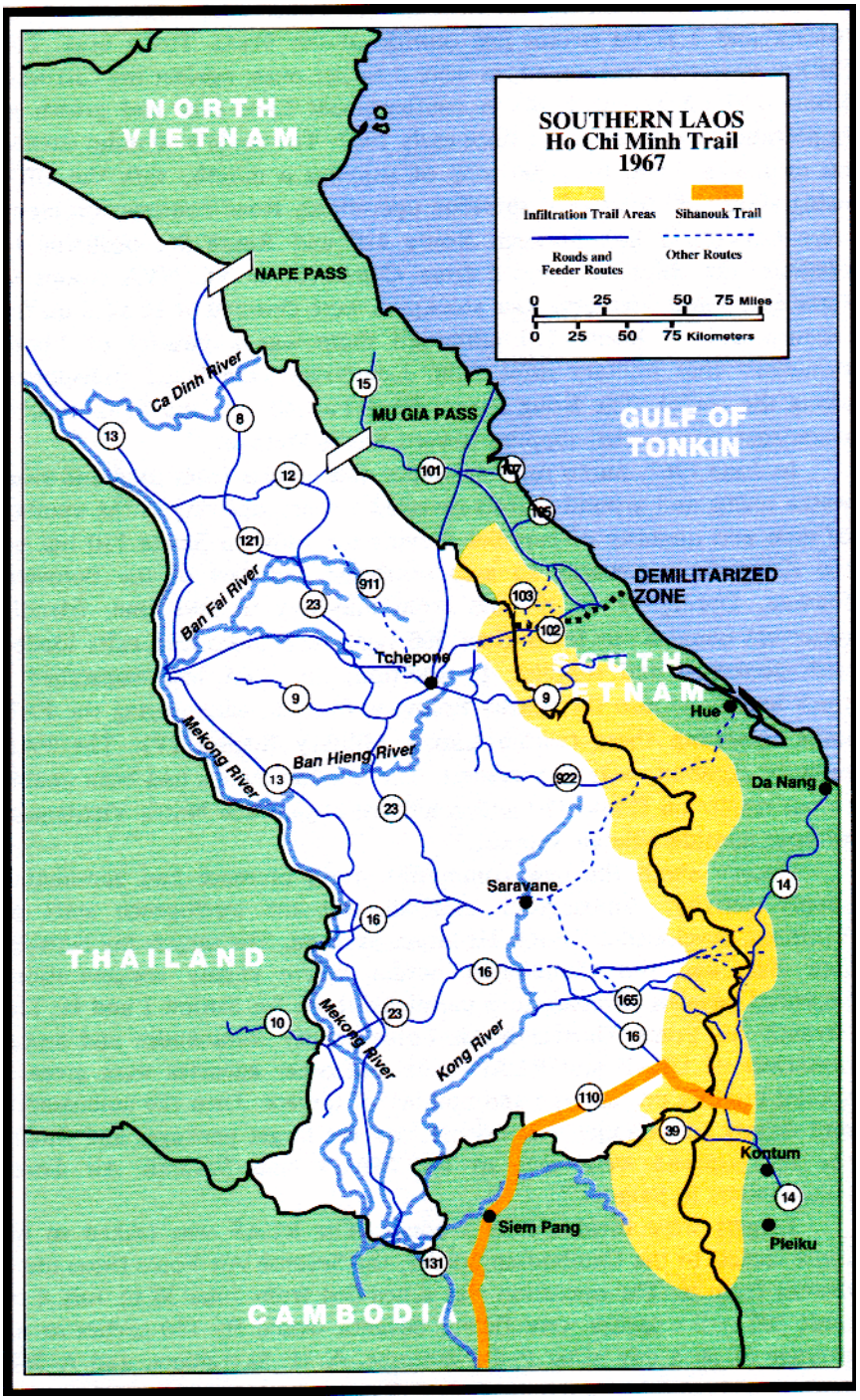
Seventh Air Force planes flew many more night combat sorties than heretofore, concentrating on truck traffic along routes south of Mu Gia Pass in STEEL TIGER. These numbered 341 of 1,007 total day and night strikes in that area in June, 325 of 910 in July, and 326 of 810 in August. To bolster night flights, Seventh Air Force in July augmented its A-26 night fighter unit from 8 to 12 aircraft, then assigned all of the NIMRODs to a newly created 609th Air Commando Squadron.[13]

Air operations from June through September were highlighted by 1 SHOCK and 2 SLAM strikes just outside of the STEEL TIGER area. The SHOCK operation was aimed, as were 2 earlier ones, against the east-west Route 110 (Sihanouk Trail) in southernmost Laos that had grown in importance as a truck route since early 1967. The route's 60 miles carried an estimated 1,000 to 1,200 tons of supplies a month, with the DRV using about 140 trucks for shuttling operations. Road-construction crews were building a link between Route 110 and Route 96, probably to facilitate the shipment of rice from Cambodia to VC/NVA troops in Laos and South Vietnam. Rice stockpiles were detected at 10 sites on the western end of Route 110 (although there was a paucity of "hard evidence" that military arms from Cambodia were being transported along the route). The Kong River, Bang Fai (River), and other nearby waterways also carried supplies toward South Vietnam.[14]

In June 1967, photo reconnaissance and reports from road and river watch teams and ground patrols revealed a sharp upswing in the number of men and quantity of supplies moving not only on Route 110 but on the Kong River towards an area northeast and east of the Bolovens Plateau. During 19 of 30 days from mid-May to mid-June, friendly observers counted no fewer than 500 boats and motorized rafts loaded with personnel and supplies. In addition, the NVA had dispatched 5 fresh battalions into the nearby Bolovens Plateau, endangering the FAR units operating there (within Laos's Military Region IV). The FAR military capability was very modest. The Laotian troops had been unable to cut traffic on Route 110 and could not engage the North Vietnamese without considerable air support.[15]

Uneasy about the new communist troop presence and accelerated supply activity, Ambassador Sullivan and the intelligence staff at Vientiane developed a SHOCK III target package. The targets lay between Ban Bak and the Cambodian border where enemy concentrations appeared heaviest. Preparations paralleled those for SHOCK I and II: The Seventh Air Force/Thirteenth Air Force deputy commander and representatives of USAF and RLAF units and other agencies were given a special briefing on the type and number of targets. Then the ambassador and deputy commander "signed off" on the target package, and finally the air requests were sent to the MACV and Seventh Air Force commanders in Saigon.[16]

Targets were divided into 2 zones. The RLAF was tasked to hit those closest to the Cambodian border, the Seventh Air Force those more distant from it. The operation was scheduled from June 30 to July 4 or until 200 strike sorties were flown. Seventh would fly 150 sorties or an average of 30 a day using F-4 Phantoms, A-1E Skyraiders, and A-26K


SOUTHERN LAOS
Ho Chi Minh Trail
1967
Infiltration Trail Areas
Sihanouk Trail
Rouds and Feeder Routes
Other Routes
0 25 50 75 Miles
0 25 50 75 Kilometers
NORTH VIETNAM
NAPE PASS
MU GIA PASS
GULF OF TONKIN
DEMILITARIZED ZONE
SOUTH VIETNAM
Ca Dinh River
Ban Fai River
Mekong River
Ban Hieng River
Kong River
Tchepone
Saravane
Siem Pang
Hue
Da Nang
Kontum
Pleiku
THAILAND
CAMBODIA
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12
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165
121
911
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103
102
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922
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165
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14
131

NIMRODs. The RLAF would fly 50 sorties (10 a day) using T-28s. In addition, B-52s for the first time would participate.[17]

SHOCK III started as scheduled on June 30 against the Sihanouk Trail, but the monsoon clouds and rain held the Seventh Air Force to just half of its planned strike sorties. Seventy-four were flown in daytime and eleven at night. The RLAF reportedly flew sixty-three sorties, thirteen more than expected. In addition, nine B-52s (three laden with CBU ammunition and six with general purpose bombs) flew saturation missions on truck parks, storage and supply areas, and automatic-weapons positions. Poststrike photo and other intelligence data disclosed that SHOCK III had probably destroyed or damaged enemy structures, boats, and a bridge, and set off numerous secondary fires and explosions. Tactical and B-52 aircrews also severed Route 110 and other routes.[18]

North of the SHOCK III area, ARC LIGHT B-52s and tactical aircraft were busy with SLAM V. From June 17 to August 16, SAC's superbombers chalked up fifty-three sorties against NVA troop and supply redoubts within the PRAIRIE FIRE boundary. Monsoon weather and the jungle terrain conspired to prevent much assessment of the destruction and damage inflicted by the bombs, explosions, and secondary fires.[19]

Air commanders, meanwhile, were getting ready to mount SLAM VI, but another dispute between Westmoreland and Sullivan delayed its execution. The MACV commander wanted to begin a tactical air-ground and B-52 attack on August 4 against a new large enemy complex just west of the South Vietnamese border. He said that recent PRAIRIE FIRE team probes of the area, agent reports, secondary explosions from a few tactical strikes, and small-arms and automatic weapons fire signaled the existence of troop concentrations, storage and bivouac sites, waystations, loading zones, and trails. Aerial photography revealed no friendly villages, shrines, and national monuments. Westmoreland asked for "automatic authority" to deploy additional PRAIRIE FIRE teams into the zone, to seek out targets, and call in planes (especially B-52s) as needed. Sullivan rejected the request.[20]

The crux of the problem—as always—was who had final command and control authority for American military operations in Laos. Sharp backed Westmoreland, citing the "temporary blanket approval" he had secured to conduct SLAM V that was still under way. Sullivan demanded more photographic and other hard intelligence to confirm the absence of civilians in a zone far larger than the SLAM V area. Westmoreland countered that he had already sent Vientiane all essential data on the zone and was impatient to get the attack going. He stressed the zone's importance—it harbored many NVA troops who could force a quick retreat of MACV ground reconnaissance units and was used as a major

base for enemy operations in the central and southern portions of the RVNAF's I Corps Tactical Zone. Besides, the communists undoubtedly used the zone to prepare for a recent rocket attack on Da Nang. Thus it was imperative to remove immediately all strike restrictions.[21]

Sullivan refused to budge. He reminded Westmoreland that as ambassador he was responsible to the United States and Laotian governments for minimizing civilian casualties, and that State and Defense had staffed their offices in Vientiane to discharge this function. The dispute was settled in mid-August when photo interpreters, after scrutinizing new MACV photos of the proposed SLAM VI area, agreed there were no friendly civilians in the area.[22]

SLAM VI got under way at once with B-52 strikes into the targeted area, which for bombing was divided into one-by two-mile sectors. The SAC bombers contributed seven missions totaling fifty-seven sorties.[23]

SLAM VI was the last of the large-scale SLAM strikes. SPIKE teams and HORNET units found it ever harder to sustain forays into the enemy's redoubts along the Ho Chi Minh Trail and to pinpoint aerial targets. Larger numbers of well-trained troops defended supply and other sites. They waited for PRAIRIE FIRE units, attacking incoming and outgoing Army and Air Force helicopters and their escort of low-flying FAC and strike aircraft. Most of the American-led teams had too little staying power against a well-armed foe.[24]

The danger of these operations spurred Westmoreland to renew his effort with higher authorities for his PRAIRIE FIRE III and SOUTHPAW-HIGH PORT concepts—all requiring larger air-supported ground units against the trail. As noted earlier, Sullivan and eventually Washington agreed that these concepts would prove too escalatory and divert too many resources from other essential South Vietnamese military programs.

In the following weeks, the PRAIRIE FIRE ground probes and the tactical and B-52 strikes did not cease but were conducted more cautiously. SLAM strikes were of shorter duration. With the arrival of October and drier weather on the trail, the operational pace once again picked up. Over one seven-day period, six SPIKE teams and five HORNET units entered the trail. Their targeting brought in seventy tactical and three B-52 sorties.[25]

After two years of operations, what had the air-supported PRAIRIE FIRE program accomplished? Certainly, it had cost the enemy lives and resources that would otherwise have been used in South Vietnam. The first team entered Laos on October 13, 1965, and by October 27, 1967, the program had amassed the following record:

	SPIKE Reconnaissance Teams	HORNET Platoons and Companies
Operational teams or units	20	12*
Total ground missions	262	61
Supporting tactical sorties	1,783	1,630
Supporting B-52 sorties	634	295
Enemy killed	368	368
Supply caches destroyed	177	34
Structures destroyed/damaged	1,222	158
Bridges destroyed/damaged	6	5
Vehicles destroyed/damaged	33	8
Secondary explosions	419	695
Prisoners taken	19	7
Antipersonnel mines emplaced	615	477
Antivehicle mines emplaced	23	24

*Consisting of nine HORNET platoons and three companies. Though many more PRAIRIE FIRE teams, platoons, and companies were authorized, recruitment and training were slow.

The human cost to the Americans and the South Vietnamese was considerably less than to the enemy:[26]

	SPIKE Reconnaissance Teams	HORNET Platoons and Companies
U.S. killed	30	3
U.S. wounded	33	51
U.S. missing	8	7
South Vietnamese killed	55	32
South Vietnamese wounded	54	100
South Vietnamese missing	34	37

To what extent these operations delayed the movement of manpower and materiel into South Vietnam was difficult to say. The presumption was that they did delay the enemy and they added to the enemy's costs in continuing the war. On these premises the PRAIRIE FIRE program was justified.

Together with stepped-up PRAIRIE FIRE operations in mid-1967, American military planners experimented with another anti-infiltration program along the Ho Chi Minh Trail. The project consisted of mudmaking and carried the code name COMMANDO LAVA.

COMMANDO LAVA was born in the laboratories of the Dow Chemical Company. There Dow scientists had created chemicals which, when mixed with water in the form of rain, destabilized or chelated soil into mud. With sufficient chemicals and rain, the scientists believed that enough mud could be created to slow and possibly stop vehicular traffic. The chemicals were a 50-50 mixture of trisodium nitrilo-triacetic acid and sodium tripolyphosphate sold under the trademark Calgon. Early tests in Laos indicated that a mixture of about one pound per square yard could treat six inches of top soil. About twenty tons would cover an average-size chokepoint.[27]

A C-130 aircraft began the experiments in Laos on May 17, free-dropping the chemicals (packed in palletized bags) on chokepoints along Routes 92 and 110. Ten days later, both chokepoints appeared impassable to traffic. A sloping segment on Route 110 oozed downhill like lava, inspiring the project's code name.[28]

Encouraged by the tests, Admiral Sharp and Ambassador Sullivan endorsed their continuation. McNamara, the joint chiefs, and other Washington high officials likewise approved. Sharp forecast an "excellent potential" for the project against enemy chokepoints, fords, and bridge sites during Laos's rainy season (June-September). Combined with air-dropped ordnance, mudmaking also promised to tax the communists' road-maintenance resources. Sullivan waxed even more optimistic. He informed the State Department that enemy movements through Laos might become prohibitive if mudmaking was combined with rainmaking and with the air-supported sensor anti-infiltration system to be activated in late 1967. To slow enemy personnel traveling on foot, the ambassador supported tests using FAR troops to spread the chemicals by hand on soil containing vegetable roots and matting. He saw mudmaking possibilities as equally good in South Vietnam. "Chelation may prove better than escalation," he advised State and endowed COMMANDO LAVA with a war cry—"make mud, not war."[29]

In the meantime, Vientiane officials on May 27 briefed Generals Momyer and Westmoreland on COMMANDO LAVA. Then in mid-June, at the request of Sharp and Westmoreland, Momyer's Seventh Air Force staff wrote Operation Plan 500-67, COMMANDO LAVA II. The plan tasked the 315th Air Commando Wing to furnish several C-130s for dropping the chemicals, the 504th Tactical Air Support Group for any additional aircraft and crews, and the 12th Tactical Fighter Wing for logistic support. Assisted by ABCCC aircraft, the C-130s would fly 200 feet above the ground at 160 knots and drop palletized paper bags of chemicals along traffic chokepoints. General Momyer at the same time directed his staff to start planning for early replacement of the nonjet C-130s with the speedier jets. He pointed out that if the COMMANDO

LAVA project became a regular program, the C-130s would become increasingly vulnerable to expanding enemy antiaircraft defenses.[30]

MACV in June chose one chokepoint in Laos and another in South Vietnam's A Shau Valley for further COMMANDO LAVA tests. The A Shau Valley tests took precedence because there were III Marine Amphibious Force personnel available to make a ground inspection of soil chelation and its impact on enemy traffic.[31]

Two Seventh Air Force C-130s flew their first chemical drops on July 20 and 21, 1967, along segments of Route 548 in the A Shau Valley. The airdrops succeeded even though small-arms fire struck both planes. The next day, three C-130s spread chemicals on a 200-yard segment of the same route. One aircraft was hit, apparently by a .50-caliber weapon that triggered a fire in the wing and forced the pilot to land at Chu Lai airstrip in South Vietnam.[32]

The Seventh Air Force flew several more missions in late July and early August with out loss or damage to aircraft. Meanwhile, Seventh's initial report based on aerial observation showed that the chemical compounds did little to slow or halt communist traffic. The DRV still used the roads and made no unusual efforts to bypass seeded sectors. Deep rutting on four road segments was seen, but was corrected by road-repair crews. They covered the ruts with logs and bamboo matting, a normal practice where roads were poor.[33]

In its final COMMANDO LAVA II report, Seventh said that rain had activated chelation in all six segments of Route 548 treated with the chemical compounds. However, there was scant evidence of mud or mudslides, and enemy traffic was not impeded. The report blamed the route's soil texture. Consisting largely of sand rather than clay, it was unsuitable for proper chelation. Consequently, MACV discontinued the tests on October 21, dashing earlier hopes that a radically new technique might significantly arrest enemy traffic. Whether the communists in the vicinity of Route 548 were aware of the COMMANDO HUNT II experiment remained a matter of speculation.[34]

As the monsoon weather abated in late September and in October, enemy troops and supplies commenced their seasonal logistic shift from routes and trails in southern North Vietnam to the Ho Chi Minh Trail in Laos. On the 21st at Udorn, Generals Momyer and Westmoreland, Ambassador Sullivan, and Philip C. Habib, Deputy Assistant Secretary of State for East Asian and Pacific Affairs, and other officials agreed on a new three-phase air plan to interdict the enemy, hoping to inflict on him greater manpower and supply losses than in previous dry seasons. In Phase I the Air Force would concentrate on supplies stockpiled near the North Vietnamese passes leading into Laos. As the supplies moved down the trail, the air effort in Phase II would focus on striking and harassing

trucks along the roads. The last phase would center air power on passes opening into South Vietnam.[35]

The tempo of the aerial assault on infiltration accelerated dramatically over the next four months, although the phased application of air power was overtaken by the shifting military situation in southern Laos and northern South Vietnam. Combat sortie totals reflect the magnitude of the air campaign:

	Oct 1967	Nov 1967	Dec 1967	Jan 1968
USAF	2,293	3,416	4,346	7,252
USN	9	219	1,044	unk
USMC	23	102	456	unk
Total	2,325	3,737	5,846	7,252

The Seventh Air Force continued to fly most of the sorties in Laos while the Navy and Marines concentrated most of their air effort on North Vietnam and South Vietnam respectively. In the closing months of 1967, SAC stepped up B-52 strikes within the TIGER HOUND sector. For all of 1967 the ARC LIGHT personnel flew 1,910 sorties in Laos. Most originated from Guam, but in September 1967 Thai-based B-52s were permitted for the first time to hit Laotian targets.[36]

Converging on the routes, trails, and supply sites of the ECHO and FOX sectors of the STEEL TIGER area, the Air Force relied on the relatively few prop aircraft available for use in Laos as their main antitruck weapon. Besides surpassing the jet aircraft in loiter time, technology and experience enabled the A-26 NIMRODs, T-28 ZORROs, and A-1E Skyraiders do a better truck-killing job. The starlight scope, first tested in March 1966, was now aboard many of the supporting O-1E Bird Dogs, C-123 Candlesticks, and on some of the NIMRODs.

There was additionally a new, twin-engine, O-2A Super Skymaster FAC aircraft that had arrived in the war theater in June 1967. The O-2A excelled the O-1 in loiter time and in communications that assured closer air-ground coordination for both prop and jet strike planes. Pilots had learned to use prop aircraft more effectively. A much-used tactic in heavily defended areas (where many trucks were likely to be found) was pairing aircraft. An A-26K would pair with another A-26K, with a T-28 ZORRO, and now and then with a jet B-57. The pairings not only improved truck hunting but made more ordnance available against trucks and antiaircraft positions. Finally, all strike pilots had access to new ordnance, including M-31 and M-32 incendiary clusters.[37]

Nonetheless, the days of the prop aircraft seemed numbered. There were few A-26Ks or T-28s left in the USAF inventory, although a fair

number of A-1E Skyraiders could eventually be made available. As of June 30, 1967, the Air Force had 89 Skyraiders and 150 more could be transferred from the Navy and the VNAF during fiscal years 1968 and 1969. Most important, however, was the vulnerability of the prop aircraft to the heavier automatic weapons and antiaircraft artillery fire, and receipt by Seventh Air Force of better-equipped USAF jets for hunting trucks and other targets.[38]

As the antitruck campaign gathered momentum in late 1967, General Momyer sent more jet aircraft into Laos. The majority were F-4C and F-4D Phantoms, the latter being the Air Force's newest and best fighter. After October the Phantoms began accounting for 50 percent or more of all strikes on the Ho Chi Minh Trail, about half of them flown at night. During November additional F-105 Thunderchiefs appeared over Laos and 2 types of specialized jet aircraft made their debut—the F-100F Super Sabre and the A-37. On the 13th, several Super Sabres, recently converted to MISTY FACs and fitted for flying armed reconnaissance, began trail missions. Equipped with 2 LAU-59 rocket launchers for target marking and a 20-mm cannon for armed reconnaissance, the F-100Fs began substituting for the slower and more vulnerable prop O-1s and O-2s in the heavily defended areas. Also in November, several specially equipped A-37s that had undergone a combat evaluation in South Vietnam (COMBAT DRAGON), started flying in southern Laos. Featuring a 7.62-mm minigun in its nose, the twin-engine A-37 could carry 4,855 pounds of ordnance.[39]

An exception to the use of more jets in Laos was a test in November 1967 of a newly configured turboprop JC-130A called Gunship II.* This aircraft was a follow-on to the AC-47 gunship withdrawn from Laotian operations in 1966 because of its vulnerability to ground fire (though still used in South Vietnam). The JC-130 had four M-61 Vulcan 20-mm cannon, four 7.62-mm miniguns (MXU-470), beacon-tracking radar, a starlight scope, and a fire-control system. It carried considerable armor to protect aircrews, an illuminator, and special safety fuel tanks. As a truck-killer, Gunship II appeared to pass early combat tests with flying colors. Its cannon and miniguns were credited with destroying twenty-seven trucks and damaging five, and probably destroying seven trucks and one automatic-weapons position. The crew counted eleven secondary explosions resulting from the attacks on enemy vehicles.† A number of Gunship IIs would see action in Laos during 1968.[40]

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*Subsequent models were designated AC-130As.

†For a history of Gunship II, see Ballard, *Development and Employment of Fixed-Wing Gunships, 1962-1972*, Chap III.

Ambassador Sullivan in Vientiane viewed with disquiet the growing use of jets in southern Laos, particularly against enemy trucks. Convinced that prop aircraft were by far the best truck-killers, he wanted more—not fewer—of them. It was an issue over which he and Momyer had earlier crossed swords. Several weeks previously, Sullivan and Eugene M. Locke, U.S. Deputy Ambassador to Saigon, had jointly asked the Office of the Secretary of Defense to analyze the efficacy of prop versus jet aircraft against trucks and watercraft.[41]

The Office of the Secretary of Defense analysts supported Sullivan's position. They calculated that for the first 8 months of 1967 prop aircraft had destroyed or damaged 996 vehicles and watercraft, at a rate of 12.8 transport targets destroyed per 100 sorties and at a cost of $55,000 per target. In contrast, jet F-4s and F-105s had destroyed or damaged only 336 vehicles or watercraft at a rate of 1.5 per 100 sorties and at a cost of $700,000 per transport target. The analysts said that by replacing the 2 F-4 squadrons with 2 A-1E squadrons (there being no extra A-26K or T-28 prop aircraft on hand), 1,200 more trucks and watercraft could be destroyed or damaged in the next 12 months at a savings of $28 million. The sole shortcoming of the prop aircraft was that it was 4 times more vulnerable to enemy antiaircraft fire. Over 12 months the additional vehicle and watercraft attrition would cost the United States 18 more aircraft and 8 pilots. McNamara solicited the views of the joint chiefs who in turn queried field commanders for their reaction to these findings.[42]

The Seventh Air Force and PACAF commanders and their staffs, in detailed replies, argued strongly on doctrinal and practical grounds for jets rather than prop aircraft. They invoked the USAF airpower concept requiring attacks on enemy supplies as close to the source as possible. This dictated giving first priority to supply targets in North Vietnam (chiefly in the Hanoi-Haiphong area) before the materiel entered the maze of roads, routes, and trails in southern North Vietnam and Laos. Also, enemy antiaircraft defenses in Laos as in North Vietnam were very dangerous in certain areas, thus foreclosing the use of the vulnerable nonjet aircraft. Above all, jets gave the Seventh Air Force commander the requisite flexibility to conduct air operations anywhere in the war theater. Finally, Seventh and PACAF leaders faulted the analysis for omitting from jet statistics the sorties flown for flak suppression, escort, and strikes on fixed targets. The omission distorted the record and made jet operations against trucks and watercraft seem less effective than they really were. A year-round aircraft-by-aircraft comparison, they said, would prove that jets destroyed more trucks than the nonjets did.[43]

Countering certain of the Air Force arguments was not easy. It was hard to argue against a commander's need for adequate operational

flexibility when he faced the likelihood that the DRV would bring many more 37-mm, 57-mm, and other aircraft weapons into Laos. To General Momyer the operational flexibility argument was crucial. Despite the daily air requests developed by the Vientiane embassy, he judged it essential to evaluate the requests purely within the context of theater-wide air priorities. Momyer also believed that direct embassy strike requests were a usurpation of a basic USAF role and mission.*

Left unsaid was another Air Force concern. This was the continuing financial outlays for basically obsolete nonjet aircraft at the expense of using and testing numerous newer and higher-performance jet planes. On the other hand, the statement that jets surpassed the nonjets in truck-killing could not be squared with an abundance of data. The data underscored the advantages of the nonjets against fleeting trucks and watercraft in a country with mostly jungle terrain and rainy weather. These advantages prevailed, however, only so long as the nonjets flew in a reasonably permissive environment.

In any event the jet-nonjet dispute was destined to become academic, although Sullivan tried for a while longer to obtain more A-1E Skyraiders. Westmoreland defended the Seventh Air Force and PACAF views. The MACV commander noted that the F-4C Phantoms were needed to fly MiG combat air patrol over North Vietnam, and that the new F-4D was an all-weather aircraft for which there was no equivalent prop plane. He further stressed General Momyer's desire for "flexibility and versatility in optimizing the out-of-country air campaign." Admiral Sharp, too, backed Momyer. He advised the JCS and McNamara separately that nonjet aircraft losses were bound to rise, and the seasonal nature of the war often demanded "fast reacting" strikes that only jets could provide. On the basis of this information, McNamara did not pursue the matter further.[44]

The jet-nonjet issue was not the sole one between the Vientiane embassy and the Air Force. In December, as truck traffic accelerated along the Ho Chi Minh Trail and the west-to-east Sihanouk Trail, embassy targeteers and the Air Force wrangled over air responsiveness to targets developed by roadwatch teams. Momyer and his subordinate commanders insisted a large number of the targets could not be struck. Of the 715 trucks reported by the teams in November, Air Force pilots using visual and photo reconnaissance could not confirm the presence of 195 of them, and 375 truck sightings were not acted upon due to delayed reports. Disagreeing, embassy officials decided to fashion a SHOCK IV target package to extract more air strikes from the Seventh Air Force.[45]

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*See Chapter VII.

The SHOCK IV targets were found in aerial reconnaissance and roadwatch team reports documenting the stepped-up, southward-moving traffic along the Sihanouk Trail and water traffic on the Kong River. The FAR commander of Military Region IV feared that the traffic portended (as in late June) another enemy thrust against the FAR units near Attopeu and on the edge of the Bolovens Plateau in the area.[46]

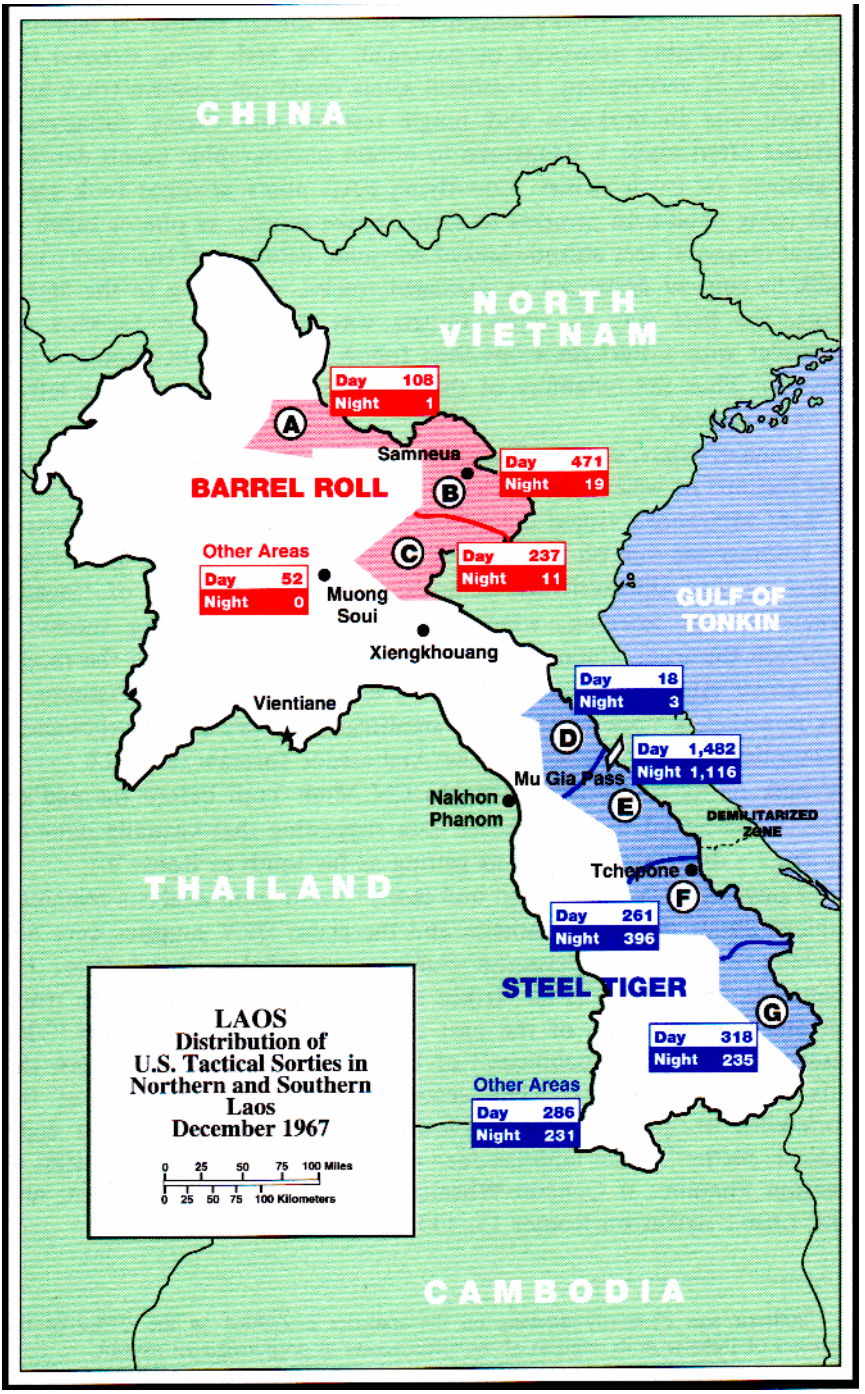
After concurrences by the embassy, the deputy commander, Seventh Air Force/Thirteenth Air Force, and the RLAF, a five-day SHOCK IV operation began on December 26. Air Force F-4s, A-37s, and RLAF T-28s attacked truck parks, storage areas, automatic-weapons positions, troop rest stops, and watercraft. While RLAF pilots concentrated much of their firepower on watercraft, USAF pilots hit other targets and cut the Sihanouk Trail in several places. The assault set off numerous secondary explosions and fires. Because weather canceled many missions, Seventh Air Force pilots flew only 87 of their planned 160 sorties and the RLAF flew 47 sorties. Jungle terrain and weather once more frustrated bomb damage assessment missions, but the strikes were judged to have taken a fair toll in enemy lives and supplies. Air Force and RLAF aircraft carried out a final SHOCK V in the same area during February 1968 with similar flying problems and uncertain bombing results.[47]

Meanwhile, Seventh Air Force's truck-attrition claims were setting unprecedented records. Pilots in November saw 3,019 trucks, attacked 2,416, and destroyed 517. President Johnson followed the "truck-busting" campaign closely, and as November ended he directed "maximum resources" against the Ho Chi Minh Trail. The U.S. airmen rose to the occasion. In December they sighted 5,511 vehicles, attacked 4,598, and destroyed 978.* In January 1968 they detected 6,911 trucks, destroying and damaging 1,151.[48]

Questioning the trend of these statistics, Westmoreland in early December discussed them with General Momyer. He said the reported truck-kills appeared "awfully high," far above those of a year earlier. Momyer promptly had his staff reexamine the criteria for recording truck-kills.[49]

The reexamination resulted in the clarification of criteria for verifying truck attrition in the 56th Air Commando Wing. Pilots had to see a truck explode and burn. Explosions and fires started by an air attack on trucks beyond twenty-five feet of a road should be assessed

*Headquarters USAF analysts later refined the statistics for November and December 1967 as follows: Trucks sighted in November, 4,267, destroyed and damaged, 834. Trucks seen in December, 6,093, destroyed and damaged, 1,030. [TIA, Dir/Ops, USAF, Feb 68, p 3-33.]


CHINA
NORTH VIETNAM
Day 108
Night 1
A
Samneua
BARREL ROLL
Day 471
Night 19
B
Other Areas
Day 52
Night 0
C
Day 237
Night 11
Muong Soui
Xiengkhouang
GULF OF TONKIN
Vientiane
Day 18
Night 3
D
Day 1,482
Night 1,116
Mu Gia Pass
E
Nakhon Phanom
DEMILITARIZED ZONE
Tchepone
F
THAILAND
Day 261
Night 396
STEEL TIGER
G
Day 318
Night 235
Other Areas
Day 286
Night 231
LAOS
Distribution of
U.S. Tactical Sorties in
Northern and Southern
Laos
December 1967
0 25 50 75 100 Miles
0 25 50 75 100 Kilometers
CAMBODIA

purely as secondary explosions and fires. Secondary explosions or fires created by attacking trucks hidden by jungle foliage should be reported solely as probably destroyed or damaged. The 56th Wing stressed the difficulties of verification. In general pilots could not confirm truck-kills at night due to darkness and jungle terrain, and enemy antiaircraft defenses often made it dangerous to obtain photographic bomb damage assessment of truck strikes. Low-flying FAC pilots at times took great risks using hand-held cameras to secure strike results, as photos taken at several thousand feet altitude lacked adequate detail. And the enemy was quick to conceal destroyed or damaged trucks. According to the 56th's pilots, the best way to verify targets was to equip the forward air controller with a starlight scope then follow up with night photographic missions. Thus the reliability of the high truck-attrition estimates left a lot to be desired.[50]

Some officials, such as President Johnson and Ambassador Sullivan, were inclined to believe the truck-killing estimates. When Air Force Chief of Staff McConnell visited Udorn in late November, the elated ambassador commended him on the Seventh Air Force's truck-killing operations. Sullivan called the antitruck campaign the consummation of "nearly three years of learning, adapting, adjusting, and refining success." Although the truck-killing could not be publicized nor match the recent spectacular American and allied victory at Dak To in South Vietnam, it was nonetheless "one of the most significant military and psychological accomplishments of the war." The Ambassdor foresaw the DRV losing the bulk of its trucks along the Ho Chi Minh Trail before the end of 1967. He accepted the intelligence data suggesting that virtually none of the DRV's dry-season cargo was getting as far south as Route 9.[51]

Conversely, Westmoreland and many Washington analysts remained dubious about the truck statistics and the claim DRV supplies were not reaching Route 9. Ambassador Sullivan nevertheless stood firm. He insisted in December the air strikes were taking an unprecedented truck toll and the air tactics of the past three years were "paying off." He lauded the "special capabilities" of USAF prop aircraft which flew the bulk of night missions. They accounted for seventy percent of the truck-kills, he noted, but only twenty percent of total day and night tactical sorties.* The ambassador wanted more A-1E Skyraiders at Nakhon Phanom, if General Wheeler could arrange to send them, and ARC LIGHT strikes on Routes 15, 137, 911, and 912.[52]

*Sullivan was obviously drawing on the statistics assembled by the Office of the Secretary of Defense in its analysis of the effectiveness of prop versus jet aircraft.

Apart from the disagreement over truck-killing estimates, a more elusive figure was the number of communists killed by air on the trail. Defense Secretary McNamara offered the only approximate manpower-attrition statistic to a Senate investigating subcommittee on August 25, 1967. He said that about two percent of the ten to twenty percent of all personnel who failed to reach the battle area while transiting from North to South Vietnam were victims of air attacks. Presumably, the rest were felled by disease, injuries, and other causes. McNamara's estimate included air operations in southern North Vietnam as well as in Laos.[53]

Whatever the enemy losses by air in Laos, American commanders in late 1967 were fairly sanguine about the anti-infiltration program and the war's progress. Their reports were fairly upbeat, for they were convinced that the Hanoi regime was taking a heavy drubbing. Compared with the close of 1966, the regime's manpower, truck, watercraft, and rolling-stock losses throughout the war theater were more severe. Its ability to support the war had diminished, and reliance on foreign military imports had mounted. Lastly, the American pacification effort in South Vietnam seemed encouraging.[54]

Air commanders envisioned two further military measures for slowing the enemy's manpower and supply flow to the south. One would be a sharp upturn in the B-52 sortie rate. The other (initially opposed but now supported) would be the use of acoustic and seismic sensors to detect personnel and vehicles passing along segments of the Ho Chi Minh Trail, thereby identifying targets for air strikes. Months of planning, debate, and preparations preceded each measure.

The desire of air commanders to step up SAC's sortie rate in the war theater triggered another drawn-out debate between the field and Washington. By 1967 the bombing issue was more sensitive than in the year before. There was now more domestic and foreign opposition to the B-52s, and administration officials were deeply troubled by their spiraling costs.

At the beginning of February, the Guam-based bombers were flying about 800 sorties per month theater-wide, with increasing numbers allocated to Laos. A need existed to reduce the roughly 12-hour round-trip flight time between Guam and a South Vietnamese or Laotian target. After exploring forward bomber basing with several countries,* U.S. authorities asked the Thai government for permission to station

*SAC and PACAF favored basing the bombers on Okinawa, while Westmoreland leaned toward using a Philippine base. South Vietnam and Thailand were also considered as possible forward base sites. All but Thailand were rejected for political or military reasons. [Hist, SAC, Jul-Dec 66, pp 146-47; Jacob Van Staaveren, *The Air Force in Vietnam: The Search for Military Alternatives* (Washington, 1969), p 8.]

part of the B-52 fleet on Sattahip Air Base (shortly renamed U-Tapao Air Base) near Bangkok. The Thai government agreed on March 2, Secretary of State Rusk publicly announced the decision on the 22d, and on April 30 three bombers from the 22d Bombardment Wing on Guam landed at the base following a mission in South Vietnam. The next day the same bombers flew their first strike from Sattahip against a South Vietnamese target area. Fifty-nine sorties had been launched from the new base by the end of April. In accordance with Ambassador Martin's instructions, all SAC mission requests had to be received in Bangkok no less than 24 hours before launching to allow clearance with Thai authorities.[55]

Additional bombers deployed from Guam to Thailand in May and June, the last five of the fifteen authorized by the Thai government arriving on July 9. With Laos and Cambodia officially neutral countries, the bombers flew a circuitous route around Cambodia to reach their targets in South Vietnam, the demilitarized zone, and southern North Vietnam. Prime Minister Souvanna Phouma's "neutrality" did not foreclose unpublicized bombing of his country. Not until September 1967, however, did he permit the U-Tapao-based bombers to strike selective targets in southeastern Laos.[56]

Militarily, the round-about missions from Thailand were wasteful and impelled SAC Commander in Chief Nazzaro, Admiral Sharp, and General Westmoreland to urge higher authorities to permit overflights of Laos. The country was neutral only in a technical sense, they argued, and the political risks of overflights appeared minimal. Most important, direct flights from Thailand to target areas would further reduce strike reaction time, enable the bombers to fly more sorties, and conserve considerable funds. Concurrently, Westmoreland pointed out that the SAC operations were indispensable for interdiction, close support, and keeping the enemy off-balance; and he pressed for a 50-percent rise in the sortie rate to 1,200 sorties per month. In light of a limited general purpose bomb inventory and the time lag in increasing bomb production, the sortie buildup should be gradual.[57]

These overlapping issues were debated intensely from spring through autumn 1967. In briefings for and communications to higher headquarters, General Nazzaro and other air commanders stressed the operational advantages of bombers from Thailand overflying Laos. They said the B-52s could reach any South Vietnamese or Laotian target within one and a half hours versus four and a half hours by detouring around Cambodia. The shorter route would make refueling by KC-135 tankers unnecessary, save about $1.5 million monthly, and let aircrews select the best direction of attack against targets in and near the demilitarized zone. The last would minimize the risk of hitting friendly forces or exposure to

SA-2 surface-to-air missiles emplaced in southern North Vietnam. All air commanders desired round-the-clock B-52 strikes on infiltration in southern Laos rather than the present nighttime strikes.[58]

Ambassadors Martin in Bangkok and Sullivan in Vientiane needed no convincing as to the advantages of overflying or striking targets in Laos. The crux of the problem was political. On the one hand, Sullivan observed, Thai authorities would allow B-52s to fly from their bases only if they were told of the targets. On the other hand, the U.S. government was not keeping Souvanna Phouma fully apprised of the magnitude of Guam-based B-52 strikes on Laotian targets near the Vietnamese border. Sullivan was reluctant, if directed, to inform the Thais but not the Laotians about the use of Thai-based B-52s. He also disliked withholding strike information from both governments when circumstances made Thai-based missions a compelling need to assure adequate "operational flexibility."[59]

After conferring with Thai authorities, Ambassador Martin secured their assent to allow B-52s to overfly and conduct strikes in Laos. He cited the "excellent record" of maintaining security about Thai-based USAF operations, and the diminishing public interest in the United States and elsewhere in the use of the bombers. At the same time, Admiral Sharp accented again the military advantages of striking Laos directly from U-Tapao.[60]

However, Ambassador Sullivan, after learning of the Thai government's consent, recommended to Washington that Thai-based B-52s be allowed to hit Laotian targets only at night and if cover strikes in South Vietnam continued. The ambassador opposed overflights because of their "significant international dimension." The Soviets, he said, had remonstrated to Souvanna Phouma regarding further B-52 violations of Laos's neutrality, and the prime minister had assured them such flights were not taking place. Sullivan said another reason for his decision was Souvanna's vexation about recent U.S. "loose talk" concerning combat operations in his country. State flashed its concurrence to Sullivan on September 1, meaning that the bombers would continue flying their circuitous route around Cambodia.[61]

Meanwhile, new enemy pressure on northern South Vietnam induced Westmoreland and Sharp to ask for more ARC LIGHT B-52 sorties in the demilitarized zone area, preferably by the Thai-based bombers overflying Laos. Sullivan turned down the overflight request but was overruled by the White House three months later.[62]

The resurgent enemy pressure on allied forces in northern South Vietnam was also a catalyst in Westmoreland's strenuous effort (still unapproved by the JCS and higher authorities) to boost SAC B-52 sorties from 800 to 1,200 a month. The administration's concerns

paralleled those raised in the 1966 debate leading to approval of 800 sorties per month—the need for a substantially higher financial outlay for more bombers, KC-135 refueling, munitions, and base construction but, above all, B-52 effectiveness.[63]

The cost and B-52 effectiveness issues were debated interminably throughout the spring of 1967 at SEACOORD, at ARC LIGHT conferences in August and September, and in a mountain of dispatches among SAC, Seventh Air Force, MACV, PACOM, Vientiane, Bangkok, and Washington. In mid-October the joint chiefs solicited from SAC, PACOM, and MACV "more explicit data and information on results, factual analysis of the overall contribution . . . in meeting objectives, [and] benefits expected . . . from the 400 sortie rate increase."[64]

Supported by Nazzaro and Sharp, Westmoreland reemphasized the requirement for a 1,200 monthly sortie rate. The ARC LIGHT saturation bombings, he said, had been a "major factor" in arresting recent enemy thrusts into the demilitarized zone. With the onset of the dry season in Laos, allied forces were faced with a potential buildup of enemy troops and supplies in South Vietnam's Kontum Province and enemy stockpiling near the Mu Gia Pass and other Laotian base areas. Westmoreland conceded that B-52 bomb damage assessment was hard to obtain. Nevertheless, the bombers recently killed in and near the demilitarized zone an estimated 3,665 enemy and, in conjunction with tactical Seventh Air Force and Marine strikes and ground artillery, inflicted 3,000 additional enemy casualties.

The MACV commander added that the B-52 strikes created many secondary explosions, and prisoner-of-war interrogations further attested to the bombers' destructiveness and fearsome impact. He said there was adequate evidence that the bombers prevented communist troop massing for very long. Thus "there was every reason to believe . . . the B-52 has become and will continue to be a decisive weapon for destroying staging and logistic areas and disrupting plans for enemy concentrations." Admiral Sharp endorsed the 1,200 monthly sortie rate for either surge or sustained operations.[65]

State Department analysts in contrast were far from convinced of the soundness of these judgments. They noted that earlier DIA and Defense system analysis studies showed the absence of a reliable data base for proving B-52 effectiveness. In Vientiane, Ambassador Sullivan had frequently expressed the view that B-52 strikes in Laos had been inefficient and ineffective, and preferred USAF tactical aircraft—props rather than jets—for striking enemy trucks and other targets. To justify this position, he obtained a study by Defense system analysts that generally supported his view.[66]

Secretary McNamara, who had been following the issue closely, decided to support the air commanders. He asked the JCS and the Air Staff to examine the cost of 60- to 90-day B-52 "sortie surge" proposals. The joint chiefs' final recommendation called for a surge capability of 1,200 sorties a month for 60 rather than 90 days. This was accepted by Secretaries McNamara and Rusk, who then proceeded to spell out how the capability would be achieved. On November 13, they jointly informed Leonard Unger, who had recently replaced Martin as ambassador to Thailand,* to seek Thai concurrence to increase the SAC bomber force from 15 to 25 aircraft, and to permit the entry of more supporting KC-135 tankers and 1,000 USAF personnel. The enlarged fleet would supply 800 sorties monthly from U-Tapao. Guam-based bombers would satisfy additional sortie needs. Unger reported in late November that Thai authorities had acceded to the American request.[67]

An implemental SAC-PACOM plan called for the 1,200 sorties a month to be attained by February 1, 1968, the expenditure of $10 million for air base and facilities expansion, the deployment of 5 more B-52s to U-Tapao by February 1 and the last 5 by June 1, 1968. The plan also provided for an earlier interim 1,200 sortie capability on 72 hours' notice, employing some bombers based on Guam. There would be supplemental KC-135 tanker support from Kadena Air Base, Okinawa, and Ching Chuan Kang Air Base, Taiwan.[68]

The details for the 1,200 monthly sortie surge rate were hammered out in late 1967. At the same time, President Johnson and his chief advisers decided to rescind the ban on overflights of Laos by Thai-based B-52s. The rescission was effective at 2400 on December 5, 1967. Prompting this change in ARC LIGHT policy was the tremendous expansion in DRV truck traffic down the Ho Chi Minh Trail, together with Westmoreland's recent requests for urgent, fast-reacting ARC LIGHT and tactical strikes at Dak To and in the demilitarized zone. Also contributing to the president's decision was a perceived lessening, as Ambassador Martin had noted, of public and diplomatic curiosity about Thai-based B-52s that had established a "pattern" of flying around Cambodia to South Vietnamese targets, and the rising U.S. budgetary problems created by the war. Simultaneously, the commander in chief authorized B-52 daylight strikes in Laos and canceled cover strikes in South Vietnam. The latter decision mirrored the observation that an average of three to five ARC LIGHT missions flown daily in South

*Appointed to succeed Martin on August 11, Unger did not arrive in Bangkok until the beginning of October, presenting his official credentials to the Thai government on the 4th.

Vietnam would afford enough "cover." However, the curb on public disclosure of B-52 operations in Laos would remain.[69]

Ambassador Sullivan took umbrage over the bluntness of Washington's instructions. After receiving McNamara's and Rusk's personal assurances there would be no public announcement on changes in ARC LIGHT missions, Sullivan met with Souvanna Phouma who assented to the American requests with several qualifications.[70]

Briefly, the prime minister stipulated that all Thai-based B-52s should overfly Laos at high altitude using an air corridor between Savannakhet and Pakse (roughly 160 miles wide) and avoid passing over Saravane and other big towns. Large ARC LIGHT missions should be avoided in daytime (he was most concerned about daytime strikes). Since it would be difficult to characterize the B-52 missions as "reconnaissance activity," Souvanna asked that they enter and leave Laos from the east (as Guam-based bombers were doing at present).[71]

In conveying Souvanna's views to Washington, Sullivan said he believed the prime minister's concern about large daylight ARC LIGHT overflights of his country could be allayed by normal three-aircraft missions. The ambassador foresaw no major problem in requiring Thai-based bombers on daylight strike missions to enter Laos from the east. This would add but one hour to a normal two-hour mission directly from U-Tapao. In any event, the B-52s were seldom fragged for an immediate attack on fleeting targets.[72]

With bombing secrecy and Laos's sovereignty intertwined in an expanding air and air-ground war, Sullivan narrowly interpreted Souvanna Phouma's requests in drafting B-52 operation orders. He passed his instructions through Colonel Pettigrew, his air attaché, to PACOM, SAC, and MACV commanders. Bombers would be restricted to a 20- rather than a 160-mile-wide air corridor and required to maintain no less than a 30,000-foot altitude, minimize their contrails, schedule only a few planes on each mission, and vary their flightpaths. Finally, each overflight mission had to be cleared by the embassy.[73]

Finding Sullivan's instructions unworkable, the Strategic Air Command postponed the first overflight launch from Thailand set for December 5. General Nazzaro, SAC Commander in Chief, declared the guidelines "so restrictive as to negate much of the advantage [to be] gained by overflight." The twenty-mile-wide ARC LIGHT corridor, he said, was too narrow.

Representatives of SAC, 3d Air Division, Military Assistance Command, Thailand, Pacific Command, Vientiane's air attaché office, and others quickly convened in Bangkok to seek a solution. The conferees proposed and Sullivan promptly agreed to a sixty-mile-wide flight corridor. In addition, SAC desired "north gate" and "south gate" air

corridors. The former would assure more effective bombing of the Mu Gia Pass area, and the latter (south of Pakse) would facilitate the return of bombers to Thailand. The two corridors were likewise needed, said SAC, to handle sudden requests for bombers to hit other than preselected target areas.[74]

Sullivan disapproved SAC's request. Secrecy in using a southern air gate between Pakse and the Cambodian border, he warned, could be readily breached by Cambodian monitoring with Soviet-supplied radars. Nor was the Cambodian government likely to hesitate in informing the International Control Commission that the United States was making illegal use of Laotian air space. Furthermore, new air gates required Souvanna Phouma's approval. The ambassador reminded air commanders of the prime minister's request to confine the bomber air corridor to the region between Savannakhet and Pakse and believed the United States should adhere to this arrangement. He asked the commanders to launch the overflight missions under the approved guidelines for a month. Then if serious operational problems existed, he would solicit Souvanna's approval for a second air corridor between Thakhet and Paksane.[75]

In Bangkok, Ambassador Unger quickly obtained Thai government assent to B-52 overflights of Laos using a sixty-mile-wide air corridor. He then advised Admiral Sharp and Generals Nazzaro and Westmoreland to avoid air corridor deviations without Thai concurrence, respect Cambodian air space, and assure that ARC LIGHT missions would not be detected over Laos by anyone, including personnel aboard commercial aircraft. Adhering to these injunctions, the first Thai-based B-52s on December 30 flew to their Laotian and South Vietnamese targets.[76]

The Laotian overflight authorization came none too soon. In the ensuing weeks, commanders would call on the ARC LIGHT bombers for an all-out interdiction effort in defense of the U.S. Marine base at Khe Sanh and to blunt the enemy's Tet offensive that began on January 30, 1968.

Chapter IX

Inauguration of the Sensor-Oriented Anti-Infiltration System (IGLOO WHITE)

In late 1967 and early 1968, air and air-ground anti-infiltration operations were augmented by a sensor oriented program known as IGLOO WHITE.* The Office of the Secretary of Defense directed the program, with the Air Force playing a key role in its development. IGLOO WHITE evolved from earlier mobile troop and physical barrier concepts for blocking the entry of North Vietnamese manpower and supplies into South Vietnam.

Soon after his appointment in June 1961 as military representative to President Kennedy, Gen. Maxwell D. Taylor considered establishing some type of barrier against North Vietnamese infiltration. In October he went to Saigon on a special presidential mission to study President Diem's military and political problems. While there, he asked Brig. Gen. Edward G. Lansdale, a mission member, to look into the possibility of erecting a physical "fence" in South Vietnam. Lansdale subsequently recommended in lieu of a fence the formation of special mobile units for deterring and attacking enemy infiltrators.[1]

Taylor concurred in the need for a mobile concept. His Saigon trip report to the president in November 1961 urged among other things that a special South Vietnamese "frontier ranger force" be formed to patrol the difficult terrain along the Laos-South Vietnamese border. The force

*IGLOO WWHITE was the last and best known code name of the program, which on its inception in September 1966 was called PRACTICE NINE. On June 14, 1967, the code name was changed to ILLINOIS CITY and on July 15, 1967, the program was renamed DYEMARKER. On September 8, 1967, after the project was divided into two major components, DYEMARKER signified that part of the barrier being built in South Vietnam's Quang Tri Province (a strongpoint obstacle system or SPOS), and a new code name, MUSCLE SHOALS, was assigned to an air-supported antivehicular and antipersonnel system planned for southern Laos. MUSCLE SHOALS was renamed IGLOO WHITE in June 1968. The DYEMARKER part of the project was abandoned in late 1968. [Col Jesse C. Gatlin, *Igloo White (Initial Phase)* (Project CHECO, Hickam AFB, Hawaii, 1968).]

would attack Viet Cong lines of communication and communists infiltrating the high plateau and adjacent areas. In the ensuing months, the United States helped the South Vietnamese establish special border-control units, but they quickly proved quite ineffective.*[2]

As South Vietnam's infiltration problem worsened, studies on barrier control continued. In 1964 a RAND study for the Defense Department's Advanced Research Projects Agency (ARPA) outlined a physical and a sieve barrier concept. The physical barrier would comprise fences, walls, mines, moats, closely spaced patrols, and possibly biological and chemical deterrents to enemy infiltration. The sieve barrier would consist of small patrols reconnoitering randomly selected areas near South Vietnam's borders but away from fixed outposts, strongpoints, or patrol bases. MACV approved of the ARPA-requested study and the way in which it appeared, from the Army's perspective, to underscore an "inescapable fact." That is, a properly manned and equipped physical barrier "is the only positive means of halting infiltration in RVN." MACV recognized, however, a second inescapable fact—a physical barrier would be very expensive to build and to man.[3]

Neither the restricted ROLLING THUNDER air campaign against North Vietnam (begun in March 1965) nor the slowly expanding air and air-ground anti-infiltration programs in Laos appeared to reduce DRV infiltration significantly. Consequently, the barrier concept continued to elicit high-level Defense Department interest. A catalyst was a memorandum prepared in January 1966 by Harvard Professor Roger D. Fisher, part-time consultant to McNamara and John T. McNaughton, Assistant Secretary of Defense (International Security Affairs). Concluding that neither present nor future bombing levels in the North were likely to break Hanoi's will, Fisher suggested building a combined physical and air-supported barrier system. It would be made up of barbed wire, mines, chemicals, and air-delivered ordnance.†[4]

Fisher's timely memorandum reached McNamara when the administration was under constant attack by congressional and public critics who believed the existing strategy was prolonging the war. There were demands to step up the ROLLING THUNDER program, an act the administration feared might trigger a larger conflict. Fisher's anti-infiltration barrier concept held out an alternative to heavier bombing of the North. About February 1, the Defense secretary asked Gen. Harold

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*See Chapter I.

†For a more detailed discussion of the Fisher memo, Secretary McNamara's reaction to it, and the subsequent decision to proceed with a barrier program, see Paul Dickson, *The Electronic Battlefield* (Bloomington, Ind., 1976).

K. Johnson (then Army Chief of Staff) for a more detailed review of Fisher's concept.[5]

As a result, Army planners quickly assembled a 12-page talking paper, and in March Johnson sent it to McNamara, the JCS, and CINCPAC. In brief the paper called for 5 Army divisions to clear and construct a 216-mile-long and 500-yard-wide barrier along South Vietnam's border with Laos. The barrier would have a concertina wire fence, 1,800 searchlights, 72,000 floodlights, and 10,000,000 mines. Clearing the ground would take 6 months, constructing the barrier another 12.[6]

When asked for their views, the joint chiefs and Southeast Asia commanders strongly opposed the barrier concept. The Air Staff believed it smacked of "Maginot Line" thinking, noting that the requirement for five Army divisions would place more troops in South Vietnam than were presently there. General Harris declared the barrier would allow the enemy to attack it at any point, leaving many American forces in a permanent defensive posture. Further, the concept would drain away resources from current military operations in South Vietnam. Admiral Sharp and the PACFLT commander likewise opposed the barrier because of its enormous logistic needs. Only Gen. John K. Waters, USARPAC Commander, and General Westmoreland evinced interest to the extent a barrier system would give the Army more ground troops, although they too underscored the large logistic demands. The MACV commander said he preferred to block infiltration through Laos using conventional ground forces, and Waters cited two USARPAC plans (RAIN FALL and SEA FREE) for sending several thousands of American and allied troops into southern Laos from South Vietnam and Thailand.[7]

General Wheeler on April 18 furnished McNamara a Joint Staff report on the Army's barrier paper, appending his view that the Army's estimates of resources requirements and time needed to construct a barrier were overly optimistic. It would take 6 to 7 Army divisions—not 5—to clear and secure terrain for a barrier, and the project would take 24 to 48 months rather than 6 to 12 months to complete. The logistic needs would be considerable: new port facilities at Da Nang and other landing areas in South Vietnam and eastern Thailand, new roads and bases, and at least 206,000 tons of construction materials. While the barrier was under construction, American forces might stop large-scale infiltration but not small enemy penetrations. In fact the enemy was likely to resort to more resupply by sea and Cambodian routes. Diversion of American forces to the barrier project would conceivably enable the communists to overrun most of South Vietnam before the barrier was finished.

In light of these findings, the Joint Staff recommended and the JCS agreed that the barrier concept should not be adopted, observing that all

Southeast Asia air and ground commanders concurred in this conclusion. Wheeler said present and future American forces in South Vietnam could be more usefully employed in accordance with previous JCS recommendations calling for more intensive bombing of North Vietnam.[8]

Despite the negative views of Wheeler, the Joint Chiefs of Staff, and Southeast Asia commanders, McNamara and additional high civilian officials retained a high interest in a possible anti-infiltration barrier. McNaughton revised Professor Fisher's barrier concept, and State Department officials, with an abiding concern for ending the war, viewed the project favorably if it could isolate enemy areas and certain infiltration routes. State's "deep interest" led General McConnell to ask Generals Harris and Nazzaro, the PACAF and SAC commanders, to study the value of an "aerial blockade" that would increase enemy harassment and casualties and reduce or stop infiltration.[9]

Meanwhile, the Defense secretary turned to four distinguished government scientific advisers: Drs. George B. Kistiakowsky and Carl Kaysen of Harvard, and Jerome B. Wiesner and Jerrold R. Zacharias of the Massachusetts Institute of Technology. He asked these scholars to form a study group to find ways to enhance technology in the Vietnam War. In a memo to McNaughton on April 26, McNamara requested the group to consider the feasibility of erecting a fence across the infiltration trails and the use of improved warning systems, reconnaissance methods (especially at night), night-vision devices, defoliation techniques, and area-denial weapons.[10]

The administrative arrangements resulted in a contract with the Institute of Defense Analyses (IDA), whose JASON division would coordinate the studies. A group of forty-seven scientists was soon recruited. They and twenty technologically qualified IDA personnel convened in Wellesley, Massachusetts, on June 13, 1966, to begin ten days of high-level briefings by Defense, State, Central Intelligence Agency, and White House officials. Thereafter, the personnel broke into four JASON division subgroups to study the intelligence data base in estimating the flow of DRV men and supplies into South Vietnam, the VC/NVA's communications and command and control system, bomb damage assessment procedures, and a possible barrier to halt enemy infiltration from north to south.[11]

Working rapidly, the four subgroups submitted four studies on August 30. One on the bombing impact on North Vietnam and Laos concluded that the bombing had "no measurable direct effect on Hanoi's ability to mount and support military operations in the South at the current level." This was because North Vietnam possessed an agricultural, subsistence economy with few rewarding targets, received most of its military supplies from the Soviet Union and China, used a large,

flexible transportation network for moving a relatively low volume of supplies, and employed very effective bombing countermeasures. The countermeasures consisted of moving mostly at night, taking advantage of terrain and weather, and organizing large road- and trail-construction and repair teams and defense units. Expanding the bombing program would make it more difficult and costly for Hanoi to move supplies to the VC/NVA in South Vietnam, but would not seriously impair its ability to do so. Nor would heavier bombing seriously curtail Hanoi's expansion of recruitment and training of military forces for the insurgency in the South.[12]

The most important subgroup study dealt with a barrier concept that would use existing technology and rely heavily on air power to slow or halt infiltration of men and supplies into South Vietnam. The concept had two main components—antipersonnel and antivehicular. Both would depend chiefly on detection devices, denial ordnance, and aircraft. The antipersonnel component would include a fence in the mountainous area just south of the demilitarized zone. It would start fifteen miles from South Vietnam's coast and push thirty miles west into Laos, denying the DRV two key personnel infiltration routes. The flatlands farther east would be blocked by U.S. and South Vietnamese ground troops.

The second or road-denial part of the system would be contiguous to the first but stretch 80 miles north and south along the Ho Chi Minh Trail, covering roughly the CRICKET geographical sector containing main truck routes. There would be 2 basic components. One would be composed of several types of "gravel" mines (some already in production) that would explode on contact. Manufactured to last 30 days, about 13,000,000 gravel mines monthly would be sown along roads and trails to deny their use to the enemy. Minesowing would require 45 A-1E Skyraider aircraft flying 1,400 sorties per month. The second component would embody battery-run sensors, initially to be modified Navy acoustic sonobuoys. Some sensors would be activated by personnel stepping on or vehicles rolling over small, noise-making gravel mines (popularly called button bomblets). The "pistol shot" noise from a bomblet would be relayed by sensors to monitoring personnel aboard aircraft. They would note the sensor's signals, and hence the enemy's presence.

An estimated 62 Navy P-2 aircraft would be needed to dispense and ensure that at any one time there were about 800 active sensors lying along roads and trails or hanging in jungle growth. Only a few planes, however, would be required to drop about 25,000,000 button bomblets a month. Approximately 8 specially equipped aircraft would alternately orbit above the sensor field and monitor sensor signals. Upon receiving the signals, which could travel up to 30 miles depending on terrain, monitoring personnel aboard the aircraft would determine the sensor's

(and the enemy's) location. They would then direct strike aircraft to the target area for attacks with BLU-43 bomblets.* An Air Force F-4C squadron would drop nearly 10,000 BLU-43s monthly on an enemy believed to be moving close to 7,000 infiltrators a month and 180 tons of supplies a day largely through Laos toward South Vietnam.

Another element of the aerial barrier system demanded more high-resolution aerial photography of targeted areas and ten to forty well-trained photo interpreters to detect new roads and trails. Current aerial photography, the authors observed, needed a very intensive photographic and photo-interpretative effort to uncover fresh roads and trails in the jungle terrain.

One year after an official go-ahead, the basic concept could begin operating at a cost of $800 million excluding aircraft. The authors nonetheless cited uncertainties and problems, some quite troubling. One was the fence concept and its manning. The fence should be designed to require a minimum of manpower. A second was the need for better hardware to accurately pinpoint sensor locations. A third was the DRV's potential for taking countermeasures. Among them were minesweeping, sensor spoofing to lure pilots into heavily defended areas, concealing roads and trails with more jungle canopies, and digging additional foxholes for personnel. These countermeasures would take time, and it was possible U.S. personnel could in turn nullify them. A fourth concern was that modified gravel mines might accidentally develop a life far in excess of thirty days. This could leave more than 1,000 square miles of mountainous area unsafe for inhabitants for an indefinite period.

More fundamental, perhaps, was the need to defend the concept before the services who were basically opposed to a defensive barrier strategy. To meet this challenge, an expanded planning and experimental effort appeared in order. The authors recommended establishing a special task force, and they volunteered to join it. The task force would work out further details of the barrier concept and consider, for example, the need for more technical components, the lead time for developing them, and the possible use of additional ground troops.

Annexes to the barrier study spelled out in greater detail the requirements for research and development, sensors, munitions, air delivery, and other items. The authors urged a sharp step-up in intelligence collection to learn more about the DRV's infiltration system, especially in the areas tentatively earmarked for the air-supported barrier

*A limited number of bomblets modified for antitruck operations were produced. They contained sharp tooth-shaped pellets and were nicknamed DRAGONTOOTH. Hence the reference to DRAGONTOOTH bomblets in the ensuing pages.

program. They recommended expansion of roadwatch team operations along motorable roads, and ground patrolling and air reconnaissance of enemy activity south of the intended antipersonnel barrier. And they suggested how to organize a task force for managing the barrier project.[13]

Secretary McNamara, whose interest in some type of anti-infiltration barrier never flagged, wasted no time in getting the project under way. On September 3 he sent the barrier concept, although not in its entirety, to the JCS for review. Prejudging the concept, he told them the proposal had "sufficient merit to warrant a decision that we will accept the plan or some modification thereof in principle and install it at the earliest practical date." The joint chiefs, after soliciting the views of Admiral Sharp, General Harris, and other commanders in the field, informed the Defense secretary that they would accept the barrier concept only if it did not compete with current demands for money, manpower, and materiel.[14]

General Westmoreland was relatively supportive of the project, Admiral Sharp less so. But both agreed the concept warranted considerably more study. The response of two component commanders, General Harris of PACAF and General Waters of USARPAC, underscored sharply the contrasting service views on the infiltration problem and how to deal with it. Very unenthusiastic about the barrier concept, Harris believed enemy vehicles should be destroyed as far from South Vietnam as possible. He considered air delivery of mines the most feasible way of denying areas to the enemy. Current plans to establish and maintain an infiltration barrier, he added, were limited by insufficient munitions and sensors, and by inadequate delivery systems and operational experience. Some munitions (BLU-3s and BLU-43s) and sensors would not be available in quantity until late 1967 or early 1968. Lastly, Harris suggested the use of chemical, biological, and defoliation agents in developing the barrier.[15]

In contrast, General Waters questioned the feasibility of the barrier concept without the use of many ground troops. He believed that the enemy's supply losses near the end of his lines of communication would hurt him more than losses sustained before supplies got there. Stopping truck traffic was no solution because many supplies were transported by bicycles, carts, and man and animal packs.* Moreover, sensors and

*General Waters grossly overestimated the quantity of supplies that could be brought into South Vietnam by bicycles, carts, and man and animal packs. He also underestimated the indispensability of truck-hauled supplies. Without the latter, the VC/NVA could never have sustained their military operations in South Vietnam and in early 1968 the siege of Khe Sanh and the Tet offensive. See Chapter V.

area-denial weapons in all likelihood could never be delivered accurately. In fact, Waters favored reducing the anti-infiltration measures in Laos, "since stopping the flow of men and supplies from the North was not essential to victory."[16]

As noted, McNamara's solicitation of the JCS's views on the barrier's feasibility, based on replies from Southeast Asia commanders, was just a formality. For the Defense secretary in early September had decided to proceed with the project and appoint Army Lt. Gen. Alfred D. Starbird to head a task force to expedite the barrier's implementation. A majority of the joint chiefs supported Starbird's appointment, but General McConnell recommended Air Force Lt. Gen. Marvin L. McNickle, Deputy Director of Administration, Evaluation, and Management, Directorate of Defense Research and Engineering (DDR&E), if the task force was established within the Office of the Secretary of Defense. If not, he recommended Air Force Lt. Gen. Waymond A. Davis, Vice Commander of the Air Force Systems Command at Andrews Air Force Base. All of the services wanted the project administered by DDR&E.[17]

At bottom, the joint chiefs harbored deep reservations about the barrier, and worried over its substantial cost and the probable diversion of resources from current military programs. But aware that McNamara was determined to go ahead with the project, they informed him that the "first order of business" was to obtain a clearer definition of the barrier concept.[18]

Moving swiftly, McNamara on September 15, 1966, appointed General Starbird Director of Joint Task Force (JTF) 728 and instructed him to design, produce, and make operable by September 15, 1967, the air-supported anti-infiltration barrier system. Again overriding service recommendations, the Defense secretary placed Starbird and his organization outside of the military services with authority to report directly to himself or to Dr. John S. Foster, Jr., head of Defense Research and Engineering. The JTF 728 director could communicate directly as necessary with the joint chiefs and each of the military services and their subordinate commands and units. This arrangement in effect made Starbird the czar of the project. Proper functioning of the anti-infiltration system, said McNamara, required

> experimentation and further development of such features as foliage penetration, moisture resistance, and proper dispersion of gravel; development of a better acoustic sensor than currently exists; aircraft modifications; possible modifications in BLU-26B fusing; refinement of strike-navigation tactics; and total system tests. Production of components will have to be increased, personnel will have to be trained, and doctrine for its operation will have to be developed. Communist infiltration practices and the location of civilian populations will have to be

> studied. Political groundwork will have to be laid. Public relations questions will have to be addressed. Furthermore, to keep ahead of counter-measures, new components of the system and new tactics will have to be under development even before the first general system is installed.

As the system would be of political interest, Starbird was further enjoined to keep Mr. McNaughton and the State Department up to date on the system's development and to make use of an advisory group of nongovernmental experts. Finally, the JTF 728 director was instructed to set up a project office and submit by September 29 a program outline of how he intended to carry out his task.[19]

McNamara's directive to Starbird failed to reassure the services. The joint chiefs considered the directive's guidelines for Starbird satisfactory, but urged that the project's "definition," when firmed up by the new JTF 728 commander, pass through the JCS. They expressed hope that the system would not become a substitute for present military operations in South and North Vietnam nor divert critically short munitions. The date of September 15, 1967, for inaugurating the system appeared overly optimistic.[20]

The Air Force still doubted that the system would work. Gen. Bruce K. Holloway, Vice Chief of Staff, USAF, found nothing but pitfalls when asked by Secretary Brown for comments on the system's concept as developed thus far. He warned Brown on September 26 that the system might not be effective even if built as a "MANHATTAN PROJECT."* Furthermore, it jeopardized existing high-priority air and other programs; the jungle canopy would prevent distinguishing between humans and animals; the seeding of millions of nonsterilized mines could eventually cause political trouble with the Laotian and South Vietnamese governments; and the research and development timetable probably could not be met. However, if the administration was determined to proceed with the system which required considerable USAF support, it should be headed by an Air Force general.[21]

General Holloway's views made no discernible impression on McNamara or on JTF 728 planning. Starbird remained chief of the new agency. Seeing that the barrier program was an accomplished fact, McConnell arranged for Air Force support. He appointed Maj. Gen. Woodrow P. Swancutt, Director of Operations, as the USAF focal point for all JTF 728 matters. Swancutt in turn assigned day-to-day responsibility to his deputy, Maj. Gen. George B. Simler.[22]

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*The code name for America's top-priority effort to produce the atomic bomb in World War II.

Meanwhile, General Starbird had swung into action. On September 19 he created a project office. The office's unclassified code name was PRACTICE NINE, the classified name, Defense Communications Planning Group (DCPG). On the 29th, he defined his initial manpower needs and the barrier's subsystems. He asked for and McNamara quickly approved 170 personnel for his JTF 728, already established on the grounds of the U.S. Naval Observatory in Washington, D.C. The subsystems would require several types of mines and other ordnance, a physical barrier, surveillance and navigation hardware, aircraft, and command and control systems. A few days later, Starbird determined he would need at least 2 squadrons of Air Force F-4Cs for a strike force. He also directed the Air Force and Army to conduct drop and safety tests of several types of gravel and DRAGONTOOTH mines. The tests were to take place in the Panama Canal Zone as soon as possible.[23]

Next, Starbird flew to Saigon to discuss the barrier system with Westmoreland and his staff. From October 10 to 14, he was joined by McNamara, and both received comprehensive MACV briefings on the war and discussed the barrier concept further. The MACV commander proposed during the briefings that a conventional physical barrier be constructed all the way across South Vietnam below the demilitarized zone, augmented in Laos by air-delivered sensors and munitions. McNamara agreed to study such an anti- infiltration system further. The concept assumed that additional American forces, above those currently requested by MACV, would be furnished for barrier construction and manning.[24]

After returning to Washington, Starbird took other preparatory actions. He asked for and McNamara approved an initial production of 10,000,000 gravel mines a month (with a life of 30 to 60 days) for the antipersonnel facet of the barrier system, and 3,500,000 DRAGONTOOTH mines a month for the antivehicular facet.[25]

On November 21, Westmoreland sent Washington an outline of his ground barrier concept, indicating he believed it was the only way to reduce or halt infiltration. "I have never supported the . . . air barrier concept in Laos," he said, "but rather the selective use of special munitions as they became available, to augment existing interdiction programs." He said his concept required considerably more manpower, no rigid completion date, and operational flexibility to use available military resources in pursuit of the overall mission.[26]

However, McNamara preferred a less ambitious ground and air barrier concept. He reported to President Johnson on November 14 that the physical portion of the barrier would stretch from the South China Sea westward only nineteen miles over a relatively flat area. The sector would contain fences, wires, mines, and sensors, and be supported by

aircraft, artillery, and mobile troops. Immediately westward would be an intermittent ground barrier blocking ravines or defiles through which DRV men and supplies were normally forced to move by the terrain. Farther west and extending into Laos would be an air barrier. Still under review, the air barrier might be created by stepping up current air anti-infiltration operations, by adopting a new USAF COMBAT BEAVER concept that envisaged continuous bombing of several important choke-points or sectors, or by another air program to prevent the transit of enemy trucks, men, and supplies.[27]

The COMBAT BEAVER concept to which the Defense secretary alluded had been hastily developed in October by the Air Staff at the direction of General McConnell. Its aim was to forestall an overinvestment of USAF and other military resources in the unwanted barrier project, drawing on lessons learned in the STEEL TIGER program in Laos and the GATE GUARD and TALLY HO programs in Route Package I in southern North Vietnam. COMBAT BEAVER would rely on Air Force tactical and B-52 aircraft as well as naval air and gunfire (the latter, obviously, only on coastal targets) to interdict key infiltration points traversing southern North Vietnam and parts of Laos. Concentrated air power would create a series of "belts" following natural geographic and lines of communication features from the demilitarized zone to a line running southwesterly from Thanh Hoa in North Vietnam through Barthelemy Pass to a point east of Xiengkhouang in Laos.* SAC's B-52s would play a significant role by saturation bombing of enemy routes at Mu Gia, Nape, and Barthelemy Passes along the Laotian border. The bombers, for example, would orbit above the passes and drop six bombs every thirteen minutes over a twenty-four-hour period.

McConnell said COMBAT BEAVER could be launched at once and eventually complement the ground barrier system scheduled for construction just below the demilitarized zone.[28]

The COMBAT BEAVER concept was short lived. After an initial Joint Staff study, the concept was reviewed in late November 1966 by Admiral Sharp and his staff who rejected it. Sharp asserted that with some exceptions it was similar to current air programs, overstressed the importance of air strikes in Route Packages II, III, and IV in southern North Vietnam, threatened to increase aircraft losses, and would disrupt the current "well-balanced" air effort. Still hoping to win Sharp's approval, the Air Staff reworked COMBAT BEAVER into an integrated

*The brief GATE GUARD program of the spring of 1966 was based on a similar concept and envisaged creating interdiction "gates" to block enemy traffic at strategic points. See Chapter IV.

strike and interdiction plan. Although the plan was never officially adopted, many of its salient features were ultimately accepted by the JCS and CINCPAC and put into effect.[29]

At the same time, communications between the Defense Communications Planning Group and the services suggested that the barrier's needs for manpower, air, and other resources would soar far beyond first estimates. This was manifested in mid-November when Starbird sent McNamara his initial program definition plan (PDP) that projected a requirement for 45,641 personnel solely for MACV's ground barrier in South Vietnam, nearly 44,000 more than postulated in Defense's current Program 4 deployment plan.* Shortly afterwards, the USAF air contribution was estimated at 54 F-4s, 34 A-1Es, 21 EC-121s, 25 O-2s, 15 O-1s, 6 UC-123s, and 12 CH-3 helicopters. The barrier's price tag was well over a billion dollars compared with the JASON division's August estimate of $800 million.[30]

The joint chiefs were deeply distressed. "It is clear," they said, "from examination of the PDP, that the barrier program, because of the prescribed installation date [of September 15, 1967] is proceeding toward execution without adequate and timely determination of feasibility." They voiced special concern over the schedules for tests, evaluations, follow-on production, and costs of such sub-system components as the acoubuoy sensor, button bomblets and dispensers, gravel and DRAGONTOOTH mines, the sensor monitoring system, and modification of EC-121 aircraft.

JTF 728, they said, optimistically assumed that all research and development would adhere to schedules and failed to provide for redesign and retesting of components. In view of the uncertainties of the technical and operational facets of the plan, the likely diversion of resources from existing anti-infiltration programs, and the specter of more inflation in South Vietnam's economy from the influx of additional Americans into the country, the joint chiefs recommended against going ahead with Starbird's program definition plan. Instead, they urged modifying and expanding current anti-infiltration programs.[31]

McNamara again ignored the joint chiefs' opinions. General Starbird went on revising his plan and on December 22 sent it to the Defense secretary and the JCS with lower manpower and other requirements. On January 7, 1967, the JCS asked CINCPAC to use Starbird's guidelines in writing two implementation plans. One would be for a strongpoint

*Since late 1965, Defense issued periodically a series of numbered deployment plans in order to monitor and assure tight control over the number of U.S. military men needed for the war.

obstacle system in South Vietnam's Quang Tri Province, the other for an air-supported anti-infiltation system in Laos. CINCPAC redelegated the task to Westmoreland and his staff, who forwarded the plans in late January and March 1967 respectively.[32]

In Washington, McNamara and Starbird were jointly urging and taking various measures to speed up the development of the barrier systems. At their request, President Johnson on January 13, 1967, assigned the highest national priority (signified by a DX symbol) to the projects to assure their development and completion by the services at the earliest possible date. A week later, the president assigned a DX priority to the development and production of gravel and DRAGONTOOTH mines, both slated to become vital components of the dual system.[33]

The Air Force was already busily engaged in its barrier responsibilities. In November 1966, the Tactical Division of the Directorate of Operations, USAF, began work on a design and operational concept for a command and control facility to manage the air-supported barrier sector. (This facility was soon renamed infiltration surveillance center.) The Tactical Division published a design concept on December 5 and directed Tactical Air Command and Air Force Systems Command to build a mockup for checking out the facility. The original mockup, constructed at Eglin Air Force Base, Florida, and operated by the Tactical Air Warfare Center, functioned only manually. A larger facility, configured for both manual and automatic operations, was later built inside a hangar at Eglin and training began.[34]

The development of suitable sensors, using existing technology, was carried out under the aegis of General Starbird's Defense Communications Planning Group. In August 1966 the JASON division analysts of the Institute of Defense Analyses had recommended making an acoustic sensor from a modified Navy acoubuoy. This was done. A microphone replaced a sonar device, and a longer-life battery was added. The sensor could be parachuted into and left hanging in jungle canopy or implanted in the ground with a telescoping spike. Finally, after a spike canister was introduced, the sensor was called a spikebuoy. The earliest acoubuoys had three detection modes—a C mode using line spectrum detection to determine the presence of enemy vehicles, an I mode that could be activated by detonations of small aspirin-size mines called button bomblets to locate personnel, and a B mode that combined the characteristics of the first 2 modes. The early-model acoubuoys, which could operate on continuous real-time mode of 40 activations per hour, contained batteries with a maximum life of 30 days. The I-mode acoubuoy could detect personnel up to 438 yards, and the C-mode acoubuoy could detect vehicles at distances up to 1,094 yards.[35]

The initial seismic sensor that could also be dispensed from an aircraft was called an air-delivered seismic intrusion detector (ADSID). It could sense the vertical earth motion by an internal geophone. The geophone processed motion through its circuits and determined whether the object was a man or vehicle. The ADSID could detect personnel within 33 yards and vehicles at 109 yards, depending on the desired activation rate. A helicopter-delivered seismic intrusion detector (HELOSID) was almost identical to an ADSID except that it was designed to launch from a special pod attached to a USAF CH-3 Jolly Green Giant. The HELOSID had a battery life of up to 60 days.[36]

The sensors were given frequency channels ranging upward from 162.5 megahertz (MHz) or 173.5 MHz on the very high frequency band. Thirty-one channels were assigned to each type of sensor with a 375-MHz separation between each channel. Every channel contained 27 identification codes or addresses which could be set in the field prior to sensor emplacement. Thus a total of 837 individual sensors (27 x 31) could be deployed at any one time without duplication in a single operational zone. After the sensors began to be used, different channel numbers were assigned to each type of sensor. Acoubuoys, for example, would have 11 channels, ADSIDs, 12, and HELOSIDs, 4.[37]

Field testing was the responsibility of Air Force Systems Command. By the beginning of 1967, that command was conducting occasional sensor airdrop tests in the Panama Canal Zone, where jungle conditions were somewhat similar to those in Southeast Asia. At the same time, the Navy and Air Force were readying units in accordance with McNamara's instructions. The Navy was forming a detachment of Lockheed P-2s (redesignated OP-2Es upon modification) to sow sensors along designated infiltration routes in Laos. The Air Force was preparing a Lockheed EC-121 unit to monitor the sensors' signals.[38]

The ensuing weeks witnessed more preparations for the barrier system. On January 26, in response to a JCS request, Westmoreland submitted another linear barrier plan, calling for a minimum of 7,691 personnel, 5,731 of them ground troops for construction work. He introduced helicopter and ground team requirements for emplacing sensors and munitions. The initial operational capability (IOC) date was slipped from September 15 to November 1, 1967. Several weeks later, additional studies boosted the manpower requirements total to 8,353.[39]

All the joint chiefs but General Wheeler basically opposed the linear barrier plan, citing the spiraling costs in manpower and money. Undeterred by the majority JCS view, McNamara directed the Defense Communications Planning Group to start procuring materials for the strongpoints, base camps, and observation posts for one sector of the barrier. He also authorized the services to begin road improvement and

port expansion to handle the anticipated large influx of barrier material.[40]

On March 11, Westmoreland sent to CINCPAC and Washington a separate air-supported anti-infiltration plan that would be located largely in Laos. The Air Force would provide most of the manpower and aircraft. Personnel requirements totaled 5,444, with the Air Force assigned 4,319, the Army 794, and the Navy 331. Supporting aircraft would include 21 or more Lockheed EC-121s for receiving signals from sensors sown along roads and trails and relaying them to an analysis center, a squadron of A-1E Skyraiders for air-dropping gravel mines, a squadron of F-4 Phantoms (it eventually replaced the Skyraiders for dispensing gravel and other ordnance), and about two dozen Air Force CH-3E and several Army UH-1B helicopters for sensor sowing and logistic support. The Navy would furnish about 8 Lockheed OP-2Es for the initial dropping of acoustic and seismic sensors.

To enhance aircraft navigation and control, the Air Force would enlarge the MSQ-77 radar facility at Nakhon Phanom and equip some of this aircraft with the latest C and D types of Loran receivers. The infiltration surveillance center, undergoing mockup and tests at Eglin Air Force Base, would be set up at Nakhon Phanom. The center would receive sensor signals on enemy movements from orbiting EC-121s. It would decode, evaluate, and integrate the data with other intelligence, then request air strikes. The plan envisaged close coordination with the BARREL ROLL, STEEL TIGER, and TIGER HOUND air programs in Laos. These programs relied heavily on USAF RF-101s and RF-4s for photography, O-1s and O-2s for visual reconnaissance, UC-123s for defoliation of jungle growth along roads and trails, and Army OV-1s for infrared and side-looking airborne radar reconnaissance.

Anticipating some overlap with anti-infiltration operations in that area of South Vietnam's Quang Tri Province abutting the Laos boundary, the plan provided for the III Marine Amphibious Force, in coordination with the Air Force, to use helicopters and ground teams to sow sensors near the Laotian border.

As with the linear part of the anti-infiltration system, the MACV commander urged that the initial operational capability date for the air-supported portion likewise be delayed from September 15 to November 1, 1967.[41]

The joint chiefs reviewed the plan and recommended that the IOC date be deferred to April 1, 1968, to make sure all aerial components functioned. But in a series of memoranda (April 22 through May 8) the Defense secretary ruled that the IOC date remain November 1, 1967, as recommended by Westmoreland. McNamara also approved the deployment of additional aircraft, helicopters, and personnel, and expedited

construction to improve or enlarge air bases in South Vietnam and Thailand. He directed Mr. McNaughton, the International Security Affairs Chief, to seek through the State Department Thai government approval for basing more personnel and aircraft on Thai bases, and Lao government approval for conducting the new anti-infiltration operations and enlarging the PRAIRIE FIRE boundary. Since 1965 the Seventh Air Force and MACV had carried out small, air-supported intelligence-gathering and air-targeting ground forays within the boundary.*[42]

Since the PRAIRIE FIRE geographical sector contained segments of numerous infiltration routes of the Ho Chi Minh Trail, it was eminently suitable for sensors, gravel and DRAGONTOOTH mines, and other munitions. Seven- to nine-man PRAIRIE FIRE SPIKE ground teams, comprising three U.S. Special Forces personnel and four to six South Vietnamese, would be integrated into the program. They would emplace the sensors and mines and when possible pinpoint enemy targets for tactical and B-52 strikes. The Lao government quickly acceded to the American requests. In July, McNamara approved the establishment of thirty-four SPIKE teams for the linear and air-supported systems. The teams would be launched from Lang Vei (near Khe Sanh) and from Nakhon Phanom.[43]

Meantime, limited construction began in April on the linear barrier (recently renamed the strongpoint obstacle system) in Quang Tri Province just below the demilitarized zone. However, the builders were plagued with insurmountable difficulties in improving roads, in securing the needed materials and sufficient vehicles for transportation, and in construction. Worse, the builders were increasingly harassed by enemy fire that produced many U.S. and allied casualties. Though some strongpoints were built, the SPOS failed to meet its IOC date of November 1, 1967. Construction delay continued into 1968. After the United States decided to begin troop withdrawals later that year, the project was discontinued.[44]

The air-supported barrier system, to be built separately, had as its principal unit an infiltration center and associated facilities at Nakhon Phanom. In its early development, the center was given several names for administrative and security reasons. Just before construction it was called the Communication Data Management System. During construction it was nicknamed DUTCH MILL, and on October 18, 1967, it was named simultaneously Seventh Air Force Task Force and Operating Location Number 1, 6250th Support Squadron, Headquarters Seventh Air Force, PACAF. But virtually from the beginning of the center's construction,

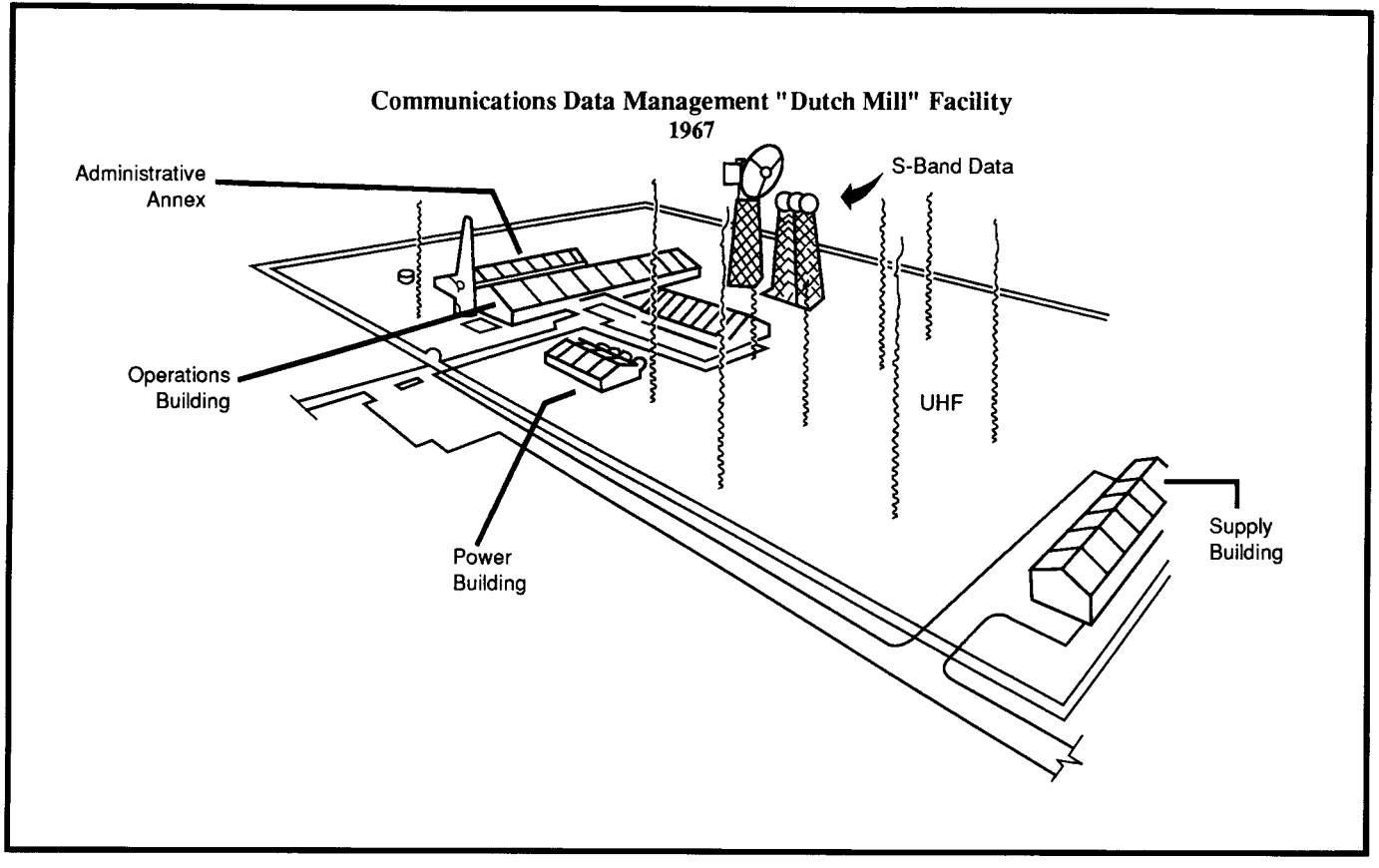
*See Chapter IV.

officials of the Seventh Air Force, the American embassy in Bangkok, and the Thai government agreed to call it TASK FORCE ALPHA. This was the chief name by which the center and its supportive facilities would be known and remembered.[45]

Ground-breaking for the center commenced on July 6, 1967. Col. Lawrence M. Politzer of Air Force Systems Command's Electronic Systems Division was site activation manager. He supervised the work of personnel from several contractors such as the Ralph M. Parsons Construction Company, International Business Machines (IBM), Inc., the Magnavox Company, Radiation Systems Company, plus 450 Thai workers. Mr. William C. Derango of IBM was the IBM site manager to oversee the installation of IBM-manufactured computers, storage and retrieval equipment, and other devices.[46]

Constructing the center took a little more than 3 months. Upon completion in October, it consisted of a single complex holding 3 buildings: a 20,000-square-foot operations center, a 5,600-square-foot communications building, and a building for housing six 200-kilowatt diesel generating sets. There were 3 major types of equipment—communications, data processing, and display. The communications system included 3 parabolic dish S-band tracking antennas and 9 ultra high frequency antennas that permitted direct contact with orbiting EC-121s (for receiving and relaying sensor signals), and with ABCCC, reconnaissance, FAC, and strike aircraft. Data processing machines would furnish near or real-time receipt, processing, and display of sensor activities. Display equipment would show the weather and the location of sensors and enemy targets. While the center's construction was under way, the Air Force determined that more administrative and automatic data processing space was needed. After receiving approval from Washington authorities, additional space was built during the first half of 1968.[47]

To staff the center, about 200 Air Force officers and airmen arrived at Nakhon Phanom in July and August from Eglin Air Force Base and elsewhere. More arrived in subsequent weeks until about 400 were in place by late October. Because of crash personnel recruitment, many officers and airmen arrived without prior training. Consequently, on-site training was begun at Nakhon Phanom in IBM computer programming, key punch operations, sensor and munitions management, communications, intelligence analysis, weather reporting, and in other specialized tasks. The training program had to compete with a concurrent, mundane need to construct housing and messing facilities, and to obtain furniture and other housekeeping and office items at an austerely stocked air base. Nonetheless, the major training and administrative difficulties had been


Communications Data Management "Dutch Mill" Facility
1967
Administrative Annex
S-Band Data
Operations Building
UHF
Power Building
Supply Building

largely surmounted by November when TASK FORCE ALPHA conducted the first tests of its sensor-receiving and associated equipment.[48]

Monitoring the TASK FORCE ALPHA's progress was Air Force Brig. Gen. William P. McBride. Appointed by General McConnell on July 14, McBride's first job was to organize a Tactical Evaluation Task Force as a management control agency. The agency's main task was to keep Air Force Secretary Brown, Generals McConnell and Starbird, and other USAF and Department of Defense personnel apprised of the Air Force's ability to meet the IOC date of November 1, 1967, for the antivehicular and antipersonnel subsystems.[49]

While work on the numerous TASK FORCE ALPHA components went on, the Seventh Air Force issued Operation Plan 48-167 on August 10. It itemized the type and number of aircraft, communications equipment, and additional elements that would be used to inhibit enemy infiltration. Unlike the optimistic expectations of JASON division analysts and McNamara, the Seventh Air Force's plan said that the air-supported infiltration systems would "augment [the] current overall interdiction program, not substitute for it." According to the plan, aircraft would first sow sensors and mines from central Laos eastward to South Vietnam's border and, if necessary, towards the conventional barrier to be built below the eastern portion of the DMZ. This would permit detection of truck traffic

> by air-emplaced acoustic and seismic sensors which are activated by the noise or microseism produced by truck movement. Personnel movement along foot trails will be detected by air-and hand-emplaced acoustic, seismic, and magnetic sensors. Small, pressure-sensitive, explosive devices (button bombs and/or micro-gravel) will be air-delivered in conjunction with acoustic sensors (acoubuoys). When stepped on, the button bomb or micro-gravel will generate an acoustic signal to activate nearby acoubuoys. Small mines (gravel and/or dragontooth) capable of injuring personnel and damaging truck tires will be air-emplaced to inhibit personnel movement on trails, to deter construction of new trails, and discourage searching for sensors. Further, they will be used along truck routes to immobilize convoys and impede accompanying personnel. Periodic replacement of sensors and mines and button bombs will be necessary because of limited life, destruction resulting from activation or strike action, and discovery and removal by enemy forces.[50]

As has been noted, McNamara earlier in 1967 set November 1 as the IOC date for antivehicular and anti-personnel systems in Laos. But throughout July and August sensor technical problems, the unreadiness of numerous EC-121 aircraft and CH-3 helicopters, and delays in getting the infiltration surveillance center equipped and manned by trained personnel induced General McBride to recommend a slippage in the date.

With the concurrence of Generals McConnell and Starbird, Secretaries Brown and McNamara, and other officials, the Laotian antivehicular and antipersonnel systems were given new IOC dates of December 1, 1967, and January 1, 1968, respectively.[51]

With the infiltration surveillance center nearing completion, General McConnell secured the approval of Generals Westmoreland and Starbird and Secretary McNamara to appoint General McBride commander of TASK FORCE ALPHA on October 18, 1967. The operational chain placed McBride under General Lindley, the Deputy Commander of Seventh Air Force/Thirteen Air Force at Udorn, with administrative and logistic support to come from Thirteenth Air Force in the Philippines. McBride's assignment to Lindley was in compliance with a long-standing Thai policy underscored by Ambassador Martin, requiring all American military personnel in Thailand to be responsible directly to an American military commander in Thailand. TASK FORCE ALPHA coordination with Headquarters MACV would be through a brigadier general on the MACV staff.[52]

The TASK FORCE ALPHA commander would be the operating manager of the air-supported infiltration system in Laos and in those parts of South and North Vietnamese territory near the western end of the demilitarized zone that Westmoreland might assign to him. His authority would initially be circumscribed, with General Momyer retaining operational control of the Air Force and Navy sensor sowing, ABCCC, and strike aircraft earmarked for the project. This would permit General McBride to concentrate on making the ISC a workable personnel and truck analysis and targeting center.

If experience pointed to the need for a change, aircraft operational control might then be shifted to McBride. Until then, he would be chiefly a coordinator of diverse activities and make recommendations to higher commands. He would locate and recommend targets to the Seventh Air Force Tactical Air Control Center or to the orbiting ABCCCs. In coordination with MACV, he would task ground reconnaissance teams, interpret intelligence gained through the ISC, plan for and monitor sensor and munition drops, suggest sortie levels, and evaluate constantly the sensor-oriented anti-infiltration system. Finally, McBride would keep the American ambassadors in Bangkok and Laos up to date on all TASK FORCE ALPHA activities.[53]

McNamara endorsed the foregoing terms of reference but specified that General Starbird would remain in overall charge of the anti-infiltration effort. This would include conceptual planning, research, development, and tests of improved concepts and hardware, and timely procurement of the necessary resources.[54]

A major planning task was to decide where the initial antivehicular and antipersonnel sensor and munition tests and operations should be carried out. Important infiltration areas were selected on September 8, after extensive study and discussion by representatives of TASK FORCE ALPHA, Seventh Air Force, MACV, and the U.S. embassies in Vientiane and Bangkok. Both areas were below Mu Gia Pass, not far from South Vietnam. The antivehicular area (called MUD RIVER) was solely in the STEEL TIGER sector. The antipersonnel area (DUMP TRUCK) encompassed a network of trails lying within an area twelve miles north, northwest, and west of the intersection of the demilitarized zone and the Laos border. It also embraced the westernmost parts of southern North Vietnam, the demilitarized zone, and northern South Vietnam. Studies disclosed that most DRV personnel entered South Vietnam along these trails.[55]

Specially equipped aircraft to take part in the sensor and munition tests commenced arriving at Thai bases in October. The first seven of twenty-six Lockheed EC-121s of the 553d Reconnaissance Wing reached Korat on the 20th, and the rest deployed in the following weeks. The EC-121s would perform the crucial task of "uplink relay" (i.e., receiving sensor data) and "downlink relay" (i.e., sending sensor data to the ISC for analysis). The first of eighteen A-1E Skyraiders of the 1st Air Commando Wing that would dispense gravel munitions touched down at Nakhon Phanom on November 1. On November 15, nine OP-2Es of Navy Observation Squadron 67 arrived at Nakhon Phanom with the mission of dispensing sensors in the MUD RIVER sector of Laos. Several of twelve CH-3E helicopters of the 21st Helicopter Squadron, selected to dispense sensors in both the MUD RIVER and DUMP TRUCK sectors, reached Nakhon Phanom in early December.[56]

Upon arrival at Nakhon Phanom, the personnel and planes from the 1st Air Commando Wing and the 21st Helicopter Squadron were assigned to the 56th Air Commando Wing already at the base. However, those from Navy Observation Squadron 67 remained unassigned to any USAF organization. A total of twenty-three FAC O-2s, presently assigned to the 23d Tactical Air Support Squadron at Nakhon Phanom, would fly FAC sorties for sensor and munition drop missions. A squadron of F-4D Phantoms for dispensing DRAGONTOOTH and other munitions was not due in Thailand until early 1968.[57]

The impending, unique TASK FORCE ALPHA air operations dictated an adjustment in existing rules of engagement in Laos. These were worked out by representatives of TASK FORCE ALPHA, Seventh Air Force, MACV, and the U.S. embassies in Vientiane and Bangkok. The changes were relatively minor, and present rules largely promised to suffice. Briefly, for sensor drops the pilots would need prior approval of

Supporting Igloo White Aircraft

553rd Reconnaissance Wing	21 EC-121s	Korat
8th Tactical Fighter Wing		
25th Tactical Fighter Squadron	18 F-4Ds	Ubon
56th Air Commando Wing		
1st Air Commando Squadron	18 A-1Es	Nakon Phanom
21st Helicopter Squadron	12 CH-3Es	Nakhon Phanom
23d Tactical Air Support Squadron	23 0-2s	Nakhon Phanom
	11 0-2s	Ubon

Withdrawn or Not Utilized

VO-67 (Navy)	8 OP-2Es	Nakhon Phanom
334 Assault Helicopter Company (Army)	12 UH-1Cs	Nakhon Phanom
361 Assault Helicopter Company (Army)	12 UH-1Fs	Camp Holloway, South Vietnam

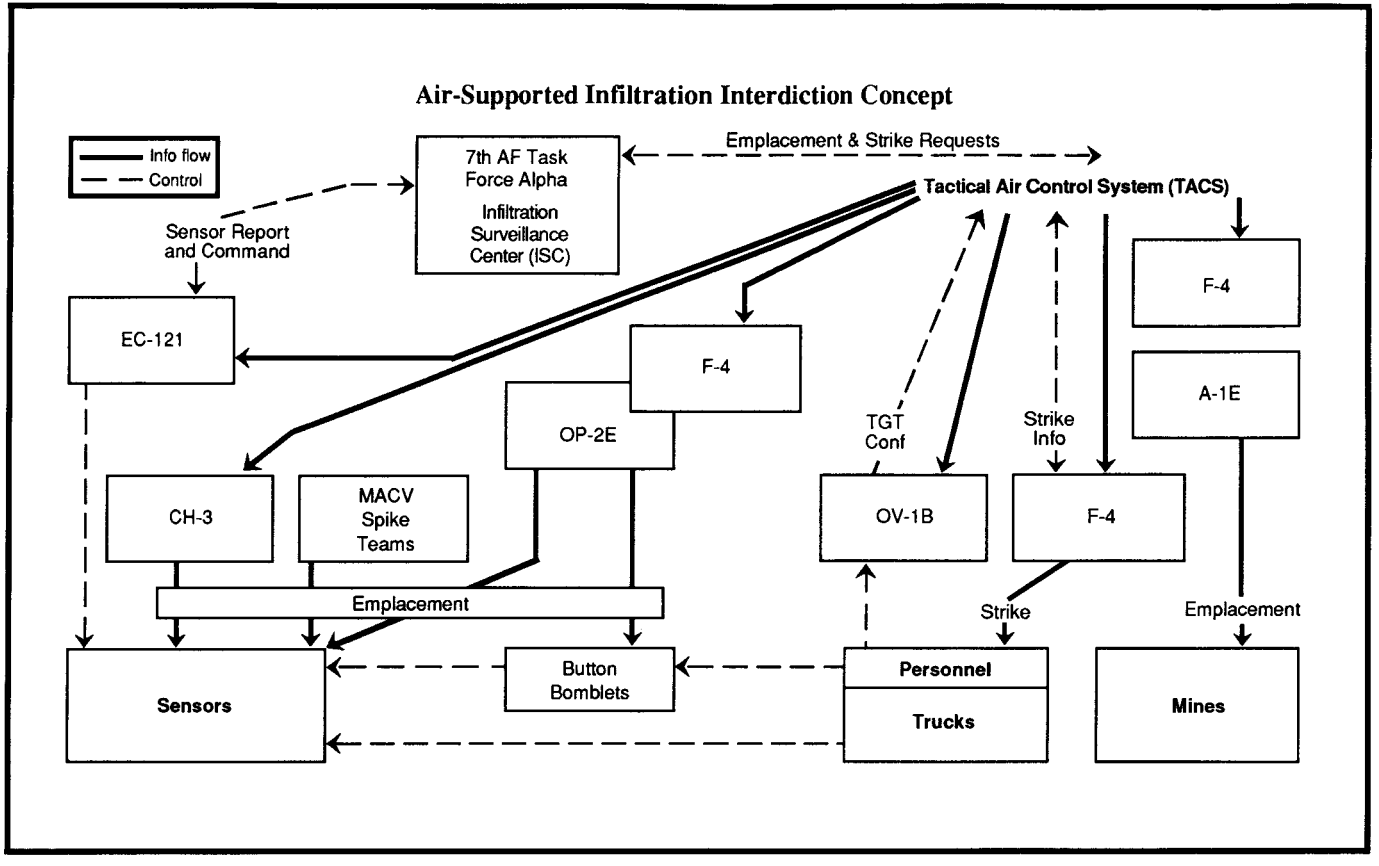
a route or geographical area, and FACs would control the drops. Pilots would be prohibited from dropping sensor strings (i.e., groups of sensors) within 550 yards of a Laotian village, or reseeding a route or areas with sensors without higher approval.[58]

Air strikes on sensor-developed targets would be controlled by Seventh Air Force through an ABCCC following established rules for Laos. These required, among other things, FAC visual confirmation of a target, FAC marking of a target with a smoke rocket, and no strikes on villages nor on any other unapproved target, no matter how lucrative, beyond 220 yards on either side of a motorable road or main trail. Normal exceptions to these rules would apply. For example, any RLAF-validated target could be struck as could any segment of a road or trail in an authorized armed reconnaissance area.[59]

The first few weeks of November witnessed final administrative actions before official testing of the antivehicular system. On the 9th, Generals McBride and Lindley, officers from Military Assistance Command, Thailand, and USARPAC flew to Bangkok to brief Thai Air Marshal Dawee Chunlasap and other high Thai officials on the impending TASK FORCE ALPHA operations. General McBride gave the principal briefing, and a general discussion followed. The Thais raised no important questions about the project. On the 15th, TASK FORCE ALPHA filled a key personnel slot when Col. Walter B. Forbes, Commander of the STEEL TIGER Task Force (based at Nakhon Phanom), was appointed director of operations. Col. William L. Walker was already serving as director of intelligence.[60]

On November 25, General McBride ran the first shakedown test of the new anti-infiltration facility. Several Navy OP-2E aircraft, guided and controlled by FAC O-2s, dropped 18 air-delivered seismic intrusion detectors and 6 acoustic "hang-up" acoubuoys in the Mud River sector of Laos. Seventeen sensors survived the first drop. Orbiting at about 20,000 feet overhead, an EC-121 monitored the first sensor emplacements and relayed the signals to the ISC with only minor procedural difficulties. To the gratification of all, the various "systems" worked. There was no attempt to attack enemy targets.[61]

The test, as expected, disclosed a number of problems, with drop accuracy the most important. While some sensor strings were on target, one fell 4 miles from the intended area, and the location of another could not be ascertained. Drop inaccuracy had been anticipated because the OP-2E's "bombsight" was a fixed grease-penciled cross on the bow of plexiglass (the aircraft shortly acquired a Norden bombsight). In addition the targets were hard to acquire in a virtual sea of green and gray of the Laotian karst, which was in sharp contrast with the well-defined test ranges at Eglin Air Force Base. Heavy enemy 37-mm


Air-Supported Infiltration Interdiction Concept
Info flow
Control
7th AF Task Force Alpha
Infiltration Surveillance Center (ISC)
Emplacement & Strike Requests
Tactical Air Control System (TACS)
Sensor Report and Command
EC-121
F-4
A-1E
F-4
OP-2E
TGT Conf
Strike Info
CH-3
MACV Spike Teams
OV-1B
F-4
Emplacement
Strike
Emplacement
Sensors
Button Bomblets
Personnel
Trucks
Mines

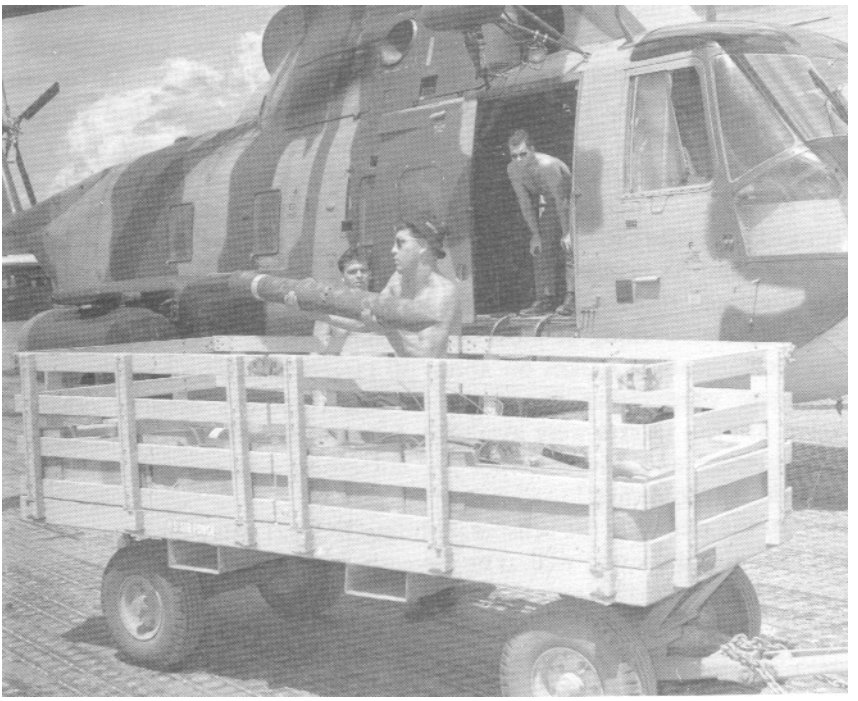
fire also affected accuracy, forcing the OP-2Es to make their sensor drops at around 5,000 feet. From this height some ADSIDs fell too deeply into the earth, burying their antennas.[62]

December 1 marked the kickoff of the MUD RIVER antivehicular IOC sensor test. Preparatory to the first drop, TASK FORCE ALPHA operations personnel used aerial photos of the MUD RIVER sector to subdivide it into modules corresponding to road segments. A target analysis officer (TAO) monitored sensor signals in each module, relayed by an orbiting EC-121. An IBM computer routed the signals automatically to the TAO. Since the sensors sent signals twenty-four hours a day, EC-121 orbits and TAO analyses would continue around the clock. The first EC-121 orbit for relaying sensor signals from the northern sector sector of MUD RIVER was called "red." When sensor emplacements began in southern MUD RIVER, a second EC-121 orbit ("yellow") was established. Experience would show that an EC-121 could orbit for about eight hours.[63]

At 0945 on the same day, a Navy OP-2E dropped a string of 4 ADSIDs from 5,000 feet in the first MUD RIVER module, then returned to base because of bad weather. Only 2 sensors activated. On the 5th, after more ADSIDs were dropped, operations personnel requested their first strike through a C-130 ABCCC. Seventh Air Force responded quickly and hit 5 sensor-detected trucks that triggered 2 secondary explosions. A followup strike later the same day produced undetermined results. In the third week of December, after planes sowed more sensors, operations personnel flashed 321 strike recommendations to the ABCCCs. However, FAC O-2E pilots were able to confirm only 21 targets, and these elicited 38 Air Force strikes that destroyed an estimated 8 enemy trucks and caused 23 secondary fires and explosions.[64]

By the close of December 1967, Navy aircraft had sowed 49 sensor strings in 17 MUD RIVER modules. The strings contained a total of 247 ADSIDs and 38 acoustic acoubuoys, generating 959 "target sequences" that suggested superficially the passing of 5,766 enemy trucks. Buoyed by the successful working of most system components, TASK FORCE ALPHA was recommending strikes on about 30 targets a day by late December. But there were rather few strike aircraft responses because other or higher priority targets were available. In summary, the IOC tests showed both success and the existence of numerous system bugs and other operational problems.[65]

On the plus side the sensors, orbiting EC-121 relay aircraft, and the ISC facilities did quite well. The Seventh Air Force cautiously informed Washington that the potential for greater surveillance of the DRV's supply system "had been demonstrated." In fact the sensors had detected several truck convoys. Also, the longevity for the battery-



THE IGLOO WHITE ANTI-INFILTRATION PROGRAM relied on sensors emplaced along major infiltration routes. *Clockwise from upper left*: An acoubuoy acoustic sensor hung in the jungle canopy. The spikebuoy seismic sensor implanted in the *forest floor. An airman prepares to load a spike seismic sensor aboard a CH-3* helicopter for delivery in Laos.

operated sensors in a jungle environment exceeded expectations, with the average ADSID's life running twenty-seven to thirty days in lieu of twenty. The longevity of the acoustic acoubuoys hinged on their reporting characteristics. Those set for an "impulse mode" lasted about twenty days as opposed to an earlier estimate of fifteen days. These set for a "continuous reporting mode" lasted only seven days.[66]

Among the shortcomings of the antivehicular systems was the excessive sensitivity of the sensors, as demonstrated by the 491,814 ADSID activations and the 125,649 acoustic acoubuoy activations. These activation rates were 3 or 4 times higher than those experienced at Eglin. It was obvious that not enemy trucks but ambient factors such as animals (especially frogs), thunder, and other sounds were triggering most of the activations. This created problems for the ISC's sensor signal analysts, but by the end of December they were beginning to learn how to distinguish some of the truck signals from those induced by other stimuli.

Another problem area was sensor drop accuracy. In the second week in December the circular error probable (CEP) for ADSIDs was 896 yards and for acoubuoys 789 yards. During the next week the CEPs were reduced to 466 and 544 yards respectively—a considerable improvement but still excessive. As noted earlier, the Navy soon installed Norden bombsights on its OP-2Es. This, plus more reliance on MSQ-77 SKYSPOT radar, somewhat improved sensor drop accuracy.[67]

The IOC tests further proved that sensors should be dropped in strings of 6 and never less than 5, to ensure that 3 would survive and could be activated. The ADSIDs and acoubuoys impacting in the earth (spikebuoys) did best when spaced 547 to 1,094 yards apart. Acoubuoys parachuted into trees (called hang-ups) had to be similarly spaced even though Navy pilots found it hard to do. TASK FORCE ALPHA facilities as presently designed possessed a limited sensor warfare capability. Only 31 frequency channels and 27 tone codes had been allocated to the seismic ADSIDs and acoustic acoubuoys. This allowed no more than 837 sensors to be monitored at one time in a specific geographical location.[68]

The effectiveness of gravel mines was yet to be tested. Not until December 27 did an A-1E drop a damaging type of gravel mine (XM-41). It was hoped that the mines would blow up truck tires and thus delay truck traffic.[69]

Finally, the IOC tests could not surmount long-standing geographic and climatic drawbacks in Laos. In spite of numerous TASK FORCE ALPHA strike requests, the rules of engagement required the FAC pilot to visually verify the target, but the densely foliated test area many times prevented the pilot from doing so. If the target was verified and a strike

requested through the ABCCC, strike pilots were frequently weathered out or engaged elsewhere in attacking enemy trucks and other targets.[70]

Meanwhile, TASK FORCE ALPHA coordinated with MACV and the III Marine Amphibious Force on preparations to launch IOC tests of the DUMP TRUCK antipersonnel system. The first test was set for January 1, 1968, but the services asked higher authority for a short test delay. The reasons cited were unresolved problems of sensor drop accuracy, excessively high sensor activations, and the need to complete photo and ground reconnaissance of the DUMP TRUCK area. Defense secretary McNamara agreed to a maximum extension of no more than three weeks.[71]

The DUMP TRUCK test scenario called for sensor drops by Navy OP-2Es and Air Force CH-3s. The latter would have two missions: emplanting helicopter-delivered seismic intrusion detectors, and flying in U.S.-led, seven- to nine-man PRAIRIE FIRE SPIKE teams who would emplant the hand-emplaced seismic intrusion detectors. However, the helicopter missions were held in abeyance pending the correction of the sensor injection system.[72]

As a consequence the first DUMP TRUCK IOC test employed just Navy OP-2Es. Preparing for the first sensor drop, an EC-121 on January 13 established a third ("blue") orbit over the test area. Then on the 17th a Navy aircraft dropped two strings of ADSIDS in what turned out to be the sole DUMP TRUCK IOC mission. Abandonment of DUMP TRUCK came when suddenly the NVA encircled the Marine Corps base at Khe Sanh on the eastern end of the DUMP TRUCK area, and the Tet offensive followed two weeks later. The diversion of most U.S. air and other resources to these two events would change drastically the course of the war.[73]

Chapter X

Prelude to Khe Sanh and the Tet Offensive

The threat to Khe Sanh and the potential for enemy offensive action in January 1968 was not totally unanticipated by American air and ground commanders. Since September there had been heightened enemy activity. During that month the VC/NVA attacked numerous U.S. and allied positions in South Vietnam including a major assault on a U.S. Marine Corps combat base at Con Thien. In October and November the enemy shifted to South Vietnam's western border region where he attacked allied positions at Phuoc Binh, Loc Ninh, and Dak To. MACV surmised he was trying to divert allied attention away from urban areas and more eastern I Corps regions. As noted earlier, the DRV also began in late October a massive truck resupply push down the Ho Chi Minh Trail in support of these energetic operations.[1]

Not unexpectedly, news reports of this step-up in the war tempo intensified public, congressional, and media criticism and opposition to the war. Yet, U.S. commanders were not overly concerned. This was not the first VC/NVA preparation for a "winter-spring" offensive in South Vietnam. There had been similar seasonal buildups in the past, and when heavier attacks came they had been invariably blunted or defeated by American air, ground, and naval power. While the magnitude of current DRV activity appeared larger than in previous years, the United States and its allies believed they were better equipped to counter it.[2]

The confidence of Southeast Asia commanders did not conceal, of course, their continuing, deep frustrations over the many administration-imposed military restrictions in Laos and North Vietnam which, they believed, precluded an early termination of the war. These frustrations and mounting concern in Congress over the unending conflict had been aired extensively in August during hearings before a Senate Preparedness Investigating Subcommittee headed by Senator John C. Stennis. The hearings underscored the sharply divergent views between high Air Force, Navy, and Army leaders and the administration over the war's conduct. Secretary McNamara, the administration's chief spokesman, insisted the restrictions were necessary to prevent a wider war. He was also

convinced, in contrast with the belief of the military leaders, that the war could only be ended by negotiations.[3]

On the one hand, President Johnson was confronted by Saigon's optimistic reports on the war's progress, and on the other by mounting American domestic opposition to the conflict. He therefore decided in November 1967 to launch a public relations effort to convince doubters and critics as to the correctness of the administration's support of the military operations under way. In conjunction with this move, he asked General Westmoreland, Ellsworth Bunker (U.S. Ambassador to Vietnam), and Robert W. Komer (American pacification chief for South Vietnam) to come to Washington to brief congressional and media representatives as well as top administration officials. The Saigon delegation arrived in mid-November but played no part in making the Washington briefing arrangements and received no instructions on what to say. Nevertheless, the delegation's views on the war were those of the president, their reports having induced his optimism.[4]

In a series of public appearances and private official meetings, Westmoreland and his colleagues underscored how the war was gradually being won. The most visible progress, the MACV commander said, was in South Vietnam. There the Saigon government's stability had been enhanced on September 3 by national elections, and its military accomplishments were heartening. On the battlefield, the ratio of enemy to allied troops killed was 3 to 1 and for weapon losses 3.8 to 1. The enemy's losses of 12,900 to 15,000 men in the third quarter of 1967 outstripped VC recruitment and NVA infiltration. In fact, recruitment had fallen dramatically, averaging only 3,500 personnel per month compared with 7,000 per month in November 1966. The pacification program had brought 67 percent of South Vietnam's territory under government control, leaving only 17 to the VC/NVA, and the rest of the area still contested. With additional military assistance, the Saigon government could assume most of the responsibility for the war by the end of 1969, permitting the United States to begin withdrawing its forces.

Contributing to the successes in South Vietnam were of course the air programs in Laos and North Vietnam. In Laos, DRV manpower infiltration was estimated at 5,500 to 6,000 per month, down from about 7,000 per month a year earlier, although the rate could rise again.[5]

A month later, U.S. commanders saw no need to change their basic November assessments. The Laotian and North Vietnamese air programs appeared to be taking a substantial toll of enemy trucks, supplies, and personnel. In Laos, American airmen had flown by the end of 1967

about 103,148 tactical strike sorties, 73,116 of them by the Air Force,* with more than three-fourths of the sorties flown against targets in central and southern Laos. About 1,718 SAC B-52 sorties were also flown, all in southern Laos.† The strikes destroyed and damaged an estimated 6,478 supply-carrying trucks, 430 boats and other watercraft, and 7,584 structures (many well stocked with food and war materiel). To slow personnel and vehicular logistic movements, aircrews destroyed or damaged about 7,784 small bridges and made 12,895 chokepoint and other road cuts. Enemy losses in materiel were impossible to quantify, but presumably many thousands of tons were denied use in South Vietnam.[6]

The unremitting air and air-ground assaults also forced the DRV to divert more manpower and resources than ever before to maintain and protect its Laotian road and trail network. In late 1967 about 25,000 NVA troops and 40,000 laborers (mostly Laotian) were engaged in repairing, widening, and extending the routes. Bulldozers and other heavy equipment were being used, and U.S. air strikes had forced the DRV to deploy more air defense units and personnel to protect its most important roads, road junctions, and passes.[7]

The enemy's personnel losses in central and southern Laos were more difficult to calculate. The tactical and B-52 strikes undoubtedly killed and injured many troops and workers along the trail and caused other losses indirectly. Since most DRV personnel were known to travel through Laos on foot, analysts speculated this was partly due to truck vulnerability to air strikes. Walking took the communists much longer to go from North Vietnam through Laos into South Vietnam, and rendered them more susceptible en route to malaria and other diseases. A U.S. intelligence study in August 1967 suggested that upwards of twenty percent of the walkers became ineffective because of air strikes, illnesses, and desertions.[8]

Whatever the personnel and materiel attrition, the DRV appears to have maintained a steady, significant flow of resources into South Vietnam, although numbers or amounts were highly speculative. The Defense Intelligence Agency believed that about 82,500 northerners entered the South in 1967, only slightly less than the 89,600 estimated for

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*Not included in these figures were a small but undetermined number of flak-suppression sorties conducted by Air Force and Navy YANKEE TEAM reconnaissance escort aircraft from June 1964 to December 14, 1964, when the BARREL ROLL interdiction program began. For security reasons at the time, the escort strikes were listed as reconnaissance sorties. See Chapter II.

†Also for security reasons, some B-52 sorties in 1966 were probably listed as sorties flown in South Vietnam. See Chapter VI.

1966,* with the majority entering through Laos. Most supplies also moved through Laos. Another intelligence analysis estimated that in 1967 about 31,250 tons of supplies entered the country by truck, chiefly through the Mu Gia and Ban Karai Passes, and 2,900 tons by trail for an average of about 94 short tons per day (STPD). Of this total, about 47 STPD were consumed or lost in Laos and 47 STPD reached the South. In addition, an average of 25 STPD flowed from Cambodia into Laos where about 15 STPD were consumed or lost and the remaining 10 STPD reached South Vietnam.[9]

The DRV exacted a high price for the U.S. day-and-night aerial surveillance and strike operations. Its automatic weapons and AA artillery units were concentrated in the vicinity of the Plain of Jars, near the Mu Gia, Ban Karai, and Nape Passes, and around Tchepone. More often than not, these air defense personnel forced strike pilots to remain above optimum bombing levels. Employing an assortment of weapons but mainly 14.5-, 37-, and 57-mm guns, they had shot down 132 U.S. aircraft and helicopters (107 USAF) by the end of 1967. In January 1968 the gunners would destroy 4 more aircraft, 2 Air Force and 2 Navy. Most losses occurred in central and southern Laos where infiltration and hence interdiction was heaviest.[10]

As noted, military dispatches from Saigon and Honolulu in December 1967 conveyed a sense of steady progress. Westmoreland on the 20th informed Sharp and Wheeler that Hanoi knew it was on the losing end of the war, and would have to make a significant decision in the next six months. Hanoi could attempt a final all-out effort that was bound to fail, then either open negotiations or continue the war at a reduced level. Admiral Sharp's year-end report proclaimed that 1967 produced a definite shift to the allies. "As a result, the enemy is no longer capable of a military victory."[11]

These predictions proved overly optimistic. In December the DRV continued to display not only a capacity for unprecedented supply movement through southern Laos, but resurgent battlefield strength throughout Laos and South Vietnam. On December 6 in Laos, NVA/PL units threatened the southern town of Saravane and the nearby Ban Khot airstrip known as Lima Site 44, endangering a USAF Tacan facility that had been emplaced nearby in April 1966. On the 20th of December, they encroached again on the Plain of Jars, and a few days later forced the abandonment of two strong Meo guerrilla positions near Long Tieng.

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*For 1967 the "accepted" or reasonably confirmed number of infiltrators totaled 52,400, the "possible" 29,800. For 1966 the "accepted" figure was 58,700 and the "possible" 30,900. [*Southeast Asia Military Fact Book*, Jul 68, p A-74.]

Then in the panhandle on Christmas Day, NVA/PL troops captured Muong Phalane and overran a nearby airstrip (Lima Site 61) on which the Seventh Air Force had erected a mobile Tacan facility only eight months earlier. Three days later, they seized Pak Song and assumed virtual control of the southern Bolovens Plateau. However, FAR forces managed quickly to retake Pak Song.[12]

In retrospect, it was evident that the enemy's Laotian ground assaults were preparatory to his encirclement of Khe Sanh and launching of the Tet offensive in January 1968. Keenly aware of the importance of Tacan sites to U.S. air navigation, the foe made them primary targets. Beginning at 1:30 in the morning, the December 25 attack on Muong Phalane and Lima Site 61 (both defended by FAR troops) was a surprise. An estimated 300-man NVA/PL battalion assaulted Site 61, and after a 3-hour battle the disheartened FAR troops withdrew. No USAF or RLAF aircraft were available to assist the defenders.[13]

Lima Site 61 was wiped out with three buildings and three "hootches" or living quarters destroyed. The buildings had housed the communication equipment, a generator, and an operations "shack." What remained was booby-trapped. In Muong Phalane the attacks demolished several U.S.-occupied buildings including one used by Agency for International Development personnel. The FAR's losses were severe—twenty-five killed, thirty-one wounded, and eighty-one missing in action. Also missing in action were two USAF Tacan operators. The two Americans were later found killed and their bodies recovered. The town and Site 61 stayed in enemy hands until recaptured on December 31 by FAR forces and guerrillas.[14]

General Momyer, concluding that security for the Tacan facility near Saravane was inadequate, ordered the U.S. operating personnel to spend their nights at Pakse. He further directed the instant replacement of the Tacan unit destroyed near Muong Phalane but in a more secure area. A survey team discovered a suitable site on 6,500-foot Phu Mano Mountain, about 3 1/2 miles from the Thai border town of Mukdahan. The mobile Tacan unit began functioning on Janaury 9, 1968, covering the Khe Sanh area in South Vietnam nearly 125 miles away. Three days later, NVA/PL troops failed to capture another USAF Tacan facility at Lima Site 85 in northern Laos, used by aircrews for their operations in the Hanoi area. In March, however, they would succeed.[15]

Concurrent with these ground assaults, the DRV's truck supply movements through southern Laos in December 1967 and January 1968 were unabated. Two new roads eased logistic movements from Laos toward South Vietnam. U.S. aerial photos and other intelligence showed that the roads stretched from the Laotian border towards South Vietnam's I Corps and ending within twenty-seven and fourteen miles

respectively of the Marine base at Khe Sanh. Enemy troop movements in the area and elsewhere suggested that the objective was not only Khe Sanh but other allied bases throughout South Vietnam.[16]

Bracing for the onslaught, Admiral Sharp and General Westmoreland began to express more concern. While Sharp believed the antitruck campaign had yielded "outstanding results," he warned that the services had not "interdicted or will be able to interdict the traffic to the degree required to achieve a major threat reduction in this area." Nor was there any assurance, he added, that the sensor-targeting system just beginning in the MUD RIVER and DUMP TRUCK areas would attain the desired effectiveness in the next few months. Westmoreland reiterated the Army's view that the only effective method of interdicting the enemy through Laos was to deploy ground troops to cut off his access to the South. He said he had requested a new study (code name EL PASO) for a corps-size thrust into Laos during the next dry season. The corps would hit the key chokepoints along and near Route 9 to block enemy vehicular and troop movements. The MACV commander added that he was considering a new concept (YORK III) that would require more troops than envisaged in EL PASO.[17]

On January 9, General Momyer expected the VC/NVA to soon mount a general offensive. On the 18th, as the enemy began an enveloping movement around Khe Sanh, Westmoreland launched OPERATION NIAGARA I, an air-ground effort supported by Seventh Air Force and the III Marine Amphibious Force, principally to determine the location of troop and supply sites. As the enemy completed its encirclement of Khe Sanh, Westmoreland launched NIAGARA II in defense of the base. This triggered the largest single tactical and B-52 operation of the war.[18]

Massive tactical and B-52 operations in defense of Khe Sanh would continue for several weeks. SAC bombers flew directly over Laos and hit heavily the enemy foot and truck traffic along the trail, especially on Route 9 and in the vicinity of Khe Sanh. In addition, General Westmoreland tasked General McBride to shift his TASK FORCE ALPHA resources (just beginning IOC testing of the DUMP TRUCK antipersonnel system) to Khe Sanh's defense.[19]

McBride and several aides flew at once to Dong Ha, South Vietnam. They conferred with Maj. Gen. Rathvon M. Tompkins, Commander of the 3d Marine Division, whose 26th Marines under Col. David E. Lownds were defending Khe Sanh. After indicating how sensor-oriented targeting might furnish more accurate coordinates for Marine harassment and interdiction artillery fire, McBride and his aides returned to Nakhon Phanom to prepare for an earlier-than-expected operational role.

The TASK FORCE ALPHA commander called on his 21st Helicopter Squadron for the first sensor drop mission. On January 20, one of the 21st's Jolly Green Giant CH-3s, with eighteen ADSIDs tied to the floor, flew to the Khe Sanh area, and upon arrival a crewmember began tossing ADSIDs out by hand along a designated enemy route. Lt. Col. Harry F. Hauser, the 21st's commander, had recently demonstrated that both ADSIDs and accouboys could be hand tossed from a helicopter with reasonable accuracy. During the next four days, ninety-nine ADSIDs were hand dispensed by crewmen who stood at the helicopter door doubling as "sensor-droppers" and gunners. On the 29th a crewman tossed out the first spike acoubuoy in the vicinity of Khe Sanh. The Navy's OP-2Es also flew some sensor-dropping sorties.[20]

Accompanying each sensor-dropping helicopter was another CH-3 serving as armed escort, an arrangement that worked quite well. The use of armed Army UH-1 copters as escorts, as orignally planned, was postponed for the same reason the USAF "choppers" could not begin operations in the MUD RIVER sector—the absence of secure helicopter refueling bases in Laos. The Army's UH-1s flew but one escort mission, then briefly assisted in tightening up base defense in Nakhon Phanom, and finally returned to a South Vietnamese base. Air Force A-1E Skyraiders presently took over the helicopter escort mission on a regular basis.[21]

By the end of January, the CH-3 helicopters and the Navy's Lockheed OP-2Es had dropped 316 sensors in 44 sensor strings for the initial DUMP TRUCK tests and for Khe Sanh's defense. The sensors consisted of 171 ADSIDs, 86 parachuted acoubuoys, and 59 spike acoubuoys. However, not until January 25 did an A-1E sow its first load of button bomblets or mines. These noninjurious mines were designed to activate acoustic sensors. An injurious type (XM-41) began to be used on the 27th and a variant mini-gravel one (XM-41-1E) shortly thereafter. On February 1, General Momyer ordered TASK FORCE ALPHA to give highest priority to sowing gravel mines. The more lethal gravel mines were meant to keep enemy infiltrators on main trails, injure them if they did not, and slow truck traffic by puncturing tires.[22]

Despite difficulties due to over-activation of sensors and the later dispensing of gravel mines, 282 strikes were made on enemy trucks and personnel in both the MUD RIVER and DUMP TRUCK areas during January. The strikes destroyed or damaged an estimated 79 trucks, caused scores of fires and secondary explosions, and killed numerous enemy troops. At first the Marines found little use for the sensor-generated targeting data because of their unfamiliarity with it and the need to collate it with other intelligence. But by early February, under

the fire of necessity, they began to learn how to use the new targeting system which assisted materially in the defense of Khe Sanh.[23]

As Westmoreland's sensor-assisted NIAGARA tactical and B-52 operations in defense of Khe Sanh expanded in January, North Vietnamese antiaircraft units took their toll. They downed an Air Force F-4D, a Marine F-8E, and two Navy planes (an A-4E and a sensor-sowing OP-2E). Then on January 30 the VC, with NVA support, launched its offensive in South Vietnam, choosing a day that heralded the annual lunar New Year or "Tet" celebrations. "We did not surmise the true nature or the scope of the country-wide attack," Westmoreland later observed, "nor did it occur to us that the enemy would undertake suicidal attacks in the face of our power. But he did just that."[24]

The enemy, in fact, did more than merely launch a new offensive; he changed the course of the war.

Epilogue

The scope and intensity of the Tet offensive, which would continue through February, would profoundly affect American military and diplomatic policy toward Hanoi. The offensive underscored the communists' tenacity and resilience, and cast severe doubt on official estimates of their manpower and supply losses in the war theater. As the narrative has indicated, nowhere was it more difficult to calculate these losses than in Laos. Some assessment of bomb damage was possible by daily aerial and ground reconnaissance. But for the overwhelming number of air strikes against fixed and armed reconnaissance targets, intelligence analysts were forced to assess strike results, chiefly on evidence gleaned from fleeting pilot observations, and on extrapolations from thousands of secondary fires and explosions.

North Vietnam's infiltration through Laos had of course been aided and abetted in several ways. There was the generosity of its communist suppliers, particularly the Soviet Union and China. More significant was the impact of American political considerations on military policy. One major concern was the desire to preserve, if possible, the Geneva Agreement of 1962 on the neutrality of Laos. More important was the danger of a possible confrontation with the Soviets and Chinese. Consequently, the president would not allow the Air Force and Navy to impose an effective air and naval blockade of the North. Important targets were immune from air strikes in the Hanoi-Haiphong area (including the Haiphong port), and in the twenty-five- to thirty-nautical-mile buffer zone next to China. This permitted an uninterrupted flow of military supplies to enter the North by ship, rail, and road.

Once freely unloaded in the country, the supplies were quickly dispersed. This made it more difficult for American pilots to find and destroy them, not only in the North but along the rudimentary transportation system in Laos.

In Laos the jungle and mountainous terrain, the monsoon weather, and the smoke and haze were Hanoi's natural allies. The North Vietnamese also adeptly kept infiltration routes open by such tactics as night traveling, camouflaging, road and trail building and repairing, and by emplacing their most lethal antiaircraft defenses at or along key infiltration points. By 1968 they had transformed the 200-mile-long southeastern Laos corridor (known as the Ho Chi Minh Trail) into hundreds of miles of fair-weather motorable roads, and an intricate maze of smaller roads, trails, paths, bridges, supply sites, truck parks, rest

areas, and overnight shelters. The roads, trails, and paths were linked with a stream and river transportation system. Together they assured a steady flow of supplies into South Vietnam or areas adjacent to its borders.

Finally, Air Force and other service pilots were enjoined to abide by many and frequently changing air rules emanating from Washington or Vientiane officials. The rules prohibited tactical and B-52 strikes on friendly towns and villages, troops, roadwatch teams, and on specified routes and waterways in the demilitarized zone and neutral Cambodia, all for the purpose of preserving the fragile Geneva agreements of 1962 on Laos's neutrality. Thus were the North Vietnamese able to blunt the impact of a series of progressively heavier, albeit limited, air and air-ground infiltration programs in southern Laos.[1]

The psychological effect of the Tet offensive on a war-weary Washington and the nation was dramatic. It impelled the administration to alter its war strategy and undertake a more determined effort to find peace. In the ensuing weeks, it ended the bombing of most of North Vietnam and began initial "talks" with Hanoi's leaders on a settlement. These were developments that lessened considerably the fear of triggering a wider war and rupturing fatally the 1962 Geneva agreements on Laos. Later, however, the air war against infiltration in southern Laos would intensify, less encumbered by the manifold limited air programs and operational restrictions of previous years.

Appendices

Appendix 1
U.S. Tactical Sorties Flown in Laos
December 14, 1964* – December 31, 1967

	USAF	USN	USMC	TOTAL
Strike	73,116	19,605	10,427	103,148
Flak Suppression**	154	227	68	449
Combat Air Patrol & Escort	4,572	2,384	83	7,039
Air-to-Air Refueling	1,905	636	0	1,541
Search and Rescue	5,268	2	0	5,270
Other	64,296	1,988	90	66,374
Totals	**149,311**	**24,842**	**10,668**	**183,821**

*Beginning of Barrel Roll operations

**With occasional exceptions, most flak-suppression sorties were listed as strike sorties.

Appendix 2
Transportation and Other Targets Destroyed, and Damaged in Laos
December 14, 1964* - December 31, 1967

	USAF		USN		USMC		TOTAL	
	Destroyed	Damaged	Destroyed	Damaged	Destroyed	Damaged	Destroyed	Damaged
Vehicles	3,642	2,057	240	210	224	205	4,106	2,472
Structures	4,278	1,686	453	231	612	324	5,343	2,241
Bridges	603	616	171	260	46	56	820	932
Boats & Other Rivercraft	187	186	26	13	11	7	224	206
Ferries	9	9	0	0	0	1	9	10
Ferry Slips	11	46	1	3	3	2	15	51
POL Tanks	207	10	1	0	3	0	211	10
Antiaircraft Sites	831	399	41	36	35	6	907	441
Radar Sites	1	7	0	0	0	0	1	7
Road Cuts	10,088		2,080		727		12,895	

*Beginning of Barrel Roll operations

Appendix 3
Bomb, Rocket, and Other Ordnance Expenditures in Laos
December 14, 1964 - December 31, 1967

Bombs

	125-lb	250-lb	250-lb Frag	500-lb	750-lb	1000-lb	2000-lb	3000-lb
USAF	37,766	37,766	37,766	88,745	170,687	6,195	1,660	2,380
USN	0	0	0	34,450	137	3,029	235	0
USMC	0	0	0	21,132	548	5,225	309	48

Rockets

	2.75" Rounds	AIM	5" Zuni Rounds	AGM-12B	AGM-12C	AGM-45
USAF	331,704	29	795	125	439	4
USN	52,251	0	5,244	91	23	8
USMC	4,594	7	1,493	73	0	0

Other Ordnance

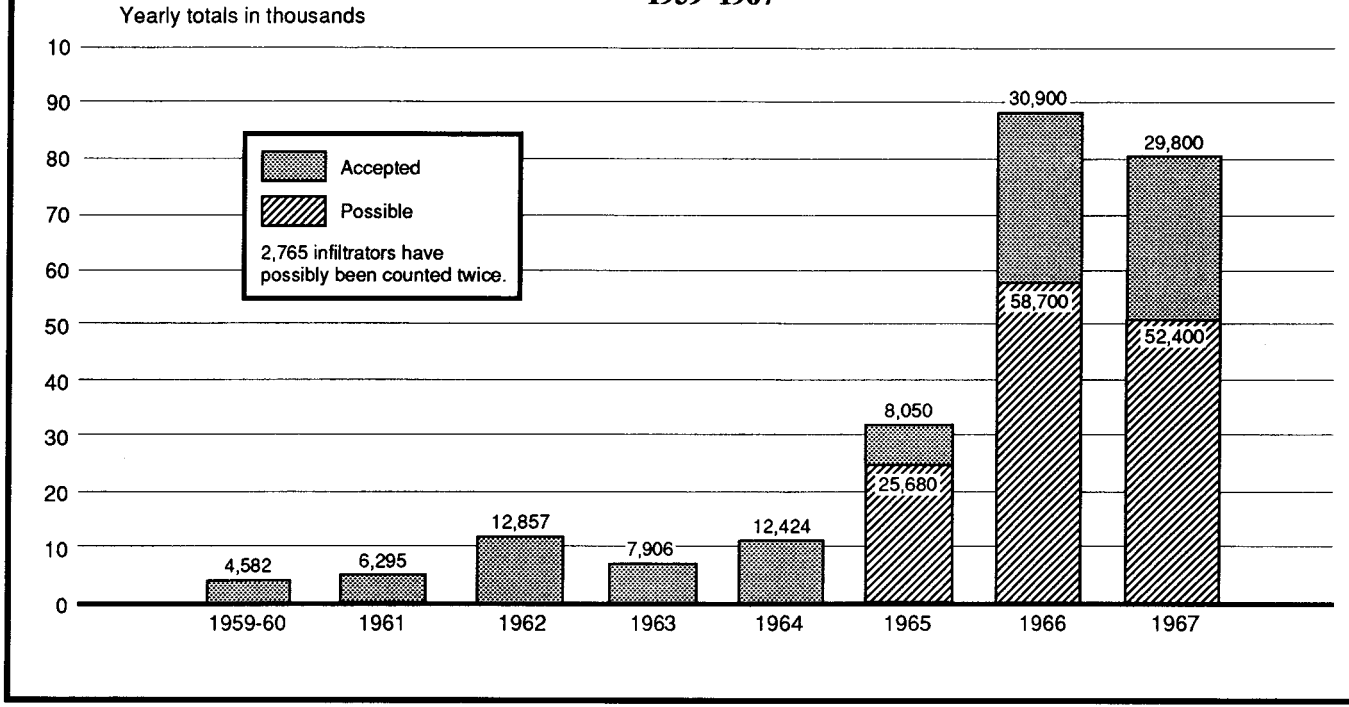
	CBU-pods	Napalm	Mines
USAF	25,468	14,468	90
USN	20	0	0
USMC	24	110	0

Appendix 4
USAF Aircraft Losses in Laos
February 1962 – February 1, 1968

	Combat	Operational*	Total
A-1	28	1	29
A-26	6	1	7
A-37	0	0	0
AC-47	4	0	4
B-52	0	0	0
B-57	4	0	4
C-7	0	0	0
C-47	0	0	0
C-123	0	0	0
C-130	0	0	0
C-141	0	0	0
CH-3	2	0	2
EB-/RB-66	0	0	0
EC-/RC-47	0	0	0
F-4C	11	0	11
F-4D	2	0	2
F-5	0	0	0
F-100	6	0	6
F-102	0	0	0
F-104	2	0	2
F-105	20	5	25
HH-3	3	2	5
HH-43	0	0	0
O-1	9	2	11
O-2	0	0	0
RB-57	0	0	0
RF-4	3	0	3
RF-101	3	0	3
T-28	3	2	5
U-10	1	0	1
UC-123	1	0	1
UH-1	1	0	1
Other	0	0	0
Total	**109**	**13**	**122**

*Losses due to accidents and other non-combat causes.

Appendix 5
North Vietnamese Infiltration Into South Vietnam
1959–1967



Notes

Chapter I

Early Efforts to Reduce North Vietnamese Infiltration through Laos

1. Committee on Foreign Relations, Senate, *Background Information Relating to Southeast Asia and Vietnam*, 6th rev ed (Washington, 1970), p 161ff [hereafter cited as *Background Info on SEA and VN*].

2. *Background Info on SEA and VN*, p 173ff; Mark Thee, "Background Notes on the 1954 Geneva Agreements on Laos and the Vientiane Agreements of 1956–1957," in *Laos: War and Revolution*, ed by Nina S. Adams and Alfred W. McCoy (New York, 1970), Chap 8; Arthur J. Dommen, *Conflict in Laos: The Politics of Neutralization*, rev ed (New York, 1971), pp 79–80.

3. Len E. Ackland, "No Place for Neutralists: The Eisenhower Administration and Laos," Chap 9, and Jonathan Mirsky and Stephan E. Stonefield, "The Nam Tha Crisis, Kennedy and the New Frontier on the Brink," Chap 10, both in *Laos: War and Revolution*.

4. D. Gareth Porter, "After Geneva, Subverting Laotian Neutrality," in *Laos: War and Revolution*, pp 183–195; Ackland, Chap 9; Mirsky and Stonefield, pp 155–162; memo, Henry L. T. Koren, Dept of State (FE/SEA), to Roger Hilsman, Asst SECSTATE for Far Eastern Affairs, subj: Meeting on Laos, Jul 27, 1963; Maj Victor B. Anthony, "A Military History of the War in Northern Laos, 1945–1968," manuscript [The Air Force in Southeast Asia] (Washington, 1976), Chap III.

5. Final Report of the Select Committee Study on Governmental Operations with Respect to Intelligence Activities, Together with Additional Supplemental and Separate Views, *Foreign Military Intelligence*, Report 94-755, Apr 26, 1976, Senate, 94th Cong, 2d sess (Washington, 1976), Bk 1, p 147 [hereafter cited as Senate Select Cmte on Intel Activities]; msg, CINCPAC to SECSTATE, 050500Z Dec 63; *Aspects of the Air and Ground War in Laos, 1965–1967* (Washington, 1967), p 3 [hereafter cited as *Air and Ground War in Laos, 1965–1967*].

6. Senate Select Cmte on Intel Activities, Bk 1, p 147; *Air and Ground War in Laos, 1965–1967*, p 3.

7. Joseph J. Zasloff, The Pathet Lao (Toronto, 1973), p 70; Jacob Van Staaveren, *USAF Plans and Policies in South Vietnam, 1961–1963* (Washington, 1965), pp 18–19; Anthony, Chap III.

8. *Background Info on SEA and VN*, p 194ff; Mirsky and Stonefield, pp 162–178.

9. Dommen, pp 224–25, 245–46; Porter, pp 179–198; Anthony, Chap IV.

10. Van Staaveren, *USAF Plans and Policies in South Vietnam, 196l–1963*, Chap II.

11. *Ibid.*

12. *Ibid.*

13. *Encyclopaedia Britannica: Micropaedia*, 1974 ed, s.v. "Vietnam, South"; *Encyclopedia Americana*, 1967 ed, s.v. "Laos."

14. G. C. Reinhardt and E. H. Sharkey, *Air Interdiction in Southeast Asia* (RM-5283-PR, Santa Monica, 1967), p 10; *Description of the Ho Chi Minh Trail* (WSEG Study 125, Washington, 1966), pp 1–3.

15. WSEG Study 125, pp 8–10.

16. *The Senator Gravel Edition, The Pentagon Papers*, 4 vols. (Boston, 1971), II, 35, 50, 60, 71–72 [hereafter cited as *Gravel Pentagon Papers*].

17. *Gravel Pentagon Papers*, II, 75, 89.

18. *A Threat to the Peace: North Viet-Nam's Effort to Conquer South Viet-Nam* (Dept of State Pub 7308, Washington, 1961), pt I, pp 20–21, and pt II.

19. C. V. Sturdevant, *The Border Control Problem in South Vietnam* (RM-3697-ARPA, Santa Monica, 1964), pp 3–4, 36–48; Hearings before a Subcommittee of the Committee on Appropriations, House of Representatives, *Department of Defense Appropriations for 1964*, 88th Cong, 1st sess (Washington, 1963), pt 1, pp 96–97.

20. *Gravel Pentagon Papers*, II, 152, 717–18.

21. *Gravel Pentagon Papers*, II, 31, 60; Van Staaveren, *USAF Plans and Policies in South Vietnam, 1961–1963*, p 70; DIA Bul 135-65, Jul 14, 1965.

22. AmEmb Saigon to SECSTATE, 3939, Oct 7, 1962; USMACV rprt, Summary of Highlights, 8 Feb 62–7 Feb 63, pp 30–49; Report of Visit by JCS Team to South Vietnam, Jan 1963, Sec IV, par. 8.

23. Van Staaveren, *USAF Plans and Policies in South Vietnam, 1961–1963*, Chaps II, III, and pp 69, 70–72, 104–05.

24. Msgs, AmEmb Saigon to SECSTATE, #896, Apr 10, 63, SECSTATE to AmEmb Saigon, #948, 12 Apr 63; AmEmb Saigon to SECSTATE, #971, 30 Apr 63, #3956, 25 Apr 63; PACAF Reference Book for May 1963 SECDEF Conference, Agenda Item 1; CINCPAC, Record, Eighth SECDEF Conference, 6 May 63, Item 6.

25. Roger Hilsman, *To Move a Nation: The Politics of Foreign Policy in the Administration of John F. Kennedy* (New York, 1967), p 528; Msgs, SECSTATE to AmEmb Saigon, #948, 12 Apr 63, AmEmb Saigon to SECSTATE, #971, 30 Apr 63, #3956, 25 Apr 63; PACAF Reference Book for May 1963 SECDEF Conference, Agenda Item 1; CINCPAC, Record, Eighth SECDEF Conference, 6 May 63, Items 1, 6; AFXOPJ, Book on Actions in Southeast Asia, 1961–1964, Items VI-E, F, G; Hearings before the Committee on Foreign Affairs, House of Representatives, *Foreign Assistance Act of 1963*, 88th Cong, 1st sess (Washington, 1963), pp 744–745.

26. CINCPAC, Record, Eighth SECDEF Conference, 6 May 63, Item 1; AFXOPJ, Book on Actions in Southeast Asia, 1961–1964, Items VI-E, F, G.

27. Dommen, pp 256–268.

28. Msg, SECSTATE-SECDEF to AmEmb Vientiane, 1219, Jun 22, 1963; rprt, DCS/Mil Ops, USA, to CSA, Analysis of SEA Actions, n.d. [*ca.* Sep 4, 1963]; Anthony, Chap V.

29. Rprt, DCS/Mil Ops, USA, to CSA, n.d. [*ca.* Sep 4, 1963]; hist, CINCPAC, 1963, pp 193–200; Anthony, Chap V.

30. Msg, AmEmb Saigon (Embassy-CIA-MACV) to SECSTATE, 170, Aug 3, 1963; ltr, CINCPAC to JCS, subj: Joint FAR/Neut/GVN Assault on Tchepone, Sep 11, 1963.

31. Msgs, AmEmb Saigon to SECSTATE, 170, Aug 3, 1963, SECSTATE to AmEmb Saigon, 181, Aug 9, 1963, AmEmb Vientiane to SECSTATE, 281, Aug 23, 1963, 296, Aug 27, 1963, and 324, Sep 5, 1963; ltr, CINCPAC to JCS, subj: Joint FAR/Neut/GVN Assault on Tchepone, Sep 11, 1963.

32. Ltr, CINCPAC to JCS, Sep 11, 1963; msg, USUN to SECSTATE, 71, Sep 26, 1963; JCS 2343/272-1, Oct 3, 1963.

33. Msg, AmEmb Vientiane to SECSTATE, 324, Sep 5, 1963; Hilsman, p 528; JCSM-825-63, Oct 26, 1963.

34. *Gravel Pentagon Papers*, III, 17–32; *The Pentagon Papers as Published by the New York Times* (New York, 1971), pp 232–33 [hereafter cited as *N. Y. Times Pentagon Papers*]; Van Staaveren, *USAF Plans and Policies in South Vietnam, 1961–1963*, pp 69–75.

35. *New York Times*, Dec 20 and 21, 1963; *Gravel Pentagon Papers*, III, 494–96; Lyndon B. Johnson, *The Vantage Point: Perspectives of the Presidency, 1963–1969* (New York, 1971), pp 63–64 [hereafter cited as Johnson, *The Vantage Point*].

36. Hist, SAC, Jul–Dec 64, III, 122–23; Kenneth Sams, *Escalation of the War in Southeast Asia, July–December 1964* (Project CHECO, Hickam AFB, Ha-

waii, n.d.), pp 92–93; Fact Sheet, Lucky Dragon Film Processing, May 8, 1964, in CINCPACAF Report for General Smart, Secretary of Defense Meeting, May 13, 1964, Bk II; Anthony, Chap V; William H. Greenhalgh, Jr., "U.S. Air Force Reconnaissance in Southeast Asia, 1960–1975," manuscript (Maxwell AFB, Ala., 1977), pp 118–121 [hereafter cited as Greenhalgh, "USAF Reconnaissance in SEA, 1960–1975"].

37. JCSM-168-68, Mar 2, 1964.

38. NSAM 288, Mar 17, 1964; *Gravel Pentagon Papers*, III, 499–510.

39. Msgs, AmEmb Vientiane to SECSTATE, 927, Mar 1, 1964, 942, Mar 3, 1964; airgram, AmEmb Vientiane to SECSTATE, A-249, Mar 4, 1964, subj: Utilization of T-28 Aircraft; memo, Dir/Ops, USAF, to CSAF, subj: Concept of Employment of the Royal Laotian Air Force, Mar 3, 1964; JCSM 202-64, Mar 11, 1964.

40. Van Staaveren, *USAF Plans and Policies in South Vietnam and Laos, 1964* (Washington, 1965), pp 72–73; Anthony, Chap V; Msgs, PACAF to CINCPAC, USAF, PFDOP-5153-63, 27 Nov 64, CINCPAC, PFCVC-044, 13 Jan 64, PFDOP-5010-64, 25 Feb 64, CINCPAC to OSD/ISA, 6 Dec 63; hist, PACAF, Jan–Jun 1964, I, pt 2, 147–48; hist, SAWC, Jan–Jun 1964, I, 44–48, 61–65; AFXOPJ, Book on Actions in Southeast Asia, 1961–1964, Item III-H.

41. Talking Paper for the JCS, Laos, May 17, 1965; JCS 2344/81, May 25, 1965; Anthony, Chap IV; hists, PACAF, Jan–Jun 1964, I, pt 2, 148, 151, Jan–Jun 1965, I, pt 2, Yankee Team Chronology, 66–67, 76–77; msgs, AmEmb Vientiane to SECSTATE, #1669, 17 May 64, #1442, 27 May 64, 2d AD to 13th AF, 2CCR-64-249E, 25 May 64; Capt Thomas R. Knox, "Waterpump, 1964–1965," *Aerospace Commentary*, II, 2 (Spring 1970), 51–52.

42. Msgs, JCS to CINCPAC (Gen Taylor to Adm Felt and Gen Harkins), 181742Z May 64, JCS to CINCPAC, 201653Z May 64, #2215, 18 May 64, CINCPAC, COMUSMACV, #2274, 20 May 64, 2d AD to PACAF, 13th AF, 2CCR-64-244E, 22 May 64, to 13th AF, 2CCR-64-249E, 25 May 64; hist, CINCPAC, 1964, pp 269–270; hist, MACV, 1964, p 47; hist, PACAF, Jan–Jun 1964, I, pt 2, p 148, Jan–Jun 1965, I, pt 2, Yankee Team Chronology, pp 67–82; Anthony, Chap IV; Greenhalgh, "USAF Reconnaissance in SEA, 1960–1975," pp 127–28.

43. Msg, JCS to CINCPAC, 201653Z May 64; hist, CINCPAC, 1964, pp 269–270; Greenhalgh, "USAF Reconnaissance in SEA, 1960–1975," pp 127–28; *New York Times*, May 22, 1964.

44. Msgs, JCS to CINCPAC (Gen Taylor to Adm Felt and General Harkins), 181742Z May 64, JCS to CINCPAC, 201653Z May 64, CINCPAC et al., #6470, 25 May 64, CINCPAC to COMUSMACV, 260836Z May 64; hist, CINCPAC, 1964, pp 269–270; hist, MACV, 1964, p 47; hist, PACAF, Jan–Jun 1964, I, pt 2, Yankee Team Chronology, 67–82; Anthony, Chap IV; AFXOPJ, Book on Actions in Southeast Asia, 1961–1964, Item V-B.

45. Van Staaveren, *USAF Plans and Policies in South Vietnam and Laos, 1964*, pp 75–77; Anthony, Chap IV; hists, PACAF, Jan–Jun 1964, I, pt 2 pp 148, 151–152, Jan–Jun 1965, I, pt. 2, Yankee Team Chronology, pp 66–67; msgs, AmEmb Vietiane to SECSTATE, #1669, 17 May 64, USAIRA Vietiane to DIA, CX-332, 27 Jun 64; Knox, "Waterpump, 1964–1965," p 57; Project CHECO, USAF Operations from Thailand, 1964–1965, p 18.

Chapter II

Expansion of Counterinfiltration Activities

1. Anthony, Chap VI.

2. Anthony, Chap V; 1st Lt Robert L. MacNaughton, *Yankee Team, May 1964–June 1965* (Project CHECO, Hickam AFB, Hawaii, 1966), pp 6, 11–12; Rebecca Y. Noell, *Tactical Air Command in Southeast Asia, 1961–1968* (Langley AFB, Va., 1972), p 30; Robert F. Futrell, *A Chronology of Significant Airpower Events in Southeast Asia, 1954–1967* (Maxwell AFB, Ala., 1967), p 34 [hereafter cited as Futrell, *Chronology*].

3. MSgt Robert T. Helmka and TSgt Beverly Hale, *USAF Operations from Thailand, 1964–1965* (Project CHECO, Hickam AFB, Hawaii, 1966), pp 10–11.

4. Intvw, Lt Col Robert G. Zimmerman, Oral Hist Br, Albert F. Simpson Hist Rsch Cen, with Col Robert L. F. Tyrrell, former AIRA, Vientiane, May 12, 1975, pp 40–45; *Air and Ground War in Laos, 1965–1967*, pp 8–9.

5. MR, William P. Bundy, Asst SECSTATE for East Asian and Pacific Affairs, subj: Views of Ambassador Unger on Operations in Eastern Laos, Apr 29, 1964.

6. *Ibid.*; MACV OPlan 34B-64, Cross-Border Operations into Laos, Dec 18, 1964 (redesignated OPlan 98A-64 in 1964); Talking Paper for JCS for SECDEF–NSC Mtg on Apr 20, 1964, Recommendation 11, National Security Action Memorandum 288.

7. *Gravel Pentagon Papers*, III, 499–510; *N.Y. Times Pentagon Papers*, pp 283–85; msg, AmEmb Saigon to SECSTATE, 1913, Apr 6, 1964.

8. Msg, CINCPAC to JCS, 022223Z May 64; hist, MACV, 1964, Annex A, p A-1; Gen William C. Westmoreland, USA, Ret, *A Soldier Reports* (Garden City, N.Y., 1976), pp 106–07.

9. Msgs, AmEmb Vientiane to SECSTATE, 1232, Apr 30, 1964, SECSTATE to AmEmb Vientiane, 95, May 5, 1964, to AmEmb Saigon, 1832, May 5, 1964; memo, Rear Adm Francis J. Blouin, USN, Dir/FE Region, ISA, to John T. McNaughton, Asst SECDEF (ISA), subj: Status of Current Authorizations for Operational and Combined Planning for Cross-Border Operations into Laos, Jul 1, 1964; msgs, SECSTATE to AmEmb Saigon, 130, Jul 14, 1964, 256, Jul 25, 1964, AmEmb Saigon to SECSTATE, 202, Jul 24, 1964, COMUSMACV to CINCPAC, 251245Z Jul 65, AmEmb Saigon to SECSTATE, 457, Aug 17, 1964, COMUSMACV to JCS, 030857Z Sep 64; memo, Lt Col Steve A. Marcinko, USAF, mil rep to Benjamin H. Read, Ofc of SECSTATE, no subj, Sep 23, 1964.

10. Msg, SECDEF-SECSTATE, to AmEmb Saigon and JCS, 272141Z Jul 64.

11. Msg, COMUSMACV to CINCPAC, 011057Z Jul 64.

12. Msgs, AmEmb Saigon to SECSTATE, 457, Aug 17, 1964, 485, Aug 20, 1964, COMUSMACV to CINCPAC, 160943Z Aug 64.

13. Msgs, AmEmb Vientiane to SECSTATE, 263, Aug 7, 1964, AmEmb Saigon to SECSTATE, 485, Aug 20, 1964.

14. *Gravel Pentagon Papers, III*, 565–66; msgs, COMUSMACV to JCS, AFIN 57320, Oct 23, 1965, AmEmb Saigon to SECSTATE, 1068, 091050Z Oct 64.

15. Memo, Asst Dir/Processing, Asst SECDEF (ISA), to Asst SECDEF (ISA), ATTN: Mr. Solbert, Jul 27, 1964; JCSM-595-64, Jul 10, 1964; memo, SECDEF to CJCS, Jul 15, 1964.

16. Msgs, SECSTATE to AmEmb Vientiane, 89, Jul 26, 1964, AmEmb Vientiane to SECSTATE, 170, Jul 27, 1964; *Gravel Pentagon Papers*, III, 512–17.

17. Van Staaveren, *USAF Plans and Policies in South Vietnam and Laos, 1964*, pp 24–26; *Background Info on SEA and VN*, p 214.

18. Van Staaveren, *USAF Plans and Policies in South Vietnam and Laos, 1964*, pp 27–35; Johnson, *The Vantage Point*, p 119.

19. Msgs, AmEmb Vientiane to SECSTATE, 040845Z Aug 64, AmEmb Saigon to SECSTATE, 486, Aug 20, 1964, AmEmb Vientiane to SECSTATE, 423, Sep 7, 1964.

20. Msg, AmEmb Vientiane to SECSTATE, 423, Sep 7, 1964.

21. *Gravel Pentagon Papers*, III, 563–66.

22. *Gravel Pentagon Papers*, III, 566–68.

23. Msgs, SECSTATE to AmEmb Vientiane, 275, Sep 25, 1964, AmEmb Vientiane to SECSTATE, 531, Sep 29, 1964, and 010547Z Oct 64; Anthony, Chap V.

24. Msg, AmEmb Vientiane to 2d AD, 300154Z Sep 64; Anthony, Chap VII.

25. Msgs, AmEmb Vientiane to SECSTATE, 568, 030630Z Oct 64, 581, 061100Z Oct 64; Anthony, Chap VII; Tyrrell intvw, May 12, 1975.

26. Msgs, AmEmb Vientiane to SECSTATE, 582, 061044Z Oct 64, SECSTATE-SECDEF to AmEmb Vientiane, Oct 7, 1964.

27. Msgs, AmEmb Saigon to SECSTATE, 1068, 091050Z Oct 64, SECSTATE-SECDEF to AmEmb Vientiane, 330, Oct 13, 1965, CINCPAC to JCS, 212221Z Oct 64; JCSM-870-64, Oct 13, 1964; JCSM-889-64, Oct 20, 1964; Anthony, Chap IV.

28. Msgs, AmEmb Vientiane to SECSTATE, 616, 140451Z Oct 64, 619, 141139Z Oct 64, and 221107Z Oct 64, SECSTATE to AmEmb Vientiane, 358, Oct 20, 1964; Anthony, Chap VII.

29. Msg, AmEmb Vientiane to SECSTATE, 67, 261131Z Oct 64; Anthony, Chap VII.

30. Msgs, AmEmb Vientiane to SECSTATE, *et al*, 281211Z and 311146Z Oct 64, SECSTATE to AmEmb Vientiane, 374, Oct 24, 1964, JCS to CINCPAC, 301742Z Oct 64, AmEmb Saigon to SECSTATE, 061333Z Oct 64, AmEmb Vientiane to SECSTATE, 706, Nov 3, 1964, SECSTATE to AmEmb Vientiane, 411, Nov 5, 1964; Anthony, Chap VII.

31. Msgs, CINCPAC to JCS, 010501Z Nov 64, AmEmb Vientiane to SECSTATE, 706, 030608Z Nov 64, AmEmb Saigon to SECSTATE, 061113Z Nov 64; Van Staaveren, *USAF Plans and Policies in South Vietnam and Laos, 1964*, pp 36–38; Anthony, Chap VII.

32. Msgs, AmEmb Vientiane to SECSTATE, 769, Nov 18, 1964, 772, Nov 18, 1964, 783, Nov 21, 1964, 784, Nov 21, 1964, and 210521Z Nov 64; rpt, 2d CCR to MACV J-3, subj: MONEVAL, 2 Dec 64; AFXOPJ, Book on Actions in Southeast Asia, Item IV-H.

33. Msg, CINCPAC to JCS, 212357Z Nov 64; JCSM-997-64, Military Action in Laos, Nov 28, 1964.

34. Msgs, AmEmb Vientiane to SECSTATE, 748, Nov 21, 1964, 971, Nov 22, 1964; Anthony, Chap VII; rpt, 2d CCR to MACV J-3, subj: MONEVAL, 2 Dec 64; AFXOPJ, Book on Actions in Southeast Asia, Item IV-H.

35. Rprt, Current Situation in South Vietnam, November 1964 [signed Taylor], Nov 27, 1964.

36. Maxwell D. Taylor, *Swords and Plowshares* (New York, 1972), pp 326–27; Van Staaveren, *USAF Plans and Policies in South Vietnam and Laos, 1964*, pp 43–44; *Gravel Pentagon Papers*, III, 248–255, 677–683; AFXOPJ, Book on Actions in Southeast Asia, 1961–1964, Items IV-Y, IV-Z.

37. Msg, AmEmb Vientiane to SECSTATE, 101153Z Dec 64, 868, 10 Dec 64, JCS to CINCPAC, 112144Z Dec 64, CINCPAC to COMUSMACV, 120612Z Dec 64, COMUSMACV, CINCPACFLT, 120612Z Dec 64; JCSM-1041-61, Dec 11, 1964; MR, subj: Meeting of National Security Council Principals, Dec 12, 1964; *Gravel Pentagon Papers*, III, 253–54, 335–336; AFXOPJ, Book on Actions in Southeast Asia, 1961–1964, Item IV-2.

38. Msgs, CINCPAC to COMUSMACV, CINCPACFLT, 120612Z Dec 64, 2d AD to JCS, MACV, CINCPAC, *et al*, 140526Z Dec 64, 141323Z Dec 64, 2d AD

CP to 13th AF CP, 140735Z Dec 64, 23rd ABG, 2d CCR, 00648, 24 Dec 64, 80th TFS, 2d CCR, 00651, 25 Dec 64, USAF to PACAF, AFXOP, 60097, 24 Dec 64; *Gravel Pentagon Papers*, III, 254; Anthony, Chap IV; hists, 19th TFW, Jul-Dec 1964, p 40, Jan-Jun 1965, p 3; Robert T. Helmka and Beverly Hale, *USAF Operations from Thailand, 1964-1965*, (Project CHECO, Hickam AFB, Hawaii, 1966), pp 81-82; AFXOPLC, Analysis of Air Operations, Southeast Asia, Vol I, sec 2.

39. Msg, AmEmb Vientiane to SECSTATE, 920, 181140Z Dec 64; Melvin F. Porter, *Interdiction in SEA, 1965-1966* (Project CHECO, Hickam AFB, Hawaii, 1967), pp 6-7.

40. JCSM-1050-64, Dec 17, 1964; msg, JCS to CINCPAC, 281841Z Dec 64; Sams, *Escalation of the War in Southeast Asia, July-December 1964*, pp 203-217; msgs, AmEmb Vientiane to SECSTATE, 893, 150942Z Dec 64, to SECSTATE *et al*, 300937Z Dec 64.

41. *Gravel Pentagon Papers*, III, 254; msgs, AmEmb Saigon to SECSTATE, 2077, 071010Z Jan 65, SECSTATE to AmEmb Saigon, 1397, Jan 5, 1965.

42. JCSM-7-65, Jan 7, 1965; JCSM-28-65, Jan 15, 1965; msgs, AmEmb Saigon to SECSTATE, 2086, 080950Z Jan 65, 2074, 070555Z Jan 65.

43. Anthony, Chap VII.

44. Msgs, AmEmb Vientiane to SECSTATE, 1081, 180953Z Jan 65, 1098, 211125Z Jan 65, SECSTATE to AmEmb Vientiane, 616, Jan 19, 1965, 619, Jan 20, 1965, CINCPAC to COMUSMACV, CINCPACFLT, 190156Z Jan 65, CSAF to PACAF, 79414, Jan 22, 1965.

45. Memo, Maj Gen Reginald J. Clizbe, Dir/Ops, USAF, to SAF, subj: Use of Infrared-Equipped Aircraft for Locating Targets in Laos at Night, Jan 6, 1965; memo, SAF to SECDEF, subj: Use of Infrared-Equipped Aircraft for Locating Targets in Laos at Night, Jan 11, 1965; msgs, 2d AD to PACAF, Jan 11, 1965, CINCPACFLT to CINCPAC, 130031Z Jan 65, CINCPACAF to CINCPAC, 140408Z Jan 65, CINCPAC to JCS, 211959Z Jan 65, CINCPACAF to 2d AD, 240108Z Jan 65; Anthony, Chap VII.

46. Msg, SECDEF to AmEmb Vientiane, 031256Z Feb 65; Anthony, Chap VIII.

47. Anthony, Chaps VII, VIII.

48. Rprt of Inves, Board of Officers to Investigate Incident at MACV Compound and Camp Holloway, Pleiku, South Vietnam [Maj Gen Milton B. Adams, President], Feb 16, 1965.

49. Msgs, CINCPAC to JCS, 071056Z, 110942Z, and 132220Z Feb 65, 2d AD to PACAF, 110748Z Feb 65.

50. Jacob Van Staaveren, *USAF Plans and Operations in Southeast Asia, 1965* (Washington, 1966), p 13.

51. Msg, AmEmb Vientiane to SECSTATE, 1363, 260900Z Feb 65.

Chapter III

The Beginning of the STEEL TIGER Program

1. Adm U. S. G. Sharp, USN, and Gen W. C. Westmoreland USA, *Report on the War in Vietnam (As of 30 June 1968)* (Washington, 1969), p 107; hist, MACV, 1964, p 47.

2. Msg, ADMINO CINCPAC to CINCPAC (Exclusive for Adm Sharp), 100030Z Mar 65.

3. Msgs, CINCPACAF to CINCPAC, 140315Z Mar 65, CINCPAC to CINCPACAF, 162259Z Mar 65.

4. Msgs, AmEmb Vientiane to SECSTATE, 1416, 061215Z Mar 65, CINCPAC to JCS, 050253Z Mar 65.

5. Msg, AmEmb Vientiane to SECSTATE, 1433, Mar 13, 1965.

6. Msg, SECSTATE to AmEmb Vientiane, 780, Mar 14, 1965.

7. Msg, AmEmb Vientiane to SECSTATE, 1470, Mar 16, 1965.

8. *Gravel Pentagon Papers*, III, 337–340.

9. *Ibid.*; msg, JCS to CINCPAC, 200019Z Mar 65.

10. Msg, AmEmb Vientiane to SECSTATE, 1511, 220546Z Mar 65, SECSTATE to AmEmb Vientiane, 809, Mar 20, 1965.

11. Msgs, AmEmb Vientiane to SECSTATE, 271052Z Mar 65, CTF 77 to CINCPACFLT, 271848Z Mar 65.

12. Msg, AmEmb Vientiane to SECSTATE, 271052Z Mar 65; Van Staaveren, *USAF Plans and Operations in Southeast Asia, 1965*, pp 30, 37.

13. Msgs, AmEmb Vientiane to SECSTATE, 301128Z Mar 65, to COMUSMACV, info SECSTATE, 1573, Mar 31, 1965.

14. Msg, CINCPAC to CINCPACFLT, COMUSMACV, 312222Z Mar 65.

15. *Gravel Pentagon Papers*, III, 702–03.

16. *Analysis of Air Operations, Southeast Asia*, 5 vols (Washington, 1965), I, 2–16A through 2–20A, II, 2–13 through 2–15.

17. *Analysis of Air Operations, Southeast Asia*, II, Sec 2, III, Sec 2, IV, Sec 2; msg, AmEmb–AIRA Vientiane to COMUSMACV, 261225Z Apr 65.

18. Memo, Maj Gen Reginald J. Clizbe, Dir/Ops, USAF, to Lt Gen Keith K. Compton, DCS/Plans & Ops, USAF, subj: Interdiction Program in Southeast Asia, Apr 13, 1965; msg, JCS to CINCPAC, 171853Z Apr 65.

19. Msgs, AmEmb Saigon to SECSTATE, 210712Z Apr 65, 18th ADVON, Korat RTAFB, to 2d AD, 170520Z Apr 65, AmEmb Vientiane to COMUSMACV, 1787, May 3, 1965, to COMUSMACV (Exclusive for Westmoreland), 131057Z May 65.

20. *Analysis of Air Operations, Southeast Asia*, V, 1–1; Greenhalgh, "USAF Reconnaissance in SEA, 1960–1975," pp 181–82.

21. *Analysis of Air Operations, Southeast Asia*, V, 1–1; Greenhalgh, "USAF Reconnaissance in SEA, 1960–1975," pp 72–78, 97–106.

22. Msgs, COMUSMACV to AmEmb Vientiane, 181110Z Apr 65, AmEmb–AIRA Vientiane to COMUSMACV, 221138Z Apr 65, AmEmb Vientiane to COMUSMACV, 2d AD, 221159Z Apr 65, AmEmb Bangkok (Martin) to COMUSMACV, 241109Z Apr 65; Helmka and Hale, *USAF Operations from Thailand, 1964–1965*, pp 76–77.

23. Msgs, AIRA Vientiane to CSAF, 2460, 100105Z May 65, AmEmb Vientiane to SECSTATE, 1919, May 25, 1975, 2d AD to AIG 914, 231404Z May 65.

24. Anthony, Chap VIII.

25. Msgs, CTF 77 to COMUSMACV, 111851Z May 65 (retransmitted by COMUSMACV to CINCPAC, 130245Z May 65), AmEmb Vientiane to COMUSMACV, 191140Z May 65.

26. Msgs, AmEmb Vientiane to SECSTATE, 2070, 231046Z, SECSTATE–SECDEF to AmEmb Vientiane, 1113, Jun 25, 1965, COMUSMACV to 2d AD *et al*, 190735Z.

27. Msgs, AmEmb Vientiane to CINCPAC, 130501Z May 65, to COMUSMACV, 170600Z May 65; memo, Gen William H. Blanchard, VCSAF, to SAF, subj: Analysis of Alleged Air Strikes against Friendly Targets and Other Unauthorized Targets in Laos, Apr 13, 1966.

28. Msgs, AIRA Vientiane to JCS, CINCPAC, CINCPACFLT, CINCPACAF, *et al*, 210905Z May 65, AmEmb Vientiane to COMUSMACV, 170600Z May 65.

29. Msgs, AmEmb Vientiane to CINCPAC, 230500Z May 65, to CINCPAC (personal from Sullivan to Sharp), 220941Z May 65; memo, Blanchard to SAF, Apr 13, 1966.

30. Msg, AmEmb Vientiane to CINCPAC, 250440Z May 65.

31. Msgs, AmEmb Vientiane to CINCPAC, 220941Z May 65 and 050400Z Jun 65, AIRA Vientiane to COMUSMACV et

al, 251038Z May 65; hist, CINCPAC, 1965, II, 403–04.

32. Msgs, AmEmb-AIRA Vientiane to CINCPAC, CINCPACAF *et al*, 261135Z May 65, AmEmb Vientiane to CINCPAC, 261137Z May 65.

33. Msgs, SECSTATE to CINCPAC, 070312Z Jun 65 (relays msg, AmEmb Saigon (Taylor) to SECSTATE, Jun 5, 1965), CINCPACAF to CSAF, AFIN 17988 and AFIN 17995, Jun 8, 1965; DIA Bul 112-65, Jun 10, 1965; Talking Paper for CJCS, CNO Evaluation of Effectiveness of Road Interdiction in Southern Laos, Jun 4, 1965.

34. Helmka and Hale, *USAF Operations from Thailand, 1964–1965*, p 26.

35. Msg, CINCPAC to AmEmb Vientiane, COMUSMACV, 260330Z Jun 65.

36. Msgs, CINCPACAF to CINCPAC, Jun 12, 1965, to CINCPAC, COMUSMACV, Jun 24, 1965, COMUSMACV to CINCPAC 300247Z Jun 65, CINCPACAF to CSAF, AFIN 17988 and AFIN 17995, Jun 8, 1965.

37. Msg, AmEmb Vientiane to SECSTATE, 2054, 210445Z Jun 65.

38. Msg, COMUSMACV to CINCPAC, 200247Z Jun 65.

39. Talking Paper for CJCS, Possibility of Barrier across 17th Parallel, Oct 65.

40. Msgs, CINCPAC to COMUSMACV, 302249Z Mar 65, AmEmb Bangkok to CINCPAC, 060408Z Apr 65, AmEmb Saigon to SECSTATE, 3664, 210712Z Apr 65, AmEmb Vientiane to SECSTATE, 231100Z Apr 65.

41. Msgs, AmEmb Bangkok to CINCPAC, 060408Z Apr 65 and 150130Z May 65, COMUSMACV to CINCPAC, 120152Z and 120714Z May 65, JCS to CINCPAC, 252318Z Jun 65; MACV Briefing for Visit of the Secretary of Defense, 16–20 July 1965, Tab 10.

42. Msg, COMUSMACV to CINCPAC, 120152Z May 65.

43. Msg, JCS to CINCPAC, 252318Z Jun 65.

44. Msgs, COMUSMACV to CINCPAC, 050438Z Jul 65, JCS to CINCPAC, 202109Z Sep 65.

Chapter IV

Expansion of the Aerial Anti-infiltration Campaign July–December 1965

1. Westmoreland, *A Soldier Reports*, p 140; msgs, SECSTATE to CINCPAC (Taylor to Sharp and Westmoreland), 111600Z Jul 65, SECDEF to AmEmb Saigon, 081731Z Jul 65.

2. Msg, SECSTATE to CINCPAC, 111600Z Jul 65; MACV briefing bk, Briefing for Visit of SECDEF, Jul 65, Tab 15; MR, MACV, subj: Record of Questions and Answers in Meeting between . . . McNamara and His Party . . . Taylor and His Staff, and COMUSMACV and His Staff, Jul 16, 1965; DIA Bul 136–65, Jul 14, 1965.

3. OSD bklt, SECDEF Saigon Trip, Jul 14, 1965, Tab 10; MR, MACV, subj: Meeting between McNamara and Party and COMUSMACV and Staff, Aug 3, 1965.

4. MACV briefing bk, Jul 65, Tab 3; MR, MACV, Meeting between McNamara and Party and COMUSMACV and Staff, Aug 2, 1965.

5. MACV briefing bk, Jul 65; msg, COMUSMACV to CINCPAC, 150837Z Jul 65.

6. Memo, SECDEF to Pres, Jul 20, 1965 (partial text in *Gravel Pentagon Papers*, IV, 619–622); *Public Papers of the Presidents of the United States: Lyndon B. Johnson, 1965* (Washington, 1966), II, 795; Futrell, Chronology, p 85; hist, 355th TFW, Jul 1–Dec 31, 1965, p 36.

7. *Summary of Air Operations, Southeast Asia*, 109 vols (Hickam AFB, Hawaii, 1965–1973), II, III, IV, VI (see Steel Tiger sections); NMCC OpSums 155-65, Jul 65,

through 175-65, Jul 65, and 178-65, Aug 2, 1965, through 226-65, Sep 28, 1965; msg, CINCPACAF to CINCPAC, 200124Z Aug 65.

8. *Summary of Air Operations, Southeast Asia*, II, 1-3, IV, 2-13, VI, 2-5; msg, COMUSMACV to CINCPAC, CINCPACAF, *et al*, 301112Z Aug 65.

9. Msgs, AmEmb Bangkok to SECSTATE, SECDEF, JCS, 149, 240617Z Jul 65, ADMINO CINCPAC to CINCPAC (Adm Sharp), 212346Z Jul 65, COMUSMACV to CINCPAC, CINCPACAF, et al, 200112Z Aug 65.

10. Msg, DIA to AIG 926 (CINCPAC), 142019Z Jul 65; DIA Intel Bul 161-65, Aug 19, 1965.

11. Msgs, DIA to AIG 7011, 270311Z Sep 65, JCS to CINCPAC, 171412Z Aug 65, DIA to AIG 925, 022045Z Sep 65, CINCPAC to AIG 929, 080239Z Sep 65, CINCPAC to JCS, Sep 65; DIA Intel Buls 168-65, Aug 30, 1965, and 207-65, Sep 65.

12. *Summary of Air Operations, Southeast Asia*, II, 1-1; msgs, CINCPAC to COMUSMACV *et al*, 132219Z Jul 65, COMUSMACV to CINCPAC, 300930Z Sep 65.

13. Msgs, COMUSMACV to AmEmb Vientiane, 240925Z Aug 65, AIRA Vientiane to COMUSMACV, 290830Z Aug 65; hist, SAC, 1965, II, 434.

14. Msg, CINCPAC to COMUSMACV, CINCPACAF, CINCUSARPAC, 132219Z Jul 65.

15. Msgs, CINCPACAF to COMUSMACV, 072120Z Aug 65, 2d AD to Dep Comdr, 2d AD, Udorn RTAFB, 111211Z Aug 65.

16. Msgs, COMUSMACV to AmEmb Vientiane, 240925Z Aug 65, AIRA Vientiane to COMUSMACV, 290830Z Aug 65.

17. Msg, AMEmb-AIRA Vientiane to COMUSMACV, 021115Z Jul 65.

18. Msgs, CINCPACAF to CINCPAC, 102346Z Jul 65, COMUSMACV to AmEmb Vientiane, 151306Z Jul 65, AIRA Vientiane to CINCPAC, 231007Z Jul 65, 2d AD to CINCPAC, 260445Z Jul 65, CINCPAC to COMUSMACV, 050225Z Aug 65, CINCPAC to COMUSMACV, 211929Z Sep 65; intvw, Lt Col James C. Enney and Capt Robert N. Snakenberg, Proj Corona Harvest, with Col Franklin D. Lown, Jr., Dir/Intel, 2d AD (Apr 65-May 66), Nov 4, 1969.

19. Msgs, COMUSMACV to CINCPAC, 170518Z Jul 65, to AmEmb Vientiane, 111112Z Aug 65, AIRA Vientiane to CINCPAC, COMUSMACV, 301131Z Aug 65, AmEmb-AIRA Vientiane to CINCPAC, 010307Z Sep 65, COMUSMACV to AIRA Vientiane, 050421Z Sep 65, COMUSMACV to 2d AD, COMSEVENTHFLT, 071205Z Oct 65; Fact Sheet, MACV, Steel Tiger, Aug 13, 1965, in MACV rprt, Laos Staff Study, Sep 28, 1965.

20. Msg, COMUSMACV to AmEmb Vientiane, 120659Z Sep 65.

21. Msgs, AmEmb-AIRA Vientiane to CINCPAC, 301132Z Aug 65, CINCPACFLT TO CINCPAC, 112222Z Sep 65, AIRA Vientiane to CINCPAC *et al*, 121145Z Sep 65, COMUSMACV to CINCPAC, 150723Z Sep 65, CINCPAC to COMUSMACV *et al*, 162033Z Sep 65.

22. Msgs, JCS to CINCPAC, 030031Z Jul 65, CINCPAC to JCS, 180403Z Aug 65, COMUSMACV to CINCPAC, 170518Z Jul 65, CINCPACFLT to CINCPAC, 280548Z Jul 65, CINCPACAF to CINCPAC, 200124Z Aug 65.

23. Msg, CINCPACAF to CINCPAC, 282346Z Aug 65.

24. Msgs, AmEmb Vientiane to SECSTATE, 142, 091124Z Aug 65, SECSTATE to AmEmb Vientiane, 106, Aug 12, 1965, AmEmb Vientiane to SECSTATE, 161, 131040Z Aug 65.

25. Msgs, COMUSMACV to CINCPAC, 270949Z Jul 65, CINCPAC to JCS, 272102Z Jul 65, CINCPAC to JCS, 312140Z Jul 65, COMUSMACV to CINCPAC, 021105Z Aug 65, SECSTATE to AmEmb Vientiane, 106, Aug 12, 1965, CINCPAC to CJCS (Exclusive Sharp to Wheeler), 240233Z Aug 65.

26. Msgs, AmEmb Vientiane to AmEmb Bangkok, 146, 011100Z Aug 65, 148, 090936Z Sep 65, CINCPAC to COMUSMACTHAI, 300543Z Aug 65; Hearings before the Subcommittee on United States

Security Agreements and Commitments Abroad of the Committee on Foreign Relations, Senate, *United States Security Agreements and Commitments Abroad, Kingdom of Laos*, Statement by Amb William H. Sullivan, Dep Asst SECSTATE for Far Eastern and Pacific Affairs on Oct 21, 1969, 91st Cong, 1st sess (Washington, 1970), p 490; msg, AmEmb Bangkok to SECSTATE, SECDEF, JCS, *et al*, 240617Z Jul 65.

27. Msgs, JCS to CINCPAC, 052143Z Jul 65, 101841Z Jul 65, CINCPAC to COMUSMACTHAI, 300543Z Aug 65, to DIA, 100356Z Sep 65.

28. Msgs, COMUSMACV to CINCPAC, 250636Z Sep 65, to AIRA Vientiane, 2d AD, 210036Z Sep 65, COMUSMACV to 2d AD, COMSEVENTHFLT, 281425Z Sep 65, CINCPAC to COMUSMACV, 052357Z Oct 65.

29. Msgs, AIRA Vientiane to CSAF, DIA, *et al*, 010837Z Oct 65, 011711Z Oct 65; memo, Blanchard to CSAF, Apr 13, 1966.

30. Msgs, AIRA Vientiane to CSAF, DIA, *et al*, 011711Z Oct 65, 011710Z Oct 65.

31. Msgs, CINCPACAF to CINCPAC, 100300Z Oct 65, 2d AD to COMUSMACV, 080005Z Oct 65.

32. Msgs, COMUSMACV to 2d AD, CTG 77.3, 020630Z Oct 65, AIRA Vientiane to CSAF, DIA, *et al*, 011711Z Oct 65, COMUSMACV to CINCPAC, 030715Z Oct 65, CINCPAC to COMUSMACV, CINCPACFLT, 120219Z Oct 65, COMUSMACV to CINCPAC, 050815Z Oct 65.

33. Msg, JCS to CINCPAC, 202109Z Sep 65.

34. Msgs, CINCPAC to COMUSMACV *et al*, 290127Z Sep 65, COMUSMACV to CINCPACAF, 231412Z Dec 65, 2d AD to 6233d CSG, Ubon, 6232d CSG, Udorn, 6252d CSG, Da Nang, *et al*, 140454Z Oct 65.

35. Msgs, COMUSMACV to CINCPAC, 300703Z Sep 65, 240700Z Oct 65.

36. Msgs, COMUSMACV to CINCPAC, 170940Z Oct 65, 240955Z Oct 65; COMUSMACV Briefing, in MACV briefing bk, Nov 28, 1965, I.

37. COMUSMACV Briefing, in MACV briefing bk, Nov 28, 1965, I; msgs, COMUSMACV to CINCPAC, 240755Z Oct 65, AmEmb Vientiane to COMUSMACV, 030521Z Nov 65, COMUSMACV to AmEmb Vientiane, 270250Z Oct 65, COMUSMACV to 2d AD, 310235Z Oct 65, 2d AD to 6233d CSG, Ubon, 6235 CSG, Takhli, *et al*, 310305Z Oct 65.

38. Msgs, COMUSMACV to CINCPAC, 021233Z Nov 65, 041201Z Nov 65, 060855Z Nov 65, COMUSMACV to 2d AD, 041054Z Nov 65, CINCPAC to JCS, 090430Z Nov 65; COMUSMACV Briefing, in MACV briefing bk, Nov 28, 1965, I.

39. DIA Bul 207-65, Oct 27, 1965; msgs, NMCC to MACV, 242145Z Oct 65, COMUSMACV to AmEmb Vientiane (Personal Westmoreland to Sullivan), 280123Z Oct 65.

40. Msgs, CINCPAC to CJCS (Personal Sharp to Wheeler), 032329Z Nov 65, AIRA Vientiane to CINCPAC, 030416Z Nov 65, AmEmb Vientiane to COMUSMACV, 051045Z Nov 65.

41. Msgs, AIRA Vientiane to COMUSMACV, 050146Z Nov 65, AmEmb Vientiane to COMUSMACV, 080600Z Nov 65.

42. Msgs, AmEmb Vientiane to SECSTATE, 140402Z Nov 65, 221100Z Nov 65, AIRA Vientiane to CINCPAC, COMUSMACV, 141005Z Nov 65, AmEmb Vientiane to COMUSMACV, 150520Z Nov 65.

43. *Summary of Air Operations, Southeast Asia*, X, 3–4, XI, 3–4 to 3–5.

44. NMCC OpSum 271-65, Nov 21, 1965.

45. Msgs, AIRA Vientiane to COMUSMACV, 150947Z Nov 65, COMUSMACV to CINCPAC, 200905Z Nov 65, to AmEmb Vientiane, 210135Z Nov 65, AmEmb Vientiane to SECSTATE, 221101Z Nov 65, SECSTATE-SECDEF to AmEmb Vientiane, 330, 250130Z Nov 65, COMUSMACV to USARV, 231140Z Nov 65.

46. Msgs, COMUSMACV to AmEmb Vientiane, 050026Z Nov 65, to DIA, JCS, CINCPAC, 231008Z Nov 65, AmEmb Vientiane to COMUSMACV, 240059Z Nov

65, SECSTATE-SECDEF to CINCPAC (Exclusive for Sharp), 221300Z Nov 65, COMUSMACV to CINCPAC, JCS, SECSTATE, 091149Z Dec 65.

47. Westmoreland, *A Soldier Reports*, p 196; Gen Westmoreland's Historical Briefing, Nov 28, 1965.

48. Msgs, COMUSMACV to AmEmb Vientiane, 290158Z Nov 65, SECSTATE to AmEmb Saigon, Dec 10, 1965; General Westmoreland's Historical Briefing, Nov 28, 1965; *Summary of Air Operations, Southeast Asia*, XIII, 3-1; PACAF Activity Input to Proj Corona Harvest, *Out-Country Strike Operations in Southeast Asia, 1 January 1965-31 March 1968*, Vol I, Sub Task IIc: *Strike Operations in Laos, 5 December 1965-31 October 1967* (Maxwell AFB, Ala., 1970), 35-36 [hereafter cited as *Strike Ops in Laos, 5 Dec 65-31 Oct 67*].

49. General Westmoreland's Historical Briefing, Nov 28, 1965; Porter, *Interdiction in SEA, 1965-1966*, p 43.

50. Msgs, 2d AD to 355th TFW *et al*, 270525Z Nov 65, AIRA Vientiane to COMUSMACV, 261101Z Nov 65, AmEmb Vientiane to COMUSMACV (Sullivan to Westmoreland and Moore), 020715Z Dec 65, COMUSMACV to 2d AD, COMUSSEVENTHFLT, 030030Z Dec 65, 2d AD to PACAF, 050957Z Dec 65; memo, Blanchard to SAF, Apr 13, 1966; Helmka and Hale, *USAF Operations from Thailand, 1964-1965, p 87.*

51. Msgs, 2d AD to CINCPAC, 291200Z Nov 65, to PACAF, 030925Z Dec 65; memo, MACV to SECDEF, subj: Special Needs to Support Project Tiger Hound, Nov 28, 1965; MACV J-2 Briefing, Nov 28, 1965.

52. Msg, COMUSMACV to AmEmb Vientiane, 210135Z Nov 65; General Westmoreland's Historical Briefing, Nov 28, 1965; COMUSMACV Briefing, Steel Tiger, Nov 28, 1965; Porter, *Interdiction in SEA, 1965-1966*, p 43; *Strike Ops in Laos, 5 Dec 65-31 Oct 67*, 40.

53. Msgs, COMUSMACV to 2d AD, 040335Z Dec 65, AmEmb Vientiane to SECSTATE, 610, 040417Z Dec 65; Porter, *Interdiction in SEA, 1965-1966*, p 43.

54. Melvin F. Porter, *Tiger Hound* (Project CHECO, Hickam AFB, Hawaii, 1966), pp 11-13; intvw, Maj Ralph A. Rowley and Mr. Riley Sunderland, Ofc/AF Hist, with Lt Col Roy C. Dalton, Dir/Ops, USAF, Feb 8, 1973.

55. Msgs, AmEmb Vientiane to SECSTATE, 291119Z Nov 65, 300112Z Nov 65, 040417Z Dec 65, SECDEF to JCS, 102012Z Dec 65.

56. *Strike Ops in Laos, 5 Dec 65-31 Oct 67*, 40-41; Porter, *Tiger Hound*, pp 15-16; *Summary of Air Operations, Southeast Asia*, XIII, 3-3, 3-D-47; Working Paper 66/5, 2d AD Tac Eval Cen, Tiger Hound Effectiveness, Mar 14, 1966; msg, CINCPAC to JCS, 150040Z Dec 65.

57. Msg, COMUSMACV to 2d AD, 271200Z Nov 65; Porter, *Tiger Hound*, pp 15-16; Porter, *Interdiction in SEA, 1965-1966*, pp 45-46; *Strike Ops in Laos, 5 Dec 65-31 Oct 67*, 38-40; hist, SAC, Jul-Dec 65, II, 284-85; memo, Rear Adm Francis J. Blouin, USN, Dir/FE Region, Asst SECDEF (ISA) to Mr. John T. McNaughton, Asst SECDEF (ISA), subj: Use of Arc Light Forces, Dec 9, 1965.

58. *New York Daily News*, Dec 14, 1965; *Washington Post*, Dec 28, 1965, p 1; msgs, SECSTATE-SECDEF to AmEmb Vientiane, 393, Dec 14, 1965, AmEmb Vientiane to SECSTATE, 200546Z Dec 65; hist, SAC, Jul-Dec 65, II, 284-85.

59. Porter, *Tiger Hound*, pp 15-19.

60. *Assessment of the Air Effort in Vietnam and Laos (As of 31 January 1966)* (Washington, 1966), Annex B, Tab B [hereafter cited as *Air Effort in Vietnam and Laos]; Summary of Air Operations, Southeast Asia*, XI, 6-4 to 6-6, XIII, 3-6, 3-7, XIV, 3-5, 3-6; memo, Harold Brown, SAF, to CSAF, subj: Improved Intelligence Handling in Southeast Asia, Nov 30, 1965; hists, 363d TRW, Jul-Dec 65, pp 31-41, 6250th CSG, Jul 1-Dec 31, 1965, pp 1-2; USAF Management Summary, Southeast Asia, Jan 7, 1966, p 24.

61. Msgs, AmEmb Vientiane to SECDEF, 230525Z Dec 65, SECSTATE-SECDEF to CINCPAC, 250242Z Dec 65, SECDEF to principal defense agencies,

230013Z Dec 65, COMUSMACV to CINCPAC, JCS (Exclusive from Westmoreland to McConnell and Sharp), 260936Z Dec 65; *PACAF DI Report, Effects of Air Operations, Southeast Asia*, Jan 6, 1966; msg, COMUSMACV to 2d AD, 250807Z Dec 65; Porter, *Tiger Hound*, pp 17–18.

62. *Summary of Air Operations, Southeast Asia*, XIII, 3-A-3.

63. Hist, MACV, 1965, pp 11–15.

64. Hist, MACV, 1965, pp 262, 268–273; M. G. Weiner, J. R. Brom, and R. E. Koon, *Infiltration of Personnel from North Vietnam, 1959–1967* (Santa Monica, RM-5760-PR, 1968), p 45; msg, CINCPAC to JCS (Lt Gen Paul S. Emrick to Vice Adm Lloyd M. Mustin, USN), 110340Z Jan 66.

Chapter V

New Aerial Programs and Tactics against Infiltration January–June 1966

1. *Summary of Air Operations, Southeast Asia*, XV through XX (Sec 3 of each vol); msg, AIRA Vientiane to JCS, DIA, 120919Z Mar 66; Hearings before the Committee on Armed Services, Senate, *Fiscal Year 1974 Authorization for Military Procurement, Research, and Development . . . and Active Duty and Selected Reserve Strengths*, 93d Cong, 1st sess (Washington, 1973), pt 1, p 427 [hereafter cited as *Senate Armed Services Committee Hearings on Fiscal Year 1974 Authorization for Military Procurement*].

2. Warren A. Trest and SSgt Dale E. Hammons, *USAF Operations from Thailand, 1966* (Project CHECO, Hickam AFB, Hawaii, 1967), p 97; msg, CINCPAC TO DIA, 150332Z Mar 66; memo, lst Lt John M. Caffery III, Cricket Intel Sec, to Comdr, 4th ACW, subj: Mission of Cricket AC-47s, Mar 30, 1966.

3. EOTR, Brig Gen John R. Murphy, Dep Comdr, 7th AF/13th AF, Jul 8, 1966; *Air and Ground War in Laos, 1965–1967*, p 10.

4. Hist, 20th TASS, n.d.; Murphy EOTR, Jul 8, 1966; hist, CINCPAC, II, 530.

5. Hists, 20th TASS, n.d., CINCPAC, 1966, II, 530.

6. Msg, COMUSMACV to AmEmb Vientiane, 110647Z Feb 66; *Summary of Air Operations, Southeast Asia*, XVI, 3-6 through 3-9, Tab III-C; hist, CINCPAC, 1966, II, 530; *Effects of Air Operations, Southeast Asia*, pp 16–17.

7. Porter, *Interdiction in SEA, 1965–1966*, pp 52–53.

8. Memo, Det 3, 505th TCG, to AOC Udorn, 2d AD, 305th TCG, subj: Summary of Activities for February 1966, n.d.; *Effects of Air Operations, Southeast Asia*, p 23.

9. Hist, 23d TASS, n.d.; Trest and Hammons, *USAF Operations from Thailand, 1966*, pp 97–98; hist, MACV, 1966, p 392.

10. Msg, Det 1, 2d AD/13th AF, to Dep Comdr, 2d AD/13th AF, 030550Z Mar 66.

11. Memo, Caffery to Comdr, 4th ACW, Mar 30, 1966; *Effects of Air Operations, Southeast Asia*, p 23; *Air and Ground War in Laos, 1965–1967*, pp 18–25.

12. Porter, *Interdiction in SEA, 1965–1966*, pp 56–57; Jack S. Ballard, *Development and Employment of Fixed-Wing Gunships, 1962–1972* [The Air Force in Southeast Asia] (Washington, 1982), p 46.

13. Porter, *Interdiction in SEA, 1965–1966*, p 56.

14. Msgs, CINCPACAF to 2d AD (Gen Harris to Gen Meyers), 042051Z Feb 66, AmEmb Bangkok to SECSTATE, 050709Z Feb 66, AmEmb Bangkok to SECSTATE, 250855Z Jan 66, PACAF to CINCPAC, 072120Z Feb 66.

15. Hist, 23d TASS, n.d.; msg, 13th AF to Dep Comdr, 7th/13th AF, 270725Z May 66.

16. Porter, *Interdiction in SEA, 1965–1966*, p 55.

17. Trest and Hammons, *USAF Operations from Thailand, 1966*, pp 98–99; intvw, Lt Col Robert G. Zimmerman, USAF Oral Hist Prgm, with Col Roland K. McCoskrie, USAF, Ret, Jul 14, 1975, pp 16–18.

18. Memo, Lt Col Richard K. Brown, Dir/Ops, USAF, to Asst for Jt and NSC Matters, subj: Deployment of B-26K Aircraft, Apr 22, 1966; memo, Alain C. Enthoven, Asst SECDEF (Sys Analys), to Asst SECDEF (ISA), subj: Detachment 1, 603d Air Commando Squadron, May 10, 1966; Porter, *Interdiction in SEA, 1965–1966*, p 58; memo, Lt Col Richard K. Brown, Dir/Ops, USAF, to Lt Gen Hewitt T. Wheless, VCSAF, subj: B-26K for Cricket, Apr 22, 1966.

19. Debriefing, Col Charles L. Daniel, HQ 505th TCG, May 5, 1966; Lt Col Ralph A. Rowley, *FAC Operations, 1965–1970*, (Washington, 1975), pp 32–34.

20. Intvw, Proj CHECO officer with Col James P. Hagerstrom, Dir/TACC, Udorn Afld, Mar 17, 1966.

21. *PACAF DI Quarterly Review, Effects of Air Operations, Southeast Asia*, Mar 31, 1966, p 111.

22. Ltr, Lt Col Robert L. Johnson, Comdr, Det 3, 505th TCG, to Dep Comdr, 7th/13th AF, subj: Proposed Strategic Revision for Cricket Operations, May 18, 1966; memo, Maj Gen Charles R. Bond, Jr., Dep Comdr, 7th/13th AF, to 7th AF, subj: Proposed Strategy Revision for Cricket Operations, May 25, 1966; ltr, Brig Gen Rockly Triantafellu, Dir/Intel, 7th AF, to 7th/13th AF, same subj, Jun 20, 1966.

23. Hist, 23d TASS, n.d.; Trest and Hammons, *USAF Operations from Thailand, 1966*, pp 103–04; msg, Westmoreland to Sharp and Wheeler, 160950Z Jul 66.

24. Msg, COMUSMACV to CINCPAC, 020530Z Feb 66; *Summary of Air Operations, Southeast Asia*, XV, 3–4, 3–5, XVI, 3–4, 3–5.

25. Msgs, CINCPACFLT to CINCPAC, 111923Z Jan 66, CINCPACAF to CINCPAC, 131235Z Jan 66; *Summary of Air Operations, Southeast Asia*, XV, 3–4, 3–5, XVI, 3–4, 3–5; intvw, AU Oral Hist Ofc with Col John F. Groom, Tiger Hound TF, May 28, 1966 [hereafter cited as Groom intvw].

26. Msgs, COMUSMACV to CINCPAC, 020430Z Feb 66, 2d AD to COMUSMACV, 090229Z Jan 66.

27. Msgs, COMUSMACV to CINCPAC, 020530Z Feb 66, CINCPAC to JCS (Lt Gen Paul S. Emrick to Vice Adm Lloyd M. Mustin), 110340Z Jan 66, 2d AD to COMUSMACV, 090229Z Jan 66; *Summary of Air Operations, Southeast Asia*, XV, 3–4, 3–5, VI, 3–4, 3–5, XVI, 3–2.

28. Msgs, AmEmb Vientiane to SECSTATE, 311015Z Jan 66, COMUSMACV to CINCPAC, 020530Z Feb 66, 2d AD to CINCPAC, NMCC, *et al*, 311015Z Jan 66; Porter, *Tiger Hound*, p 20; *Summary of Air Operations, Southeast Asia*, XV, 3–5.

29. Groom intvw, May 28, 1966; *Summary of Air Operations, Southeast Asia*, XVII.

30. *Summary of Air Operations, Southeast Asia*, XXII, 2–11.

31. Groom intvw, May 28, 1966.

32. Msg, AmEmb Vientiane to COMUSMACV, 090400Z Apr 66; Porter, *Tiger Hound*, pp 32–34; *Summary of Air Operations, Southeast Asia*, XVI, 2–17.

33. Msg, COMUSMACV to CSAF (Westmoreland to McConnell), 080648Z May 66.

34. Msg, CSAF to COMUSMACV (McConnell to Westmoreland), May 11, 1966.

35. Porter, *Interdiction in SEA, 1965–1966*, pp 59–60.

36. *Ibid.*; Melvin F. Porter, *Night Interdiction in Southeast Asia* (Project CHECO, Hickam AFB, Hawaii, 1966), pp 35–36.

37. Msg, Westmoreland to Sharp and Wheeler, 160950Z Jul 66; Porter, *Interdiction in SEA, 1965–1966*, pp 61–62.

38. Msg, COMUSMACV to CINCPAC, 020710Z Nov 66.

39. Msgs, COMUSMACV to CINCPAC, 091716Z Jan 66, JCS to CINCPAC, 120426Z Jan 66, AmEmb Bangkok to SECSTATE, SECDEF, JCS, 250855Z Jan 66.

40. Msg, COMUSMACV to CINCPAC, 200959Z Feb 66.

41. Msgs, COMUSMACV to CINCPAC, 031149Z Mar 66, COMUSMACV to CINCPAC, 030926Z Mar 66.

42. Msg, COMUSMACV to CINCPAC, 201021Z Mar 66; *Summary of Air Operations, Southeast Asia*, XX, 3–20, 3–21.

43. *Summary of Air Operations, Southeast Asia*, XX, 3–20, 3–21.

44. Msgs, COMUSMACV to CINCPAC, 120826Z, 260915Z, 271100Z May 66; *Summary of Air Operations, Southeast Asia*, XX, 3–20, XXI, Sec 2, XXII, Sec 2; hist, CINCPAC, 1966, II, 534.

45. Msgs, COMUSMACV to CINCPAC, 140105Z Jan 66, CINCPAC to JCS, 222148Z Jan 66.

46. Msgs, CINCPACAF to CINCPAC, 222312Z Jan 66, CINCPAC to JCS, 221448Z Jan 66.

47. Msgs, CINCPACAF to CINCPAC, 222312Z Jan 66, CINCPAC to JCS, 221448Z Jan 66.

48. Msgs, SECSTATE to AmEmb Vientiane, 703, Jan 3, 1966, AmEmb Vientiane to SECSTATE, 061016Z Jan 66.

49. Msg, SECSTATE to AmEmb Vientiane, 465, 140105Z Jan 66.

50. Msg, AmEmb Bangkok (Martin) to SECSTATE, CINCPAC, 250855Z Jan 66.

51. Msgs, COMUSMACV to CINCPAC, 110240Z Feb 66, JCS to CINCPAC, COMUSMACV, 282014Z Feb 66, COMUSMACV to CINCPAC, 241135Z May 66, AmEmb Vientiane to COMUSMACV, 181106Z May 66; memo, Lt Col Robert M. Cowherd, USA, East Asia Sec, Dept of State, to Herbert B. Thompson, East Asia Sec, Dept of State, Oct 4, 1966.

52. Msg, CINCPAC to JCS, 282205Z May 66; JCSM-378-66, Jun 7, 1966; memo, SECDEF to CJCS, subj: Shining Brass, Jun 16, 1966.

53. *Summary of Air Operations, Southeast Asia*, XXIII, 2-21.

54. Msg, AmEmb Bangkok to SECSTATE, 2038, 301105Z Mar 66; *PACAF DI Quarterly Review, Effects of Air Operations, Southeast Asia*, Mar 31, 1966, p 111.

55. Msg, COMUSMACV to 7th AF, 251102Z May 66.

56. Msg, AmEmb Vientiane to COMUSMACV, 040550Z Jun 66.

57. *Ibid.*

58. *Ibid.*

59. Melvin F. Porter, *The Defense of Attopeu*, (Project CHECO, Hickam AFB, Hawaii, 1966), pp 1-2, 5-6; msg, AIRA Savannakhet to 2d AD/13th AF, 031315Z Mar 66.

60. Porter, *The Defense of Attopeu*, pp 1-3; msg, MACV to DIA, CINCPAC, Mar 10, 1966.

61. Porter, *The Defense of Attopeu*, pp 1-3.

62. *Ibid.*; msg, AIRA Savannakhet to 2d AD/13th AF, 031315Z Mar 65.

63. Porter, *The Defense of Attopeu*, pp 1-3; msgs, AIRA Vientiane to 2d AD, COMUSMACV, *et al*, 091600Z Mar 66, AIRA Savannakhet to 2d AD/13th AF, 031315Z Mar 65.

64. Porter, *The Defense of Attopeu*, pp 7-8.

65. *Ibid.*, pp 10-11.

66. *Ibid.*, p 11; msg, AIRA Vientiane to 2d AD, COMUSMACV, *et al*, 091600Z Mar 66.

67. Porter, *The Defense of Attopeu*, pp 11-13; msgs, AAIRA Savannakhet to AIRA Vientiane, 042350Z, 080315Z Mar 66.

68. Msgs, 2d AD to CINCPAC, NMCC, *et al*, 010305Z Jan 66, COMUSMACV to CINCPAC, 170300Z Jan 66, AIRA Vientiane to 2d AD, 210415Z Jan 66, AmEmb Vientiane to COMUSMACV, 2d AD, 141045Z Jan 66, 2d AD to AIRA Vientiane, COMUSMACV, *et al*, 201200Z Jan 66.

69. Msgs, 2d AD to CINCPAC, NMCC, *et al*, 010305Z Jan 66, COMUSMACV to CINCPAC, 170300Z Jan 66, AIRA Vientiane to 2d AD, 210415Z Jan 66, AmEmb Vientiane to COMUSMACV, 2d AD, 141045Z Jan 66, 2d AD to AIRA

Vientiane, COMUSMACV, *et al*, 201200Z Jan 66.

70. Msgs, AmEmb-AIRA Vientiane to COMUSMACV, 2d AD, 141045Z Jan 66, COMUSMACV to CINCPAC, 170300Z Jan 66, AIRA Vientiane to 2d AD, CTF 77, 210415Z Jan 66.

71. Msg, AmEmb Vientiane to COMUSMACV, 2d AD, 141045Z Jan 66.

72. Msg, AmEmb Vientiane to SECSTATE, 866, 080500Z Feb 66; memo, Blanchard to SAF, Apr 13, 1966.

73. Msg, AIRA Vientiane to Dep Comdr, 2d AD/13th AF, 2d AD, 251100Z Feb 66; ltr, U. Alexis Johnson, Dep Under SECSTATE for Political Affairs, to Cyrus R. Vance, Dep SECDEF, Mar 8, 1966.

74. Msgs, AIRA Vientiane to COMUSMACV, 240240Z Feb 66, COMUSMACV to CINCPAC, 251455Z Feb 66, 2d AD, 260418Z Feb 66.

75. Msgs, AIRA Vientiane to COMUSMACV, 240240Z Feb 66, Dep Comdr, 2d AD/13th AF, 251100Z Feb 66.

76. Msg, COMUSMACV to AmEmb Vientiane, 260500Z Feb 66.

77. Msgs, AmEmb Vientiane to COMUSMACV (Personal Chargé d'Affaires Swank to General Westmoreland) 270425Z Feb 66, CINCPAC to CINCPACFLT, COMUSMACV, 282323Z Feb 66.

78. Command Center Chronology Log, PACAF, Jan 20–Mar 7, 1966; memo, Blanchard to SAF, Apr 13, 1966.

79. Memo, U. Alexis Johnson, Dep Under SECSTATE for Political Affairs, to Cyrus R. Vance, Dep SECDEF, Mar 8, 1966.

80. DJSM-360-66, Mar 21, 1966; draft ltr, SECDEF Robert S. McNamara to U. Alexis Johnson, Dep Under SECSTATE for Political Affairs, Mar 31, 1966.

81. Memo, Blanchard to SAF, Apr 13, 1966.

82. Msgs, AmEmb Vientiane to COMUSMACV, 030300Z Jan 66, SECSTATE, 731, 080600Z Jan 66.

83. Msgs, COMUSMACV to CINCPAC, 040900Z Jan 66, DIA, CINCPAC, CINCPACAF, 061050Z Jan 66.

84. Msg, COMUSMACV to CINCPAC, 040900Z Jan 66; hists, SAC, Jul–Dec 66, I, 177–79, 188–89, CINCPAC, 1966, II, 545; EOTR, Brig Gen Rockly Triantafellu, Dir/Intel, 7th AF, Mar 6, 1965–Jul 1, 1966.

85. Msgs, COMUSMACV to CINCPAC, CINCSAC, 061055Z Jan 66, JCS to CINCPAC, CINCSAC, 072329Z Jan 66, 2d AD to 3d AD, 130755Z Jan 66, JCS to CINCSAC, 121638Z Jan 66, SECSTATE to AmEmb Saigon, 1971, Jan 11, 1966; hist, SAC, Jan–Jun 66, I, 117, 124.

86. Msgs, COMUSMACV to CINCPAC, 011615Z Feb 66, CINCPAC, 030926Z Mar 66; hist, SAC, Jan–Jun 66, I, 124.

87. Hist, SAC, 1966, I, 124.

88. Wesley R. C. Melyan, *Arc Light, 1965–1966* (Project CHECO, Hickam AFB, Hawaii, 1967), pp 127–132; General Westmoreland's Historical Briefing, Apr 9, 1966.

89. Melyan, *Arc Light, 1965–1966*, pp 130–31.

90. Msgs, COMUSMACV to CINCPAC, JCS (Westmoreland to Sharp and Wheeler), 171037Z Mar 66, CINCPAC to JCS 271000Z Mar 66; hist, SAC, Jan–Jun 66, I, 125–26.

91. Msgs, AmEmb Vientiane to CINCPAC, 270534Z Mar 66, SECSTATE, AmEmb Saigon, 310420Z Mar 66.

92. Memo, Arthur Sylvester, Asst SECDEF (Public Affairs), to Col Winant Sidle, SEA Br, FE Div, JCS, subj: B-52 Strikes in North Vietnam, Apr 8, 1966; msgs, AmEmb Vientiane to SECDEF, 100600Z Apr 66, JCS to CINCPAC, CINCSAC, 082352Z Apr 66; hists, SAC, 1966, I, 125–26, CINCPAC, 1966, II, 551–52.

93. Hist, SAC, Jan–Jun 66, I, 126.

94. *New York Times*, Apr 13, 1968; memo, Sylvester to Sidle, Apr 8, 1966; msg, AmEmb Vientiane to SECDEF, 100600Z Apr 66.

95. Melyan, *Arc Light, 1965–1966*, pp 137–141; General Westmoreland's Historical Briefing, Apr 26, 1966.

96. Hist, SAC, Jan–Jun 66, I, 128–29; Melyan, *Arc Light, 1965–1966*, p 141.

97. Hist, SAC, Jan–Jun 66, I, 129; msg, COMUSMACV to AIG 7241, AmEmb Vientiane, 290745Z Apr 66.

98. Msg, COMUSMACV to AIG 7241, AmEmb Vientiane, 290745Z Apr 66.

99. Msgs, AmEmb Vientiane to SECSTATE, 1121, Apr 26, 1966, CINCPAC to JCS, COMUSMACV, 300405Z Apr 66.

100. Msgs, NMCC to CINCPAC, 262330Z Apr 66, COMUSMACV to CINCPAC, 280943Z Apr 66.

101. Msg, CINCPAC to JCS, COMUSMACV, CINCSAC, 300405Z Apr 66.

102. Melyan, *Arc Light, 1965–1966*, pp 147–152; msg, SAC to CINCPAC, 071650Z May 66.

103. Msgs, SAC to CINCPAC, 071650Z May 66, ADMINO CINCPAC to CINCPAC, May 11 and 130925Z May 66, AmEmb Vientiane to SECSTATE, 021330Z May 66, AmEmb Vientiane to SECSTATE, 300302Z May 66, CINCPAC to COMUSMACV, CINCSAC, 310116Z May 66; Melyan, *Arc Light, 1965–1966*, pp 145–46.

104. Hists, SAC, Jan–Jun 66, I, 124, MACV, 1966, p 396; Robert M. Kipp, *B-52 Operations in Southeast Asia, 1967: A Summary Narrative* (Hist Study 105, Offutt AFB, Nebr., 1969), pp 63–68.

105. JCSM-523-66, Aug 19, 1966; memo, Col Jack C. Berger, Asst Dir for Jt Matters, Dir/Ops, to CSAF, subj: Employment of Arc Light Forces, Aug 23, 1966; hist, CINCPAC, 1966, II, 551.

106. Memo, HQ MACV through DEPCOMMACV for Air Ops to COMUSMACV, subj: Counter-Infiltration Committee Meeting, Jan 6, 1968; Herman S. Wolk, *USAF Logistic Plans and Policies in Southeast Asia, 1966* (Washington, 1967), Chap II; msg, COMUSMACV to CINCPAC, 221115Z Jun 66.

107. Msg, CINCPAC to JCS, 040037Z Feb 66; hist, CINCPAC, 1966, II, 756–765; Jacob Van Staaveren, *USAF Deployment Planning for Southeast Asia* (Washington, 1967), pp 32–35; Wolk, *USAF Logistic Plans and Policies in Southeast Asia, 1966*, Chap II.

108. Msgs, CINCPAC to JCS, 040037Z Feb 66, 7th AF to PACAF, 080910Z Apr 66; Anthony, Chap IX.

109. Msgs, 7th AF to PACAF (Personal Moore to Harris), 080910Z Apr 66, SECDEF to CINCPAC, 082013Z Apr 66, COMUSMACV to CINCPAC, 080826Z Apr 66; Van Staaveren, *USAF Deployment Planning for Southeast Asia, 1966*, pp 32–35; *Annual Report of the Commander in Chief, Pacific Fleet*, FY 1966, p 95.

110. Hearings before the Committee on Foreign Relations, Senate, *Foreign Assistance*, Statement by SECDEF Robert S. McNamara on April 20, 1966, 89th Cong, 2d sess (Washington, 1966), pp 200–02, 678–79; msg, SECDEF to CINCPAC, 082013Z Apr 66; hist, CINCPAC, 1966, II, 756–761; Van Staaveren, *USAF Deployment Planning for Southeast Asia, 1966*, pp 32–35; memo, SECDEF to CJCS, subj: Air Munitions and Sortie Plan for Southeast Asia, May 24, 1966.

111. Air Staff Notebook, Honolulu Munitions Conference (with 50 backup papers), Jul 66; Van Staaveren, *USAF Deployment Planning for Southeast Asia, 1966*, pp 32–35.

112. Hearings before the Preparedness Investigation Subcommittee of the Committee on Armed Services, Senate, *Tactical Air Operations and Readiness*, Statement by Gen John P. McConnell, CSAF, on May 9, 1966, 89th Cong, 2d sess (Washington, 1966), pp 62–63; hist, CINCPAC, II, 761–63; msg, SECDEF to COMUSMACV, 081853Z Apr 66.

113. Hist, CINCPAC, 1966, pp 761–63.

114. Msgs, NMCC to CINCPAC, 191413Z Jan 66, AmEmb Vientiane to SECSTATE, 140347Z Mar 66.

115. Msgs, AmEmb Vientiane to SECSTATE, 140347Z, SECSTATE-SECDEF to AmEmb Vientiane, 240023Z Mar 66, AmEmb Vientiane to SECSTATE, 251215Z Mar 66, 020631Z Apr 66, COMUSMACV, 060958Z Apr 66.

116. *DIA Intelligence Bulletin*, Feb 9, 14, 17, 1966; *PACAF DI Quarterly Review, Effects of Air Operations, Southeast Asia,*

Mar 31, 1966, p 111; msgs, COMUSMACV to CINCPAC, 171030Z Mar 66, CINCUSARPAC to CINCPAC, 240230Z Mar 66, COMUSMACV to AmEmb Vientiane, 050252Z Apr 66.

117. Msg, AmEmb Vientiane to SECSTATE, 1031, 291050Z Mar 66; *DIA Intelligence Bulletin*, Apr 4, 1966, p S-1; *PACOM Weekly Intelligence Digest* 17-66, May 6, 1966, p 5; *Defense Intelligence Digest*, Jun 66, pp 24-25.

118. Msg, CINCPAC to JCS, 080757Z Jun 66.

119. Weiner, Brom, and Koon, *Infiltration of Personnel from North Vietnam, 1959-1967*, pp 36-37.

120. *PACOM Weekly Intelligence Digest* 17-66, May 6, 1966, pp 5-6.

121. *Ibid.*

122. *PACAF DI Report, Effects of Air Operations, Southeast Asia*, Mar 17, 1977; *Southeast Asia Military Fact Book*, Jul 66, pp 31-39.

123. *Southeast Asia Military Fact Book*, Jul 66, p 137; Reinhardt and Sharkey, *Air Interdiction in Southeast Asia*, pp 11, 20.

124. *Southeast Asia Military Fact Book*, Jul 66, p 137; Reinhardt and Sharkey, *Air Interdiction in Southeast Asia*, pp 11, 20.

125. Michael Horrocks and David A. McCormack, "North Vietnamese Infiltration and Other Activities in Laos and North Vietnam," manuscript (Washington, 1976), pp 11-12; Weiner, Brom, and Koon, *Infiltration of Personnel from North Vietnam, 1959-1967*, p 32.

126. Horrocks and McCormack, "North Vietnamese Infiltration and Other Activities in Laos and North Vietnam," pp 11-12.

127. *Ibid.*

128. *PACAF DI Report, Effects of Air Operations, Southeast Asia*, Jan 6, 1966; *PACAF DI Quarterly Review, Effects of Air Operations, Southeast Asia*, Mar 31, 1966, pp 62-64; Reinhardt and Sharkey, *Air Interdiction in Southeast Asia*, p 12.

129. Murphy EOTR, Jun 15, 1966; msg, JANAF Vientiane to DIA, 140232Z May 66; *Southeast Asia Military Fact Book*, May 66, p C-13; Reinhardt and Sharkey, *Air Interdiction in Southeast Asia*, pp 11-12.

130. *PACAF DI Quarterly Review, Effects of Air Operations, Southeast Asia*, Mar 31, 1966, pp 111-12; msg, 7th AF to COMUSMACV, Jun 7, 1966.

131. Briefing, Brig Gen Joseph A. McChristian, ACS/J-2 Intel, MACV, for Gen Harold K. Johnson, USA, CSA, Apr 22, 1966; msg, COMUSMACV to AmEmb Vientiane, 050252Z Apr 66.

132. Briefing, McChristian for Johnson, Apr 22, 1966.

133. *Ibid.*

Chapter VI

Further Rise in Enemy Strength and Additional Air Programs, July-December 1966

1. *Gravel Pentagon Papers*, IV, 102-112.

2. Msgs, Westmoreland to Sharp and Wheeler, 160950Z Jul 66, CINCPAC to COMUSMACV, 172245Z Jul 66.

3. Msg, Westmoreland to Sharp and Wheeler, 160950Z Jul 66.

4. MR, MACV, subj: General Westmoreland's Concept for the Initiation of Operation Tally-Ho, Jul 19, 1966; General Westmoreland's Historical Briefing, Jul 24, 1966; msg, COMUSMACV to CINCPAC, 191152Z Jul 66; Warren A. Trest, *Operation Tally Ho* (Project CHECO, Hickam AFB, Hawaii, 1966), pp 7-12; Jack Shulimson, "U.S. Marines in Vietnam, 1966: An Expanding War," manuscript (Washington, 1978), pp 84-95.

5. Msg, COMUSMACV to III MAF, 7th AF, 180836Z Jul 66.

6. Trest, *Operation Tally Ho*, pp 7–12; Briefing, Brig Gen Carlos M. Talbott, Dep Dir, TACC, 7th AF, for SECDEF Robert S. McNamara, Oct 9, 1966.

7. Trest, *Operation Tally Ho*, pp 7–11; Briefing, Talbott for McNamara, Oct 9, 1966; msg, COMUSMACV to CINCPAC, 191152Z Jul 66; Porter, *Interdiction in SEA, 1965–1966.*

8. Trest, *Operation Tally Ho*, p 12.

9. *Ibid.*, p 13.

10. *Ibid.*, pp 13–14.

11. *Ibid.*, pp 14–15.

12. Msg, COMUSMACV to CTF 77, 7th AF, 291804Z Sep 66; Trest, *Operation Tally Ho*, pp 15–16, 25.

13. Trest, *Operation Tally Ho*, pp 17–18.

14. *Ibid.*, pp 18–20.

15. *Ibid.*, pp 25–27; msg, CINCPACAF to CSAF, 120341Z Aug 66.

16. Porter, *Interdiction in SEA, 1965–1966*, pp 68–69.

17. *Ibid.*

18. Msg, 7th AF to CINCPAC, 150800Z Nov 66.

19. Porter, *Interdiction in SEA, 1965–1966*, pp 68–69; Gen William W. Momyer, Ret, *Air Power in Three Wars (WW II, Korea, Vietnam)* (Washington, 1978), p 199.

20. Msg, COMUSMACV to CINCPAC, 160518Z Sep 66; hist, MACV, 1967, I, 450; L. E. Paterson, *Air War in the DMZ, January–August 1967* (Project CHECO, Hickam AFB, Hawaii, 1968), p 59.

21. Msg, COMUSMACV to 7th AF, 060817Z Oct 66; hist, MACV, 1967, I, 450; *Summary of Air Operations, Southeast Asia*, XXVII, Sec 2.

22. Hist, MACV, 1967, I, 450; *Summary of Air Operations, Southeast Asia*, XXVII, pp 2–5, 2–6; msgs, AmEmb Vientiane to CINCPAC, Flash 241, 100135Z Oct 66, COMUSMACV to AmEmb Vientiane, 110010Z Oct 66.

23. *Summary of Air Operations, Southeast Asia*, XXIV, XXV, XXVI (Sec 2 of each vol); Briefing Paper on Seventh Air Force/Thirteenth Air Force Operations, for Hearings before the Committee on Armed Services, Senate, Nov 2, 1966.

24. Msg, 7th AF to COMUSMACV, 140858Z Jan 67; *Summary of Air Operations, Southeast Asia*, XXIV, XXV, XXVI (Sec 2 of each vol).

25. Briefing, Talbott for McNamara, Oct 9, 1966.

26. *Ibid.*

27. Msgs, CINCPAC to COMUSMACV, 060340Z Jan 67, 7th AF to COMUSMACV, 140857Z Jan 67.

28. *Summary of Air Operations, Southeast Asia*, XXVI, XXVII, XXVIII, XXIX (Sec 2 of each vol).

29. *Summary of Air Operations, Southeast Asia*, XXVII, 2–5.

30. Msgs, 7th AF to PACAF, CSAF, 141110Z Mar 67, 7th AF to CINCPAC, CSAF, 270838Z Mar 67.

31. Msg, AIRA Vientiane to COMUSMACV, 7th AF TACC, 130710Z Sep 66.

32. General Westmoreland's Historical Briefing, Sep 17, 1966.

33. Msg, COMUSMACV to CINCPAC, 290415Z Sep 66.

34. Msg, AmEmb Vientiane to COMUSMACV, 070543Z Oct 66.

35. Msgs, COMUSMACV to CINCPAC, 120015Z Oct 66, AmEmb Vientiane, 140220Z Oct 66, AmEmb Vientiane to CINCPAC, 141030Z Oct 66, AIRA Vientiane to COMUSMACV, 7th AF TACC, 130710Z Sep 66, CINCPAC to COMUSMACV, CINCPACFLT, 241957Z Oct 66.

36. Msgs, COMUSMACV to AmEmb Vientiane, 140711Z Nov 66, AmEmb Vientiane to COMUSMACV (Swank to Westmoreland), 151130Z Nov 66, 7th AF to all Tiger Hound addressees, 160952Z Nov 66.

37. Msgs, CINCPAC to COMUSMACV, AmEmb Vientiane, 052112Z Nov 66, COMUSMACV to CINCPAC, 130707Z Nov 66, AmEmb Vientiane to COMUSMACV, 151130Z Nov 66.

38. Msgs, COMUSMACV to CINCPAC, 130707Z Nov 66, COMUSMACV to AmEmb Vientiane, 140711Z Nov 66.

39. Msgs, AmEmb Vientiane to CINCPAC, 070305Z Nov 66, COMUSMACV to

AmEmb Vientiane, 140711Z Nov 66, AIRA Vientiane to CINCPAC, 220537Z Nov 66.

40. *Summary of Air Operations, Southeast Asia*, XXIV, 2–6.

41. *Ibid.*; msg, COMUSMACV to CINCPAC, 231207Z Dec 66.

42. *Summary of Air Operations, Southeast Asia*, XXIV, 2–7, 2–10, XXVI, 2–6, 2–10.

43. *Summary of Air Operations, Southeast Asia*, XXIV, 2–17, 2–18, XXV, 2–7 through 2–10.

44. *Summary of Air Operations, Southeast Asia*, XXV, 2–7 through 2–10; msg, AmEmb Vientiane to CINCPAC, 180602Z Aug 66; hist, CINCPAC, 1966, II, 631.

45. *Summary of Air Operations, Southeast Asia*, XXVII, XXVIII, XXIX (Sec 2 of each vol).

46. *Summary of Air Operations, Southeast Asia*, XXV, 2–7 through 2–10.

47. *Ibid.*; *Summary of Air Operations, Southeast Asia*, XXVI, 2–6, 2–7.

48. *Summary of Air Operations, Southeast Asia*, XXV, 2–7 through 2–10, XXVI, 2–6, 2–7, XXVII, 2–5, 2–6.

49. *Summary of Air Operations, Southeast Asia*, XXV, 2–7 through 2–10, XXVI, 2–6, 2–7, XXVII, 2–5, 2–6, XIV, 2–17, XXVIII, 2–10; msg, AmEmb Saigon to SECSTATE, 090230Z Oct 66; memo, Leonard Unger, Dep Asst SECSTATE for Far Eastern Affairs to Under SECSTATE, subj: Expansion of Shining Brass Operations in Laos, Dec 2, 1966.

50. Msgs, COMUSMACV to CINCPAC, 031105Z, 031046Z, 180645Z Dec 66, AmEmb Vientiane to ADMINO CINCPAC, COMUSMACV, 140432Z Dec 66; *Summary of Air Operations, Southeast Asia*, XXIV, 2–9, 2–10.

51. *Summary of Air Operations, Southeast Asia*, XXV, 2–7 through 2–10, XXIX, 2–8, 2–9.

52. *Summary of Air Operations, Southeast Asia*, XV, 2–6, 2–7.

53. *Ibid.*

54. *Summary of Air Operations, Southeast Asia*, XXIX, 2–11; Briefing, Talbott for McNamara, Oct 9, 1966.

55. Memo, Maj Gen Richard W. Whitney, USA, C/S, DIA, to Sp Asst for COIN and Sp Actys, Jt Staff, subj: Evaluation of Shining Brass, Oct 13, 1966; memo, Unger to Under SECSTATE, Dec 2, 1966.

56. Memo, Unger to Under SECSTATE, Dec 2, 1966.

57. Msgs, COMUSMACV to CINCPAC, 051035Z Jul 66, USARPAC to CINCPAC, 180402Z Jul 66; Mission Briefing, 23d TASS, Oct 66.

58. Msgs, COMUSMACV to CINCPAC, 051035Z Jul 66, USARPAC to CINCPAC, 180402Z Jul 66; Mission Briefing, 23d TASS, Oct 66.

59. Mission Briefing, 23d TASS, Oct 66; Seventh Air Force Commander's Operations Command Book, Sep 22, 1966, Sec J; msg, AIRA Vientiane to CINCPACAF, 150643Z Oct 66.

60. Hist, 2d TASS, Oct 1–Dec 31, 1966, p 12.

61. *Summary of Air Operations, Southeast Asia*, XXVII, XXVIII, XXIX (Sec 2 of each vol).

62. Trest and Hammons, *USAF Operations from Thailand, 1966*, pp 104–05; *Summary of Air Operations, Southeast Asia*, XXIV, 2–13.

63. Trest and Hammons, *USAF Operations from Thailand, 1966*, pp 104–05; *Summary of Air Operations, Southeast Asia*, XXIV, 2–13.

64. Trest and Hammons, *USAF Operations from Thailand, 1966*, pp 105–06; msgs, 7th AF to Dep Comdr, 7th/13th AF, *et al*, 181230Z Jul 66, COMUSMACV, 290932Z Jul 66.

65. *Summary of Air Operations, Southeast Asia*, XXIV, 105–06.

66. *Ibid.*, 106–07; *Summary of Air Operations, Southeast Asia*, XXIV, 2–12, 2–13.

67. Trest and Hammons, *USAF Operations from Thailand, 1966*, p 107.

68. *Ibid.*

69. *Ibid.*, pp 107–08; msg, COMUSMACV to AmEmb Vientiane, 140711Z Nov 66.

70. Memo, Lt Col Richard K. Brown, Dir/Ops, USAF, to Asst for Jt and NSC

Matters, subj: Deployment of B-26K Aircraft, Apr 22, 1966; memo, Alain C. Enthoven, Asst SECDEF (Sys Analys), to Asst SECDEF (ISA), subj: Detachment 1, 603d Air Commando Squadron, May 10, 1966; Porter, *Interdiction in SEA, 1965–1966*, p 58; memo, Lt Col Richard K. Brown, Dir/Ops, USAF, to Lt Gen Hewitt T. Wheless, VCSAF, subj: B-26K for Cricket, Apr 22, 1966.

71. Seventh Air Force Commander's Operations Command Book, Sep 22, 1966, Sec J; Anthony, Chap X; Porter, *Interdiction in SEA, 1965–1966*, p 58.

72. Msg, AIRA Vientiane to CINCPACAF, 150643Z Oct 66; Anthony, "A Military History of the War In Northern Laos, 1945–1968," Chap X.

73. Seventh Air Force Commander's Operations Command Book, Sep 22, 1966, Sec J; msgs, AIRA Vientiane to CINCPACAF, 150643Z Oct 66, COMUSMACV, 180750Z Jul 66, 7th AF, 180750Z Jul 66; Anthony, Chap X.

74. *Summary of Air Operations, Southeast Asia*, XXIX, 2–8; *Strike Ops in Laos, 5 Dec 65–31 Oct 67*, 127; Anthony, Chap X.

75. *Summary of Air Operations, Southeast Asia*, XXVIII, 2–16, 2–17; Anthony, Chap X.

76. Msgs, AIRA Vientiane to CINCPAC, 100525Z Aug 66, 140556Z Oct 66.

77. Msgs, AIRA Vientiane to CINCPAC, 100525Z Aug 66, 140556Z Oct 66, COMUSMACV to CINCPAC, 160215Z Jan 67.

78. Msgs, AIRA Vientiane to CINCPAC, 100525Z Aug 66, 140556Z Oct 66, COMUSMACV to CINCPAC, 160215Z Jan 67.

79. MR, Col William A. Knowlton, USA, Secy, MACV Jt Stf, subj: Udorn Conference, Sep 14, 1966; msgs, AmEmb Vientiane to SECSTATE, 301029Z Sep 66, COMUSMACV to CINCPAC, 250238Z Oct 66; *Air and Ground War in Laos, 1965–1967*, pp 15–16.

80. Msgs, COMUSMACV to CINCPAC, 160215Z, 160140Z Jan 67, Dep Comdr, 7th/13th AF, to 7th AF, 041025Z Jun 67; Edward Valentiny, *USAF Operations from Thailand, 1 January 1967–1 July 1968* (Project CHECO, Hickam AFB, Hawaii, 1968), pp 71–72; *Air and Ground War in Laos, 1965–1967*, pp 18–25.

81. Msgs, COMUSMACV to CINCPAC, 160215Z Jan 67, CINCPACAF, 7th/13th AF, 201835Z Jan 67, 7th AF to CINCPACAF, 241028Z Mar 67.

82. Maj Richard A. Durkee, *Combat Skyspot* (Project CHECO, Hickam AFB, Hawaii, 1967), p 6; msgs, AmEmb Vientiane to COMUSMACV, 3000530Z Jun 66, COMUSMACV to CINCPAC, 300131Z Jun 66, CINCPAC to CINCPACAF, 230008Z Aug 66; PACAF Commanders' Conference Summary, Dec 66, pp 71–72.

83. Msg, CINCPAC to CINCPACAF, 230008Z Jul 66; *Effects of Air Operations, Southeast Asia, Aug 31, 1966*, p 110.

84. PACAF Commanders' Conference Summary, Dec 66, p 27; memo, Lt Gen Hewitt T. Wheless, Asst VCSAF, to Deps, Dirs, and Chs of Comparable Ofcs, subj: All-Weather Bomb Task Force, Mar 24, 1967; msg, CINCPACAF to 7th AF/13th AF, 250350Z Mar 67.

85. Msgs, Dep Comdr, 7th/13th AF, to CINCPACAF, CSAF, *et al*, 011530Z Dec 66, CINCPAC to JCS, 242215Z Dec 66, PACAF to 7th/13th AF, 292205Z Dec 66.

86. Capt Donald W. Nelson, *The USAF Helicopter in SEA* (Project CHECO, Hickam AFB, Hawaii, 1968), pp 17–24.

87. Ltr, Maj Gen Charles R. Bond, Jr., Dep Comdr, 7th/13th AF, to CINCPACAF, subj: Rationale for Justifying the Retention of Helicopters to Thailand, Oct 15, 1966; msgs, Dep Comdr, 7th/13th AF, to 7th AF, 240200Z Nov 66, CINCPAC to SECDEF (Sullivan to McNamara), 162131Z Jan 67, CSAF to CINCPACAF, 192315Z Jan 67, AmEmb Vientiane to SECSTATE, 020623Z Jan 67; Warren A. Trest, *Lucky Tiger: Special Air Warfare Operations* (Project CHECO, Hickam AFB, Hawaii, 1967), pp 56–64 [hereafter cited as Trest, *Lucky Tiger SAW Ops.*]

88. Msg, CINCPAC to JCS, 242215Z Dec 66; Trest, *Lucky Tiger SAW Ops*, pp 56–64.

89. Msg, NMCC TO CINCPAC, 190015Z Jan 67; Trest, *Lucky Tiger SAW Ops*, pp 64–67; hist, Dir/Plans, USAF, Jan–Jun 67, p 392.

90. Msg, NMCC TO CINCPAC, 190015Z Jan 67; Trest, *Lucky Tiger SAW Ops*, pp 64–67; hist, Dir/Plans, USAF, Jan–Jun 67, p 392.

91. Msgs, COMUSMACV to CINCPAC, 150431Z Jul 66, Westmoreland to Sharp, Info Wheeler, 160950Z Jul 66; hist, SAC, 1966, I, 177–182.

92. Hist, SAC, 1966, I, 144–45; msg, COMUSMACV to CINCPAC, 130725Z Jul 66.

93. Msgs, COMUSMACV to CINCPAC, 150451Z Jul 66, Westmoreland to Sharp, Info Wheeler, 160950Z Jul 66; JCSM-523-66, Aug 19, 1966.

94. Msg, COMUSMACV to CINCPAC, 150431Z Jul 65.

95. Msg, AmEmb Vientiane to SECSTATE, 191115Z Jul 66.

96. Msg, SECSTATE to AmEmb Vientiane, 182330Z Jul 66.

97. Msg, COMUSMACV to AmEmb Vientiane, 021435Z Aug 66; memo, Berger to CSAF, Aug 23, 1966.

98. Msgs, CINCPACAF to CSAF (Gen Moore to Gen McConnell), 120341Z Aug 66, COMUSMACV to CINCPAC, 120308Z Aug 66.

99. Hist, SAC, Jul–Dec 66, I, 143–152, 192–193; msg, COMUSMACV to CINCPAC, 120308Z Aug 66.

100. Msgs, AmEmb Vientiane to CINCPAC, 220518Z, 250145Z Aug 66.

101. Msg, CINPAC to COMUSMACV, 082128Z Sep 66; Melyan, *Arc Light, 1965–1966*, pp 168–71.

102. Msg, COMUSMACV to CINCPAC, 130420Z Sep 66.

103. Msgs, AmEmb Vientiane to SECSTATE, 150600Z Sep 66; COMUSMACV to CINCPAC (Westmoreland to Sharp, Info Wheeler), 160518Z Sep 66; General Westmoreland's Historical Briefing, Sep 17, 1966.

104. Msgs, AmEmb Vientiane to SECSTATE, 150600Z Sep 66, COMUSMACV to CINCPAC (Westmoreland to Sharp, Info Wheeler), 160518Z Sep 66.

105. General Westmoreland's Historical Briefing, Sep 17, 1966.

106. Msg, SECSTATE to AmEmb Vientiane, 131634Z Sep 66.

107. Msg, AmEmb Vientiane to SECSTATE, 160616Z Sep 66.

108. Msg, CINCPAC to CINCPACAF, CINCPACFLT, COMUSMACV, 270027Z Nov 66.

109. Msg, AmEmb Vientiane to CINCPAC, 160830Z Sep 66; memo, Rear Adm William E. Lemos, USN, Dir/FE Region, Asst SECDEF (ISA), to Mr. John T. McNaughton, Asst SECDEF (ISA), subj: Use of Arc Light Forces, Sep 12, 1966.

110. Hist, SAC, Jul–Dec 66, I, 194; Melyan, *Arc Light, 1965–1966*, pp 178–180.

111. Hist, SAC, Jul–Dec 66, I, 194; Melyan, *Arc Light, 1965–1966*, pp 178–181.

112. Melyan, *Arc Light, 1965–1966*, p 180; msg, Westmoreland to Sharp, 241122Z Sep 66; hist, SAC, Jul–Dec 66, I, 194–96.

113. Msgs, AmEmb Vientiane to CINCPAC, 270348Z Sep 66, CINCPAC, 220941Z Dec 66, SECSTATE to AmEmb Vientiane, 92784, Nov 29, 1966, COMUSMACV to AIG 7041, 161006Z, 161008Z Dec 66, CINCPAC to JCS, 170440Z Dec 66; hist, SAC, July–Dec 66, I, 194–96; USAF Management Summary, Southeast Asia, Feb 10, 1967, p 42.

114. Hist, SAC, Jul–Dec 66, I, 196; *Philadelphia Inquirer*, Dec 13, 1966, p 1.

115. Hist, SAC, Jul–Dec 66, I, 177–182.

116. Van Staaveren, *USAF Plans and Operations in Southeast Asia, 1965*, pp 39, 72.

117. Memo, Col Francis R. Cappelletti, Ch Tgts Div, 7th AF, subj: Effectiveness of B-52 Strikes in Southeast Asia, Jul 25, 1966.

118. *Ibid.*

119. Hist, SAC, Jul–Dec 66, I, 180.

120. Msg, 7th AF to CINCPACAF, 291047Z Aug 66; hist, SAC, Jul–Dec 66, I, 178–181.

121. EOTR, Brig Gen George B. Simler, DCS/Plans and Ops, 7th AF, Nov 10, 1966.

122. Memo, Maj Gen Lucius D. Clay, Jr., Dir/Plans, USAF, to Maj Gen Reginald J. Clizbe, Dir/Ops, USAF, subj: AFXOP Report on B-52 Arc Light Effectiveness, Sep 19, 1966.

123. Memo, Col Fred W. Vetter, Jr., SAF Mil Asst to SAF, subj: Air Staff Actions Resulting from Secretary of Defense's Trip to Southeast Asia, 9–14 October 1966, Oct 18, 1966; Van Staaveren, *USAF Deployment Planning for Southeast Asia, 1966*, p 64.

Chapter VII

Renewed Hope in the Anti-infiltration Effort January–May 1967

1. PACAF Commanders' Conference Summary, Dec 66.

2. *Ibid.*

3. Msgs, CINCPAC to CINCPACAF, 070923Z Dec 66, CINCPACAF, CINCUSARPAC, and CINCPACFLT, 240159Z Dec 66, CINCPACAF to CINCPAC, CSAF, 7th AF, 310243Z Dec 66.

4. Memo, Gen John P. McConnell, CSAF, to SAF, subj: Efforts to Reduce Infiltration, Jan 14, 1967.

5. Msgs, COMUSMACV to CINCPAC, 160215Z Jan 67, CINCPACAF, 7th/13th AF, 201835Z Jan 67; *Air and Ground War in Laos, 1965–1967*, pp 18–25.

6. Msg, AmEmb Saigon to AmEmb Vientiane, 210830Z Jan 67, CINCPAC to JCS, 252126Z Jan 67.

7. Msgs, CINCPAC to JCS, 271755Z Jan 67, COMUSMACV to CINCPAC, 270855Z Jan 67, AmEmb Vientiane to COMUSMACV, 240333Z Jan 67.

8. Msgs, COMUSMACV to 7th AF, 290827Z Jan 67; hist, MACV, 1967, pp 450–51; *Summary of Air Operations, Southeast Asia*, XXX, 2–8, 2–9.

9. *Summary of Air Operations, Southeast Asia*, XXXI, 2–5, 2–6; msg, COMUSMACV to CINCPAC, 060919Z Feb 67.

10. Msgs, COMUSMACV to CINCPAC, 060919Z Feb 67, CINCPAC to JCS, 070333Z Feb 67, COMUSMACV, 092340Z Feb 67.

11. Msgs, COMUSMACV to CINCPAC, 181030Z, 190725Z, and 191015Z Feb 67, 180059Z Apr 67; *Summary of Air Operations, Southeast Asia*, XXXI, 2–5 through 2–9; Briefing, Lt Gen William W. Momyer, Comdr, 7th AF, Presentation to the Secretary of Defense, Jul 8, 1967.

12. Msgs, CINCPAC to JCS, 070333Z Feb 67, COMUSMACV to CINCPAC, 060919Z, 190725Z Feb 67.

13. Briefing, Momyer for McNamara, Jul 8, 1967, pp 2–3.

14. Msg, CINCPAC to JCS, 030325Z Feb 67.

15. Hist, CINCPAC, 1967, II, 592–93; JCSM-59-67, Feb 2, 1967.

16. Msg, CJCS to CINCPAC, 111824Z Feb 67; *New York Times*, Feb 6–14, 1967.

17. Msgs, 7th AF to CINCPACAF, 110905Z Feb 67, COMUSMACV to CINCPAC, 141151Z Feb 67; *Baltimore Sun*, Feb 10, 13, 1967; *New York Times*, Feb 10–14, 1967.

18. Msg, 7th AF to CINCPACAF, 110905Z Feb 67.

19. *Ibid.*; msgs, CINCPACAF to CINCPAC, 120018Z, 140041Z Feb 67.

20. Msgs, COMUSMACV to CINCPAC, 141151Z Feb 67, CINCPAC to DIA, 242256Z Feb 67, CINCPACAF to 7th AF, 120018Z Feb 67.

21. Msgs, Westmoreland to Sharp, Info Wheeler, 141325Z Feb 67, Sharp to Wheeler, 161906Z Feb 67; *Washington Post*, Feb 17, 1967.

22. Msgs, Wheeler to Sharp and Westmoreland, 222246Z Feb 67, Mar 6, 1967.

23. Msg, CINCPAC to JCS, 060208Z Feb 67.

24. Msg, 7th AF to CSAF, SAC, PACAF, 151000Z Feb 67.

25. Msgs, COMUSMACV to AmEmb Vientiane, 150743Z, 200341Z Feb 67; hist, SAC, Jan–Jun 67, II, 159–160.

26. Msg, AmEmb Vientiane to COMUSMACV, 161045Z Feb 67.

27. Msgs, COMUSMACV to AIG 7041, 241455Z Feb 67, AmEmb Vientiane to CINCPAC, 011050Z Mar 67, SECSTATE, 011050Z Mar 67, 7th AF to 355th TFW, 388th TFW, 8th TFW, *et al*, 021230Z Mar 67.

28. Msg, COMUSMACV to CINCPAC, AmEmb Vientiane, 120920Z Mar 67.

29. Msg, AmEmb Vientiane to COMUSMACV, CINCPAC, 120430Z Mar 67.

30. Msgs, CINCPAC to COMUSMACV, 040030Z Apr 67, COMUSMACV to CINCPAC, 111126Z Apr 67.

31. Msgs, CINCPAC to COMUSMACV, 040030Z Apr 67, COMUSMACV to CINCPAC, 111126Z Apr 67.

32. Msg, COMUSMACV to CINCPAC, 111126Z Apr 67; *Air and Ground War in Laos, 1965–1967*, pp 15–25, 34–37; intvw, Lt Col Robert G. Zimmerman, Oral Hist Br, Albert F. Simpson Hist Rsch Cen, with Lt Col Howard K. Hartley, USAF, Ret, Jul 14, 1972, p 32.

33. *Air and Ground War in Laos, 1965–1967*, pp 15–17.

34. Msgs, AAIRA Savannakhet to 7th/13th AF, 160854Z Mar 67, AmEm Vientiane to 7th AF, 210900Z Apr 67; Valentiny, *USAF Operations from Thailand, 1 January 1967–1 July 1968*, pp 20, 60.

35. Msgs, AmEmb Vientiane to 7th AF, 210900Z Apr 67, CINCPAC to COMUSMACV, CINCPACFLT, 220500Z Apr 67; Valentiny, *USAF Operations from Thailand, 1 January 1967–1 July 1968*, p 61.

36. Valentiny, *USAF Operations from Thailand, 1 January 1967–1 July 1968*, pp 61–62; Paterson, *Air War in the DMZ, Jan–Aug 1967*, p 65.

37. Msg, AmEmb Vientiane to SECSTATE, 020801Z May 67; Paterson, *Air War in the DMZ, Jan–Aug 1967*, p 65.

38. Msg, AmEmb Vientiane to SECSTATE, 020801Z May 67; Paterson, *Air War in the DMZ, Jan–Aug 1967*, p 65.

39. Msgs, AmEmb Vientiane to SECSTATE, 220834Z, 300500Z May 67; Paterson, *Air War in the DMZ, Jan–Aug 1967*, pp 65–66; *Summary of Air Operations, Southeast Asia*, XXXIV, 2–7, 2–8.

40. Msg, AmEmb Vientiane to SECSTATE, 200600Z May 67; Valentiny, *USAF Operations from Thailand, 1 January 1967–1 July 1968*, p 63.

41. Msgs, CSAF to TAC, AFSC, OAR, *et al*, 142137Z Feb 67, COMUSMACV to CINCPAC, 020317Z Mar 67; Maj A. W. Thompson, *Strike Control and Reconnaissance (SCAR) in SEA* (Project CHECO, Hickam AFB, Hawaii, 1969), p 80.

42. Warren A. Trest, *Lucky Tiger Combat Operations* (Project CHECO, Hickam AFB, Hawaii, 1967), pp 19–32.

43. Msg, COMUSMACV to CINCPAC, 020317Z Feb 67.

44. Msg, 7th AF to CINCPAC, 140945Z Mar 67; Maj Victor B. Anthony, *Tactics and Techniques of Night Operations, 1961–1970* [The Air Force in Southeast Asia] (Washington, 1973), pp 73–74.

45. Trest, *Lucky Tiger Combat Operations*, pp 42–43.

46. Msgs, CSAF to CINCPACAF (for Gen Vogt from Gen Swancutt), 102101Z Mar 67, COMUSMACV to AmEmb Vientiane, 130524Z Mar 67.

47. Valentiny, *USAF Operations from Thailand, 1 January 1967–1 July 1968*, p 67; msg, 7th AF to CINCPAC, 210405Z Mar 67.

48. Briefing, Momyer for the Secretary of Defense, Jul 8, 1967; msg, 7th AF to all Bravo addressees, 091140Z Mar 67; Valentiny, *USAF Operations from Thailand, 1 January 1967–1 July 1968*, p 7; Jacob Van Staaveren, *History of Task Force Alpha, 1 October 1967–30 Apr 1968* (Nakhon Phanom RTAFB, Thailand, 1969), p 25.

49. Msg, SLTF to 7th AF, 120850Z Oct 67.

50. *Air and Ground War in Laos, 1965–1967*, pp 18–25.

51. Msgs, 7th AF to CINCPACAF, 241028Z Mar 67, 7th/13th AF, 271050Z Mar 67; intvw, Lt Col Richard R. Sexton, Ofc/AF Hist, with Capt Karl L. Polifka, Jr., Dir/Doctrine, Concepts, and Objectives, USAF, Feb 6, 1978.

52. Msg, 7th AF to CINCPACAF, 241028Z Mar 67.

53. Msg, Westmoreland to Sharp, 281327Z May 67.

54. Msg, 7th/13th AF to 7th AF, 041025Z Jun 67; Valentiny, *USAF Operations from Thailand, 1 January 1967–1 July 1968*, pp 71–72.

55. Msgs, CINCPAC TO COMUSMACV, 012012Z Oct 66, COMUSMACV to 7th AF, 021110Z Oct 66, 7th/13th AF to 7th AF, Oct 3, 1966, COMUSMACV to CINCPAC, AmEmb Vientiane, 050715Z Oct 66, 7th AF CTF, 231232Z Oct 66, 7th AF to 7th/13th AF, 240345Z Oct 66, COMUSMACV to AmEmb Vientiane, 241308Z Nov 66.

56. Msgs, 7th AF to CINCPAC, NMCC, PACAF, 111051Z Nov 66, AIRA Vientiane to 7th AF, 140940Z Dec 66, CINCPAC to CINCPACFLT, COMUSMACV, 020106Z Dec 66, AIRA Vientiane to 7th AF, 301033Z Nov 66.

57. Msg, 7th AF to PACAF, 181059Z Jan 67; Valentiny, *USAF Operations from Thailand, 1 January 1967–1 July 1968*, p 49.

58. Msgs, AIRA Vientiane to 7th AF, 7th/13th AF, 131745Z Feb 67, 7th AF to PACAF, 280733Z Feb 67, AmEmb Vientiane to COMUSMACV, 211055Z Feb 67; Valentiny, *USAF Operations from Thailand, 1 January 1967–1 July 1968*, pp 48–51; *Summary of Air Operations, Southeast Asia*, XXXVII, 7-A-5, 7-A-6; hist, CINCPAC, 1967, II, 667.

59. Msg, AmEmb Vientiane to COMUSMACV, 211055Z Feb 67.

60. Msg, 7th AF to PACAF, 280733Z Feb 67; Valentiny, *USAF Operations from Thailand, 1 January 1967–1 July 1968*, p 49.

61. Msg, 7th AF to PACAF, 280733Z Feb 67; Valentiny, *USAF Operations from Thailand, 1 January 1967–1 July 1968*, p 50.

62. Msg, 7th AF to PACAF, 280733Z Feb 67; Valentiny, *USAF Operations from Thailand, 1 January 1967–1 July 1968*, pp 48–49.

63. Msg, AIRA Vientiane to CINCPAC, 050425Z Mar 67.

64. Msgs, 7th AF to COMUSMACV, 130505Z Mar 67, CINCPAC to AmEmb Vientiane, 292126Z Mar 67; Valentiny, *USAF Operations from Thailand, 1 January 1967–1 July 1968*, p 54.

65. Msgs, AmEmb Vientiane to COMUSMACV, 211055Z Feb 67, SECSTATE, 270600Z Feb 67, SECSTATE, A-232, Mar 15, 1967.

66. Msgs, AIRA Vientiane to 7th AF, 021040Z Mar 67, AmEmb Vientiane to SECSTATE, 070701Z Mar 67, COMUSMACV, 211055Z Feb 67; hist, CINCPAC, 1967, II, 663.

67. Msg, 7th AF to CINCPAC, NMCC, PACAF, 010616Z Apr 67; *Summary of Air Operations, Southeast Asia*, XXXVII, 7-A-6.

68. Memo, JCS to Asst SECDEF (ISA), Attn: Mr. Richard C. Steadman, Dep Asst SECDEF for FE Affairs, no subj, Mar 8, 1967.

69. Msgs, 7th AF to COMUSMACV, AIRA Vientiane, 130505Z Mar 67, to all addressees, 100840Z Mar 67.

70. Msgs, 7th AF to all Bravo, Tiger Hound, Steel Tiger Task Force, Nakhon Phanon RTAFB, *et al*, 180112Z Mar 67, CINCPACAF, COMUSMACV, AIRA Vientiane, 230515Z Mar 67.

71. *Summary of Air Operations, Southeast Asia*, XXXVII, 7-A-5, 7-A-6; msg, AmEmb Vientiane to 7th AF, 271100Z Mar 67.

72. Msg, AmEmb Vientiane to 7th AF, 271100Z Mar 67.

73. Msgs, CINCPAC to COMUSMACV, AmEmb Vientiane, CINC-

PACFLT, 052148Z Apr 67, AmEmb Vientiane to CINCPAC, 061213Z Apr 67.

74. Msgs, AmEmb Vientiane to CINCPAC, 061113Z Apr 67, CINCPAC to AmEmb Vientiane, COMUSMACV, 110155Z Apr 67, AIRA Vientiane to CINCPAC, COMUSMACV, 7th AF, 131550Z Apr 67, 7th AF to all Alpha, Bravo, Tiger Hound, Tally Ho, Steel Tiger Task Force, 151050Z Apr 67, COMUSMACV to CINCPAC, 241140Z Apr 67.

75. Msg, AIRA Vientiane to 7th AF, 250900Z Apr 67.

76. Msg, CINCPAC to COMUSMACV, 222222Z Apr 67.

77. Msg, 7th AF to COMUSMACV, 240910Z Apr 67, COMUSMACV to CINCPAC, 241140Z Apr 67.

78. Msg, CINCPAC to COMUSMACV, 260534Z, Apr 67.

79. Msgs, COMUSMACV to CINCPAC, AmEmb Vientiane, 160340Z May 67, AIRA Vientiane to 7th AF, 180240Z May 67, CINCPAC to COMUSMACV, 230412Z May 67, COMUSMACV to 7th AF, 241245Z May 67.

80. Msg, JCS to CINCPAC, 102240Z Aug 66.

81. Msgs, COMUSMACV to CINCPAC, 221257Z Aug 66, CINCPAC to JCS, 242140Z Aug 66, JCS to CNO, CINCPAC, COMUSMACV, 011753Z Sep 66, JCS to CNO, CINCPAC, COMUSMACV, *et al*, 171633Z Sep 66.

82. Msgs, JCS to CNO, CINCPAC, COMUSMACV, 011753Z Sep 66, AmEmb Vientiane to SECSTATE, 040735Z Sep 66.

83. Msgs, JCS to CNO, CINCPAC, COMUSMACV, 011753Z Sep 66, SECSTATE to AmEmb Vientiane, 40012, Sep 2, 1966, 7th AF to CINCPACAF, 111020Z Nov 66.

84. Msgs, CINCPAC to OSD, JCS, CNO, CINCPACAF, 090005Z Sep 66, CINCPACAF, COMUSMACV, 180030Z Sep 66, COMUSMACV to 7th AF, III MAF, 201223Z Sep 66; 7th AF OPlan 463–67, Popeye, Sep 23, 1966.

85. Msgs, 7th AF TF/Tiger Hound to SECSTATE, AmEmb Vientiane, CINCPAC, JCS, ISA, OSD, 090500Z Oct 66.

86. Msg, 7th AF Popeye TF/Tiger Hound to CINCPAC, COMUSMACV, 300850Z Oct 66.

87. Msgs, CSAF to PACAF, 082334Z Nov 66, 7th AF to CINCPACAF, 111020Z Nov 66, 1st MAW to SECDEF, 231041Z Oct 66, CINCPAC to JCS, 092139Z Nov 66; JCSM-746-66, Dec 5, 1966.

88. Memo, SECDEF Robert S. McNamara to SECNAV, subj: Popeye, Mar 18, 1967.

89. *Ibid.*; ltr, Rear Adm William E. Lemos, USN, Dir/FE Region, ISA, to Leonard Unger, Spec Asst Secy, Bureau of East Asian and Pacific Affairs, State Dept, no subj, Mar 22, 1967.

Chapter VIII

Auguries of Eventual Victory Against Infiltration July 1967–January 1968

1. Msg, 7th AF to CINCPAC, 261235Z Jul 67.

2. Seventh Air Force Interdiction and Assessment Plan, Aug 5, 1967.

3. Msg, CINCPAC to JCS, 232131Z Aug 67.

4. Msgs, Westmoreland to Sharp, Apr 16, 1967, CINCPAC to JCS, 042027Z Jun 67, 210345Z Jul 67; memo, MACV, subj: Prairie Fire, 24–26 Jul 67, n.d.

5. Msgs, Westmoreland to Sharp, 161138Z Apr 67, COMUSMACV to CINCPAC, AmEmb Vientiane, 180059Z Apr 67, CINCPAC to JCS, 210345Z Jul 67.

6. Memo, Cyrus R. Vance, Dep SECDEF, to Gen Earle G. Wheeler, USA,

CJCS, subj: Prairie Fire, Phase III, Jun 30, 1967; msgs, AmEmb Vientiane to SECSTATE, 040940Z Jul 67, AmEmb Saigon to SECSTATE, 190925Z Jun 67, JCS to CINCPAC, 151549Z Jul 67; JCSM-461-67, Aug 19, 1967.

7. Msgs, AmEmb Vientiane to SECSTATE, 040940Z Jul 67, SECSTATE to AmEmb Saigon, Bangkok, Vientiane, and CINCPAC, Jul 17, 1967, CINCPAC to JCS, 280330Z Jul 67.

8. JCSM-461-67, Aug 19, 1967.

9. Msgs, Westmoreland to Sharp, Apr 16, 1967, CINCPAC to JCS, 042027Z Jun 67, 210345Z Jul 67; memo, MACV, subj: Prairie Fire, 24–26 Jul 67, n.d.

10. Msgs, Westmoreland to Sullivan, 091318Z Aug 67, Sharp, 191319Z Aug 67, COMUSMACV to CINCPAC, AmEmb Vientiane, 161017Z Sep 67, AmEmb Vientiane to CINCPAC, COMUSMACV, 180615Z Sep 67, CINCPAC to JCS, 200359Z Sep 67, COMUSMACV to CINCPAC, AmEmb Vientiane, 291220Z Sep 67.

11. *Summary of Air Operations, Southeast Asia*, XXXV through XXXVIII (Sec 2 of each vol); msg, 7th AF to CINCPACAF, 090752Z Jul 67.

12. *Summary of Air Operations, Southeast Asia*, XXXV through XXXVIII (Sec 2 of each vol); msg, 7th AF to CINCPACAF, 090752Z Jul 67; hist, 56th AD, Jul 1–Sep 30, 1967.

13. *Summary of Air Operations, Southeast Asia*, XXXV through XXXVIII (Sec 2 of each vol); hist, 56th ACW, Jul 1–Sep 30, 1967.

14. *Summary of Air Operations, Southeast Asia*, XXXV through XXXVIII (Sec 2 of each vol); msg, Westmoreland to Sharp, 221235Z Oct 67; Briefing, Momyer for the Secretary of Defense, Jul 8, 1967.

15. Msgs, Dep Comdr, 7th/13th AF, to 7th AF, 201105Z Jun 67, AmEmb Vientiane to SECSTATE, 291200Z Jun 67, Westmoreland to Sharp, 221235Z Oct 67.

16. Msgs, Dep Comdr, 7th/13th AF, to 7th AF, 201105Z Jun 67, AmEmb Vientiane to SECSTATE, 291200Z Jun 67; *Air and Ground War in Laos, 1965-1967*, pp 15–17.

17. Msgs, Dep Comdr, 7th/13th AF, to 7th AF, 201105Z Jun 67, AmEmb Vientiane to SECSTATE, 291200Z Jun 67.

18. Msgs, COMUSMACV to CINCPAC, CINCSAC, AmEmb Vientiane, 260325Z Jun 67, AmEmb Vientiane to SECSTATE, 061103Z Jul 67; Valentiny, *USAF Operations from Thailand, 1 January 1967–1 July 1968*, pp 60–64; hist, MACV, 1967, I, 454–55.

19. Paterson, *Air War in the DMZ, Jan–Aug 1967*, pp 62–63; msgs, Westmoreland to Sullivan, 101108Z Jun 67, COMUSMACV to 7th AF, 150010Z Jun 67; hist, SAC, Jul–Dec 67, I, 160.

20. Msgs, COMUSMACV to CINCPAC, AmEmb Vientiane, 310025Z Jul 67, CINCPAC to AmEmb Vientiane, 022253Z Aug 67.

21. Msgs, CINCPAC to AmEmb Vientiane, 022253Z Aug 67, AmEmb Vientiane to CINCPAC, 031130Z Aug 67, COMUSMACV to AmEmb Vientiane 100110Z Aug 67.

22. Msgs, AmEmb Vientiane to COMUSMACV, 101135Z Aug 67, COMUSMACV to AmEmb Vientiane, 121240Z Aug 67, AmEmb Vientiane to COMUSMACV, 130532Z Aug 67.

23. Paterson, *Air War in the DMZ, Jan–Aug 1967*, p 63; hist, SAC, Jul–Dec 67, p 160.

24. Msg, COMUSMACV to CINCPAC, 251100Z Aug 67; memo, MACV, subj: Prairie Fire, 24–26 July 67, n.d.

25. Msg, COMUSMACV to CINCPAC, 281207Z Oct 67.

26. *Ibid.*

27. Msgs, COMUSMACV to CINCPAC, 090050Z Jun 67, AmEmb Vientiane to COMUSMACV, 190530Z Jun 67.

28. *Strike Ops in Laos, 5 Dec 65–31 Oct 67*, 52; msg, COMUSMACV to CINCPAC, 090050Z Jun 67.

29. Msgs, CINCPAC to JCS, 090010Z May 67, AmEmb Vientiane to SECSTATE, 020700Z Jun 67, CINCPAC, 190530Z Jun 67.

30. 7th AF OPlan 500-67, Commando Lava II, Jun 14, 1967; msg, COMUSMACV to CINCPAC, 090050Z Jun 67.

31. Msg, 7th AF to COMUSMACV, 250220Z Jul 67; hist, 315th AD, Jul 1–Dec 31, 1967.

32. Msg, 7th AF to COMUSMACV, 250220Z Jul 67; hist, 315th AD, Jul 1–Dec 31, 1967.

33. Msgs, 7th AF to COMUSMACV, 310653Z Jul 67, 040345Z Aug 67; hist, 315th AD, Jul 1–Dec 31, 1967.

34. Msgs, 7th AF to CINCPACAF, 030440Z Sep 67, COMUSMACV to CINCPAC, 211134Z Oct 67; Final Report, 7th AF, Operation Evaluation of Commando Lava II, Sep 26, 1967.

35. Msg, AmEmb Vientiane to SECSTATE, 220559Z; 7th AF OpOrd 433-68, Sep 15, 1967.

36. Msg, AmEmb Vientiane to SECSTATE, 140406Z Aug 67; *Summary of Air Operations, Southeast Asia*, XXXIX through XLIII (Sec 2 of each vol); *Senate Armed Services Committee Hearings on Fiscal Year 1974 Authorization for Military Procurement*, pt 1, p 429.

37. *Summary of Air Operations, Southeast Asia*, XXXIX through XLIII (Sec 2 of each vol); rprt, Dir/Ops, USAF, Analysis of Enemy Vehicles: Detection and Destruction in Laos, Dec 7, 1967; hist, 56th ACW, Oct 1–Dec 31, 1967.

38. Ltr, Victor K. Heyman, Dir/SEA Prgms Div, Asst SECDEF (Sys Analys), to Eugene M. Locke, Deputy Ambassador to South Vietnam, Oct 2, 1967, with atch, rprt, Analysis of the Use of Propeller vs Jet Aircraft in Laos, n.d.

39. Rowley, *FAC Operations, 1965–1970*, pp 173–180; Lee Bonetti, *et al, The War in Vietnam, July–December 1967* (Project CHECO, Hickam AFB, Hawaii, 1968), p 19; *Summary of Air Operations, Southeast Asia*, XXXIX through XLIII (Sec 2 of each vol).

40. *Summary of Air Operations, Southeast Asia*, XL, Sec 2.

41. Ltr, Heyman to Locke, Oct 2, 1967.

42. *Ibid.*; Valentiny, *USAF Operations from Thailand, 1 January 1967–1 July 1968*, pp 78–82.

43. Valentiny, *USAF Operations from Thailand, 1 January 1967–1 July 1968*, pp 78–82.

44. Ltr, Heyman to Locke, Oct 2, 1967; Valentiny, *USAF Operations from Thailand, 1 January 1967–1 July 1968*, pp 78–82.

45. *Summary of Air Operations, Southeast Asia*, XL, 2–8.

46. Msg, AmEmb Vientiane to SECSTATE, 221013Z Dec 67.

47. Msg, JANAF Attache's Vientiane to DIA, SECSTATE, 301140Z Dec 67.

48. *Summary of Air Operations, Southeast Asia*, XL, XLI (Sec 2 of each vol); msg, Sullivan to Wheeler, 011829Z Dec 67; hist, CINCPAC, 1968, III, 191; TIA, Dir/Ops, USAF, Feb 68, pp 3-33.

49. MR, Gen William W. Momyer, Comdr, 7th AF, subj: SIC Meeting, Dec 3, 1967.

50. *7th AF Weekly Intelligence Summary*, Dec 16, 1967, pp 24–25.

51. Msg, AmEmb Vientiane to SECSTATE, 271051Z Nov 67.

52. Msgs, Sullivan to Wheeler, 010820Z Dec 67, Sharp to Wheeler, 022225Z Dec 67; see note 49.

53. Hearings before the Preparedness Investigating Subcommittee of the Committee on Armed Services, Senate, *Air War Against North Vietnam*, 90th Cong, 1st sess (Washington, 1967), pt 4, p 280.

54. Jacob Van Staaveren, *The Search for Military Alternatives*, [The Air Force in Vietnam] (Washington, 1969), pp 60–61.

55. Msgs, AmEmb Bangkok to COMUSMACV, CINCSAC, 130617Z Apr 67, CINCPAC to JCS, 062316Z May 67; hists, SAC, Jan–Jun 67, p 131, CINCPAC, 1967, II, 688–89; *Washington Star*, Mar 23, 1967.

56. Van Staaveren, *The Search for Military Alternatives, 1967*, p 8; hist, SAC, Jan–Jun 68, I, 160.

57. Msgs, CINCPAC to JCS, 062316Z May 67, COMUSMACV to CINCPAC, 280440Z Aug 67; hists, CINCPAC, 1967, II, 688–694, SAC, Jan–Jun 67, I, 166–69.

58. Msgs, CINCPAC to JCS, 062316Z May 67, SECSTATE to AmEmb Bangkok, AmEmb Vientiane, May 6, 1967, JCS to

CINCPAC, 051956Z Jul 67, SAC to JCS, 111610Z Jul 67; Maj James B. Pralle, *Arc Light, June 1967–December 1968* (Project CHECO, Hickam AFB, Hawaii, 1969), pp 1–3.

59. Msgs, SECSTATE to AmEmb Bangkok, AmEmb Vientiane, Jun 9, 1967, AmEmb Vientiane to SECSTATE, 100651Z Jun 67, AmEmb Bangkok to SECSTATE, 110552Z Jun 67.

60. Msgs, CINCPAC to AmEmb Vientiane, AmEmb Bangkok, 122001Z Aug 67, AmEmb Vientiane to SECSTATE, 140406Z Aug 67, AmEmb Bangkok to SECSTATE, 150618Z Aug 67; hist, SAC, Jul–Dec 67, I, 164.

61. Msgs, AmEmb Vientiane to SECSTATE, 140406Z Aug 67, JCS to CINCPAC, 062204Z Sep 67.

62. Msgs, COMUSMACV to CINCPAC, 280440Z Aug 67, CINCPAC to AmEmb Vientiane, 050035Z Oct 67.

63. Hist, SAC, Jul–Dec 67, I, 138–144.

64. Msgs, CSAF to SAC, 101930Z Oct 67, JCS to CINCPAC, 171811Z Oct 67; hist, SAC, Jul–Dec 67, pp 159–167.

65. Msgs, JCS to CINCPAC, 171811Z Oct 67, COMUSMACV to CINCPAC, 011125Z Nov 67, SECSTATE to AmEmb Bangkok, 131855Z Nov 67, CINCPAC to JCS, 130155Z Nov 67; hist, SAC, Jul–Dec 67, I, 138–148.

66. Memo, Fred Green, Bureau of Intel and Rsch, State Department, to Philip C. Habib, Ofc of East Asian and Pacific Affairs, State Department, subj: Evaluation of B-52 Effectiveness, Aug 4, 1967; Martin F. Herz, Ofc of East Asian and Pacific Affairs, State Department, to Philip C. Habib, subj: Arc Light Overflights of Laos, Nov 20, 1967.

67. Msgs, JCS to CINCPAC, 171811Z Oct 67, SECSTATE-SECDEF to AmEmb Bangkok, 131855Z Nov 67, AmEmb Bangkok to SECSTATE, 271135Z Nov 67; hists, MACV, 1968, I, 407–08, CINCPAC, 1967, II, 699.

68. Hist, SAC, Jul–Dec 67, I, 144–48.

69. Msgs, Sullivan to Wheeler, 010820Z Dec 67, SECSTATE to AmEmb Vientiane, 292347Z Nov 67.

70. Msgs, AmEmb Vientiane to SECSTATE, 301325Z Nov 67, 020630Z Dec 67, SECSTATE-SECDEF to AmEmb Vientiane, 012303Z Dec 67.

71. Msg, AmEmb Vientiane to SECSTATE, 020630Z Dec 67.

72. *Ibid.*

73. Msg, AIRA Vientiane to MACV, 020950Z Dec 67.

74. Msgs, CINCSAC to CINCPAC, 030145Z Dec 67, 072140Z Dec 67, CINCPAC to AmEmb Vientiane, 080511Z Dec 67, CINCSAC, 080511Z Dec 67, 090218Z Dec 67.

75. Msgs, AmEmb Vientiane to CINCPAC, 110652Z Dec 67, 121130Z Dec 67, SECSTATE, 6374, Dec 67, SAC to CINCPAC, 120015Z Dec 67, CINCPAC to AmEmb Bangkok, 141038Z Dec 67; hist, SAC, Jul–Dec 67, I, 166–167.

76. Msg, AmEmb Bangkok to CINCPAC, 280909Z Dec 67; hist, SAC, Jul–Dec 67, I, 167.

Chapter IX

Inauguration of the Sensor-Oriented Anti-Infiltration System (IGLOO WHITE)

1. David Halberstam, *The Best and the Brightest* (New York, 1969), p 164; intvw, Jacob Van Staaveren, Historian, Ofc/AF Hist, with Vincent H. Demma, Historian, USACMH, Dec 20, 1977.

2. *Gravel Pentagon Papers*, II, 86.

3. Ltr, Maj Gen Richard G. Stilwell, USA, Asst C/S, MACV, to Lt Gen Harold K. Johnson, USA, DCS/Mil Ops, USA, May 12, 1964; Sturdevant, *The Border Control Problem in South Vietnam*, pp 15–21.

4. Memo, Col Charles W. Abbott, Asst

Dep Dir of Plans for War Plans, Dir/Plans, USAF, to Asst Dir of Plans for Jt and NSC Matters, Dir/Plans, USAF, Counter-Infiltration Barrier, Mar 25, 1966; *Gravel Pentagon Papers*, III, 112–13.

5. Memo, Abbott to Asst Dep Dir of Plans for Jt and NSC Matters, Dir/Plans, USAF, Mar 25, 1966.

6. *Ibid.*

7. Memo, Abbott to Asst Dep Dir of Plans for Jt and NSC Matters, Dir/Plans, USAF, Mar 25, 1966; msgs, CINCPACAF to CINCPAC, 050356Z Apr 66, CINCPACFLT to CINCPAC, 050059Z Apr 66, CINCUSARPAC to CINCPAC, 042346Z Apr 66, COMUSMACV to CINCPAC, 041203Z Apr 66, CINCPAC to JCS, 071235Z Apr 66.

8. CM-1353-66, Counter-Infiltration Barrier, Apr 18, 1966.

9. *Gravel Pentagon Papers*, IV, 113–14; msg, CSAF to PACAF, SAC, AFOUT 87716, May 6, 1966.

10. *Gravel Pentagon Papers*, IV, 115.

11. *Ibid.*; memo, Asst SECDEF (IDA) to SA, SAF, SN, *et al*, subj: Summer Study Group, Jul 15, 1966.

12. *The Effects of U.S. Bombing on North Vietnam's Ability to Support Military Operations in South Vietnam and Laos: Retrospect and Prospect* (Washington, 1966).

13. Memo, Seymour J. Deitchman, Albert G. Hill, Carl Kaysen, and George B. Kistiakowsky, *et al*, to SECDEF, subj: JASON Summer Study, Aug 30, 1966.

14. Memo, SECDEF to CJCS, Sep 2, 1966; msgs, JCS to CINCPAC, 072155Z Sep 66, CINCPAC, 082307Z Sep 66.

15. Msgs, COMUSMACV to CINCPAC, 100432Z Sep 66, CINCPAC to JCS, 130705Z Sep 66, CINCPACAF to CINCPAC, 110029Z Sep 66, CINCUSARPAC to CINCPAC, 102220Z Sep 66; Maj Roger C. Laudati, USA, *A Summary of the Infiltration-Interdiction System for Southeast Asia* (Fort Shafter, Hawaii, 1968), p 9 [hereafter cited as *USARPAC Summary of the Infiltration-Interdiction System*].

16. *USARPAC Summary of the Infiltration- Interdiction System*, p 9; msg, CINCUSARPAC to CINCPAC, 102220Z Sep 66.

17. CM-1732-66, Sep 9, 1966.

18. *Ibid.*

19. Memo, SECDEF Robert S. McNamara to Lt Gen Alfred D. Starbird, USA, Dir, JTF 728, subj: Infiltration Interdiction System for Vietnam, Sep 15, 1966.

20. JCSM-593-66, Sep 17, 1966.

21. Memo, SAF Harold Brown to VCSAF Gen Bruce K. Holloway, Sep 9, 1966; memo, VCSAF to SAF, subj: Infiltration Barrier System for Vietnam, Sep 26, 1966.

22. Memo, Lt Gen Hewitt T. Wheless, Asst VCSAF, to Deps, Dirs, and Chs of Comparable Ofcs, subj: Combat Beaver, Sep 21, 1966; Herman S. Wolk, *USAF Plans and Policies: Logistics and Base Construction in Southeast Asia, 1967* (Washington, 1968), pp 50–51 [hereafter cited as Wolk, *Logistics and Base Construction in Southeast Asia*, 1967].

23. Rprt, Lt Gen Alfred D. Starbird, USA, Dir, JTF 728, to SECDEF Robert S. McNamara, Report to SECDEF on Schedules and Requirements for the Project JTF 728, Sep 29, 1966; memo, SECDEF Robert S. McNamara to Alain C. Enthoven, Asst SECDEF (Sys Analys), subj: Personnel Authorization for JTF 728, Sep 30, 1966; memo, Lt Gen Alfred D. Starbird, USA, Dir, JTF 728, to SA and SAF, subj: Action for JTF 728 Personnel, n.d.

24. Hist, MACV, 1966, III, 1073.

25. CM-1845-66, Oct 21, 1966; msg, DCPG to CINCPAC, 192045Z Oct 66.

26. Hist, MACV, 1966, III, 1073–75.

27. Memo, SECDEF Robert S. McNamara to President Lyndon B. Johnson, subj: Anti-Infiltration Barrier between North and South Vietnam, Nov 14, 1966.

28. Msg, Wheless to Deps, Dirs, and Chs of Comparable Ofcs, Sep 21, 1966; CSAFM-D-25-66, Nov 23, 1966; hist, SAC, Jan-Jun 67, I, 164–65.

29. Msg, JCS to CINCPAC, 192005Z Nov 66; Wolk, *Logistics and Base Construction in Southeast Asia*, pp 51–52.

30. Memo, Col James G. Gallagher, Dep Dir of Plans for War Plans, Dir/Plans, USAF, to Asst Dir of Plans for Jt and NSC

Matters, Dir/Plans, USAF, subj: Program Definition Plan, JTF 728, Nov 21, 1966; JCSM-740-66, Dec 1, 1966; memo, SAF to SECDEF, Dec 13, 1966.

31. JCSM-740-66, Dec 1, 1966.

32. Memo, Lt Gen Alfred D. Starbird, USA, Dir, JTF 728, to SECDEF Robert S. McNamara, subj: Plans for Increased Anti-Infiltration Capability in Southeast Asia, Dec 7, 1966; hist, MACV, 1967, III, 1076; Wolk, *Logistics and Base Construction in Southeast Asia, 1967*, pp 52–53; msg, DCPG to CINCPAC, 151725Z Jan 67; DCPG Program Plan, Oct 25, 1967.

33. DCPG Program Plan, Oct 25, 1967.

34. Wolk, *Logistics and Base Construction in Southeast Asia, 1967*, pp 52–53.

35. Michael Horrocks, "The Sensor War, 1966–1971," manuscript (Washington, 1977), p 7.

36. *Ibid.*, p 18.

37. *Ibid.*, p 18.

38. Van Staaveren, *History of Task Force Alpha, 1 October 1967–30 April 1968*, p 6; Wolk, *Logistics and Base Construction in Southeast Asia, 1967*, pp 52–53.

39. Wolk, *Logistics and Base Construction in Southeast Asia, 1967*, p 54; hist, MACV, 1967, III, 1078–79.

40. Wolk, *Logistics and Base Construction in Southeast Asia, 1967*, p 54; hist, MACV, 1967, III, 1078–79.

41. Msg, Westmoreland to CINCPAC, subj: MACV Practice Nine Air-Supported Anti-Infiltration Plan, Mar 11, 1967; JCSM-204-67, Apr 17, 1967.

42. JCSM-204-67, Apr 17, 1967; memos, SECDEF to CJCS, subj: Practice Nine Air-Supported Anti-Infiltration Plan, Apr 22, 1967, subj: Practice Nine Forces, May 8, 1967; msgs, DCPG to SECDEF, SAF, JCS, 052015Z May 67, SECSTATE to AmEmb Saigon, 250124Z May 67; Van Staaveren, *History of Task Force Alpha, 1 October 1967–30 April 1968*, p 9.

43. JCSM-204-67, Apr 17, 1967; *USARPAC Summary of the Infiltration-Interdiction System*, p 17; Van Staaveren, *History of Task Force Alpha, 1 October 1967–30 April 1968*, p 9.

44. Hists, MACV, 1967, III, 1087, MACV, 1968, II, 911–19, CINCPAC, 1968, III, 6–16.

45. Van Staaveren, *History of Task Force Alpha, 1 October 1967–30 April 1968*, pp 11–12, 14, 21.

46. *Ibid.*, pp 11–12, 19.

47. *Ibid.*, pp 4–6, 17.

48. Intvw, Capt Ralph I. Stearns, PACAF, with Col William A. Breeze, former Chief of Intelligence and Chief of Technical Intelligence, Task Force Alpha, Jan 15, 1970; Van Staaveren, *History of Task Force Alpha, 1 October 1967–30 April 1968*, pp 14, 31.

49. Van Staaveren, *History of Task Force Alpha, 1 October 1967–30 April 1968*, pp 7, 14.

50. 7th AF OPlan 481-67, Aug 10, 1967.

51. Memo, Col Bryan M. Shotts, Ch/Strat Div, Dir/Ops, USAF, to CSAF, subj: Muscle Shoals IOC Dates, Sep 17, 1967; memo, Gen John P. McConnell, CSAF, to CJCS, subj: Muscle Shoals IOC Dates, Sep 22, 1967; memo, SECDEF to CJCS, subj: Deployment of Air-Supported Anti-Infiltration Operations, Sep 22, 1967.

52. Van Staaveren, *History of Task Force Alpha, 1 October 1967–30 April 1968*, pp 14, 21; msg, AmEmb Bangkok to SECSTATE, 140710Z Aug 67; memo, Col Edward H. Marxen, Jr., Dir/Plans, USAF, to CSAF, subj: Dye Marker Issue, Aug 22, 1967; CM-2601-67, Dye Marker, Aug 21, 1967.

53. CM-2601-67, Dye Marker, Aug 21, 1967; MR, Gen William W. Momyer, subj: Meeting with Generals Starbird and Lavelle, Dec 12, 1967; Van Staaveren, *History of Task Force Alpha, 1 October 1967–30 April 1968*, pp 22–23.

54. CM-2601-67, Dye Marker, Aug 21, 1967.

55. Briefing for SEACOORD Working Group (Muscle Shoals), Nov 21, 1967; Van Staaveren, *History of Task Force Alpha, 1 October 1967–30 April 1968*, p 31.

56. Msg, CINCPACAF to AIG 592, 170716Z Oct 67; Van Staaveren, *History of*

Task Force Alpha, 1 October 1967–30 April 1968, pp 34–35.

57. Msg, CINCPACAF to AIG 592, 170716Z Oct 67; Van Staaveren, *History of Task Force Alpha, 1 October 1967–30 April 1968*, pp 34–35.

58. Msg, COMUSMACV to AmEmb Bangkok, 131231Z Oct 67; Van Staaveren, *History of Task Force Alpha, 1 October 1967–30 April 1968*, pp 33–34.

59. Van Staaveren, *History of Task Force Alpha, 1 October 1967–30 April 1968*, p 34.

60. Msg, AmEmb Bangkok to SECSTATE, 100729Z Nov 67; Breeze intvw, Jan 15, 1970.

61. Van Staaveren, *History of Task Force Alpha, 1 October 1967–30 April 1968*, pp 35–36.

62. *Ibid.*, pp 36–37, 41.

63. *Ibid.*, pp 37, 40.

64. *Ibid.*, pp 37–38, 41.

65. *Ibid.*, pp 39–42.

66. Msg, SECDEF to CJCS, subj: Initiation of the Dump Truck Operations in Muscle Shoals, Dec 21, 1967; Van Staaveren, *History of Task Force Alpha, 1 October 1967–30 April 1968*, pp 39–40.

67. Van Staaveren, *History of Task Force Alpha, 1 October 1967–30 April 1968*, p 41.

68. *Ibid.*, pp 40, 42.

69. *Ibid.*, p 53.

70. *Ibid.*, pp 40–41.

71. Memo, SECDEF to CJCS, subj: Date of Initiation of Dump Truck, Dec 21, 1967; Van Staaveren, *History of Task Force Alpha, 1 October 1967–30 April 1968*, p 47.

72. Van Staaveren, *History of Task Force Alpha, 1 October 1967–30 April 1968*, p 48.

73. *Ibid.*, pp 48–49.

Chapter X

Prelude to Khe Sanh and the Tet Offensive

1. Msgs, Sharp to Westmoreland, 252341Z Sep 67, Westmoreland to Gen Harold K. Johnson, USA, Actg CJCS, 270438Z Sep 67; Sharp and Westmoreland, *Report on the War in Vietnam (As of 30 June 1968)*, pp 138–39, 156–58.

2. Westmoreland, *A Soldier Reports*, pp 315–16; Don Oberdorfer, *Tet!* (New York, 1971), Chap III.

3. Hearings before the Preparedness Investigating Subcommittee of the Committee on Armed Services, Senate, *The War Against North Vietnam*, 90th Cong, 1st sess (Washington, 1967), pts 1–5.

4. Msgs, AmEmb Saigon to SECSTATE, Nov 7, 1967, Wheeler to Sharp, 081558Z Nov 67; Johnson, *The Vantage Point*, pp 371–78; Westmoreland, *A Soldier Reports*, p 315; Oberdorfer, *Tet!*, Chap III.

5. Transcript of Westmoreland's address before the Washington Press Club and questions and answers, Nov 21, 1967; transcript of *Meet the Press* (radio–TV broadcast), Nov 19, 1967; Johnson, *The Vantage Point*, p 376; Van Staaveren, *The Search for Military Alternatives, 1967*, pp 55–59.

6. *Summary of Air Operations, Southeast Asia*, XLI, 2-A-3; *Senate Armed Services Committee Hearings on Fiscal Year 1974 Authorization for Military Procurement*, pt 1, p 429.

7. Hist, MACV, 1967, I, 37.

8. *Ibid.*, p 38.

9. *Ibid.*, Jul 68, p A-74; MR, Bernard Kornhauser, Ofc/Ch of Ops Analys, USAF, Mar 19, 1968.

10. *Strike Ops in Laos, 5 Dec–31 Oct 67*, 133; *Summary of Air Operations, Southeast Asia*, XLI, 5-1 to 5-3.

11. MR, Col William F. Kaufman, USAF, Actg Dir, COC, MACV, subj: MACV Commanders Conference, Dec 3, 1967; msgs, Westmoreland to Sharp, 200609Z Dec 67, CINCPAC to JCS, 010156Z Jan 68; Van Staaveren, *The Search for Military Alternatives, 1967*, pp 60–61;

Westmoreland, *A Soldier Reports*, pp 315-16.

12. Lester A. Sobel, ed, *South Vietnam: U.S.-Communist Confrontation in Southeast Asia, 1961-1973*, 7 vols (New York, 1961-1973), Vol 6, p 95; *Summary of Air Operations, Southeast Asia*, XLI, 2-3; EOTR, Col Robert S. Ferrari, Dep Ch, JUSMAG, Thailand, May 27, 1968.

13. Msgs, AmEmb Vientiane to SECSTATE, 251448Z Dec 67, JANAF Attachés Vientiane to JCS, DIA, SECSTATE, 301140Z Dec 67; *Summary of Air Operations, Southeast Asia*, XLI, 2-3.

14. Msgs, AmEmb Vientiane to SECSTATE, 251448Z Dec 67, JANAF Attachés Vientiane to JCS, DIA, SECSTATE, 301140Z Dec 67; *USAF Communications and Air Traffic Control Operations in Southeast Asia, 1960-1973* (Richards-Gebaur AFB, Mo., 1976), p 45 [hereafter cited as *USAF Comm and ATC Ops, SEA, 1960-1973*].

15. *USAF Comm and ATC Ops, SEA, 1960-1973*, pp 40, 46; msg, JANAF Attachés Vientiane to JCS, DIA, SECSTATE, 301140Z Dec 67.

16. Bernard C. Nalty, *Air Power and the Fight for Khe Sanh* (Washington, 1973), pp 13-31; msg, Sharp to Wheeler, 062331Z Jan 68.

17. Msgs, Sharp to Wheeler, 062331Z Jan 68, Westmoreland to Sharp, 081259Z Jan 68.

18. Nalty, *Air Power and the Fight for Khe Sanh*, pp 13-31; Sharp and Westmoreland, *Report on the War in Vietnam (As of 30 June 1968)*, pp 157-164.

19. Van Staaveren, *History of Task Force Alpha, 1 October 1967-30 April 1968*, p 49; Nalty, *Air Power and the Fight for Khe Sanh*, p 9; hist, SAC, Jan-Jun 68, I, 149, 157.

20. Van Staaveren, *History of Task Force Alpha, 1 October 1967-30 April 1968*, p 50.

21. *Ibid.*

22. *Ibid.*, pp 52-53.

23. *Summary of Air Operations, Southeast Asia*, XLII, 2-7; Van Staaveren, *History of Task Force Alpha, 1 October 1967-30 April 1968*, p 52; Nalty, *Air Power and the Fight for Khe Sanh*, p 93.

24. *Summary of Air Operations, Southeast Asia*, XLII, 2-7; Sharp and Westmoreland, *Report on the War in Vietnam (As of 30 June 1968)*, p 158.

Epilogue

1. Hists, MACV, 1967, I, 34-41, CINCPAC, 1967, II, 660.

Glossary

AA	antiaircraft
AAIRA	assistant air attaché
ABLE MABLE	Limited reconnaissance by Air Force RF-101s over selected areas of Laos and South Vietnam. Began in November 1961.
ACS	air commando squadron
ACS/	assistant chief of staff for
ACW	air commando wing
AD	air division
ADMINO	administrative office
ADSID	An air-delivered seismic intrusion detector. See SPIKE-SID.
ADVON	advanced echelon
AFSC	Air Force Systems Command (USAF)
AFXOPJ	Assistant Director for Joint Matters, Directorate of Operations, United States Air Force
AGM	air-to-ground missile
AIG	address indicating group
AIRA	air attaché
AOC	air operations center
ARC LIGHT	Strategic Air Command B-52 strikes in South and North Vietnam and Laos. Began December 12, 1965, in Laos.
ARPA	Advanced Research Projects Agency. A separately organized research and development agency of the Department of Defense under the direction and supervision of the director of defense research and engineering.
ARVN	Army of the Republic of Vietnam
ASOC	air support operations center
ATC	air traffic control
AU	Air University (USAF)
BANGO/WHIPLASH	F-4s at Ubon Royal Thai Air Force Base (BANGO) and F-105s at Korat Royal Thai Air Force Base (WHIPLASH) placed on alert for rapid response to requests from the air attaché at Vientiane, for interdiction and support of Royal Laotian troops. The alert began in May 1965.
BARREL ROLL	A limited Air Force-Navy interdiction in northern and southern Laos that began on December 14, 1964. See STEEL TIGER.
BDA	bomb damage assessment
BIG EAGLE	A-26K night reconnaissance begun in 1966.
Black Spot	NC-123s equipped with forward-looking radar, low-light-level television, forward-looking infrared, laser

	ranger, advanced navigation system, weapon-release computer, and dispensers for BLUs.
Blindbat	C-130 flareships used in Laos, from Ubon Royal Thai Air Force Base.
BLU	bomb, live unit
BLUE TREE	Photo reconnaissance of targets in North Vietnam, begun in 1965.
CANDLESTICK	The call sign for the C-123 forward air control/flare aircraft in Laos.
CBU	cluster bomber unit
CEP	circular error probable—an indicator of the delivery accuracy of a weapon system, used as a factor in determining probable damage to a target.
CHECO	Contemporary Historical Evaluation of Counterinsurgency Operations (1962); Contemporary Historical Evaluation of Combat Operations (1965); Contemporary Historical Examination of Current Operations (1970)
CIA	Central Intelligence Agency (US)
CICV	Combined Intelligence Center, Vietnam
CIDG	Civilian Irregular Defense Group (RVN)
CINCPAC	commander in chief, Pacific Command
CINCPACAF	commander in chief, Pacific Air Forces
CINCPACFLT	commander in chief, Pacific Fleet
CINCSAC	commander in chief, Strategic Air Command
CINCUSARPAC	commander in chief, United States Army, Pacific
CJCS	chairman, Joint Chiefs of Staff
CM	memorandum (chairman, Joint Chiefs of Staff)
CNO	chief of naval operations (US)
COC	combat operations center
COIN	counterinsurgency
COMBAT BEAVER	Selective interdiction of key logistic hubs as a means of providing opportunities for follow-on aircraft to strike enemy materiel and equipment. Similar to the ROLLING THUNDER concept but with emphasis placed on route interdiction and surveillance of Route Packages II, III, and IV.
COMBAT SKYSPOT	MSQ-77 and SST-181 radar-controlled bombing. MSQ-77 controlled bombing missions in STEEL TIGER, Route Package I, and South Vietnam.
COMSEVENTHFLT	commander, Seventh Fleet (US)
COMUSMACTHAI	commander, United States Military Assistance Command, Thailand
COMUSMACV	commander, United States Military Assistance Command, Vietnam
CP	command post
crachin	A weather phenomenon consisting of low ceiling and drizzling rain, encountered over North Vietnam during the northeast monsoon season.

CRICKET	A special air and air-ground program in central Laos with many targets selected by tribal and roadwatch teams. Began on January 12, 1966.
C/S	chief of staff
CSA	chief of staff, United States Army
CSAF	chief of staff, United States Air Force
CTF	composite task force
DASC	direct air support center
DCPG	Defense Communications Planning Group
DCS/	deputy chief of staff for
DCSAF	deputy chief of staff, United States Air Force
DDR&E	director of defense research and engineering, Office of the Secretary of Defense
DEPCOMMACV	deputy commander, Military Assistance Command, Vietnam
DEPSECDEF	deputy secretary of Defense
DI	director of intelligence; directorate of intelligence
DIA	Defense Intelligence Agency (US)
Dir/	director of
DJSM	director Joint Staff memorandum
DMZ	demilitarized zone
DOD	Department of Defense (US)
downlink relay	Sending sensor data to the infiltration surveillance center for analysis.
Dragontooth	See BLU-43.
DRV	Democractic Republic of Vietnam
DUMP TRUCK	An antipersonnel detection program.
ESSA	Environmental Sciences and Services Administration
FAC	forward air control; forward air controller
FAR	Forces Armées du Royaume
FE	Far East; far eastern
FLAMING DART	The code name assigned to retaliatory strikes against North Vietnam in February 1965. Superseded in March 1965 by ROLLING THUNDER.
Foreign Clearance Guide	A publication of the Defense Mapping Agency covering requirements for aircraft and personnel entering foreign countries. It contains information, for example, on aircraft clearances, uniforms, immunizations, passports and visas, quarantine, and customs.
frag	To issue a fragmentary operations order covering details of a single mission.
fragmentary operations order	The daily supplement to standard operations orders 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.
FY	fiscal year

GAME WARDEN	River and waterway patrols consisting largely of intercepting watercraft suspected of carrying personnel or supplies to the Viet Cong/Democratic Republic of Vietnam forces in South Vietnam. Began on December 18, 1965.
GATE GUARD	A special Air Force-Navy program in southernmost Laos and North Vietnam. It began on May 1, 1966, and ended in July 1966.
GOLDEN EAGLE	A code name assigned to a proposal to employ American troops to reduce North Vietnamese infiltration through southern Laos.
GREEN PYTHON	RF-101 aircraft of the 15th Tactical Reconnaissance Squadron, Udorn Royal Thai Air Force Base (1965).
GVN	Government of Vietnam
HARDNOSE	Surveillance of North Vietnamese infiltration by Laotian tribesmen.
HAVOC FORCE	Code name assigned by MACV on November 7, 1966, to company-size probes into Laos.
HAYMARKET FORCE	Code name assigned on November 7, 1966, to battalion-size probes into Laos.
HILLSBORO	The C-130 airborne battlefield command and control center during the day.
HORNET FORCE	Code name assigned to platoon-size probes into Laos. Replaced the term Exploitation Force previously used.
HOUND DOG	Call sign of Air Force O-1E forward air controllers.
HUB AND HEEL	A night concept devised by Seventh Air Force in March 1967. It entailed several night B-52 strikes on probable chokepoints (hubs). Afterwards, Air Force O-1 or other forward air controllers flew visual reconnaissance over the spokes of the wheel (the routes into and out of the chokepoints or hub area).
IBM	International Business Machines, Inc.
IDA	Institute of Defense Analyses
IGLOO WHITE	An air-supported antivehicular and antipersonnel system using acoustic and seismic sensors. Started December 1, 1967.
INVERT	Call sign of the ground-controlled intercept station at Nakhon Phanom Royal Thai Air Force Base, Thailand.
IOC	initial operational capability
ISA	International Security Affairs, Office of the Secretary of Defense (US)
ISC	Infiltration surveillance center. See TASK FORCE ALPHA.
JANAF	Joint Army-Navy-Air Force
JASON	A division of the Institute of Defense Analyses.
JCS	Joint Chiefs of Staff

JGS	Joint General Staff, Republic of Vietnam Armed Forces
Joint Operation Graphic	Published in Washington. The chart depicted route designations and alignments in Laos. Distribution began in November 1965.
Joint Task Force 728	A group formed to expedite the implementation of the air-supported anti-infiltration barrier system in Laos.
J-Staff	Joint Staff, used in numerical combinations as J-1 (Personnel), J-2 (Intelligence), J-3 (Operations), J-4 (Logistics), J-5 (Plans), and J-6 (Communications and Electronics).
JTF	joint task force
JUSMAG	Joint United States Military Advisory Group
karst	An irregular limestone region with sinks, underground streams, and caverns.
kip	The basic monetary unit of Laos from 1955.
LEAPING LENA	Airdrops in mid-1964 by the Vietnamese Air Force of several small South Vietnamese information-gathering teams along selected areas of the Ho Chi Minh Trail.
LONESOME TIGER	Flight test of forward-looking infrared in the B-26K aircraft (1966).
Loran	Long-range electronic navigation system that uses a time divergence of pulse-type transmissions from two or more fixed stations. Also called long-range navigation.
LUCKY DRAGON	Reconnaissance of the Laotian and South and North Vietnam borders and selected target areas by U-2 aircraft of the Strategic Air Command. Began in February 1964.
MAAG	Military Assistance Advisory Group
MAAGV	Military Assistance Advisory Group, Vietnam
MACSOG	Military Assistance Command, Studies and Observations Group
MACV	Military Assistance Command, Vietnam
MAF	Marine amphibious force
MANHATTAN PROJECT	The code name for America's top-priority effort to produce the atomic bomb in World War II.
MATS	Military Air Transport Service (USAF)
MAW	Marine aircraft wing
MHz	megahertz
MR	memorandum for record
MSQ	mobile search special
MUD RIVER	Air-supported antivehicle subsystem activity by the Defense Communications Planning Group under IGLOO WHITE at Nakhon Phanom Royal Thai Air Force Base, Thailand.

NIMROD	Call sign for A-26s of the 56th Air Commando Wing, Nakhon Phanom Royal Thai Air Force Base, operating in Laos. (The 56th Air Commando Wing was redesignated the 56th Special Operations Wing on August 1, 1968.)
NMCC	National Military Command Center (Department of Defense)
NSAM	national security action memorandum
NSC	National Security Council (US)
NVA	North Vietnamese Army
NVAF	North Vietnamese Air Force
OAR	Office of Aerospace Research (USAF)
OPERATION HASTINGS	A military operation in July and early August 1966, against the North Vietnamese 324th B Division that crossed the demilitarized zone to infiltrate the two northernmost provinces of the Republic of Vietnam.
OpOrd	operation order
OPlan	operation plan
OPSum	operation summary
OSD	Office of the Secretary of Defense
PACAF	Pacific Air Forces (USAF)
PACFLT	Pacific Fleet (USN)
PACOM	Pacific Command (US)
PANAMA	Call sign of the ground controlled intercept station at Da Nang Air Base, South Vietnam.
paramilitary forces	Forces or groups which are distinct from the regular armed forces of any country, but resembling them in organization, equipment, training, or mission.
PATHFINDER	Two or more aircraft using lead aircraft's loran or other navigation system.
PAVN	People's Army, Vietnam
PIPESTEM	The code name for limited reconnaissance in October 1961 by four Air Force RF-101s over selected areas of Laos and South Vietnam. Replaced in early November by similar aircraft known as ABLE MABLE.
PL	Pathet Lao
Plan 34A	A concept for conducting clandestine operations against North Vietnam for sabotage, intelligence, and psychological purposes.
PL/NVA	Pathet Lao and North Vietnamese Army
POL	petroleum, oil, and lubricants
PONY EXPRESS	Support provided by Air Force helicopter units to tribal intelligence-gathering and targeting operations in southern Laos and North Vietnam.
POPEYE	The initial code name for a rainmaking program using Air Force aircraft to seed clouds over selected infiltration areas. Initial tests were conducted in 1966.
Popular Forces	The former Vietnamese Self Defense Corps. Locally recruited South Vietnamese volunteers, organized into

	squads and platoons, and used chiefly as security forces in villages and hamlets.
PRACTICE NINE	Code name of the Defense Communications Planning Group.
PRAIRIE FIRE	Formerly SHINING BRASS. Consisted of air-supported ground reconnaissance teams sent into enemy territory to select targets for air strikes and to make poststrike assessments of damage.
RANCH HAND	U1-C23 defoliation and herbicide operations.
RAND	Research and Development (The RAND Corporation, Santa Monica, California)
real time	The absence of delay, except for the time required for the transmission by communications between the occurrence of an event and reception of the data at some other location.
RED HAZE	infrared surveillance photography
Regional Forces	The former Vietnamese Civil Guard. These were local South Vietnamese defense forces, recruited and used within one of the administrative regions into which the country was divided.
RLAF	Royal Laotian Air Force
RLG	Royal Laotian Government
RM	RAND memorandum
ROCK KICK I-IV	A code name for B-52 interdiction strikes in 1966 on targets at Mu Gia Pass on the border of North Vietnam and Laos.
ROLLING THUNDER	A code name assigned to the air program against select targets and lines of communication in North Vietnam (March 1965-October 1968)
Route Package	Numbered geographic areas (I-V, VIA, VIB) in North Vietnam, designated by the commander in chief, Pacific Command, to permit the assignment of ROLLING THUNDER responsibilities to the commander in chief, Pacific Air Forces, the commander, Seventh Fleet, and the commander, United States Military Assistance Command, Vietnam.
RTAF	Royal Thai Air Force
RTAFB	Royal Thai Air Force Base
RVN	Republic of Vietnam
RVNAF	Republic of Vietnam Armed Forces
SA	secretary of the Army
SAC	Strategic Air Command (USAF)
SAF	secretary of the Air Force
SEA	Southeast Asia
SEACOORD	Coordinating Committee for United States Missions Southeast Asia
SEA DRAGON	Naval gunfire against North Vietnam.
SECDEF	secretary of Defense
SECNAV	secretary of the Navy

SECSTATE	secretary of State
SHED LIGHT	The overall United States Air Force research and development program to improve night attack/interdiction capability.
SHINING BRASS	United States-led South Vietnamese team and platoon probes into the Ho Chi Minh Trail with Army and Air Force helicopter and aircraft support. Began September 15, 1965. Renamed PRAIRIE FIRE on March 1, 1967.
SHOCK	A Vientiane embassy program to assure more United States Air Force support against targets selected by tribal roadwatch teams.
Sihanouk Trail	The nickname for Route 110, a North Vietnamese Army logistic route which came north out of Cambodia and ran eastward towards the triborder area, terminating near Dak To and Ban Het in South Vietnam.
SILVER BAYONET	A 1965 military operation in Pleiku Province. Considered one of the major allied successes of the war.
SLAM	Select, locate, annihilate, monitor—a special expanded SHINING BRASS program using United States-led South Vietnamese ground teams and platoons and Air Force tactical and B-52 aircraft. Began October 7, 1966.
SLAR	side-looking airborne radar
SLTF	STEEL TIGER Task Force
SN	secretary of the Navy
Special Forces	Military personnel with cross-training in basic and specialized military skills. They are organized into small multi-purpose detachments with the mission to train, organize, supply, direct, and control other forces in guerrilla warfare and counterinsurgency operations, and to conduct unconventional warfare operations.
SPIKESID	An air-delivered seismic intrusion detector with a spike to allow it to stick into the ground. See ADSID.
SPIKE teams	A new code name assigned to SHINING BRASS teams on October 3, 1966.
SPOS	strongpoint obstacle system
STEEL TIGER	Regular Air Force-Navy interdiction in southern Laos of the Ho Chi Minh Trail, beginning April 3, 1965. (BARREL ROLL was thereafter confined to northern Laos.)
STOL	short-takeoff-and-landing
STPD	short tons per day
TAC	Tactical Air Command (USAF)
tac	tactical
Tacan	tactical air navigation
TACC	tactical air control center

TALLY HO	An Air Force, Navy, Marine, and Army air program using TIGER HOUND Task Force personnel and aircraft. Began on July 20, 1966.
TAO	target analysis officer
TASK FORCE ALPHA	A code name assigned to the organization in 1967 that built and operated an infiltration surveillance center for receiving and analyzing acoustic and seismic sensor information on enemy activities in order to pinpoint their location for an air or ground attack. Located at Nakhon Phanom Royal Thai Air Force Base, Thailand.
TASS	tactical air support squadron
TCG	tactical control group
Tet	The lunar New Year holiday observed in Vietnam and other Asian countries. It occurs early in the Julian year.
Tet offensive	A sudden attack by the North Vietnamese and Viet Cong that began in the early hours of January 30, 1968, on Saigon, many other cities and towns, as well as numerous South Vietnamese and American military bases and airfields. It took United States and South Vietnamese forces several weeks to contain the offensive.
TF	task force
TFS	tactical fighter squadron
TFW	tactical fighter wing
TIC	target information center
TIGER HOUND	The code name of a special Air Force, Navy, Marine, and Army task force that began interdicting southeasternmost Laos on December 5, 1965.
TROPIC MOON	A research program employing A-1Es with low-light-level television (1966).
TRW	tactical reconnaissance wing
USA	United States Army
USACMH	United States Army Center of Military History
USAF	United States Air Force
USARPAC	United States Army, Pacific
USARV	United States Army, Vietnam
USMAAG	United States Military Advisory Assistance Group
USMACV	United States Military Assistance Command, Vietnam
USMC	United States Marine Corps
USN	United States Navy
USUN	United States Mission to the United Nations; United States Representative to the United Nations and Representative in the Security Council
VCSAF	Vice Chief of Staff, United States Air Force
VNAF	Vietnamese Air Force
VNSP	Vietnamese Special Forces

WATER PUMP	The code name for Detachment 6, 1st Air Commando Wing (USAF), that deployed to Udorn Royal Thai Air Force Base in April 1964 for the purpose of training and providing logistic support for Thai but also Lao air force personnel.
WSEG	Weapon Systems Evaluation Group
YANKEE TEAM	An Air Force and Navy tactical reconnaissance program that began in northern and southern Laos on May 19, 1964.
Z	Zulu Time (Greenwich Mean Time)

Bibliographic Note

Sources for this volume have been drawn from a variety of depositories. The Washington National Records Center at Suitland, Maryland, holds materials on Southeast Asia that can be found in the following collections: the USAF Directorate of Plans containing Joint Chiefs of Staff and Air Staff papers; the files of the Office of the Secretary of the Air Force; and those of the International Security Affairs, Office of the Secretary of Defense.

The United States Air Force Historical Research Center at Maxwell Air Force Base, Ala., possesses numbered air force and unit histories, many primary source documents (memoranda and messages), the volumes of the *Summary of Air Operations, Southeast Asia*, and Project CHECO (Contemporary Historical Examination of Current Operations), Project Corona Harvest, and numerous end of tour and oral history reports. Generally, unit histories contain a paucity of data on Laos, and the primary source materials are highly fragmentary. Of greatest value are several CHECO reports and in particular the *Summary of Air Operations, Southeast Asia* volumes prepared under the aegis of the Pacific Air Forces. Virtually all of the foregoing data is on microfilm. Copies of CHECO and Corona Harvest reports and volumes of *Summary of Air Operations, Southeast Asia* are also held in the Office of Air Force History.

The richest single lode of primary source documents on Laos is likewise on microfilm. These record the activities of the commander in chief, Pacific Command, during the war and are available through the Naval Historical Center. The collection contains a huge volume of messages generated by the services, major commands, and the state and defense departments on Laos, South and North Vietnam, and Cambodia. The messages are filled with both planning and operational data.

The Army's Center of Military History holds the records of the former United States Military Assistance Command in Saigon. This vast accumulation includes many primary and secondary sources on Laos and other areas of the war theater. Of particular worth are the personal files of Gen. William C. Westmoreland, USA, who served as commander of the Military Assistance Command, Vietnam, from June 1964 through June 1968.

The Foreign Affairs Document and Reference Center, Department of State, has an indispensable lode of messages and memoranda on Laos and other areas of Southeast Asia. Although underscoring the United

States' political concerns, the collection contains some data on military operations. Many—but by no means all—of the materials here may also be found in the Pacific Command's microfilm holdings.

Three separate editions of *The Pentagon Papers* (Defense Department, Gravel, and the *New York Times*) provide a modest amount of high-level source material on the war in Laos. The papers, which end in early 1968, deal chiefly with the wars in South and North Vietnam.

Statistical data on Laos is drawn mostly from the *USAF Management Summary, Southeast Asia*, and the Pacific Air Force's *Summary of Air Operations, Southeast Asia.* Each has a different format and largely different types of data.

House and Senate hearings on the war in Southeast Asia give important data on the events in Laos. Two documents have been especially useful. One is the testimony of William H. Sullivan, former Ambassador to Laos, in Hearings before the Subcommittee on United States Security Agreements and Commitments Abroad of the Committee on Foreign Relations, Senate, *United States Security Agreements and Commitments Abroad, Kingdom of Laos*, 91st Cong, 1st sess, 1970. The other is a chronological guide to events in Southeast Asia, entitled *Background Information Relating to Southeast Asia and Vietnam*, published by the Committee on Foreign Relations, Senate.

Finally, there are numerous special studies and reports prepared under the auspices of the Office of Air Force History, by other defense department offices and agencies, and by activities under contract with the Department of Defense.

Governmental Sources

Books

Ballard, Jack S. *Development and Employment of Fixed-Wing Gunships, 1962-1972.* [The Air Force in Southeast Asia]. Washington: Office of Air Force History, 1982.

Buckingham, William A., Jr. *Operation Ranch Hand: The Air Force and Herbicides in Southeast Asia, 1961-1971.* Washington: Office of Air Force History, 1982.

_____. *A Chronology of Significant Airpower Events in Southeast Asia, 1954-1967.* Maxwell Air Force Base, Ala.: Aerospace Studies Institute, Air University, 1967.

Momyer, Gen William W., USAF, Ret. *Air Power in Three Wars (WW II, Korea, Vietnam).* Washington: Government Printing Office, 1978.

Nalty, Bernard C. *Air Power and the Fight for Khe Sanh.* Washington: Office of Air Force History, 1973.

The Pentagon Papers as Published by the New York Times. New York: Bantam Books, 1971.

The Senator Gravel Edition, The Pentagon Papers: The Defense Department History of United States Decisionmaking on Vietnam. 4 vols. Boston: Beacon Press, 1971.

Sharp, Adm U. S. G., USN, and Westmoreland, Gen W. C., USA. *Report on the War in Vietnam (As of 30 June 1968).* Washington: Government Printing Office, 1969.

Studies and Reports

Aggression from the North: The Record of North Vietnam's Campaign to Conquer South Vietnam. Washington: Office of Media Services, Bureau of Public Affairs, Department of State, 1965.

Air Operations Against North Vietnam. Washington: Rolling Thunder Study Group, Joint Chiefs of Staff, 1966.

Analysis of Air Operations, Southeast Asia. 5 vols. Washington: USAF Study Group, United States Air Force, 1965.

Annual Report of the Commander in Chief, Pacific Fleet, FY 1966.

Anthony, Maj Victor B., USAF. "A Military History of the War in Northern Laos, 1945-1968." Manuscript. [The Air Force in Southeast Asia]. Washington: Office of Air Force History, 1976.

_____ . *Tactics and Techniques of Night Operations, 1961-1970.* [The Air Force in Southeast Asia]. Washington: Office of Air Force History, 1973.

Assessment of the Air Effort in Vietnam and Laos (As of 31 January 1966). Washington: Strategy and Tactics Analysis Group (STAG), United States Army, 1966.

Bonetti, Lee, et al. *The War in Vietnam, July-December 1967.* Hickam Air Force Base, Hawaii: Project CHECO, Pacific Air Forces, 1968.

Description of the Ho Chi Minh Trail. WSEG Study 125. Washington: Weapons Systems Evaluation Group, Directorate of Defense Research and Engineering, Office of the Secretary of Defense, 1966.

Durkee, Maj Richard A., USAF. *Combat Skyspot.* Hickam Air Force Base, Hawaii: Project CHECO, Pacific Air Forces, 1967.

The Effects of U.S. Bombing on North Vietnam's Ability to Support Military Operations in South Vietnam and Laos: Retrospect and Prospect. Washington: Institute of Defense Analyses, 1966.

Greenhalgh, William H., Jr. "U.S. Air Force Reconnaissance in Southeast Asia, 1960-1975." Manuscript. Maxwell Air Force Base, Ala.: Albert F. Simpson Historical Research Center, 1977.

Helmka, MSgt. Robert T., USAF, and Hale, TSgt. Beverly, USAF. *USAF Operations from Thailand, 1964-1965.* Hickam Air Force Base, Hawaii: Project CHECO, Pacific Air Forces, 1966.

Horrocks, Michael. "The Sensor War, 1966-1971." Manuscript. Washington: Office of Air Force History, 1977.

Horrocks, Michael, and McCormack, David A. "Distinguishing the Pathet Lao from the North Vietnamese in Laos." Manuscript. Washington: Office of Air Force History, 1976.

_____ . "North Vietnamese Infiltration and Other Activities in Laos and North Vietnam." Manuscript. Washington: Office of Air Force History, 1976.

Kipp, Robert M. *B-52 Operations in Southeast Asia, 1967: A Summary Narrative.* Historical Study 105. Offutt Air Force Base, Nebr.: Strategic Air Command, 1969.

MacNaughton, 1st Lt Robert L., USAF. *Yankee Team, May 1964-June 1965.* Hickam Air Force Base, Hawaii: Project CHECO, Pacific Air Forces, 1966.

Melyan, Wesley R. C. *Arc Light, 1965-1966.* Hickam Air Force Base, Hawaii: Project CHECO, Pacific Air Forces, 1967.

Nelson, Capt Donald W., USAF. *The USAF Helicopter in SEA.* Hickam Air Force Base, Hawaii: Project CHECO, Pacific Air Forces, 1968.

Noell, Rebecca Y. *Tactical Air Command in Southeast Asia, 1961-1968.* Langley Air Force Base, Va.: Tactical Air Command, 1972.

Pacific Air Forces Activity Input to Project Corona Harvest. *Out-Country Strike Operations in Southeast Asia, 1 January 1965-31 March 1968.* Volume I, Sub Task IIc: *Strike Operations in Laos, 5 December 1965-31 October 1967.* Maxwell Air Force Base, Ala.: Aerospace Studies Institute, Air University, 1970.

Paterson, L. E. *Air War in the DMZ, January-August 1967.* Hickam Air Force Base, Hawaii: Project CHECO, Pacific Air Forces, 1968.

Porter, Melvin F. *The Defense of Attopeu.* Hickam Air Force Base, Hawaii: Project CHECO, Pacific Air Forces, 1966.

_____. *Interdiction in SEA, 1965-1966.* Hickam Air Force Base, Hawaii: Project CHECO, Pacific Air Forces, 1967.

_____. *Night Interdiction in Southeast Asia.* Hickam Air Force Base, Hawaii: Project CHECO, Pacific Air Forces, 1966.

_____. *Tiger Hound.* Hickam Air Force Base, Hawaii: Project CHECO, Pacific Air Forces, 1966.

Pralle, Maj James B., USAF. *Arc Light, June 1967-December 1968.* Hickam Air Force Base, Hawaii: Project CHECO, Pacific Air Forces, 1969.

Reinhardt, G. C., and Sharkey, E. H. *Air Interdiction in Southeast Asia.* RM-5283-PR. Santa Monica: The RAND Corp, 1967.

Rowley, Lt Col Ralph A., USAF. *FAC Operations, 1965-1970.* [The Air Force in Southeast Asia]. Washington: Office of Air Force History, 1975.

Sams, Kenneth. *Escalation of the War in Southeast Asia, July-December 1964.* Hickam Air Force Base, Hawaii: Project CHECO, Pacific Air Forces, n.d.

Shulimson, Jack. *U.S. Marines in Vietnam: An Expanding War, 1966.* Washington: History and Museums Division, U.S. Marine Corps, 1982.

Sturdevant, C. V. *The Border Control Problem in South Vietnam.* RM-3697-ARPA. Santa Monica: The RAND Corp, 1964.

Summary of Air Operations, Southeast Asia. 109 vols. Hickam Air Force Base, Hawaii: Directorate of Operational Analysis, Deputy Chief of Staff for Operations, Pacific Air Forces, 1965-1973.

A Summary of Headquarters USARPAC Participation in Development of the Infiltration-Interdiction System for Southeast Asia. Fort Shafter, Hawaii: 1st Military History Detachment, United States Army, Pacific, 1968.

Thompson, Maj A. W., USAF. *Strike Control and Reconnaissance (SCAR) in SEA.* Hickam Air Force Base, Hawaii: Project CHECO, Pacific Air Forces, 1969.

A Threat to the Peace: North Viet-Nam's Effort to Conquer South Viet-Nam. Department of State Publication 7308. Washington: Department of State, 1961.

Trest, Warren A. *Lucky Tiger Combat Operations.* Hickam Air Force Base, Hawaii: Project CHECO, Pacific Air Forces, 1967.

_____. *Lucky Tiger: Special Air Warfare Operations.* Hickam Air Force Base, Hawaii: Project CHECO, Pacific Air Forces, 1967.

_____. *Operation Tally Ho.* Hickam Air Force Base, Hawaii: Project CHECO, Pacific Air Forces, 1966.

Trest, Warren A., and Hammons, SSgt Dale E., USAF. *USAF Operations from Thailand, 1966.* Hickam Air Force Base, Hawaii: Project CHECO, Pacific Air Forces, 1967.

USAF Communications and Air Traffic Control Operations in Southeast Asia, 1960–1973. Richards-Gebaur Air Force Base, Mo.: Air Force Communications Service, 1976.

Vallentiny, Edward. *USAF Operations from Thailand, 1 January 1967–1 July 1968.* Hickam Air Force Base, Hawaii: Project CHECO, Pacific Air Forces, 1968.

Van Staaveren, Jacob. *History of Task Force Alpha, 1 October 1967–30 April 1968.* Nakhon Phanom Royal Thai Air Force Base, Thailand: Seventh/Thirteenth Air Force, Thirteenth Air Force, Pacific Air Forces, 1969.

_____. *The Search for Military Alternatives.* [The Air Force in Vietnam]. Washington: Office of Air History, 1969.

_____. *USAF Deployment Planning for Southeast Asia, 1966.* Washington: United States Air Force Historical Division Liaison Office, 1967.

_____. *USAF Plans and Operations in Southeast Asia, 1965.* Washington: United States Air Force Historical Division Liaison Office, 1966.

_____. *USAF Plans and Policies in South Vietnam, 1961–1963.* Washington: United States Air Force Historical Division Liaison Office, 1965.

_____. *USAF Plans and Policies in South Vietnam and Laos, 1964.* Washington: United States Air Force Historical Division Liaison Office, 1965.

Weiner, M. G.; Brom, J. R.; and Koon, R. K. *Infiltration of Personnel from North Vietnam, 1959–1967.* RM-5760-PR. Santa Monica: The RAND Corp, 1968.

Wolk, Herman S. *USAF Logistic Plans and Policies in Southeast Asia, 1966.* Washington: United States Air Force Historical Division Liaison Office, 1967.

_____. *USAF Plans and Policies: Logistics and Base Construction in Southeast Asia, 1967.* Washington: United States Air Force Historical Division Liaison Office, 1968.

Zasloff, Joseph J. *The Role of North Vietnam in the Southern Insurgency.* RM-4140-PR. Santa Monica: The RAND Corp, 1964.

Intelligence and Operational Data

Defense Intelligence Digest. Defense Intelligence Agency. June 1966.

DIA Intelligence Bulletin. Defense Intelligence Agency. February 9, 14, 17, 1966.

PACAF DI Quarterly Review, Effects of Air Operations, Southeast Asia. Directorate of Intelligence, Pacific Air Forces. March 31, 1966.

PACAF DI Report, Effects of Air Operations, Southeast Asia. Directorate of Intelligence, Pacific Air Forces. January 6 and March 31, 1966, March 17, 1977.

PACOM Weekly Intelligence Digest 38-65. Pacific Command. September 17, 1965.

PACOM Weekly Intelligence Digest 46-66. Pacific Command. May 6, 1966.

Seventh AF Weekly Air Intelligence Summary. Directorate of Intelligence, Seventh Air Force. December 16, 1967.

Southeast Asia Military Fact Book. Defense Intelligence Agency/Joint Chiefs of Staff. May 1966, July 1966, July 1968.

Congressional and Presidential Documents

House. Hearings before a Subcommittee of the Committee on Appropriations. *Department of Defense Appropriations for 1964.* 88th Cong, 1st sess. Washington: Government Printing Office, 1963.

Senate. Hearings before the Committee on Foreign Relations. *Foreign Assistance.* 89th Cong, 2d sess. Washington: Government Printing Office, 1966.

Senate. Hearings before the Preparedness Investigation Subcommittee of the Committee on Armed Services. *Tactical Air Operations and Readiness.* 89th Cong, 2d sess. Washington: Government Printing Office, 1966.

Senate. Hearings before the Preparedness Investigating Subcommittee of the Committee on Armed Services. *The Air War Against North Vietnam.* 90th Cong, 1st sess. Washington: Government Printing Office, 1967.

Senate. Committee on Foreign Relations. *Background Information Relating to Southeast Asia and Vietnam.* 6th rev ed. 91st Cong, 2d sess. Washington: Government Printing Office, 1970.

Senate. Hearings before the Subcommittee on United States Security Agreements and Commitments Abroad of the Committee on Foreign Relations. *United States Security Agreements and Commitments Abroad, Kingdom of Laos.* 91st Cong, 1st sess. Washington: Government Printing Office, 1970.

Senate. Hearings before the Committee on Armed Services. *Fiscal Year 1974 Authorization for Military Procurement, Research and Development, Construction Authorization for the Safeguard ABM, and Active Duty and Selected Reserve Strengths.* 93d Cong, 1st sess. Washington: Government Printing Office, 1973.

Senate. Final Report of the Select Committee on Governmental Operations with Respect to Intelligence Activities, Together with Additional Supplemental and Separate Views. *Foreign Military Intelligence.* Report 94-755. 94th Cong, 2d sess. Washington: Government Printing Office, 1976.

Public Papers of the Presidents of the United States: Lyndon B. Johnson, 1965. Washington: Office of the Federal Register, National Archives and Records Service, 1966.

Non-Governmental Sources

Books

Adams, Nina S., and McCoy, Alfred W., eds. *Laos: War and Revolution.* New York: Harper & Bros, 1970.

Dommen, Arthur J. *Conflict in Laos: The Politics of Neutralization.* Rev ed. New York: Frederick A. Praeger, 1971.

Fall, Bernard B. *The Two Viet-Nams: A Political and Military Analysis.* 2d ed. New York: Frederick A. Praeger, 1963.

Halberstam, David. *The Best and the Brightest.* New York: Random House, 1972.

Hilsman, Roger. *To Move a Nation: The Politics of Foreign Policy in the Administration of John F. Kennedy.* Garden City, N.Y.: Doubleday & Co, 1967.

Johnson, Lyndon B. *The Vantage Point: Perspective of the Presidency, 1963-1969.* New York: Holt, Rinehart & Winston, 1971.

Sobel, Lester A., ed. *South Vietnam: U.S.-Communist Confrontation in Southeast Asia, 1961-1973.* 7 vols. New York: Facts on File, Inc, 1961-1973.

Taylor, Gen Maxwell D., USA, Ret. *Swords and Plowshares.* New York: W. W. Norton & Co, 1972.

Westmoreland, Gen William C., USA, Ret. *A Soldier Reports.* Garden City, N.Y.: Doubleday & Co, 1976.
Zasloff, Joseph J. *The Pathet Lao.* Toronto: Lexington Books, 1973.

Articles

Encyclopaedia Britannica: Micropaedia. 1974 ed. s.v. "Vietnam, South."
Encyclopedia Americana. 1967 ed. s.v. "Laos."

Newspapers

Baltimore Sun, February 10, 13, 1967.
New York Daily News, December 14, 1965.
New York Times, May 22, 1964, February 6–14, 1967, April 13, 1968.
Philadelphia Inquirer, December 13, 1966.
Washington Post, December 28, 1965, February 17, 1967.
Washington Star, March 23, 1967.

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