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USAF OPERATIONS from THAILAND

1 January 1967 to 1 July 1968

20 NOVEMBER 1968

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for *W. H. Peterson*

WARREN H. PETERSON, Colonel, USAF
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9AF(DO).....1Cy (101)
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 USAFAGOS.....1Cy (104)
 USAFSAWC(DO)....1Cy (105)
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 USAFTFWC(CRCD)..1Cy (109)
 FTD(TDPI).....1Cy (110)

PACAF

DP.....1Cy (111)
 DI.....1Cy (112)
 DO.....1Cy (113)
 DPL.....1Cy (114)
 DXIH.....1Cy (115)
 5AF(DOP).....1Cy (116)
 7AF(DOAC).....9Cys (117-125)
 13AF(DOP).....1Cy (126)
 13AF(DXI).....1Cy (127)
 834AIRDIV.....1Cy (128)
 3TFW.....1Cy (129)
 8TFW.....1Cy (130)
 12TFW.....1Cy (131)
 14SOW.....1Cy (132)
 31TFW.....1Cy (133)
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 37TFW.....1Cy (135)
 56SOW.....1Cy (136)
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 388TFW.....1Cy (140)
 432TRW.....1Cy (141)
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TABLE OF CONTENTS

	<u>Page</u>
FOREWORD	vi
INTRODUCTION	vii
Flexibility and Centralized Control	vii
Laos and Neutrality	viii
Dual Character of War	ix
CHAPTER I - U.S. AIRPOWER	1
Command and Control	1
Ambassador to Laos	3
Targeting and Concepts of Operation	5
Fragging, Control, and Diversions	7
ABCCC	8
Forward Air Controllers	11
CHAPTER II - THE WAR FOR LAOS	12
Politics	12
American Air Attache	13
RLAF	15
The Ground War	18
Dry Season, 1967--Enemy Stalled	21
Wet Season 1967, Friendly Vacillation and Dissention	24
Dry Season, 1967-68--Initiative Lost	28
North Laos	30
Site 85	30
Through June 1968 in the North	31
Site 36	33
South Laos	34
CHAPTER III - ENEMY LOCs and RULES OF ENGAGEMENT	37
Enemy LOCs and Tactics	37
History of Ho Chi Minh Trail	38
Operation of the Ho Chi Minh Trail	39
Defenses along the Trail	43
Rules of Engagement	45
Short Rounds	48
Muong Phalang and Site 61	49
Revised Rules of Engagement	51
Easing of Short Rounds--Channel 77	52
Changes of ROE in BARREL ROLL	55

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	<u>Page</u>
CHAPTER IV - CONDUCT OF USAF OPERATIONS AND DEVELOPMENTS	58
Trends in Operations	59
Developments	65
Target Acquisition	67
CHAPTER V - AIRPOWER RATIONALE AND RECOMMENDATIONS	78
Props vs Jets	78
Ambassador's Needs and 7AF Responses	82
TFA, Command and Control Element	90
CHAPTER VI - SUMMARY OF OPERATIONS	94
Dual Character of War	94
U.S. Ambassador-Commander, 7AF, Relationship	94
USAF-RLAF Performance	95
Improving the Air Effort	95
Advantages of the Enemy	96
FOOTNOTES	
Introduction	98
Chapter I	98
Chapter II	101
Chapter III	106
Chapter IV	110
Chapter V	113
APPENDIXES	
I - USAF Strikes in Laos, 1 Jan 67-30 Jun 68	115
II - Results of USAF Attacks	122
GLOSSARY	129
FIGURES	<u>Follows Page</u>
1. Armed Reconnaissance Areas	2
2. General Orbit Positions	8
3. Enemy Attack Areas	20
4. Situation in Laos	34
5. Ho Chi Minh Trail	38
6. USAF Sorties Which Drew Enemy Fire	44
7. USAF Aircraft Combat Losses in Laos	44
8. Zoned Armed Recon Areas	52
9. USAF Strike Sorties in Laos	58
10. B-52 Sorties in Laos	58

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FOREWORD

Combat air operations in "USAF Operations from Thailand, 1 January 1967 - 1 July 1968" are discussed against a background of developments in the Laotian ground war. Because this report places the Laotian conflict within the context of the entire Southeast Asian struggle, the problems of command and control are major points which are examined. Other topics trace developments in enemy lines of communication, Rules of Engagement, and trends and developments in the application of airpower.

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INTRODUCTION

Flexibility and Centralized Control

Of primary concern in this study are combat air operations over Laos--part of the immense effort that the U.S. Air Force carried out in Southeast Asia. Many of the same forces that waged the air campaigns in Laos were utilized in South Vietnam, as well as against North Vietnam. These forces were not unlimited; nor were they unhampered in application by restraints and restrictions--military and political.

Assignations of Air Force airpower, under operational control of the Commander, 7th Air Force, were made with a view of the totality of the Southeast Asian conflict in all its facets and demands. In this way, it was believed, the fullest capability of all airpower could be realized. This concept permitted the shifting of emphasis for various periods to one phase or another of the total air war. For example, during the Northeast Monsoon season, when enemy supply routes in Laos dried and were being heavily utilized, considerable emphasis could be directed to interdiction missions.

Similarly, flexibility and centralized control allowed the Air Force to better cope with daily problems. Aircraft could be diverted from targets hampered by bad weather to other areas. Strikes could be shifted to more lucrative targets. In addition, surprise enemy moves in rapidly changing tactical situations could be better countered.

Nevertheless, although it was viewed that overall needs could best be met by these concepts, not all the desires for airpower in Laos held priorities

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sufficiently high to be rapidly fulfilled.

Laos and Neutrality

Laos, a nation of 2,700,000 people living in an area of less than 92,000 square miles, bordered Communist China, Burma, North Vietnam (NVN), South Vietnam (SVN), Cambodia, and Thailand. Located in the middle of the South-east Asian arena of conflict, the Royal Laotian Government (RLG) had great difficulty in maintaining its existence.

In 1962, supported by the Geneva Accords which guaranteed its "neutrality", a coalition government of contending pro-Communist, Neutralist, and pro-Western factions was formed. Ruled nominally from the Royal Capital at Luang Prabang by King Savang Vatthana, the administrative capital was located at Vientiane. The chief of state and premier was Souvanna Phouma, who maintained the support of the National Assembly.

However, the formation of a neutral coalition government did not end the conflict in Laos. By 1963, the pro-Communist military forces, the Pathet Lao (PL), once again assisted by North Vietnam, resumed the struggle. In May 1964, when the PL attacked Neutralist forces in the Plaine des Jarres, the Government of the United States demonstrated American support for the legal Laotian Government. In response to a Laotian request, the U.S. Air Force and Navy began a limited reconnaissance program (YANKEE TEAM) to help identify PL locations and prove North Vietnamese participation. Since 1964, the American air effort expanded considerably from the strict reconnaissance role. The U.S. Air Force, alone, flew more than 57,000 combat and combat support sorties in 1966. In

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1967, the number rose above 76,000. In only the first half of 1968, nearly 53,000 sorties were flown.^{1/}

Since 1964, the continued aggression by the PL and North Vietnamese has made the neutral stand of the Laotian Government more difficult to maintain. For survival, the RLG has been forced to lean toward the American side in the Southeast Asian struggle. During an October 1967 visit by Premier Souvanna Phouma to Paris, this tendency was criticized by French President Charles de Gaulle. An American Attache report from Vientiane related Souvanna's response:^{2/}

"...Souvanna stated rather sharply that it is the intention of Laos to be neutral, but with 15 or 20 Laotians being killed each day by the North Vietnamese, Laos had adopted a policy which might appear to de Gaulle to be anti-NVN. Souvanna further added that Laos is therefore as neutral as it is permitted to be."

Dual Character of War

As the war in South Vietnam expanded, enemy supply lines through Communist-controlled portions of Laos increased in scope and importance. As a result, Laos became more significant. While refraining from committing ground forces to Laos, the U.S. recognized that the Laotian Government had to be maintained. Souvanna Phouma provided the best and most stable leadership for the many factions in the nation. In addition, if American airpower was to continue to enjoy the permission to strike enemy supply lines in Laos, as they stretched to South Vietnam, support of Souvanna, his Government, and Laotian military forces was necessary.

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Hence, there were, in essence, two air campaigns being waged in Laos. One was directed against the North Vietnamese supply lines to SVN; the other had the objective of supporting the Laotian Government against the encroachments of PL and North Vietnamese Army (NVA) forces.

It was necessary to have in mind the dual character of the war in Laos, in order to better grasp the problems. The duality, however, did not mean exclusion, one from the other. The two wars were unique and yet intertwined. One connecting link was the U.S. Ambassador to Laos. He, perhaps, more than any other American official, was concerned with both wars. The Air Force was responsible for fulfilling his requirements within the context of the priority demands on airpower.

Therefore, it was necessary to have, at the minimum, a general view of the war inside Laos from January 1967 through June 1968, so as to gain some perspective in understanding the basis for the requirements which the Ambassador levied against the 7AF Commander, as well as the responses generated in return.

In essence, this time span was not a productive one for the Laotian Government. Its military position was reasonably good in January 1967 and remained so until the late fall of that year. Subsequently, it eroded considerably, and the pressures which were generated by this deterioration were transferred from the Laotian military to the RLG, from the RLG to the U.S. Ambassador, and finally from him to the 7AF Commander.

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CHAPTER I
U.S. AIRPOWER

Command and Control

The Pathet Lao insurgency effort in Laos continued to receive aid from NVN in the form of men and supplies. In addition, the enemy used Laos as the major supply route to move men and supplies into SVN. To move against this two-pronged effort, the Commander-in-Chief Pacific (CINCPAC) had directed the Commander, United States Military Assistance Command-Vietnam (COMUSMACV), and the Commander-in-Chief Pacific Fleet (CINCPACFLT), to strike validated Royal Laotian Air Force (RLAF) targets and conduct armed reconnaissance in authorized areas to interdict enemy supply lines to SVN and Laos.^{1/}

Already, by April 1965, two armed reconnaissance areas had been established in Laos, BARREL ROLL (BR) in northern Laos and STEEL TIGER (SL) in the south.^{2/} To speed up the validation of targets, the southern portion of STEEL TIGER was designated TIGER HOUND in December 1965.^{3/} Later, BARREL ROLL was divided into three sectors, A, B, and C. Similarly, the south was divided: D and E formed STEEL TIGER, F and G sectors made up TIGER HOUND. (See Fig. 1.)

COMUSMACV had responsibility for the U.S. air campaign over Laos and the passes from NVN into Laos, as well as the adjacent Route Package I (RPI), the southernmost area of NVN.^{4/} These were in addition to COMUSMACV's primary obligation of South Vietnam.

The COMUSMACV objectives in Laos were:^{5/}

"Apply military pressure to achieve maximum effectiveness

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*in disrupting Pathet Lao and NVN logistical support;
to disrupt enemy logistic flow into SVN; and to
cause NVN to cease supporting the insurgencies in
SEA."*

To accomplish these tasks, COMUSMACV relied primarily on the resources of 7AF, headquartered at Tan Son Nhut AB, RVN. Additional sorties were provided by the 1st Marine Air Wing at Da Nang AB, RVN, and the Commander, Seventh Fleet. Furthermore, CINCPAC guaranteed COMUSMACV a minimum of 2,500 USAF strike sorties from Thailand-based units. These Thai-based sorties could be utilized in either Laos or RP I, according to COMUSMACV's needs.^{6/}

In turn, COMUSMACV delegated to the Commander, 7AF, the operations planning, scheduling, coordination, and execution of these tasks. As Air Component Commander for COMUSMACV, the Commander, 7AF, was appointed coordinating authority for U.S. operations within this area of responsibility. Direct liaison was authorized with appropriate American Embassies on matters pertaining to operational aspects in Laos, Thailand, and NVN.^{7/} Outside the responsibilities derived from COMUSMACV, the Commander, 7AF, also maintained operational control of all USAF strike forces in Thailand. This was derived from the Commander-in-Chief, Pacific Air Forces (CINCPACAF).^{8/}

Although U.S. Navy and Marine sorties were not under the operational control of the Commander, 7AF, for smoother operations, these military services were required to coordinate with 7AF on their intended strikes in Laos at least 48 hours before execution.^{9/}

In the role of Air Component Commander under COMUSMACV, the 7AF Commander

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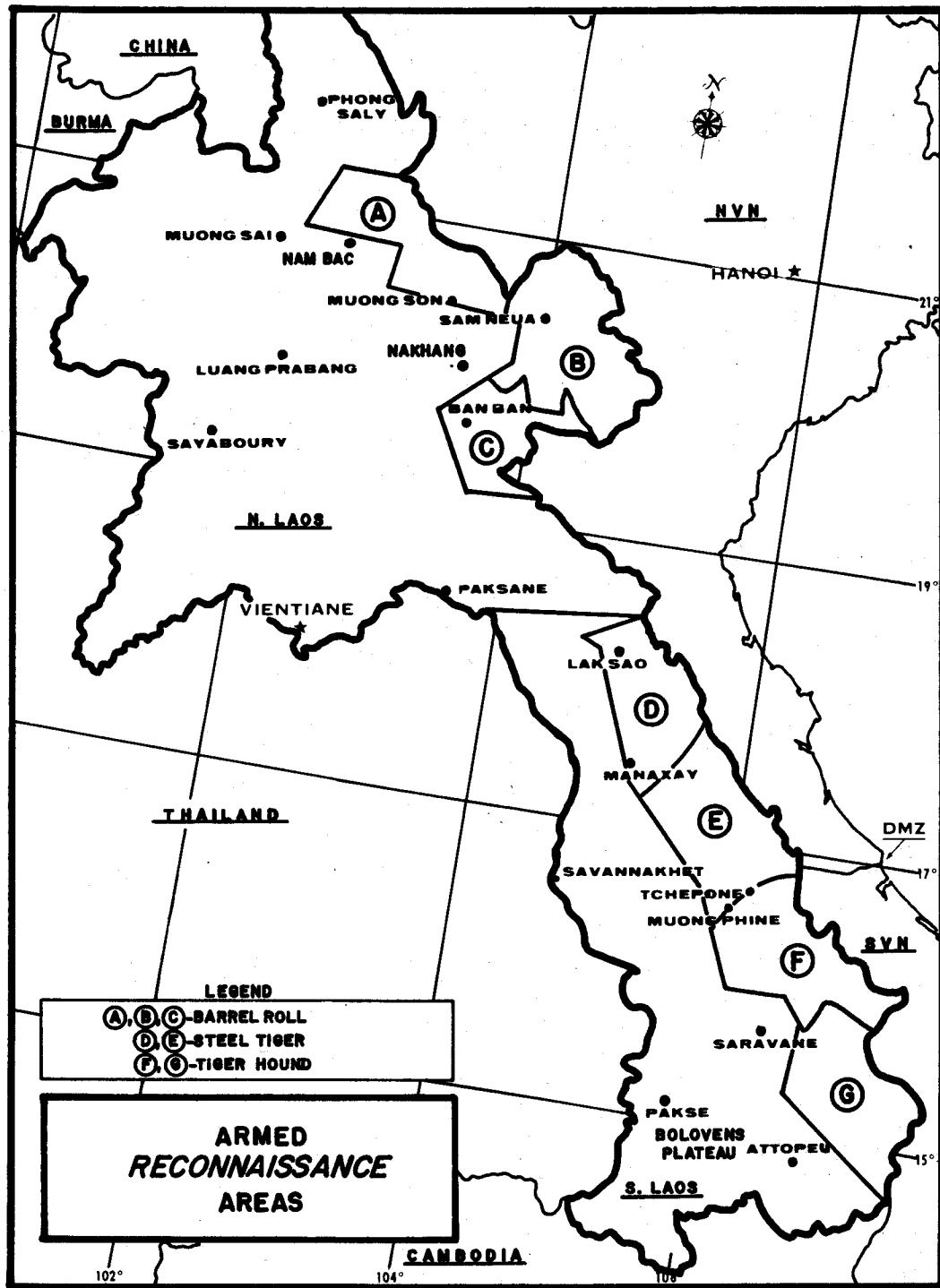


FIGURE 1

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controlled USAF resources in SVN, and bore the COMUSMACV responsibilities for Laos. Under authority derived from CINCPACAF, he also held operational command over USAF strike forces in Thailand, whose mission it was to attack targets in NVN and Laos.

This structure allowed an approach to the Single Manager concept for U.S. airpower in Laos. In the interest of effectiveness, Thai-based resources could be allocated against either NVN or Laos; similarly, SVN-based resources were usable in SVN, Laos, or portions of southern NVN. This flexibility already existed by January 1967. Only a political restriction imposed by the Thai government blocked the use of Thai-based USAF strikes into SVN, thereby completing the triangular capability to shift USAF strike sorties throughout SEA and permit wider control, flexibility, and effectiveness. This restriction was modified in January 1968, when Thai-based aircraft were allowed to strike in I Corps, the northernmost zone of SVN.^{10/}

Ambassador to Laos

Since no "U.S. forces under area military command" were located in Laos, the U.S. Ambassador to Laos was responsible for the "overall direction, coordination, and supervision" of U.S. activities in support of the RLG. This was established by Presidential directive. The Ambassador's policy regarding U.S. air operations in Laos stated that all planning and participation concerning Laotian operations had to have his approval before implementation. The Air Attache Office in Laos provided the channel for requests for U.S. air support.^{11/}

A small USAF detachment, established in Thailand in mid-1964, served to

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train RLAF maintenance technicians and RLAF and Thai mercenary pilots for T-28 operations in Laos. From this detachment and the Air Attache Office, the Ambassador was later supplied with USAF personnel to assist him, and air operations centers (AOC) were set up at Vientiane and Savannakhet. In addition to military air activities, this group became closely involved with Controlled American Source (CAS) activities, U.S. Agency for International Development (USAID) projects, and Air America personnel who operated throughout Laos from isolated short takeoff and landing (STOL) sites.^{12/}

By delegation from COMUSMACV, the Commander, 7AF, was required to coordinate with and obtain approval of the American Embassy for the conduct of air operations in Laos. Rules of Engagement were established by CINCPAC and the Embassy at Vientiane, with COMUSMACV concurrence (hence 7AF, too). Additional rules established by the 7AF Commander were designated as operating rules.^{13/} The Commander, 7AF, was also responsible for submitting nominated targets to the U.S. Air Attache (USAIRA) for validation before they could be struck.^{14/} Also involved, though to a lesser degree, was the U.S. Ambassador to Thailand, who had to obtain permission from the Thai government to allow U.S. aircraft, based in Thailand, to conduct air operations into Laos.^{15/}

To have a clearer understanding of the complexities of the Laotian conflict, it is necessary to keep these relationships in mind. The U.S. Ambassador to Laos held primary responsibility to our Government for the situation in Laos. He was vitally concerned with the situation of the RLG. The diplomatic "chain of command" proceeded from him to the State Department in Washington. His primary responsibility ended at the Laotian Border.

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The 7AF Commander, however, had wider and different responsibilities. His interests in Laos stemmed from relationships with COMUSMACV and CINCPAC (through CINCPACAF). Although responsive to the Laotian situation, he was directly concerned with SVN and NVN, as well as most of Southeast Asia. The military command structure "chain" also extended to Washington, but via CINCPAC and the JCS, to the Department of Defense.

Targeting and Concepts of Operation

USAF strikes in Laos were directed at two broad classifications of targets. They were targets of opportunity and fixed targets. Targets of opportunity were those of a military nature, such as "vehicles, troops, active AAA, etc." which were not specifically designated in the frag order.^{16/} Fixed targets were defined as "caves, truck parks, open storage, buildings, ferries, cantonment/barracks, trenches, and bunkers".^{17/}

More generally associated with the fixed target category were validated RLAF targets. These were a changing list of RLAF numbered targets which was approved by an Embassy, Vientiane message, and on which 7AF annotated photography was available to aircrews.^{18/} Throughout the period of this report, the number of RLAF validated targets never fell below 515, and once rose as high as 681 in October 1967.^{19/} The ability to strike these targets permitted increased flexibility, since they could be struck as either primary or alternate targets.

In turn, each of the RLAF validated targets was placed into one of three priority categories, depending upon its residual value for repeated strikes or its political/military sensitivity. Priority "A" or "B" targets could be

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struck without further validation; priority "C" targets could not be struck without the specific authorization of Vientiane.^{20/}

Provisions were also made to strike targets not previously validated, or which were outside approved areas. The responsibility and authority for validating targets for U.S. aircraft operating in Laos were delegated to:^{21/}

AIRA, Vientiane

AIRA, Savannakhet

AIRA, FACs

Laotian Observers (those assigned to U.S. FACs or the ABCCC)

Selected CAS Team Chiefs (five in BR and one in SL)

No village in Laos could be attacked without validation by AIRA or the Embassy at Vientiane, unless ground fire was received from the village.^{22/}

To improve the coordination necessary for USAF operations over Laos and promote better targeting, a series of meetings was begun at 7AF/13AF Headquarters at Udorn RTAFB, Thailand, on 24 January 1967.^{23/} The participation of four organizations was originally requested: 7AF/13AF; CAS, Udorn; AIRA, Vientiane; and 7AF. The meetings continued with these representatives until late in 1967. Most of the targets were recommended by CAS, Udorn.^{24/}

Because it was believed that other units operating in Laos possessed considerable knowledge of lucrative targets along the enemy lines of communication (LOCs), additional participation was invited to include organizations which had FACs or strike controllers. Representatives of the following organizations began attending the meetings: 7AF Airborne Command and Control

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Squadron (ABCCC); 20th TASS (Covey FACs); 131 SAC (SPUDS--Army MOHAWK Recon); Task Force Alpha; 602d TFS (Fireflies); and the 56th ACW (Air Commandos). The availability of targeting information at 7AF/13AF was enhanced in early 1968 by the acquisition of Photo Interpreters, who increased that Headquarters' evaluating and selecting capability.^{25/}

The relative importance of targets to be struck in Laos was brought out in the 7AF Operations Order 433-68, which described USAF operations:^{26/}

"Attack aircraft will perform armed reconnaissance over specified lines of communication to locate and destroy enemy targets of opportunity. Where rules of engagement permit, armed recce is the primary mission...."

"Flights fragged for fixed targets will also conduct armed reconnaissance with due consideration for fuel requirements and rules of engagement...."

"Attack aircraft will strike fixed targets as fragged, but may be diverted to targets of opportunity...."

"The Royal Laotian Government ground forces will be provided with close air support on a recurring basis. CAS (Controlled American Sources), American Air Attache (AIRA), Vientiane and 7/13AF will provide coordination for these operations...."

Fragging, Control, and Diversions

The fragging of USAF strike sorties in Laos was accomplished at Headquarters, 7AF. The 7AF Command Post (CP) controlled sorties planned for BARREL ROLL and STEEL TIGER. In addition, the 7AF Director of Operations, Command and Control (DOCC) exercised control of fragged sorties to STEEL TIGER. The 7/13AF Tactical Air Control Center (TACC) at Udorn served as an alternate in case the 7AF CP could not perform its role. The 7/13AF TACC provided flight-following and monitoring, ready to assume the control and execution functions

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if necessary. The ABCCC filled the capacity of on-the-scene controlling agency to weld the system tightly together. Alert sorties bound for STEEL TIGER were launched by the 7AF DOCC.^{27/}

Subsequent to execution and launch or diversion, aircraft proceeded to the target area with assistance and flight-following provided by Control and Reporting Centers (CRC) or Control and Reporting Posts (CRP). Before entering the area, if possible, flights contacted the ABCCC, which in turn cleared them to a Forward Air Controller (FAC), MSQ-77 facility (ground radar-directed bombing), or, on armed reconnaissance missions, to a fixed point on a highway system or TACAN Radial and Distance.^{28/} Strikes were then carried out.

To enhance flexibility, the diversion of forces was authorized. The 7AF Commander or his representative (generally 7AF CP or ABCCC) made the determination to divert sorties from fragged targets. Diversion from and to any area of Laos, NVN, and SVN was practiced. In addition, the 7/13AF Deputy Commander held diversion authority, provided his actions were coordinated beforehand with 7AF CP, and he gave full consideration to the comparative importance of targets, fuel reserves, weather conditions, ROE, and turn-around requirements.^{29/}

ABCCC

In early 1967, functions of the ABCCC were performed by EC-130s stationed at Da Nang AB, RVN, and RC-47s flying from Udorn RTAFB, Thailand. Two RC-47s covered ABCCC night operations in Laos under the call sign Alley Cat. The Da Nang EC-130 aircraft handled Laotian strikes during the day.^{30/} The EC-130

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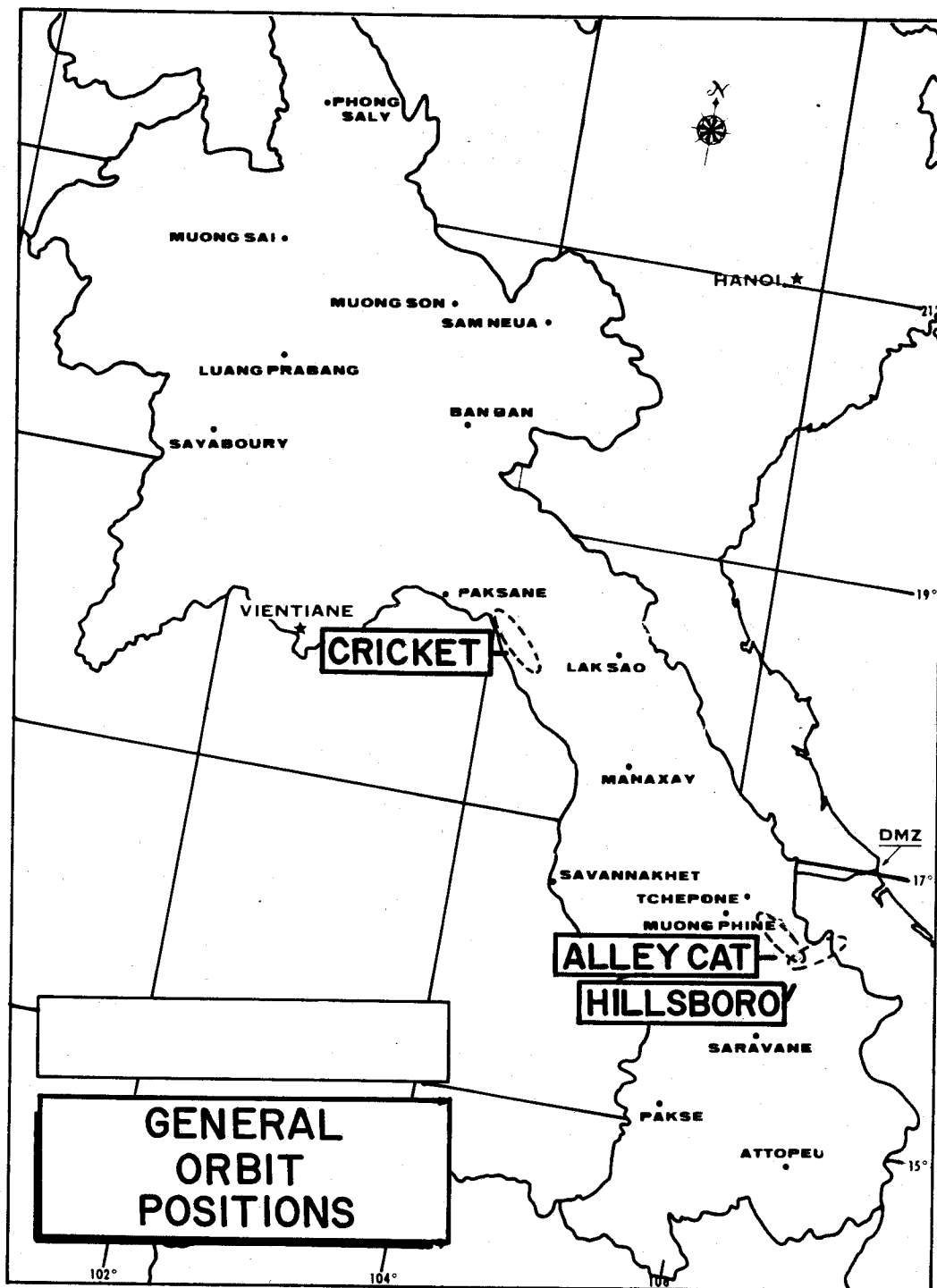
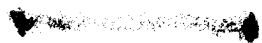


FIGURE 2

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force was subsequently increased to seven aircraft, and three of these were deployed to Udorn to replace the RC-47s in June 1967.^{31/} It was planned that the seventh aircraft would always be in maintenance. The split operations involved one sortie per day from Da Nang and two from Udorn.

The lone Da Nang sortie, call sign Hillsboro, flew a 12-hour mission providing daytime ABCCC coverage in TALLY HO area in NVN and TIGER HOUND in Laos. Cricket, one of the Udorn sorties, covered the rest of Laos (STEEL TIGER and BARREL ROLL) and RP I in NVN during the day. At night, another Udorn-based EC-130, assuming the Alley Cat call sign, took on the responsibilities of both Cricket and Hillsboro. (See Fig. 2.)

In July 1967, ABCCC aircraft at Da Nang were damaged in an enemy mortar attack. Concern generated by this attack and the problem of replacing delicate and complicated communications capsules in the EC-130s prompted the rest of the operation at Da Nang to move to Udorn.^{32/} Although Udorn was congested and steps were considered to return the entire ABCCC operation to Da Nang,^{33/} operations continued from Udorn.

Also in July 1967, a program was begun to carry a Laotian national aboard the Hillsboro aircraft who could offer on-the-spot validation for strikes on fleeting targets in Laos.^{34/} When Hillsboro shifted operations to Udorn, this practice ceased. At the time, a concept for carrying a Thai aboard Alley Cat to interrogate Road Watch Teams (RWTs) in STEEL TIGER had just been cancelled for security reasons. It was considered imprudent to deny Thai participation, while allowing Laotian, in operations from Thailand.^{35/}

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Subsequently, the Thai participation was accepted, but the Laotian was not resumed.^{36/}

Later, in December, 7AF proposed the addition of a second night ABCCC mission, MOON BEAM. MOON BEAM's task was to cover the Hillsboro daytime control area, allowing Alley Cat to assume the nighttime mission of Cricket. These operations began in February 1968 and MOON BEAM became a vital part of the major operation, NIAGARA, around Khe Sanh. However, a shortage of EC-130 aircraft forced the termination of MOON BEAM after NIAGARA ended, and operations continued with only Alley Cat providing night ABCCC services. Plans and manpower were established to return to MOON BEAM operations in August 1968.^{37/}

All USAF strike sorties were controlled by the ABCCC, with the exception of B-52 strikes. The Stratofortresses operated on specific targets and had pre-selected alternates which could be struck. The ABCCC monitored their operations to insure no problems arose involving other aircraft on strike missions. While Navy and Marine aircraft were not directly controlled in the same manner as the USAF, they were encouraged to contact the ABCCC to allow for smoother operations. Similarly, naval gunfire was another topic closely monitored. RLA operations were not under the control of the ABCCC. However, this offered no particular difficulties because RLG air operations were normally conducted in areas in which the USAF did not operate extensively.^{38/}

While the ABCCC operation was designed primarily to facilitate and extend the command and control of the 7AF Commander in the extended battlefield areas of Laos and NVN, the inherent flexibility of air maneuver of the ABCCC to provide better battlefield coverage was not forgotten. Kham Duc was a recent

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example of this flexibility. When the Special Forces Camp at Kham Duc in SVN was attacked in May 1968, Hillsboro was shifted from its normal orbit to provide on-the-spot ABCCC service to the operation. Hillsboro played a significant part in managing the air resources which permitted evacuation of the defenders. ^{39/}

Forward Air Controllers

To provide information and direction to attack aircraft, FACs were supplied from several sources:

- Ground FACs were associated with the Laotian Army (Forces Armee Royale, the FAR).
- Laos-based U.S. FACs operated under the auspices of the RLAF.
- Other FACs in BARREL ROLL and STEEL TIGER came from SVN or Thailand units. ^{40/}

FACs had to be familiar with the area they controlled, as well as the local enemy defenses and weather patterns. A full knowledge of the capabilities and munitions of strike aircraft, FAC procedures, and the serious consequences of misidentifying targets were vital to this phase of the operations. ^{41/}

Aircraft that could be used in the FAC role were the O-1, O-2, T-28, A-26, A-1E, A-37, F-100F, and, when performing as flareships, the C-130A and C-123. Pilots of T-28 or A-1E aircraft flying in pairs were permitted to FAC for each other; however, when these were flown singly, pilots were not allowed to FAC for themselves, unless two qualified crewmembers were on board to cross check and positively identify the target. The A-26, normally carrying two qualified crewmembers, had the capability for FACing its own strikes. ^{42/}

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CHAPTER II

THE WAR FOR LAOS

Politics

Elections held on 1 January 1967 gave Premier Souvanna Phouma's "United Front" about two-thirds of the seats in the National Assembly. The election had shown that Souvanna was better off politically than he had ever been before. Rightists had lost some strength, and neutralism, per se, had been so weak that no one had run under that label, although a few Neutralists had been elected. It was significant that the Forces Armee Royale (FAR) supported the "United Front", because the FAR was a very important factor behind the scenes. ^{1/}

One PACAF publication analyzed: ^{2/}

"In retrospect, the election campaign gave every appearance of the democratic tradition although there is little doubt that the rural vote was thoroughly manipulated by FAR Regional Commanders. The electorate, though largely illiterate, were not overtly crowded into voting for candidates that they did not personally approve or esteem. All in all, the democratic electoral process in Laos apparently succeeded as well as could be expected, thereby setting an example for the rest of SE Asia."

This degree of stability was to continue through 30 June 1968, but not without periodic fluctuations. Factionalism seemed endemic to Laos. Even fears of secession by certain portions of the nation occasionally cropped up. A deteriorating military situation in 1968 and grumblings in the FAR caused some anxiety, but no strike on the order of Neutralist General Kong Le's coup

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attempt of September 1966 or Air Force General Ma's try in October of the same year took place. Ma stayed out of reach in political asylum in Thailand. Kong Le threatened to return as he bounced from Indonesia to Hong Kong and finally came to rest, to the chagrin of the Laotian Government, in Paris.^{3/}

American Air Attache

A vital link in the air operations in Laos was provided by the Office of the American Air Attache (AAIRA) in Vientiane.

By the Geneva Accords of 1962, the signatories agreed that no foreign advisors, other than the French, would be allowed in Laos. In line with this, the U.S. Military Assistance Group (MAG) left Laos and moved to Thailand, although supply and some advice continued to be given. The AIRA and the Army Attache (ARMA) assumed these tasks (the ARMA operated with a smaller staff than the AIRA, and their "extra-curricular" activities were primarily observation and reporting).^{4/}

To handle the air portion of MAAG duties (among them the RLAF), coordinate Air Force combat activities with 7AF and the Deputy Commander, 7/13AF, advise the Ambassador on air matters, and perform the normal attache, intelligence, and administrative functions, the AIRA functioned with a strength of only 100 personnel.^{5/} This number was miniscule when compared to the nearly 50,000 NVA troops who were in Laos, and whose presence the North Vietnamese Government denied.

The 100-man limitation on the AIRA office posed many problems. In some cases personnel assigned were faced with operational difficulties and were

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called upon to give counsel on fast-changing and technical operational matters not normally associated with attache work, and hence, outside of their normal experience. This was an important function, since the Ambassador relied upon advice from this source in formulating his overall view of the air war, for which he was ultimately responsible.^{6/}

Normal attache functions, among them administration, had to be performed by a part of this group--and these duties were not minor. For example, more than 10,000 messages were processed by AIRA monthly.^{7/} The maintenance of records was a formidable task.

To fill the advisory role to the RLAF, the AIRA operated three AOCs. One each was located at Vientiane, Luang Prabang, and Savannakhet. A fourth was to be established at Pakse later in 1968. While lending assistance and advice to the RLAF, the AIRA was prohibited from actually taking part in combat operations, with the exception of providing FACs. The AOC at Luang Prabang is used as an example of the USAF manning at an AOC in Laos:^{8/}

- 1 AOC Commander (a T-28 Instructor Pilot)
- 1 FAC
- 1 Medic
- 1 Radio Operator/Repairman
- 1 Aircraft General Maintenance Specialist
- 1 Armament Specialist
- 1 Engine Specialist
- 1 Ordnance Specialist

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In addition, AIRA provided ten USAF FACs for Laotian operations (there were only five until August 1967). Drawn from various sources, emphasis was placed on getting FACs with current SVN operational experience. This handful performed exceptionally well, and was used throughout Laos. They supplemented other USAF FAC operations in south Laos and in the Panhandle. They were the only airborne FACs available to the RLAF. And most importantly, with the exception of A-1 Firefly aircraft who doubled as FACs on occasion, they were the only FACs in north Laos. In general, one FAC flew from Luang Prabang and covered portions of north Laos; four others operated out of Lima Site 20A guiding strikes in the usually most active USAF area in north Laos, Gen. Vang Pao's Military Region II. Two FACs served the middle Panhandle from Savannakhet and three covered the south at Pakse.^{9/}

To overcome the language barrier and provide on-the-spot validation of targets, a Laotian observer accompanied these FACs. RLAF restrictions were less stringent than those placed upon USAF operations. However, the RLAF operations offered much less flexibility in targets and the shifting of strikes.^{10/}

RLAF

The RLAF strike force consisted of T-28s obtained from U.S. sources. The total number available fluctuated considerably between January 1967 and July 1968; however, an average of about 45-50 would serve for an approximation. Of this number, six at Udorn RTAFB, Thailand, were used for training and not for combat. In early 1967, strike aircraft were evenly divided between Savannakhet and Luang Prabang in Laos and Udorn in Thailand.^{11/} T-28s from Luang Prabang covered northern Laos; the Savannakhet planes struck targets in central and

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south Laos. The aircraft were shifted to other locations on occasion; for example, to Paksane and Pakse, on special operations or to provide air support for scattered operations. Because of increased enemy emphasis in the south, steps were begun to make operations out of Pakse more permanent and an AOC was being established in 1968.^{12/}

RLAF pilots were trained at Udorn RTAFB for T-28 operations. There existed a continual shortage, however. Training began with completely inexperienced Laotians, but combat pilots were turned out.^{13/}

RLAF maintenance technicians were also trained at Udorn. Upon completion of training, both the pilots and mechanics were assigned to bases in Laos. Minor maintenance on combat aircraft was performed at operating bases in Laos, with USAF technicians on hand to lend assistance and advice. These Americans were those of the AIRA AOCs.^{14/} Major maintenance and periodic inspections were conducted at USAF facilities at Udorn.^{15/}

Because of the shortage of Laotian nationals to pilot T-28s, Thai "mercenary" pilots (called Victors) participated. The Victors flew unarmed aircraft to Wattay Airport at Vientiane. The aircraft were met there by USAF personnel who daily commuted between Udorn and Vientiane and who armed, fueled, and loaded the T-28s for subsequent launches.^{16/} After flying the combat sorties, the Victors returned to Udorn.

Complete RLAF T-28 sortie data were not available for this report; however, from February through December 1967, 7,991 strike sorties were identified. From January to July 1968, the number was 3,728.^{17/} Operations apparently were

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not steady because weekly sortie totals fluctuated considerably. Jumps from about 60 sorties per week to more than 200, and then back to 60 were not uncommon; therefore, no trend in operations can be discerned. These fluctuations were generally due to a variety of problems. Among them were maintenance problems, demand, losses, and, most of all, bad weather. ^{18/}

Bad weather was a continual hindrance to air operations over Laos. USAF strike sorties were inhibited greatly, but the Laotian T-28s, with generally lower performance and lacking the flexibility to switch to other areas for better operations, were severely hampered.

It may be roughly stated that two-thirds of the RLAF operations came from Vientiane and Luang Prabang. Luang Prabang was located in a small valley surrounded by mountains which rose to more than 5,000 feet. Aircraft flying north or northeast from Vientiane had to cross similar terrain; in one direction a mountain towered 9,000 feet. Monsoons, mountain weather, a shortage of navigational facilities and equipment, and low performance aircraft were not conducive to steady performance. In addition, worse conditions often existed in target areas.

The RLAF was completely subservient to the Forces Armee Royale (FAR). It was not represented in any of the higher echelons of command. ^{19/} This was one of the bones of contention in General Ma's coup attempt in late 1966 (another ^{20/} was the use of RLAF aircraft for personal gain by some officials). Hence, the primary mission of the RLAF strike capability was close air support.

The RLAF close air support was very unsophisticated. Communications,

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air-to-ground, were usually poor if they existed at all. Subject to the orders of FAR commanders, airborne diversions were seldom possible. A handful of AIRA FACs was all that was available to direct strikes.^{21/} Furthermore, instructions to FACs on targets were generally vague (some FAR ground commanders distrusted the idea of airstrikes and never called for them).^{22/} One AIRA FAC related that it was not rare to have a two-three-mile square pointed out on a map as the target area. It was the apparent expectation that the RLAF could level such an area. The FAC had to reconnoiter the general area to find a target before calling in the strikes, providing, of course, that the T-28s had not arrived before the FAC and already expended.^{23/}

Nevertheless, the RLAF T-28s played a considerable role in the total Laotian picture. Numerous FAR engagements may well have ended in defeat without their participation. The long, though eventually unsuccessful, defense of Nam Bac, described later in this study, would have been impossible without the RLAF. Royal Laotian Air Force operations were usually conducted in areas where USAF aircraft did not operate, and they were bound by much less stringent restrictions. The RLAF was also able to operate in the border areas of Laos, and strike targets which would have been impossible for the USAF under existing Rules of Engagement.^{24/}

Ground War

As 1967 opened, military prospects in Laos looked better for the RLG. The previous August, friendly forces had succeeded in capturing and occupying the Nam Bac Valley in Luang Prabang Province. The valley, an area with high rice yields and good fruit production, had come under government control for the first

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time since 1960.^{25/} This region, just some 60 miles north of the Royal Capital at Luang Prabang, had historically provided the avenue of invasion from the direction of Dien Bien Phu in NVN.

Moreover, the ability of the RLG to take and hold Nam Bac was indicative of the receding Communist tide in northern Laos, where most of the population was located. Since 1964, when the battle had been resumed, Communist forces had been stubbornly and fitfully giving ground. There appeared little doubt that the PL was a spent force and would have "withered on the vine" if left to themselves.^{26/} But they were propped by the infusion of nearly 14,000 first line NVA combat troops organized in formal units. This number beefed the enemy tactical forces to about 50,000 PL, NVA, and dissident Neutralists. It was estimated that another 25,000 NVA were in Laos, but they served as advisors, engineers, and transportation and communications personnel, more directly associated with the infiltration and supply routes than direct combat. These numbers did not take into account combat units moving south to the Vietnamese war.^{27/}

Hence, although the friendly posture had been improving steadily, they were not in a position to make large scale military gains against the enemy as long as NVA units supported the PL.^{28/}

The war exhibited ebb and flow characteristics. Almost traditionally, during the dry season from November to April, the enemy moved to the offensive and expanded his holdings. Pushing back the friendly forces, he tried to consolidate newly won regions. But, as the wet season came on, from May to September, the communists were forced to pull back.

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By contrast, as enemy operations literally bogged down in most areas during the wet season, friendly forces became more aggressive. Numbering about 80,000 Royal Army, Neutralists, guerrillas (the Auto-Defense-de-Choc forces of Gen. Vang Pao), and paramilitary units (nearly half the total), friendly forces varied in combat effectiveness.^{29/}

In the past, the Neutral Army Forces (FAN) had been the best led and equipped units, but they lacked experience and training in large scale operations. Furthermore, they were reluctant to place themselves under the command or at the disposal of FAR officers, whom they distrusted.^{30/}

The most effective combat troops were the guerrillas, primarily the Mao tribesmen, who fought less for national ideals than their own way of life, institutions, and leaders. They naturally opposed the NVA as "outsiders". However, the guerrillas, the ADC, were not reliable beyond their indigenous locale and would fight only for certain leaders. The guerrillas were, in effect, mercenaries, fighting for U.S. supplied money, loot, and plunder. Such a force did not serve well in static positions.^{31/}

The paramilitary forces were home guards, and were mainly interested in their own villages, valleys, and provinces. Generally, effective only in scouting, guerrilla, or village defense roles, their training was weak, logistical support irregular, and they had little experience with crew-served weapons.^{32/}

The sole advantage held by friendly forces was airpower. Air supply and mobility considerably enhanced their capabilities. This was provided by the

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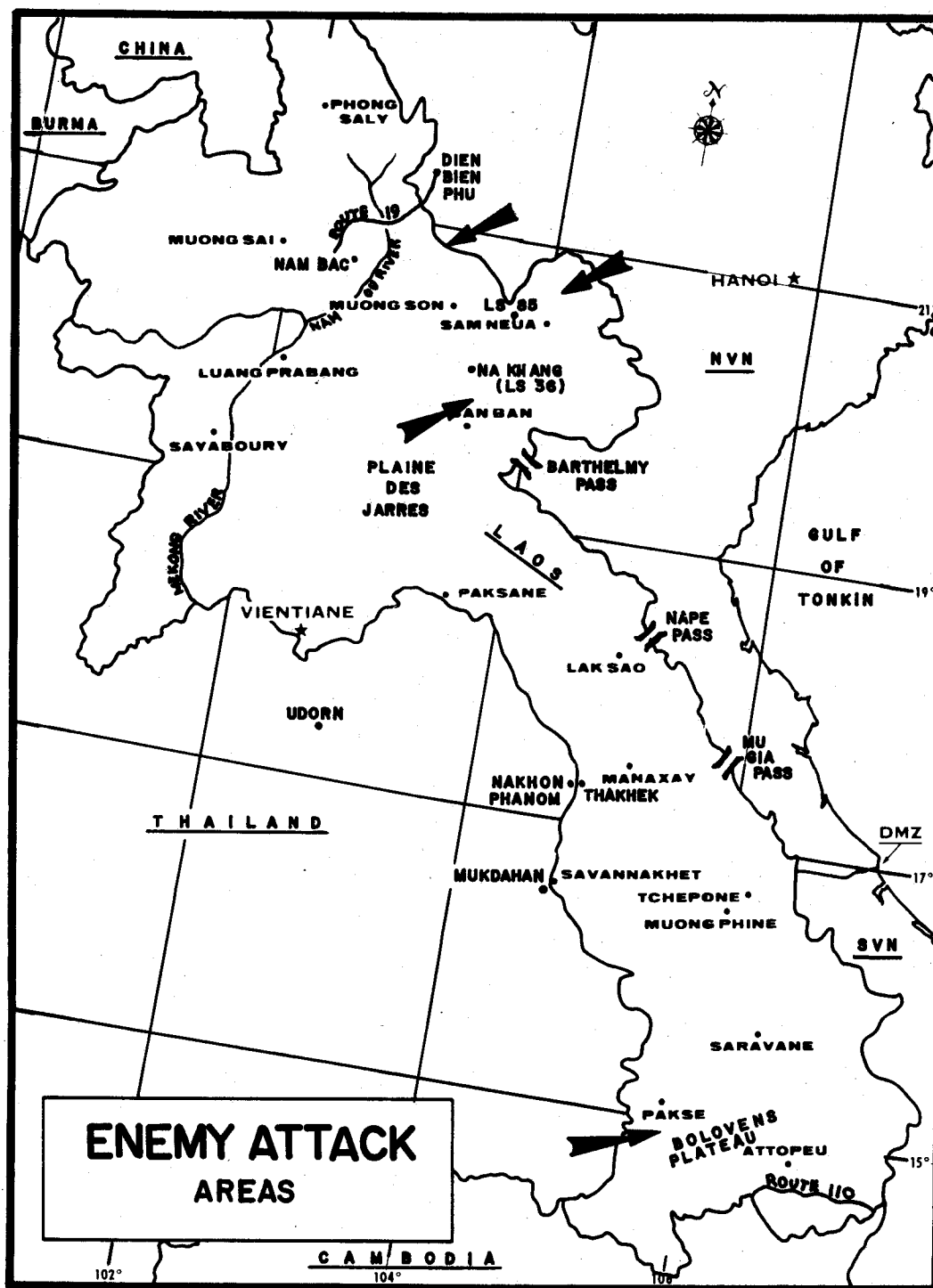


FIGURE 3

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RLAF, the USAF, and certain civilian contract airlines (Continental Air Services and Air America). Even more important, however, were supporting air attacks by RLAF T-28s and USAF aircraft. ^{33/} A PACAF Intelligence publication stressed: ^{34/}

"U.S. air and RLAF operations have been the most instrumental factor in bringing about the optimistic military position of the Royal Laotian Government. The FAR and other friendly units will continue to depend on air support in both defensive and offensive actions to carry the fight to the enemy."

The RLG carried out two different types of war in north and south Laos. In north Laos, on a limited scale to be sure, the RLG waged a war of position and maneuver. It was here the majority of successes were obtained. In the south, however, friendly forces were not as strong, and hence engaged primarily in infiltration and attrition against the enemy. They stressed pacification and exerted pressure on North Vietnamese supply lines to SVN and south Laos. This latter tactic tied down considerable enemy forces. ^{35/}

Dry Season, 1967--Enemy Stalled

Throughout Laos, the enemy, for the first time, failed to achieve a single significant exploitation victory during the dry season which ended in April 1967. (See Fig. 3.) This fact was not lost to the Laotian Government and a feeling of cautious optimism began to grow. It was hoped the turning point in the war had been reached. ^{36/}

This did not mean the enemy was inactive. In January, he launched two fairly large attacks in north Laos. On 6 January, he drove on Lima Site (LS) 36 at Na Khang, about 25 miles north of Ban Ban. On 22 January, LS 52, about 20 miles north of Sam Neua, was the objective. Neither attack was very

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successful.

Site 36 was the principal friendly forward base in north Laos. With a STOL strip, it was a supply, evacuation, and communications point for guerrilla operations in the area. The site was also used as a forward staging base for U.S. helicopters engaged in search and rescue operations in Laos and NVN.^{37/}

The NVA began a buildup in the area in late 1966 and, on 6 January 1967, launched their attack. (CHECO report, "Second Defense of Lima Site 36".)^{38/}
The American Ambassador in Vientiane reported:

"...it is not repeat not our intention to attempt to hold it (Site 36) against overwhelming odds. At current stage of attack, defenders probably outnumber enemy and should be able (to) hold out with air support unless and until enemy reinforcements arrive."

"We are currently receiving active and rapid air support from Seventh Air Force, but are still somewhat handicapped because of poor weather. If weather continues to improve, we hope to be able (to) break the back of today's attack by combination of USAF and T-28 air strikes plus defensive tactics of ground forces at the site."

Later that same day, the Ambassador was able to inform Washington:^{39/}

"Due to favorable break in weather and superb action by Seventh Air Force and Thai-piloted T-28s, using mosaic defense plans developed by CAS, and combined with Meo counterattacks, enemy drive on Na Khang (Site 36) has been blunted and driven back. Enemy casualties have been heavy and they have left field in confusion.... Original defense perimeters have been re-established and as of 1600 local situation (is) quiet."

Similarly the attack later in January against Site 52 was relieved by the intervention of airpower.^{40/}

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Early on the morning of 2 February, a small enemy force of between 12 and 30 men conducted a "disastrously successful" sneak attack with rockets and small arms against Luang Prabang airfield. Following the 15-minute onslaught, the attackers withdrew. Friendly losses were six T-28s and two H-34 helicopters destroyed. Three other T-28s and one H-34 were severely damaged. The AOC was partly destroyed. Five soldiers were killed and six wounded--there were apparently no enemy casualties. ^{41/}

Since Luang Prabang was the Royal Capital and had previously been immune to attack, the incident was unprecedented. Perhaps because it was the Royal Capital, the Communists seemed to deliberately avoid hitting the city or damaging the runway. ^{42/}

In the extreme south, PL/NVA activity indicated a potential buildup in the area of the Bolovens Plateau. Although no attack materialized, the area was closely watched, because, if the eastern end of the Plateau were lost, the town of Attapeu would have been surrounded and hence untenable by the FAR. ^{43/} USAF and RLAF airstrikes conducted in the area of the Bolovens on 5-6 February were judged instrumental in halting the potential enemy thrust. ^{44/}

Activity for the remainder of the dry season was generally minor. In the friendly-held Nam Bac area, seesaw engagements were fought as friendly forces launched forays and spoiling attacks to keep the Communists off balance; Communist forces countered by retaking lost positions. ^{45/}

Site 52, north of Sam Neua, the most northeasterly ADC stronghold, was taken by the enemy on 4 April. The enemy attacked from three sides and had

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prepared an ambush to catch the retreating friendly troops in the fourth direction. The result was a demoralizing defeat for the defenders.^{46/} However, aside from these smaller activities, no major enemy drive had materialized before the coming of the wet season.

Wet Season 1967, Friendly Vacillation and Dissension

Friendly activity in the first half of the 1967 wet season matched the enemy's previous performance--relatively little was accomplished. Minor skirmishes appeared to have been the order of the day.^{47/} Spoiling actions now became the enemy's tactic. An abnormally dry period in June in northern Laos allowed the enemy to conduct some minor operations, no doubt calculated to forestall a friendly offensive. However, no offensive was planned.^{48/} The FAR concentrated on strengthening the Nam Bac area.

On 16 July, an even more destructive attack than the one in February was launched against the Luang Prabang airfield. An estimated 12 infiltrators hand-placed charges on most of the T-28s located at the field. Of the 11 T-28s, nine were completely destroyed, with one other destroyed in all but name. A portion of the ammunition supply (containing fuzes and napalm) also was lost, although the main dump was not hit. Three friendly soldiers were killed and eight were wounded. No enemy was reported engaged.

The following data revealed the status of the RLAF T-28s:^{49/}

Before the attack, assigned	55
Destroyed	9
Major damage	1

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Major damage in Site 36 crash landing	1
"C" Models, at Udorn, training only	5
Reconnaissance configured	1

Accordingly, after 16 July, only 38 T-28s were available. Scheduled inputs called for three to be delivered in each of the next three months, but ^{50/} it was believed that this force would be adequate for upcoming operations.

On 19 July, Ban Phone, a town about 40 miles north of Attopeu, and on the northeast edge of the Bolovens Plateau, was overrun by 600 enemy troops. ^{51/} This move was relatively unexpected, but no further drives resulted.

In the north, meanwhile, enemy road construction was progressing along Route 19, which entered Laos near Dien Bien Phu and wound its way toward the Nam Bac Valley. Also during this period, the Nam Ou River was being used to supply the enemy. Neither ambushes, nor airstrikes halted this traffic. ^{52/}

To obtain more effective use from USAF diversions to BARREL ROLL from NVN, a new program was begun at the end of July. Under the nickname, KNIGHT WATCH, prevalidated targets in each sector of BARREL ROLL were selected, and FACs (A-1Es) were briefed in detail by CAS to include photo interpretation. Then the FACs were sent to fly over these areas. If the USAF strike force to northern NVN (ROLLING THUNDER) could not hit primary targets due to bad weather, they were to be diverted to BARREL ROLL to these pre-positioned FACs. Forty-seven strike sorties and four FACs contributed to the first operation. Results were worth the effort and enemy AAA response was heavy, indicating the value of the targets. ^{53/} Additional operations of this kind were carried out at

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different intervals.^{54/}

Early in August, Gen. Vang Pao sent part of his guerrillas from Muong Hien toward Route 6, a heavily used enemy artery. On 2 August, one battalion of FAR, in conjunction with two companies of ADC, captured Muong Ngan (south-east of Xieng Khouang), netting the richest valley in northern Laos, and keeping a valuable rice harvest from the enemy. The operation used very current information from four PL ralliers. In fact, the ralliers were used as ground FACs for T-28 and A-1E strikes.^{55/}

In the meantime, in the Nam Bac area, enemy activity was picking up. Unconfirmed reports indicated three additional NVA battalions were being introduced from Dien Bien Phu. In addition, a large enemy buildup in the Plaine des Jarres, unprecedented since 1964, was beginning. Since action in the Panhandle of Laos was scattered and minor, the FAR began to shift some forces to the Nam Bac area to replace worn units.^{56/}

To counter enemy reinforcements and clear the enemy from one of his strong points east of Nam Bac, the FAR began steps for a fairly large operation late in August. Aircraft were to attack the enemy and guerrilla activities were to keep the enemy off-balance. This operation never really got started.^{57/}

Although it was late in the wet season to begin a major operation, the FAR appeared determined to carry it off--initially. The first of a series of delays occurred at once, when resupply efforts were incurred by periods of bad weather and maintenance difficulties with RLAF helicopters, which carried most of the supplies to friendly units.^{58/}

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In early September, a short round incident on the southwestern side of the defenses around Nam Bac caused another delay. RLAF T-28s had inadvertently bombed their own troops, and these troops had fled the field leaving a gap in the perimeter. The defenses were unhinged, but, fortunately, the enemy did not attack at once. However, by mid-September that gap had not been reoccupied and, around the 20th, the position was taken by the enemy.^{59/}

Rumbles of dissension were heard from the RLAF. Even though nonrepresentation in higher echelons of command had been a cause of the coup attempt by the RLAF Commander, General Ma, in 1966, nothing had been done to correct this problem. The RLAF helicopter operation, a vital part of the supply mechanism, suffered from ineffective maintenance management, poor leadership, and a lack of guidance. In south Laos, low morale and inefficiency fostered the collapse of RLAF discipline, resulting, on 5 September, in a refusal by RLAF personnel to load strike aircraft. RLAF officers were generally reported as weak and absent from duty for long periods of time. Low pay, inadequate quarters, no messing facilities, poor leadership, and poor equipment were other complaints.^{60/}

In addition, commanders around the Thakhek area in central Laos expressed concern because of the shifts of troops from their area northward. Neutralists, whose integration with the FAR had not yet been achieved, were complaining of inadequate communications and dwindling rice supplies. To bridge the gap created by the disaffection of the RLAF, Thai-based T-28s were used more extensively. But the enemy was taking advantage of the lessening of airstrikes by increasing his probes around Nam Bac.^{61/}

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At the end of September, the offensive had still not begun. The position, which had been inadvertently struck and evacuated, and which subsequently was taken by the enemy, could not be recaptured. In early October, the piecemeal commitment of forces to counter enemy probes around Nam Bac was increasing friendly casualties. These forces were used outside of friendly artillery ranges and so had little support. Although reduced, this practice was not fully eliminated.^{62/}

In mid-October, supply problems and enemy activity were the excuses offered by the increasingly conservative-minded General Staff. They had become very concerned that the offensive should not meet with disaster. Meanwhile, the enemy was reinforcing, and by skillfully shifting his mortars, was causing heavier casualties among the defenders--but, for the time being, the enemy was content not to launch a major attack. FAR morale was sagging and delay was piling on delay.^{63/} It was becoming very late.

Dry Season, 1967-68--Initiative Lost

By November, the roads in Laos were practically open--in northern Laos, they were all in good shape. While the Nam Bac area was holding and airstrikes were helping, enemy activity was increasing at other places in Laos, which were still weakened due to transfers to Nam Bac.^{64/}

Gen. Vang Pao began to move some of his forces westward in an effort to link up with Nam Bac's defenders and ease enemy pressure. He was relatively unopposed, but movement was slow. The friendly forces at Nam Bac did not push eastward to facilitate a join-up.^{65/}

Finally, dissatisfied with the entire situation, 57 young colonels in the

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army began meeting in November and, toward the end of the month, issued a petition to the RLG calling for a governmental reorganization. Ranking high in their request was a plan to bypass the present CINC and Deputy CINC of the FAR. The petition was rejected; however, no coup resulted. Nevertheless, the meetings of the colonels continued in an attempt to come up with acceptable reforms.^{66/}

By December, enemy harassment had picked up considerably. All over Laos, the enemy was becoming more aggressive. On 23 December, 880 FAR troops were airlifted from Nam Bac to the east of the Nam Ou River to link up with Vang Pao. Almost as if by signal, the enemy countered by stepping up clashes and mortaring the Nam Bac airstrip.^{67/}

It was not until 12 January that the enemy delivered a decisive blow to the defenders at Nam Bac. A four-battalion NVA/PL attack shattered the defenders and overran the positions. Of the approximately 3,800 FAR troops at Nam Bac, only some 1,400 were accounted for by the end of January 1968, and stragglers continued to turn up as late as April. The supplies that were lost were also significant:^{68/}

<u>EQUIPMENT</u>	<u>LOST</u>
60-mm Mortars	36 of 43
80-mm Mortars	16 of 36
57-mm Recoilless Rifles	42 of unknown number
75-mm Recoilless Rifles	7 of 7
75-mm Howitzers	1 of 2

All the ammunition, more than one million rounds of small arms, and 33,000 assorted heavier rounds, was also lost.

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Writing on the impact of the Nam Bac defeat, an unnamed observer wrote in a CAS report in March: ^{69/}

"This defeat was a tragedy for it did not need to happen. It did occur, however, primarily because of poor leadership and poor tactical implementation of basic plans and concepts by officers of the Royal Laotian Government. The Nam Bac defeat cost the Lao armed forces (FAR) approximately 1,500 men who were killed, missing or captured. This manpower loss resulted in FAR in effect losing its mobile reserves for some of the troops that were in Nam Bac at the time of its fall had come from south Laos. The enemy was quick to take advantage of the opening he gained through the Nam Bac defeat and he focused on consolidating himself in north central Laos...."

North Laos

Up to the end of 1967, the enemy had made no substantial increases in the number of NVA troops in north Laos. However, the troops which were present were used more aggressively than in the past. In January, the NVA committed three more battalions to north Laos. Four more arrived in February, but whereas the former had been scattered, more or less, throughout the north, the latter force was concentrated against the Phou Pha Thi area, Site 85. ^{70/}

Site 85

Site 85 was a guerrilla base at the higher elevations of Phou Pha Thi, a 5,800 foot, steep ridge located 25 miles west of Sam Neua in northeastern Laos. A Tactical Air Navigation (TACAN) Channel 97, had been installed near the top to provide navigational assistance to USAF aircraft attacking targets in NVN and northern Laos. As the tempo of the air war against selected targets in ROLLING THUNDER accelerated, USAF planners searched for a method to permit

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all-weather operations against the upper Route Packages. One of the earlier solutions attempted was to have a Pathfinder (EB-66) aircraft lead in fighter-bombers. The Pathfinder was to provide a radar bombing capability. ^{71/}

Through June 1968 in the North

By February, the enemy had injected 3,000 new NVA troops into northern Laos. ^{72/} The loss of Nam Bac in January, and the fall of Site 85 in March, turned loose large numbers of the NVA/PL forces, which had been tied down, investing these friendly positions. They proceeded to press their offensive and a great number of friendly positions in Gen. Vang Pao's Military Region II fell like dominoes. In March, the U.S. Ambassador reported: ^{73/}

"Fall of Phi Thi (Site 85) in Sam Neua Province opens a new time of troubles for Vang Pao and the Meos of Military Region II. The size of the attacking forces and their heavy supporting weapons are greater than anything friendly troops can muster in the immediate vicinity. Therefore, there is no alternative but to evacuate friendly troop units and their dependents in order (to) maintain them intact for counterattack activity in rainy season... (Comments on refugee problem)...."

"It should be borne in mind that North Vietnam mounted attack of this size and intensity because it wished (to) eliminate U.S. installation, which had become "attractive nuisance" for them. Consequently, this vast uprooting of human resources and abandonment of useful territory is direct result (of) U.S., rather than RLG, operational interests."

"Site 36, which is used as forward launch base for ARS helicopters, is another U.S.-dedicated activity which will doubtless also attract enemy attention. Although it is more heavily defended than Site 85, it is questionable whether it can withstand a determined assault by seven NVN battalions, the strength we feel enemy is probably able to deploy against it."

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In an effort to match the obvious escalation of the Laotian war and inflict punishment on enemy supply areas long existing in virtual sanctuaries, steps were begun to increase USAF bombing in northeast Laos. The Ambassador stated: ^{74/}

"Most of the targets are in or lie close to towns and other centers of civilian population which Prime Minister has previously asked us to avoid. I went over list with Souvanna yesterday and we agreed to have U.S. photo-interpreters examine prospects for carefully controlled strikes against a number of Vang Pao's targets. We agreed to take a joint look at photography as soon as my people can get target folders assembled."

Plans were coordinated and forces were readied for strikes against the previously untouched targets, particularly in the areas around Sam Neua and Xieng Khouang. ^{75/} Unfortunately, no massive campaign was launched, largely due to a period of bad weather. A few sorties did strike these areas, but they served more to warn the enemy to make them less lucrative, than to devastate. ^{76/}

On 1 April 1968 (Laos time), the President of the United States ordered a cessation of American bombing above the 20th parallel. In the next few weeks, all U.S. bombing of BARREL ROLL was curtailed considerably, although some strikes were continued in the Site 85 vicinity against enemy positions, and also against enemy concentrations in the Site 59 area. ^{77/}

Near the end of April, difficulties over interpretations of Rules of Engagement and a period of bad weather caused a decrease in some USAF air activities in northern Laos. While enemy activity in these areas had eased

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considerably with the coming of the wet season, he inflicted one more large effort against Site 36. At the end of the month, about five enemy battalions concentrated about 30 miles south of Site 36. ^{78/}

Site 36

Enemy probes had increased in intensity around the site in the last week of April. Pressures came primarily from the east and, for the first few days of May, the USAF sent 50 strike sorties to assist the Meo defenders. Seventeen A-1 sorties were especially effective on 5 May. ^{79/}

Although the enemy had approximately eight battalions in the general vicinity, reports indicated he committed four to five against LS 36. Vang Pao's defenders numbered nearly the same amount, about 1,500 troops. ^{80/} During the second week in May, the USAF devoted 215 of its total 239 sorties in BARREL ROLL to the site's defenders. The results were that an enemy push from the east was virtually destroyed. On the crucial day, 11 May, an additional 18 RLAF sorties were contributed. ^{81/}

After a week of relative quiet, the enemy returned to his task about 20 May. But it had already been estimated that a major enemy attack would come near that point in time, and plans had been made to defend it with a minimum of 60 USAF sorties per day during the period of 20-22 May. Twenty-four first priority targets and 23 second priority targets had already been selected and validated. ^{82/}

Seventh Air Force agreed to the plan, but cautioned: ^{83/}

"Request that these strikes be applied only to those

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targets indicated in referenced message or more lucrative targets in the immediate area in defense of LS36 and not be diverted to other areas as allocation of this amount of air effort to the BARREL ROLL area draws down upon our ability to apply badly needed effort in other areas of 7AF responsibility."

A meeting was held between 7AF representatives and representatives of the Vientiane Embassy on 22 May, to determine future requirements for additional air support for Site 36. ^{84/}

The enemy thrust had been blunted and, in early June, Gen. Vang Pao opened a Meo drive back up the salient, toward Sam Neua, which had been lost. (See Fig. 4.) His tactics were to utilize small guerrilla units to find and fix the enemy; then, large units would move to destroy them. By 1 July 1968, he had made moderate headway. ^{85/}

South Laos

In south Laos, 1967 ended with the PL/NVA forces moving in their traditional early dry season roles of foraging and forcing the friendly units toward the cities, thereby opening the countryside to exploitation by the communists and allowing road repairs and construction to proceed. But, as in the north, three new NVA battalions were introduced in January, and the enemy began expanding operations westward. By the end of February, NVA increases in the south approximately matched those in the north of 3,000 men. ^{86/}

During March and April, enemy forces continued to be aggressive. They threatened, and, in some cases, virtually surrounded a number of cities among them Saravane, Attapeu, and Thakhek across the Mekong from Nakhon Phanom. Friendly forces were rendered relatively ineffective. Despite the fact that

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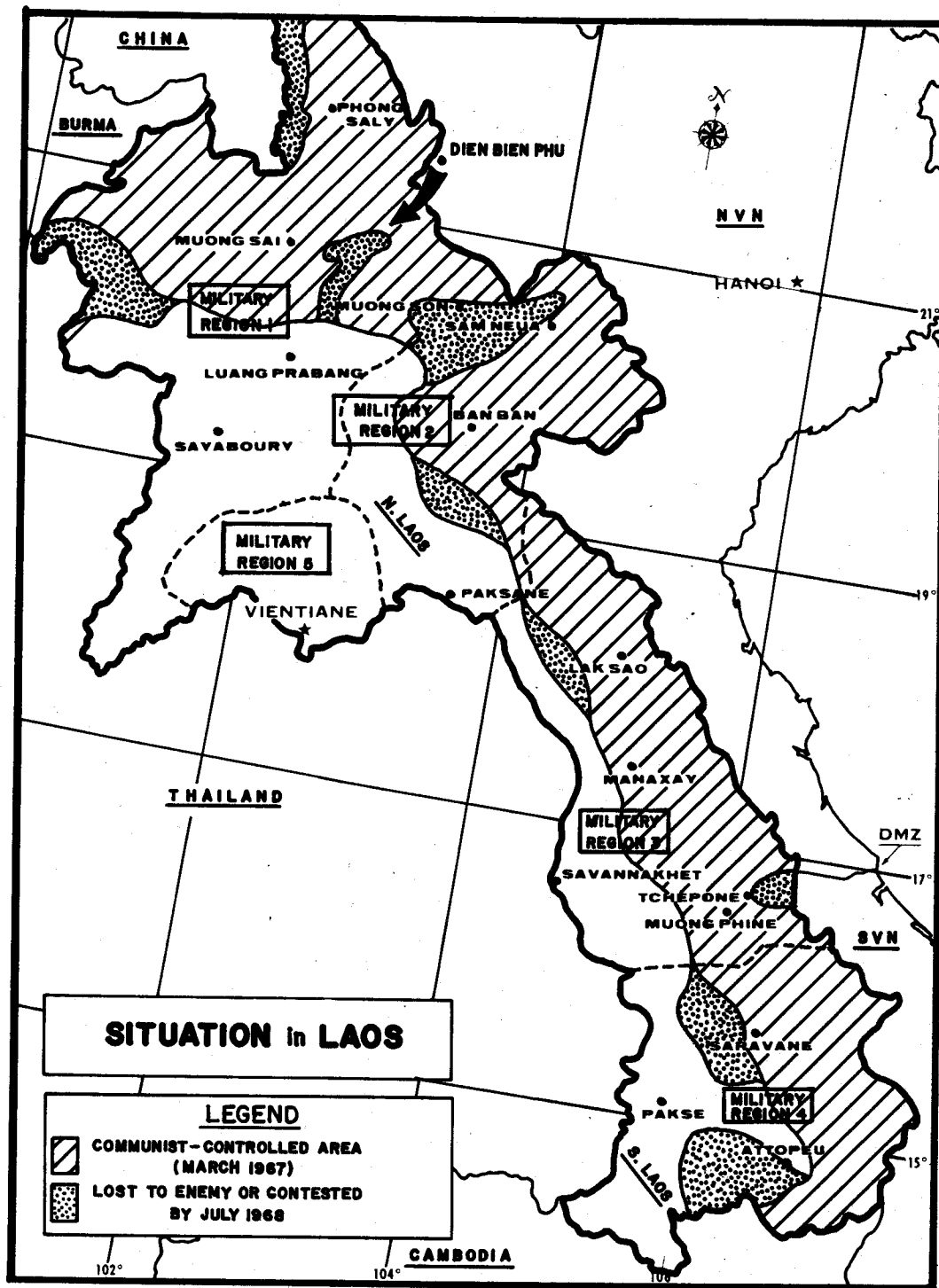


FIGURE 4

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crushing defeats could have been administered to beleaguered defenders in a few of these cities, the enemy did not choose this course. For example, it was estimated that nearly 2,000 enemy troops surrounded Saravane at the end of February. They kept up pressure, but did not launch a final assault. It was unknown whether the enemy was intent on "nibbling tactics", as he had followed at Nam Bac or was afraid to concentrate for a final assault, making himself vulnerable to airstrikes. In the case of Saravane, he may have been swayed by Souvanna Phouma's threat to enlist outside assistance from the 1962 Geneva Accords signatories, if Saravane fell.^{87/} Whatever the reason, friendly forces were effectively neutralized and boxed up.

The 1968 gains by the enemy put new strains on the Royal Laotian Government. There were fears of disorders in Vientiane and Luang Prabang, but nothing of magnitude developed. A reorganization did begin in the upper echelons of military command, however. The technical details were not so important as the fact that units were restructured, and the young colonels were given more power and a greater voice. A few of the older generals were booted upstairs to posts and positions which carried more prestige, but little power.^{88/}

The FAR began a more concentrated effort to pinpoint targets for airstrikes. Meetings were held to decide what areas would be held and consolidated and what areas would be conceded to the enemy.^{89/}

In the south, enemy pressures had eased sufficiently at the end of April for the FAR to resume moderately aggressive activities. A limited friendly effort around Houei Mune, about 60 miles west-northwest of Saravane offered a good example.^{90/}

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This operation moved well against light opposition. The gain, however, was not as significant as the methods employed. For the first time, the RLAF was brought in on the planning of an operation at the beginning. Colonel Ly, the Army Commander, ran the operation forcefully, praising or chastising subordinates, and even personally briefing the RLAF pilots before their missions. Excellent coordination resulted, with exemplary air-to-ground communications. Some of the RLAF T-28s flew Combat Air Patrol (CAP) missions over the battlefield and were called in to assist the advance and hit enemy rear areas. The RLAF flew 99 sorties in support and was credited with a large part in the victory. It was hoped that this operation would serve as an example of what ^{91/} could be done with aggressive leadership, planning, and coordination.

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CHAPTER III

ENEMY LOCs AND RULES OF ENGAGEMENT

Enemy LOCs and Tactics

In a Command Briefing at 7/13AF Headquarters on 11 May 1967, the 7/13AF Director of Intelligence stated: ^{1/}

"In central Laos we are fighting...an air war that has its primary, if not its sole purpose, the interdiction of lines of communication....we are primarily oriented against roads, little improved roads that snake across the countryside, down through the valleys, mostly under the trees, into the canyons where not only is it difficult to find a target, but it is difficult to find a road from time to time. These are the main roads of the Ho Chi Minh Trail, over which trucks travel at night to carry materiel from sources in North Vietnam on an end run through Central Laos into the supply areas and the base camps of both the Viet Cong and the North Vietnamese in South Vietnam"

The 7AF Operations Order, which outlined activities in Laos, stated that the primary mission in Laos was armed recce associated with the enemy lines of communication. Provisions were also made for giving air support for the military forces of the RLG, "on a recurring basis". ^{2/}

One PACAF publication in January 1967 pointed up the increasing importance of supply lines through Laos for enemy forces in SVN: ^{3/}

"The CINCPAC--estimated 50,000 man enemy in-country (South Vietnam) increase for 1966, coupled with expanded USN maritime programs has added to the requirement for overland resupply through Laos. Thus the truck traffic in Laos, or lack of it, should signal the enemy's intentions for the next six months even more clearly than before."

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The Ho Chi Minh Trail was not the sole avenue of supply into Laos, but it was the main one. In the northeast, the Routes 6 and 7 complex sustained enemy units in the Plaine des Jarres region. Still further north, Route 19, which entered Laos from Dien Bien Phu, was the main artery. However, goods and troops transported along these northerly routes were not usually destined for SVN or southern Laos.

In the extreme south, another supply line stretched northward from Cambodia. This avenue, the Sihanouk Trail, primarily used routes associated with Highway 110. This system blended with the southern portions of the Ho Chi Minh Trail. In addition, during the wet season, or whenever possible, waterways were also used to transport men and materiel. These waterways offered primary or alternate supply lines and added depth to the entire system.^{4/}

History of Ho Chi Minh Trail

A rough approximation of this LOC was in use as early as World War II, when guerrillas traversed this general area. After that war, Viet Minh bands trekked the jungle trails, until the French control of the seacoast weakened. When Vietnam became divided in 1954, NVN agents and Communist-indoctrinated returnees to SVN used the trail.^{5/}

By 1964, the Ho Chi Minh Trail was developed into a dry-season truck route (See Fig. 5), which entered Laos via Routes 8 and 12 at the Nape and Mu Gia Passes, respectively. The motorable routes joined near Thakhek and, following Route 13, moved south to just east of Savannakhet, before coursing eastward again on Route 9. West of Tchepone, traffic could either continue eastward

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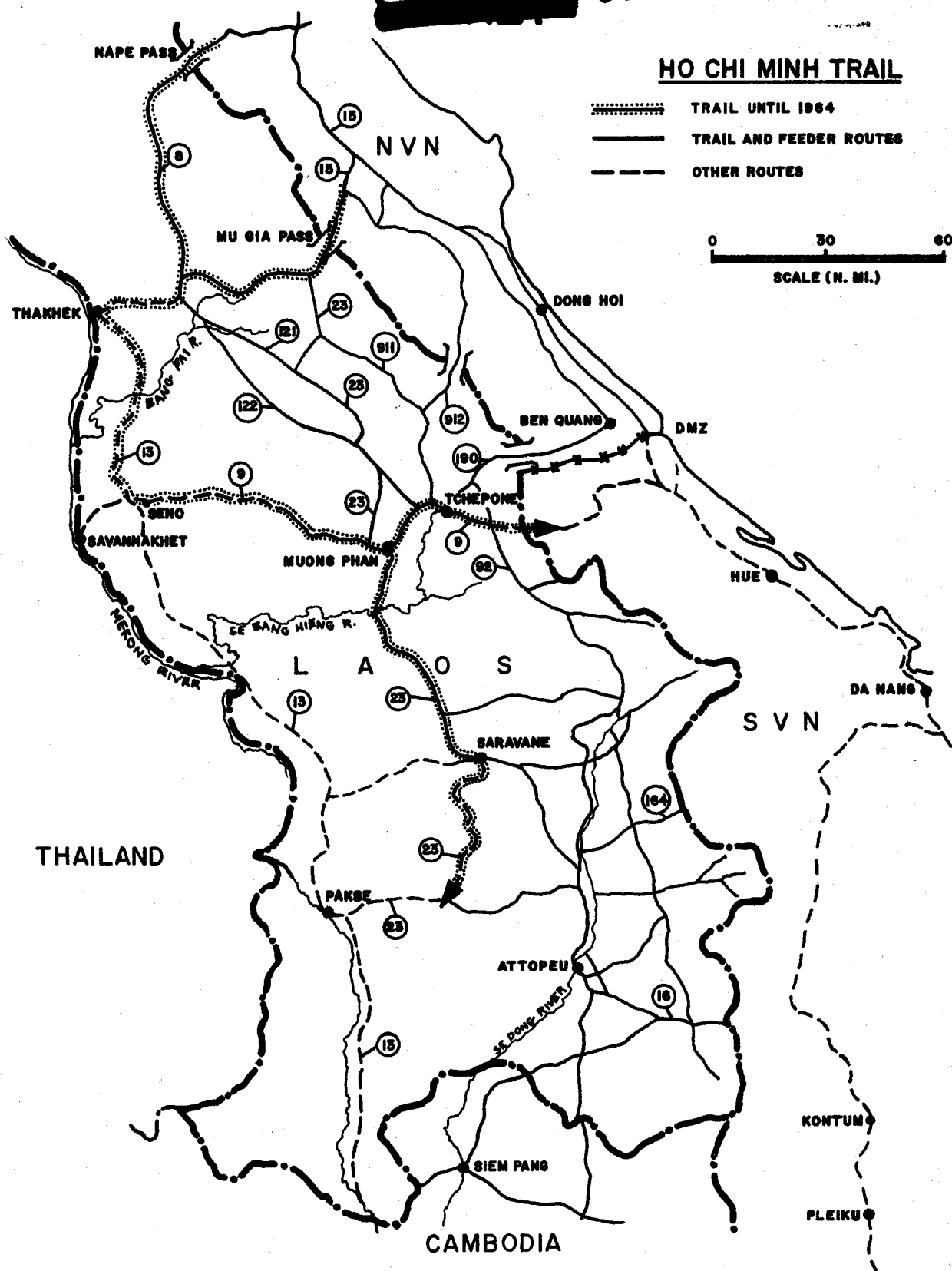


FIGURE 5

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toward the SVN border on Route 9, or turn south again on Route 23.^{6/}

Only a handful of jungle trails ran directly south from Mu Gia. In fact, even the route structure described above was open only during the dry season (approximately October through April). Furthermore, there was no capability for covert supply along this system, because Thakhek was held by RLG forces.^{7/}

By 1965, the Trail had become a network of several hundred miles of motorable roads; the building and refining had not ceased since that time.^{8/} Construction of numerous bypasses and multiple routes had compounded the problem of interdicting these LOCs. With a minimum effort, enemy ground tactics in the central and southern portions of Laos had aimed to isolate and neutralize friendly forces by boxing them in certain towns during the dry season.

Operation of the Ho Chi Minh Trail

One document, destributed in April 1967 by the 7/13AF Director of Intel-^{9/}ligence, best described operations on the trail:

"The North Vietnamese have a considerable logistics system, manned by a relatively large number of personnel along the corridor routes to render assistance and to man way stations. It has proved an effective system despite our best efforts to disrupt it...."

"Generally vehicle shelters and supply storage areas are located at intervals varying from 10 to 30 kilometers, depending on the terrain. One type of vehicle shelter in common use consists of 30 to 50 individual hillside excavations with earth roofs, each large enough for a single truck. In the same general area as the truck parks, but 500 to 1,000 meters away are

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an equal number of supply shelters. The facilities are usually located from 500 to 1,000 meters from the road.

"In addition to the supply shelters mentioned above, work camps, military structures, construction and repair equipment parking are all usually 500 meters or better from the main road. Though the enemy may not be directly familiar with the restrictions placed upon our armed recon aircraft, experience has taught him his chances for survival increase as he moves back from the road. Each shelter area is commanded by a North Vietnamese officer who controls truck convoy movements and provides assistance to disabled vehicles. Normally, convoys arrive at shelter areas prior to sunrise. After arrival, each truck's cargo is unloaded at one of the supply shelters and then the truck is parked in a vehicle shelter. Drivers sleep in hammocks located in the jungle nearby. After sunset, the trucks are reloaded and the journey continues.

"The North Vietnamese officer is also responsible for determining if a convoy can pass his area without being caught between shelter areas after sunrise, and for notifying the next shelter area of a convoy's approach. Every third to fifth shelter has a refueling capability. Telephone communication is maintained between the shelter areas...Each shelter has 30 to 60 North Vietnamese soldiers, the actual number depending on its size, its area of responsibility, and the frequency with which the road or shelter area is bombed. These soldiers are equipped with the necessary tools to make quick road repairs.

"Supplies are normally moved by the shuttle system in which groups stationed at one area moved supplies a definite distance, usually between three and seven shelter areas, and then return to their point of origin. This eliminates the need for a guide as each driver is familiar with his particular route. It has the added advantage of allowing the trucks to be serviced by mechanics familiar with the individual vehicles."

This system of using certain trucks for only a portion of the supply route dovetailed the practice of stockpiling supplies at various locations along the route.^{10/} Under favorable circumstances (as during the 1967 TET truce from 8-12 February), periods of exceptionally good weather, or when simply

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taking a risk, the enemy would move large convoys through generally constricted areas (for example, the Mu Gia Pass during 1967 TET).^{11/} By operating with numerous stockpiles and by devoting a number of trucks to only specified segments of the route, the enemy created a degree of flexibility which allowed him to overcome a time of bad weather, or a time when road interdiction might hinder his supply moves.

Three shots generally signaled mechanical difficulties, but help was usually nearby. Repairable vehicles were towed to the next area for repairs; non-repairable trucks were stripped of parts and moved off the road. Generally, only minor maintenance--welding and parts replacement--was performed on the Trail.^{12/}

Warning of approaching aircraft was conveyed by gunfire, a system of warning lights, if there were unobstructed visibility, lookouts, or movable road barriers. If an aircraft were heard or flares were seen, the trucks halted. If the plane stayed at altitude or at a distance, the trucks continued with shielded headlights. Should the aircraft be low and close, the vehicles stopped, lights were extinguished, and the drivers took cover in the numerous shelters and foxholes along the route.^{13/}

The lead truck in a convoy used a low headlight; the others followed with a low red light. Another method was to use a small light underneath the truck chassis, which gave the driver a forward visibility of about five meters. The vehicles were more vulnerable at fords, for lights had to be raised to achieve the proper alignment for crossing. They were better targets in open or defoliated areas. It was probable that enemy patrols swept the route areas

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periodically to allow convoys to move without being detected by Road Watch Teams. ^{14/}

Although there was some mechanized equipment, most road repairs were done manually, using hand tools such as hoes, picks, shovels, and axes. Dynamite was commonly used to clear obstructions or obtain fill material. The essential items used in road repairs were wood, bamboo, rock, and earth fill; these were all readily available. Corduroying with logs, limbs, or bamboo helped prolong road use in bad weather. Log bridges were built over small streams and depressions. ^{15/}

The enemy also has used underwater bridges to facilitate stream crossings, and in clear areas sometimes created an artificial canopy by building trellises and planting fast-growing vines. Fortunately, for the enemy at least, there were no major bridges on the Trail's Laotian routes. ^{16/}

The 7/13AF Director of Intelligence report concluded: ^{17/}

"...the enemy has been successful in keeping its major routes open. Road workers, both military and civilian, leave their foxholes to repair bomb damaged roads as soon as a strike is over. Often these workers can repair badly damaged roads within a few hours.

"The system owes its success to the vast numbers that are devoted to keeping the road open and the trucks moving. The trucks are backed up by bicycles, pack animals, and coolies capable of bypassing the most severe interdiction. As long as the vast pool of labor exists and continues to persist in its efforts to move men and supplies south, our task of countering these operations will be extremely difficult."

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Defenses Along the Trail

To help protect vital route segments, the enemy relied to a great extent on antiaircraft weapons. Although their coverage was not so sophisticated or complete as that employed in the route packages of NVN, especially near Hanoi, they were effective, nonetheless. In addition to numerous small-arms weapons, it was estimated the enemy had 185 antiaircraft guns in Laos as early as February 1967. Forty-six of these were AA machine guns of 12.7 and 14.5-mm; ^{18/} 139 were light AAA guns of the 37- and 57-mm variety.

These guns were highly mobile and shifting their positions made them more effective, since it became more difficult to fix their location over long periods of time. In 1967, the enemy began using searchlights to assist in spotting targets. ^{19/}

In April 1967, the enemy introduced twin-mounted 23-mm AAA weapons, and there were indications that the enemy had developed a fairly reliable acoustical or radar tracking system to direct these guns. ^{20/}

Since a considerable part of the USAF interdiction effort was supplied by slower propeller aircraft, enemy antiaircraft fire was particularly dangerous. A message in mid-April 1967 from Nakhon Phanom RTAFB, Thailand, pointed up the enemy's effectiveness: ^{21/}

"The area of greatest concern to everyone associated with the night program here (interdiction) is the significant increase in ground fire reaction recently... it has been necessary that we make operational adjustments. The truck kill rate has dropped since the ground fire picked up and we have definitely lost some

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effectiveness...(the new adjustment was bombing on a single pass)...It will be a rare situation when it will be possible to stay in an area and dig for truck kills as has been done in the past. If the ground fire situation continues to intensify, it will be necessary to adjust the tactics again and possibly conduct an intensive counter-ground fire program... (Policy was)...that we will continue working the area and will work where the traffic is, but that consideration will be given to defenses and truck attacks will not be pressed into areas of extensive ground fire. Furthermore, as a general rule, prop aircraft will not attack gun positions unless the pilot can determine an approach which will avoid a direct confrontation with the site."

Figure 6 indicated the approximate percentage of USAF strike sorties, which drew enemy AA reactions in Laos, by month from January 1967 through June 1968, and USAF Aircraft Combat Losses are depicted in Figure 7. The data represented all of Laos, and included BARREL ROLL in north Laos. Since BARREL ROLL received fewer sorties than southern Laos, ground fire reaction figures were considerably lower. Therefore, if STEEL TIGER were viewed alone, the reaction figures would be slightly higher.

Figure 6 also pointed out two other important facts. First, during the summer months, when the wet season prevailed and truck traffic decreased, enemy ground fire fell off. The enemy moved many of his guns from Laos to RP I in NVN during this season. They were moved north: (1) To keep them from being stranded in the south due to impassable roads; and (2) To enhance the AA ^{22/} protection for newly-planned infiltration routes in RP I.

In October, the guns began to be returned to STEEL TIGER--in even greater ^{23/} numbers. One report stated:

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USAF SORTIES WHICH DREW ENEMY FIRE

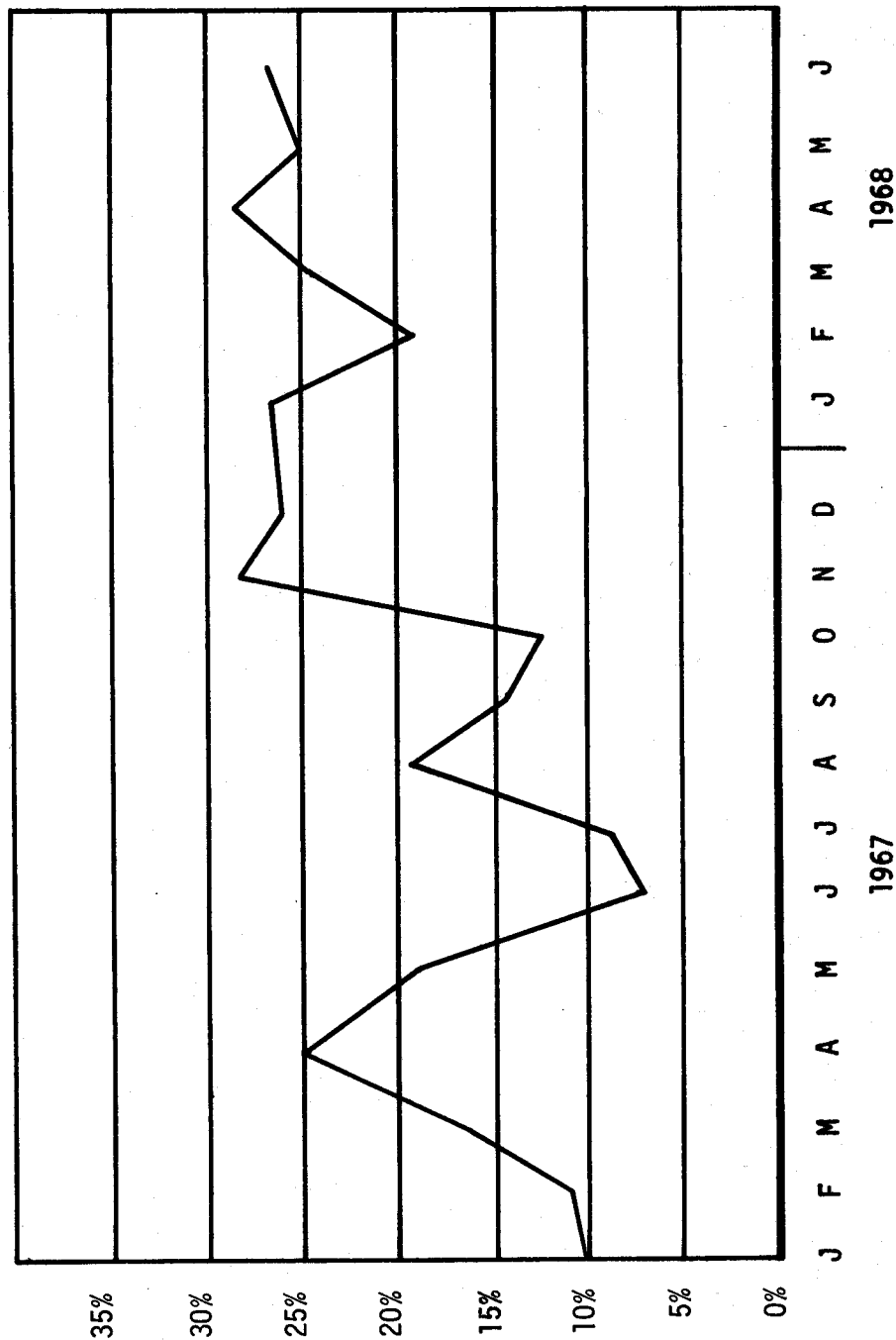


FIGURE 6

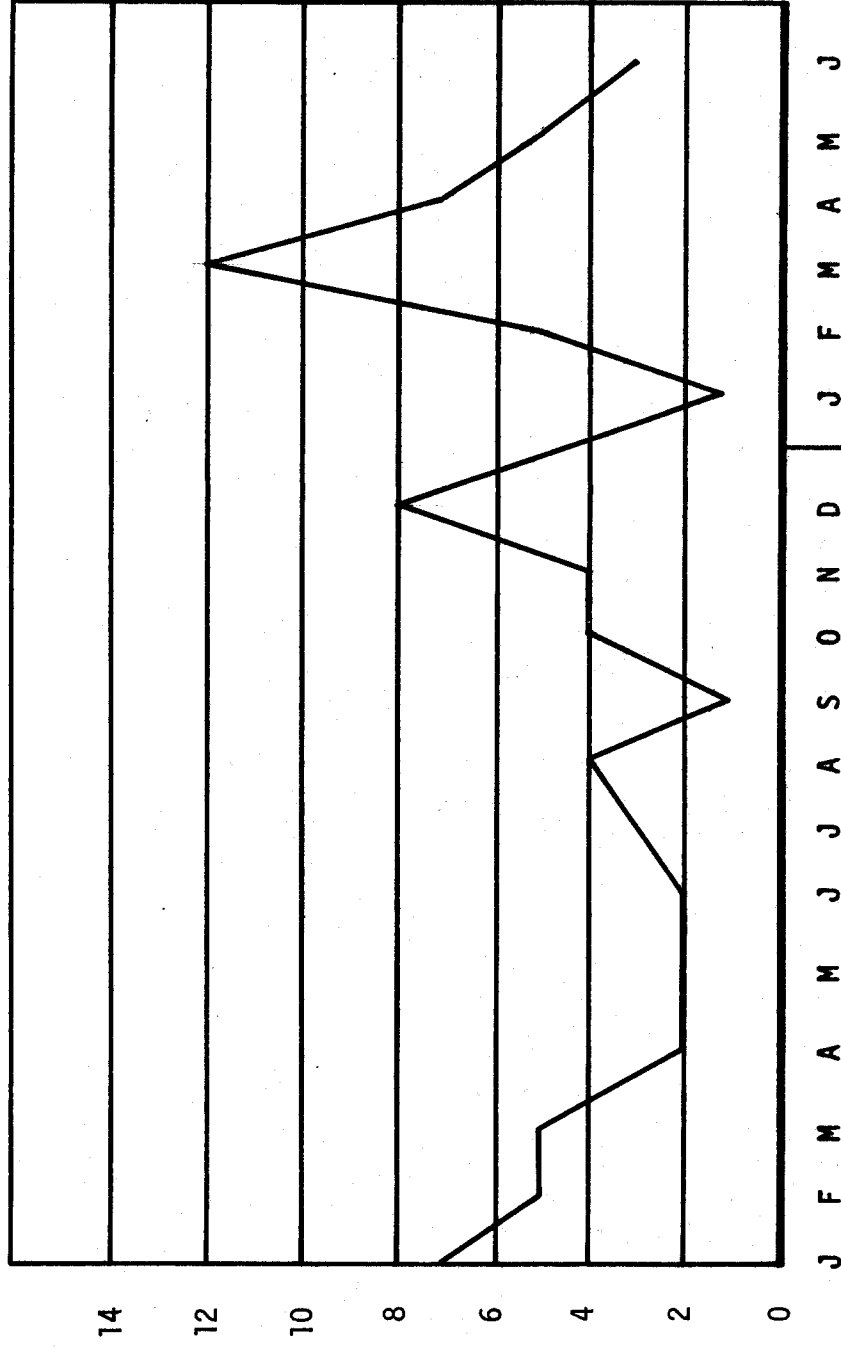
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USAF AIRCRAFT COMBAT LOSSES IN LAOS



1968

1967

FIGURE 7

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"The mass influx and exodus of AAA in STEEL TIGER are proving to be yearly events. The dry Northeast Monsoon Season triggers a large scale flow of weapons into the area to protect stepped up infiltration. The majority of the same weapons are moved to Route Package I and TALLY HO (north of the DMZ) just prior to the Southwest Monsoon Season. This seesaw tactic is expected to continue with the number of guns involved increasing each season."

Figure 6 also showed quite clearly that the percentages of ground fire responses to sorties flown increased sharply in November. Data for 1968 were substantially higher than corresponding months of 1967. More areas were being termed "high threat areas", and, in some cases, were prohibited to slower prop aircraft.

Rules of Engagement

Rules of Engagement (ROE) were agreed upon by CINCPAC, COMUSMACV, and the American Embassy in Vientiane. They were directive in nature and compliance was required by all U.S. military forces carrying out activities in Laos. Supplementing these rules, and usually more restrictive, were operating rules and policies established by the Commander, 7AF.^{24/} Rules of Engagement formally stated what was permitted or forbidden in air operations.

In January 1967, the seven sectors, A through G, delineated armed reconnaissance areas in BARREL ROLL and STEEL TIGER (North, and TIGER HOUND). (See Fig. 1.) In these areas, U.S. aircraft were allowed to conduct strikes outside of villages, against targets of opportunity. Any target of opportunity could be struck, day or night, provided it was located within 200 yards of a motorable trail or road.^{25/}

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Provisions were in force to strike other types of targets. Fixed targets, targets of opportunity outside the armed recon areas, or targets of opportunity within the armed recon area, but more than 200 yards from a motorable road or trail, could also be attacked. However, one of the following stipulations had to be met:^{26/}

- The target had to be a validated RLAF "A" or "B" target.
- Approval had to be obtained from AIRA, Vientiane, AIRA, Savannakhet, or an AIRA, FAC.
- Gunfire had been received from the target.

Airborne and ground FACs, plus the MSQ-77, aided the strike aircraft. The MSQ-77 could be used to guide strikes against validated targets, day or night, and in all weather. FACs were required:^{27/}

- On close air support missions.
- When called for by the American Embassy on certain specified targets.
- Within five kilometers of the Cambodian Border.
- On all night strikes against fixed targets, unless under MSQ direction.
- Against large traffic on streams and rivers, other than the main stream of the Song Ma River.

It was mandatory that aircraft, which carried out strikes without FAC or MSQ assistance, confirm their position by radar or TACAN beforehand. If any doubt existed concerning his position, the pilot was not to expend his ordnance.^{28/}

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Two zones had been established in the STEEL TIGER area of Laos which had slightly different rules. One was called CRICKET WEST (and FRINGE). The CRICKET area had originally been a particular region, near the Nape Pass, in which U.S. aircraft conducted concentrated interdiction. As enemy ground forces threatened friendly positions to the west of the interdiction area, U.S. aircraft lent support. This area was called CRICKET WEST. Further extensions of these operations were dubbed CRICKET FRINGE. All strikes in these latter operations had to be FAC-directed.^{29/}

The other unique region was called the STEEL TIGER special operating area. Established in November 1966, it was a narrow strip of the eastern Panhandle of Laos that stretched from just north of the DMZ, along the NVN and SVN borders, south to Cambodia. (See Fig. 1.) This area had been set aside to provide additional flexibility in operations. Armed recon without FACs was authorized in this strip against all enemy activity. This allowed the effective use of sorties diverted from ROLLING THUNDER which arrived over Laos, when there were no FACs available or when the strike aircraft had little fuel remaining.^{30/}

U.S. aircraft were prohibited from flying over a number of Laotian cities. Luang Prabang and Vientiane had to be avoided by at least 25-NM; Attapeu, Pakse, Saravane, Savannakhet, and Thakhek were to be skirted by 10-NM and 15,000 feet. Later, Muong Phalane was added to the list. However, A-1 propeller-driven aircraft were authorized to penetrate within 10 miles of Attapeu when attacking targets along Route 110, a major enemy artery in the extreme south.^{31/}

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The Rules of Engagement were continually adjusted to allow for a changing ground situation or to avoid international complications. These adjustments were either permanent or temporary. For example, in January 1967, BARREL ROLL was expanded to cover a highway route being used by the enemy; in February, Russian complaints about strikes in the Khang Khay region temporarily halted strikes there; and, also in February, a proposed International Control Commission meeting at Xieng Khouang put that locale off limits.^{32/} At the very end of February, a major revision in the Rules of Engagement was carried out.

Short Rounds

The increased tempo of air operations over Laos in 1966 had caused a correspondingly rising number of inadvertent strikes. The tragic trend continued into early 1967. This was an extremely sensitive issue to the Laotian Government, which was struggling against a stubborn enemy who was attempting to win adherents to his cause.

Each short round was damaging to the Royal Laotian Government, because it promoted fear and distrust among the people. The U.S. quickly followed up inadvertent strikes by sending teams into the attacked area, which provided and arranged medical care, settled claims, repaired structures, and removed undetonated explosives. However, all commanders were aware that some means had to be devised to reduce, if not eliminate, these tragic occurrences.^{33/}

The inadvertent strikes were mostly concentrated in the STEEL TIGER area, which was the area of major U.S. air effort. In essence, the same factors which inhibited U.S. air operations, promoted short rounds. An elusive enemy, poor

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weather, mountainous terrain, geographical similarities between target areas and other nearby locales, thick vegetation, and a limited number of reliable navigational aids were among the causes. ^{34/}

On 14 January, jet aircraft mistakenly struck a Laotian village, Ban Na Muong, in central Laos. A CAS informant was killed. A little over two weeks later, four more jets hit the same village. Two villagers were killed, three wounded, and several buildings were destroyed. In a message to COMUSMACV, ^{35/} AIRA, Vientiane, emphasized:

"Would appreciate all concerned be advised again that many villages, even within the armed recon area, are pro-Government. This village, for example, has been giving aid and comfort to CAS teams for some time. The Rules of Engagement clearly state that villages will not be attacked unless A/C receiving ground fire therefrom. It is therefore hoped that combat crews can again be impressed with this fact. This rule about villages is the strongest point made by officials of the RLG, re U.S. airops, and we try to assure them that all possible precautions are taken."

Muong Phalane and Site 61

Although all inadvertent strikes were distressing, the most significant for the purposes of this study were those around a small village, Muong Phalane, midway between Savannakhet and Tchepone in central Laos. This village was friendly, although very near enemy-dominated territory, and close to the approved armed recon area. Situated on Route 9, some 50 miles east of Savannakhet, the village contained a small bridge that spanned a minor river; there were houses on both sides of the river. There was also a STOL site, ^{36/} Lima 61, near the village.

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On 12 February 1967, three swept-wing jets carried out a raid against the bridge. About 16 bombs were dropped, but the bridge was not hit. Six bombs exploded on impact, with ten set on delay.^{37/} (One of the bombs, [all apparently 750-pounders], was not found and recovered until 13 July, after an exceedingly frustrating search.)^{38/}

The strike had terrified the villagers, who had fled their homes, and many refused to return. Great interest was generated in the RLG and the village was visited by the commanders of the RLAF, II and III Military Regions, officials of various RLG ministries, AIRA, and U.S. assistance teams. During the visits other jets were seen and heard.^{39/}

On 21 February, the Ambassador to Laos sent a message to COMUSMACV and stated:^{40/}

"Accidental bombing of Muong Phalane has caused considerable emotional reaction in Laos, not only among residents of area concerned but also in higher echelons of RLG. In part, this is because same area has been bombed in error at least three times previously and, in part, it is because error has occurred despite our previous elaborate assurances of positive controls by radar, TACAN, and other devices...FAR Headquarters, South Laos, has recommended that all flights in STEEL TIGER/TIGER HOUND area be put under positive FAC control. This is not repeat not unreasonable, from their point of view, since they are aware of the elaborate FAC plus other restrictions which pertain to strikes in South Vietnam. From their point of view, they are just as friendly (if not more so) than their South Vietnamese neighbors.

"At the same time, I am impressed with the extra burden and the additional resources which would be required if we were to accede to their proposal that all south Laos be put under positive FAC control....

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"Nevertheless, experience has shown that we cannot repeat not give RLG iron-clad assurances that positive controls stipulated in Rules of Engagement are always observed or, even if they are observed, are foolproof against error...."

"In order to resolve this dilemma, we are attempting (to) negotiate a compromise arrangement with RLG. This proposal would preserve the bulk of STEEL TIGER and TIGER HOUND areas under current Rules of Engagement, but would place westernmost reaches of these areas under positive FAC control."

Diplomatic pressure was not ended. At the end of February, the Ambassador reported to the Secretary of State: ^{41/}

"...Souvanna then asked that we undertake arrangements with the Lao Air Force to develop system which would prevent recurrence of such errors. He felt that it would probably require exclusion of all jet aircraft from the general region, leaving operations to propeller-driven planes which 'move slowly enough to know where they are.'"

Meanwhile, the USAF did not treat this incident lightly. After extensive study and examination, an element of pilot error was found to have been a contributing cause. The actions taken emphasized command concern. The Commander, 7AF, wrote: ^{42/}

"It is directed that the flight leader be relieved of his duty and given a verbal reprimand. The seriousness of this offense must be brought to the attention of all crews. War is cruel enough without exposing the innocent. All unit Commanders are expected to demand the highest degree of professional performance from their crews...."

Revised Rules of Engagement

Discussions between RLG officials and the American Ambassador moved to a conclusion and new Rules of Engagement for STEEL TIGER were put into effect

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early in March. Basically, the concept of armed recon areas D, E, F, and G were changed. South Laos was divided, in effect, into four north-south zones, with increasing Rules of Engagement restrictions as they were arranged toward the west; i.e., toward friendly-held territory. (See Fig. 8.)

The easternmost region, called Zone I, was similar to the previous special operating area. It remained a "free fire area" in which all enemy activity could be attacked without FAC control; however, confirmation of aircraft position was stressed.^{43/}

Zone II had Rules of Engagement like the earlier armed recon areas (D, E, F, and G). Zone III was made a FAC control area. No strikes could be made in this area without positive FAC control (later, clarifications were made to include MSQ-77 direction as permissible, too). Zone IV, which extended westward from the other zones, and included most of south Laos, could not be struck without specific permission from AIRA, Vientiane.^{44/}

These alterations, while reorganizing areas, in essence, changed little. A message from the AIRA to 7AF summed up the substance:^{45/}

"The new feature...is essentially Zone III which places sensitive area of STEEL TIGER in special category similar to that practiced in CRICKET, but slightly less rigid than practiced in South Vietnam."

Easing of Short Rounds - Channel 77

Unfortunately, the rash of short round incidents did not materially decrease through March, even though Rules of Engagement were revised. Even

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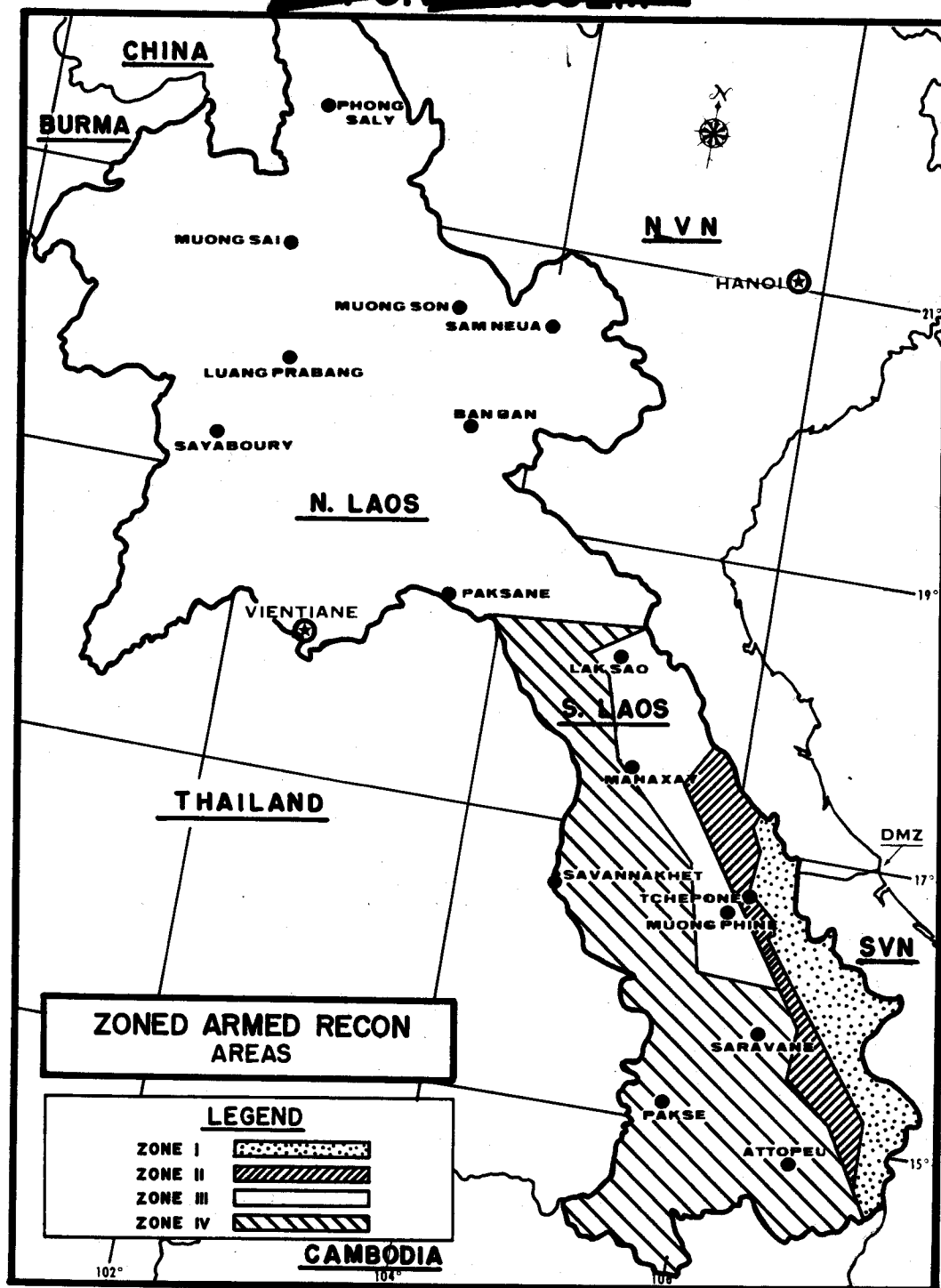


FIGURE 8

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Muong Phalane was not immune. Ever increasing emphasis on professionalism and the fact that pilots were not to expend unless absolutely sure of their targets was not decreasing the frequency of mishaps.^{46/} The Commander, 7AF, acting on his prerogative to establish operating rules (not to be confused with Rules of Engagement), directed that all strikes in Laos had to be FAC- or MSQ-directed.^{47/} In the ensuing coordination, it was agreed that A-26, A-1, and T-28 aircraft equipped with compatible ground-to-air radios could serve as FACs.^{48/}

Two other factors had helped increase the number of inadvertent strikes. They were bad weather and a lack of navigational aids. Pilots sometimes arrived over their assigned target areas only to find them weathered in. In searching for a "hole", they sometimes got lost. If they did find a "hole" and descended, it was difficult to reestablish their positions positively, because of the inadequacies of the navigational aids at low levels. In fact, a number of inadvertent strikes in Laos were made at the end of March and in early April without the use of FACs. Although violating the directive issued by the 7AF Commander, the cause was that pilots had believed they were actually over NVN, which could be struck without FACs.^{49/}

The problem of inadequate navigational aids for central Laos had been realized. Not only was this affecting positioning, it was also hurting effectiveness. On 9 February, the 634th Tactical Unit Operations Center (TUOC) at Nakhon Phanom reported to 7/13AF:^{50/}

"TACAN reception from Channel 89 (Nakhon Phanom), Channel 109 (Dong Ha, SVN), and Channel 72 (Saravane) is not adequate to insure pinpoint location of the LOC in STEEL TIGER area. During night operations

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TACAN radial/distance is the only feasible method for armed recce aircraft to locate prebriefed or UTM coord. targets. To acquire a lock-on the aircraft must climb to altitudes which will guarantee line of sight reception. Climbing to sufficient altitudes which will guarantee line of sight reception results in loss of the element of surprise, excess fuel consumption, ineffective flare drops, and less than optimum positioning of attacking aircraft for quick strike under first flare...Request action be taken to locate a TACAN station at Lima Site 61, Muong Phalane, Laos."

Similar recommendations were put forward by various organizations and commands. It was seen that placing a TACAN at Site 61 would serve to improve the navigational situation in the area, cut down on short rounds, and demonstrate again USAF concern to give more protection to that village against inadvertent strikes.^{51/}

A TACAN, Channel 77, was established at Lima Site 61 in early April 1967. Seventh Air Force commented on 5 April on procedures:^{52/}

"Subject TACAN was installed as an additional means of precluding further inadvertent bombing incidents in Laos.

"Aircrews operating in SL (STEEL TIGER) sectors Delta and Echo will crosscheck position with Channel 77 and one other TACAN before releasing ordnance.

"Aircrews operating in sectors Foxtrot and Golf will do the same or use a combination of two other TACAN channels.

"Above policy does not negate requirement to fully utilize all nav aids in determining position prior to ordnance release."

Channel 77 at Site 61 functioned until Christmas night 1967, when a combined PL/NVA force overran the site, destroyed the equipment, and killed two of the operators. To fill the gap created by this loss, a portable TACAN, Channel 99, was installed at Mukdahan, Thailand, just across the Mekong River from

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Savannakhet.

Changes of ROE in BARREL ROLL

BARREL ROLL operations were unaffected by the rezoning in STEEL TIGER in March 1967, although the requirement for FAC or MSQ control applied to BARREL ROLL, as well. The enemy offensive of early 1968 extended his sway to areas outside of the armed recon sectors and operations were adapted somewhat under FAC control to accommodate these new areas. AIRA FACs, A-1Es, and a few qualified CAS team chiefs were used to direct strikes.^{53/} However, major reinterpretations in operations were brought about by the Presidential decision on 1 April (Laos time), to cease bombing the northern portions of NVN.

There was considerable concern that USAF strikes in the BARREL ROLL armed recon areas (which were contiguous to the NVN border) should not inadvertently stray into NVN. Some uncertainty existed as to whether the cessation of activities in northern NVN would apply to northern Laos also. Hence, on 4 April 1968, U.S. airstrikes in A, B, and C sectors of BARREL ROLL were discontinued.^{54/}

To lend more positive control of aircraft for a resumption of bombing in the armed recon sectors of BARREL ROLL, CINCPAC sent a message to JCS on 21 April 1968:^{55/}

In brief, the control measures are as follows:

"COLLEGE EYE (EC121) aircraft will maintain a NW to SE orbit with a stabilization point at 20°N/104°E to provide positive control of strike aircraft operating in Alpha, Bravo, and Coco sectors.

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"Aircraft entering BARREL ROLL area must have operational IFF/SIF displayed.

"COLLEGE EYE will provide border warning to any aircraft entering an area within 15 km of the NVN border and best egress heading away from the border.

"All strikes conducted within 10 NM of the NVN border north of 19 degrees will be under positive COLLEGE EYE and FAC control.

"The positive control measures noted...are considered adequate to preclude violation of NVN airspace north of 19 degrees.

"Recommend...authority be granted to resume operations in BR areas Alpha, Bravo, and Coco."

In line with these recommendations, on 24 April, approval was given to resume strikes in Bravo area, along Route 6 and associated LOCs, west of 104° East. Coco sector strikes were authorized also, along Route 7, to within 10 km of NVN. Alpha sector strikes were still prohibited.^{56/}

The U.S. Ambassador to Laos was quick to desire a modification of the terms of the resumption. Premier Souvanna Phouma desired strikes on areas which had been excluded, notably Route 19 in sector Alpha. A "no strike" policy east of 104° and in sector A would have eliminated strikes against the enemy storage complex around Sam Neua, numerous RLAf fixed targets, and made precarious the defense of some guerrilla outposts which would have received no airstrike support. The Ambassador recommended all of A, B, and C be opened again, with only 10 NM of the NVN border being "off limits".^{57/} Coincidentally, it was while these modifications were being made that the enemy chose to begin to concentrate against Site 36.^{58/}

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By 3 May, it was settled that, in effect, all LOC portions of A, B, and C sectors could be hit as part of the enemy logistics system (excluding the town center of Sam Neua) up to 10 NM of the NVN border. COLLEGE EYE and FAC control applied.^{59/}

As the situation around Site 36 intensified, the Ambassador was mistakenly led to believe that COLLEGE EYE aircraft controlled USAF strikes in all of BARREL ROLL, and strikes could not be carried out without COLLEGE EYE. Since COLLEGE EYE was airborne only 19 hours each day (21 if alerted soon enough), he was concerned that no strikes could be carried out when COLLEGE EYE was not on station. In such a condition, an attack against Site 36 might have had to be handled without air support.^{60/} The fact was explained, however, that COLLEGE EYE controlled only A, B, and C armed recon sector strikes, and, since Site 36 was outside these sectors, COLLEGE EYE presence or absence was no factor.^{61/}

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CHAPTER IV

CONDUCT OF USAF OPERATIONS AND DEVELOPMENTS

The following data represent the total U.S. strike effort directed in Laos from 1 January 1967 to 30 June 1968:

	<u>1967</u>	<u>1968</u>
U.S. Navy	7,452	7,090
U.S. Marine Corps	2,614	1,019 (through May)
USAF Tac Air	34,333	26,073
B-52	1,708	1,481

A detailed breakdown of Tac Air strikes is given in Appendix I to this study. Figure 9 offers a graphic presentation of the monthly breakdown of Tac Air strikes, and Figure 10 covers B-52 strikes. A few parameters of the effectiveness of USAF attacks are provided in Appendix II.^{1/} Charts in Appendix II point out three important characteristics of the war in Laos. First, the erratic movement shown by the lines demonstrates the shifting of strike emphasis in Laos (and indirectly within the theater). This becomes especially obvious in the composite illustration, when, for example, in the spring of 1967, the emphasis on trucks, bridges, and road cuts waned, while interest in enemy structures was on the rise.

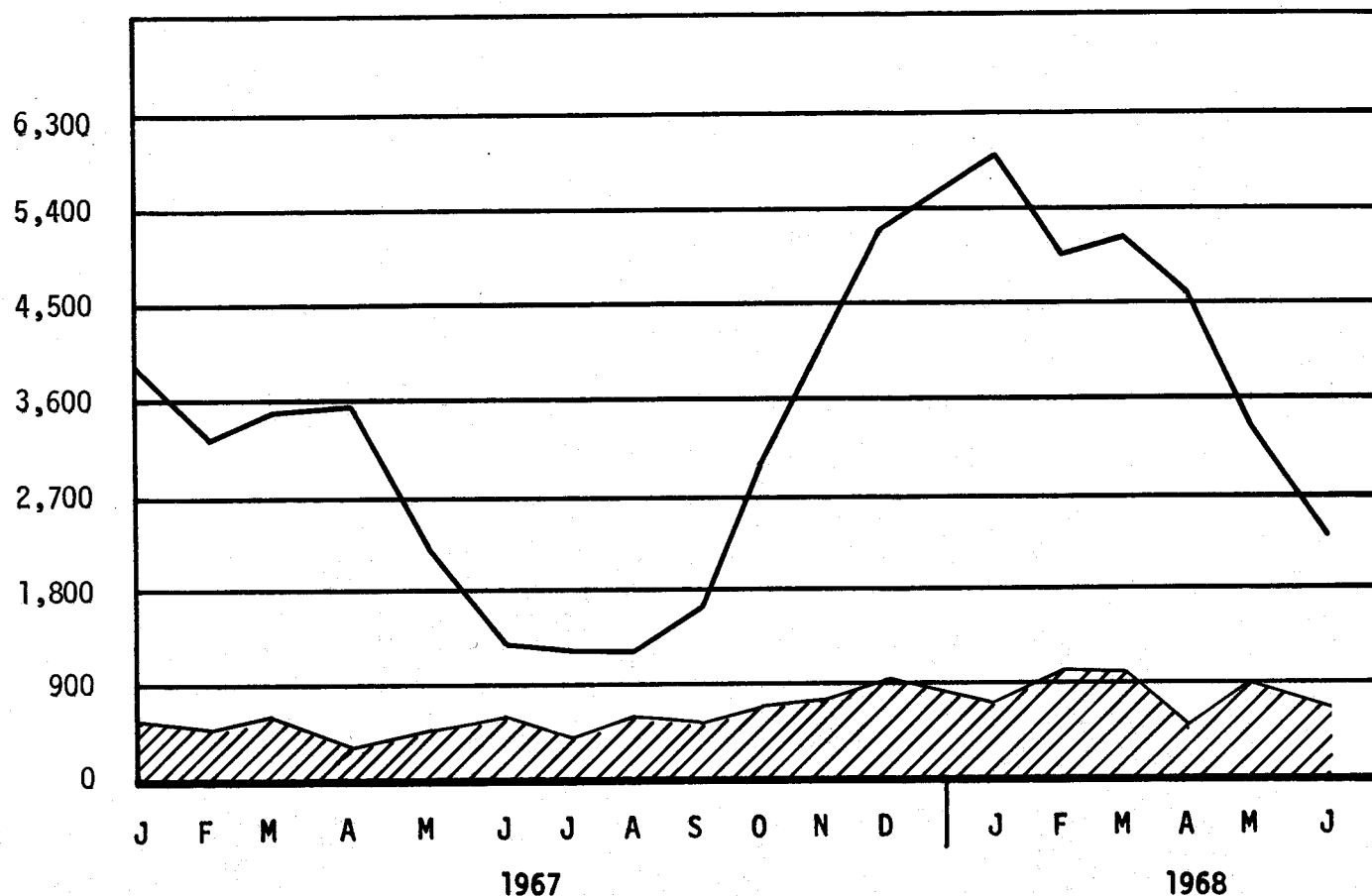
Secondly, the charts in Appendix II emphasize the seasonal character of the war. As the wet season developed during the summer months, enemy activity proportionally contracted. Similarly, USAF activity declined. As the enemy shifted emphasis elsewhere, USAF airpower followed.

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USAF STRIKE SORTIES IN LAOS* (Excludes B-52's)



* Shaded portion emphasizes BARREL ROLL.

FIGURE 9

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B-52 SORTIES IN LAOS

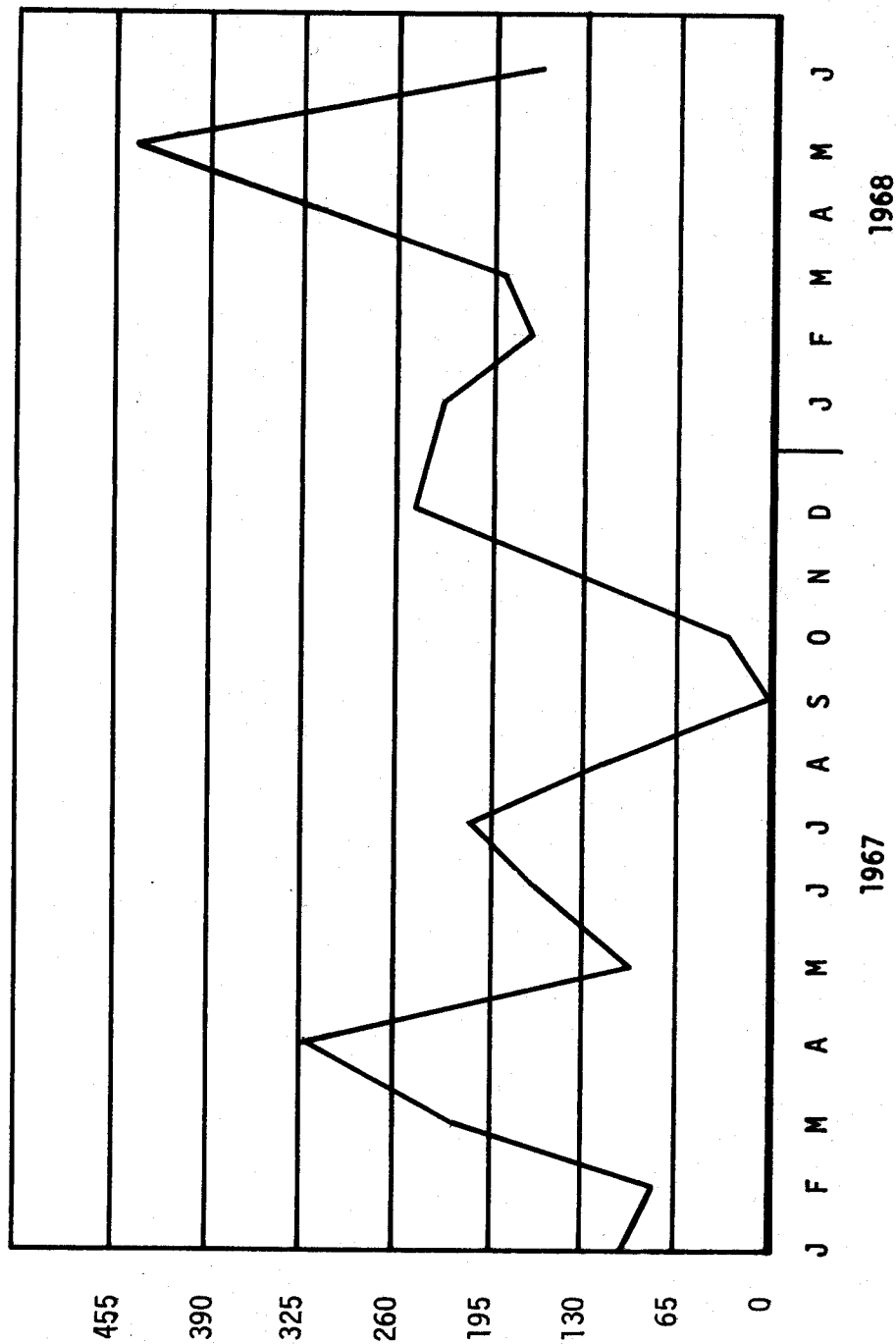


FIGURE 10

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Finally, the charts indicate the greater effort and effectiveness in USAF operations beginning with the 1967-68 dry season, which commenced in October - November 1967. This indirectly indicated the increased liveliness of the enemy, too. Previous portions of this study pointed out the heightened vigor of the enemy in operations during 1968 in Laos; in addition, his attacks on Khe Sanh, the nationwide TET Offensive of early 1968, and subsequent operations in SVN put a greater demand on his supply system. An examination of the following 7AF data demonstrates this: ^{2/}

TRUCKS

Jan - Dec 1967

<u>Area</u>	<u>Observed</u>	<u>Destroyed</u>	<u>Damaged</u>
STEEL TIGER	19,989	1,713	655
TIGER HOUND	8,659	523	258

Jan - Jun 1968

STEEL TIGER	34,073	2,987	542
TIGER HOUND	17,551	1,589	657

Trends in Operations

Through January 1967, the USAF continued to wage a campaign directed primarily at air interdiction. Thereafter, and until the wet season, the emphasis shifted to attacks against trucks, truck parks, and storage areas. In the latter part of the dry season, in addition to regular day and night operations, selective, but concentrated, interdiction strike programs were pressed. ^{3/}

These selective programs were called SLAM and SHOCK operations. SLAM

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operations originally began in August 1966 against NVN troops in northwestern SVN, but in two extended periods, 27 January - 13 March 1967 and 23 March - 4 April 1967, SLAMs were placed in STEEL TIGER.^{4/} Divided into two phases, the detection and analysis of targets and the strike phase, the program was sufficiently flexible to run for extended periods;^{5/} however, for planning purposes, the strike phase was generally envisioned as lasting 36 hours. Phase II utilized ABCCC control and FACs for direction and control. Pre-dawn B-52 strikes began the active campaign, so that areas would be opened, shock would be effected, and lucrative targets would be uncovered. Immediately afterwards, Tac Air in continuous waves was injected to further explore the initiative. Other service participation was tasked by 7AF, which also controlled the B-52s in SLAM operations.^{6/} Ground teams to determine damage and develop more targets, plus the dropping of psychological warfare leaflets, were two additional parts of the plan which could be implemented.

A modification of the SLAM concept was also applied in Laos. This was the SHOCK operation. In essence, a SHOCK was a small SLAM. It omitted B-52 strikes, other service participation, but generally included RLAF strikes. SHOCKS involved a shorter period of time. The RLAF and CAS played greater parts in target selection and close coordination between the American Embassy at Vientiane and 7AF was required. Four SHOCKS were carried out in 1967:

<u>Number</u>	<u>Dates</u>	<u>Target Area</u>
SHOCK I	27 Apr-30 Apr	Route 110
SHOCK II	20 May-27 May	Route 110
SHOCK III	30 Jun-4 Jul	Se Kong River and Ban Bac area (east of Saravane)
SHOCK IV	26 Dec-30 Dec	Routes 110, 95, 165

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The ability to apply SHOCK tactics on short notice was an advantage. For example, on 21 April, the U.S. Ambassador sent a personal message to the 7AF Commander which began the formulation of SHOCK I: ^{7/}

"Interrogation recently defected North Vietnamese supply officer who has been working on so-called Sihanouk Trail has confirmed much of our evidence concerning location storage points and truck parks on Route 110.

"We assume North Vietnamese are aware this officer's defection and will make effort soonest (to) disperse or move these concentrations. Therefore consider it essential airstrikes be mounted against them soonest.

"We have put together package of targets in most lucrative locations and I have cleared strike campaign with Prime Minister. This package has been routed to you through 7/13, Udorn. It requests approximately 30 sorties per day for four day campaign.

"I hope you will personally clear this expeditiously since I believe this is some of the best intelligence on lucrative targets which we have obtained to date."

Seventeen hours later the 7AF Commander responded: ^{8/}

"I am prepared to allocate the required sorties against nominated targets. My staff has been directed to give every assistance necessary to get the targets. We will back up the strike effort with intensified photo reconnaissance to uncover additional target areas...."

The area of attack in SHOCK I, the highway Route 110 in south Laos, was partitioned into three sectors, all controlled by FACs. One sector was allocated to RLAF T-28s; the second sector used USAF prop-driven aircraft and the RLAF; the third was open to any USAF strike aircraft and the RLAF. The USAF supplied 30 sorties daily and the RLAF 18. ^{9/}

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To assist in FACING, two USAF O-1s were deployed to Attopeu. A special command post was also established there to maintain contact with FACs, the ABCCC (Hillsboro), AIRA at Vientiane and Savannakhet, and CAS. A summary report on SHOCK I stated: ^{10/}

"Overall SHOCK I is considered a successful operation. Results in terms of secondary explosions alone (148) clearly support conclusion that operation's primary objectives; i.e., destruction of accumulated stocks of military supplies and disruption of enemy lines of communication, were effectively accomplished. Magnitude of this success underscores profitable exploitation of joint CAS, AIRA, and USAF intelligence and tactical air planning session."

This report also offered recommendations to improve subsequent SHOCKs. Targets in close proximity to the Cambodian Border and which had been assigned to the RLAF were not effectively hit because of "political jitters" on the part of the Laotians, and because a FAR operation in the south drained some sorties. More detailed coordination might have eliminated this problem. The report continued: ^{11/}

"The road interdiction program was not as successful as planned. In spite of good road cuts and nighttime coverage the enemy was able to keep the traffic moving. It is believed that ordnance was a key factor since the lack of time delay weapons degraded the capability to effectively close the route."

It was recommended that SHOCK operations should run longer; i.e., from eight to ten days, because it took the FACs a few days to become adequately familiar with the area. Thereafter, their effectiveness rose. Also, the four-day operation had not given enough time for ground teams to adequately evaluate strike results and make recommendations. In SHOCK I, they had been

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placed too far west at the initial stages of the operation to properly accomplish their task.^{12/}

Many of these problems were corrected for SHOCK II. This was directed against the same road, Route 110, at the end of May. Although the results were not as rewarding as SHOCK I, the route was closed. Bad weather hampered operations and the wet season had already begun to curtail enemy activities in the area.^{13/}

SHOCK III, during the wet season, was directed against enemy traffic on the Se Kong River near Ban Bac. SHOCK IV returned to Route 110 and connecting routes in December.

Due to the lightness of the rainy season in 1967, planners calculated that enemy activity would resume earlier than in 1966.^{14/} The first of November was estimated to be the beginning date. On 21 October 1967, COMUSMACV, the U.S. Ambassador to Laos, their staffs, the 7AF Commander, U.S. diplomats from Saigon, and the Deputy Assistant Secretary of State met at Udorn RTAFB to examine probable enemy intentions for the coming dry season and to coordinate proposed actions against them.^{15/} It was noted that the enemy was stockpiling material at the Mu Gia Pass near the Panhandle of Laos and on the Mekong River at the west end of Route 110. Therefore, the conferrees assigned the first priority for the coming season to air attacks against these stockpiles.^{16/}

Assuming the enemy would next move to improve and repair his road net, the second phase of the effort was to be a ground and air harassment of the system using RWT, guerrilla teams, and strike aircraft. Phase III was to

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apply airpower against the trucks as they carried materiel.^{17/}

Enemy truck traffic surged at unprecedented levels. Against them, the USAF logged a record number of truck kills in December. Pleased with the effectiveness of the truck killing campaign, the U.S. Ambassador to Laos informed 7AF:^{18/}

"I would like to express my great satisfaction with continuing high (number) of truck kills in Ho Chi Minh Trail structure. Our records show that 902 trucks were destroyed and 77 damaged in the period 1-31 December which exceeds all-time high set in November (693 destroyed - 78 damaged)."

"Kills on the Trail this December were more than five times greater than last year when 170 trucks were destroyed...."

That record was exceeded by nearly 50 percent in April 1968 when 1,446 trucks were destroyed.

In early February 1968, the fifth SHOCK operation was launched against enemy troops, storage areas, and LOCs in the vicinity of Mahaxay, about 25 miles east of Thakhek. A second motive for SHOCK V was to help boost FAR morale, which had been lowered by the Nam Bac defeat in mid-January.^{19/} While SHOCK V produced less destructive results than earlier SHOCK operations, enemy activity in the area declined considerably and Thakhek was not attacked.

SHOCK activities were curtailed for the remainder of the dry season of 1968. However, concentrated USAF efforts were applied to enemy forces which threatened friendly outposts. Most significant were the strikes in support of Site 85 in February and March, and the successful defense of Site 36 in April

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and May. A major air campaign, nicknamed TURNPIKE, was launched in April, against enemy stocks and supplies on the infiltration routes of Laos and Route Package I. To assist in this operation, COMUSMACV delegated the operational control of 30 B-52 sorties per day to the Commander, 7AF, in April.^{20/} This campaign lasted until the rainy season virtually stopped enemy activity in the area.

Developments

In the January 1967 issue of the PACAF Publication, "Southeast Asia Air Operations", the following observation was made:^{21/}

"Results of strikes that have taken place in the STEEL TIGER area have not been as gratifying as desired, though the number of sorties has increased. This area has, of a necessity, often absorbed the preponderance of the weather-forced diversions from ROLLING THUNDER targets. Continued harassment of the LOCs has been achieved along with a high level of air presence. However, attendant unavoidable contributing factors such as saturation of FACs, low fuel states after diversions, fewer validated targets, limited interdiction points, and weather have not permitted the accrual of a level of damage normally expected and desired from the sorties available."

The article continued by recommending that more validated targets were necessary in the Special Operating Area of STEEL TIGER, which at that time could be struck without FACs. This, of course, was negated by the operating rule change of March 1967, which required FAC/MSQ direction of all strikes in Laos.

Also in January, a conference was held at Udorn to discover methods of "improving capability for combating infiltration through the Laos Panhandle. Considerable attention was focused on coordinated air action against enemy

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truck movements and expanded road watch/ground reconnaissance effort".^{22/}

It has already been shown that enemy traffic moved along the LOCs primarily at night. Data from Appendix I indicated that, in 1967, 33 percent of the strikes in Laos were conducted at night. In the first half of 1968, 29 percent of the attacks occurred during darkness. A number of factors, however, bore upon what might seem an apparent incongruity. First, not all the Laotian effort was directed against truck traffic. Bridges, road cuts, structures, and storage areas were other targets.

Secondly, to use the maximum capability of airpower available in-theater, it was important to be able to shift strikes from one area to another. The campaign against the upper Route Packages of NVN was almost wholly a daytime effort. When NVN had bad weather, generally from October through April, there was a great advantage to be gained through the shift of these strikes to Laos, rather than have them return to their bases unexpended. In January 1967, USAF diversions from ROLLING THUNDER to STEEL TIGER amounted to about 30 percent of the total sorties for that month.^{23/}

Finally, while considerable effort was exerted to strike targets moving at night, it was patently evident that attacks against them might be more lucrative if they could be caught during daylight, immobile in their parks.

Therefore, the matter of increasing the effectiveness was, in essence, a two-fold problem. The first involved methods of employment. Techniques in applying the limited amount of air available could be revised, reinterpreted, or applied in altogether new ways. The SLAM operation was an example

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of the last method. This represented the tendency to try to weld all available assets together for heightened effectiveness. B-52s, Tac Air, FACs, ABCCC, psychological warfare, and ground teams were combined in the strike phase.

Another example occurred in March 1967. Termed the "Hub and Wheel Concept", B-52s conducted night attacks against likely choke point areas, at or near vital road intersections; this was the "Hub". Subsequently, VR/FAC aircraft worked on the "Spokes" of the wheel--those routes proceeding into or from the choke point. Hoping to find lucrative targets blocked by the strikes at the "Hub", FACs would call in Tac Air which was airborne nearby. To supplement the B-52s, C-130 or C-123 flareships were used in conjunction with A-26s and USAF T-28s to hit at night.^{24/} This was a version of the hunter-killer team concept.

But although available resources were and could be used in new forms, the key to increased effectiveness in the interdiction campaign rested in target acquisition. If targets could be found in the Laotian environment of twisting roads, bad weather, obscuring vegetation, and nighttime movement, airpower could more effectively attack them.

Target Acquisition

The three main areas of emphasis in acquisition involved FACs, RWT, and the establishment of the STEEL TIGER Task Force (SLTF), which evolved into Task Force Alpha with the MUSCLE SHOALS/IGLOO WHITE system.

In a message to COMSEVENTHFLT in February, CINCPACFLT remarked on strikes in Laos which were guided by USAF FACs:^{25/}

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"It is realized that airborne FACs provide the most effective means of coordinating interdiction against the flow of enemy war materials into SVN. Accordingly, all diverts into Laos should continue utilizing FAC control as a primary source of tgt (target) acquisition."

FACs, generally in low and slow liaison aircraft, O-1s and then O-2s, were the heart and soul of the USAF interdiction program. After visually acquiring targets and contacting the orbiting ABCCC to call in aircraft, the FACs directed the strikes. It was a rarity, however, to see trucks moving in Laos in daylight;^{26/} they moved at night. The rugged terrain, enemy air defenses and tactics, heavy vegetation, weather, and darkness aided the enemy and were detrimental to the FAC program.

Artificial illumination was one method of assisting night target acquisition. C-130 and C-123 flare/FAC aircraft were among those used at night to find traffic and direct strikes.^{27/} However, as soon as truck convoys became aware of the flares or aircraft presence, they stopped or even pulled off the road.^{28/} Furthermore, as the 7AF Improvement Plan of 23 April 1968 noted:^{29/}

"...the enemy is effectively using saturation tactics by running large convoys with trucks spaced far enough apart so that only one truck can be attacked at a time. Because of airspace required for a night strike, only one or perhaps two strikes can be conducted at a time on the convoy. Meanwhile, the other trucks evade and are lost by the FAC or strike/attack pilot."

Some improvement in the night VR program in Laos was gained by the introduction in February 1967 of the Starlight Scope.^{30/} This aid permitted visual acquisition on bright, moonlit nights or when trucks used low headlights. After spotting the target and calling the ABCCC for aircraft, the target area was

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flared and the scope was used to direct strikes.^{31/} Fuller effectiveness of this method was hindered by the short supply of the scopes, so it was not until the 1967-68 dry season that results increased. The increase can be illustrated by comparing night data for 30 Nov - 2 Dec 1966 with the same period in 1967:^{32/}

<u>Trucks Sighted</u>	<u>30 Nov - 2 Dec 66</u>	<u>30 Nov - 2 Dec 67</u>
Visually	20	30
Starlight Scope	-	597
Destroyed	8	83

Night VR activities by an O-2 in southern TIGER HOUND were described in a 7AF Intelligence publication in June 1968 as follows:^{33/}

"Because of the mountainous terrain and the lack of TACAN equipment, visual reconnaissance altitudes along Route 110 (in the southern area of TIGER HOUND) are 6,500 feet MSL; along Route 96 (in the north) altitude for VR is 7,500 feet MSL. When the FACs are able to fix their position over a particularly lucrative choke point, virtually all visual reconnaissance and strikes are conducted between 3,000 and 5,000 feet AGL because of the many active ZPU (heavy machine-gun) and 37mm anti-aircraft guns usually present near these targets. At night with one pilot flying and the other using the Starlight Scope (light-intensifying viewing device), VR is conducted by using dead reckoning navigation to a known starting point and circling until the man with the scope picks up the road. Visual recce is then conducted by flying along the left side of the road and circling when promising areas are spotted...Flares are not normally used for VR."

FACs could then control attacks in darkness by verbally guiding strike aircraft, while viewing the target through the scope. Sometimes, they flew over the target and turned on their navigation lights to indicate the target. Either C-130 or other flareships could be used to light up the target area,

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while a FAC marked it for strike aircraft. ^{34/}

The operating rule of March 1967, which necessitated FAC/MSQ control of all strikes, did not substantially hurt night VR capability; however, it was detrimental to daytime VR. Most night strikes had already been FAC-directed. ^{35/} However, in the day, FACs were too busy controlling strikes for extensive VR. More FACs was the answer. Other airborne systems which were used were Side Looking Airborne Radar (SLAR) in Army recon aircraft, Infrared, and a Low-Light Television (LLTV). The latter was installed in two A-1s and two B-57s and test programs in Laos were carried out under the nickname, Tropic Moon, in 1968. Bad weather during these tests made the results inconclusive.

RWTs were another source of target acquisition; however, they did not operate as FACs. Their function was to report on truck traffic. Developments in this task were directed to improve their observations by moving them to more lucrative areas, and improving communications to enhance the timeliness of the intelligence which was forwarded. The reports were known as Peacock Reports.

Concern was generated in early 1967 about the overall value of the RWT concept, and steps were begun to make the reports and subsequent reactions faster. Until July, Peacock Reports were forwarded to the SLTF, an extension of the 7AF Command and Control organization which was located at Nakhon Phanom RTAFB. ^{36/} The SLTF offered an opinion of the RWT operation at the end of March:

"Peacock Reporting should be continued. We are definitely interested in any information, data collection, or system which contributes to improved truck kill rate. Discussion with CAS

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at 7/13th meeting 25 March appeared to contribute to mutual understanding of operational limitations in responding effectively to reports. CAS representative has obtained data regarding best operational areas for Starlight Scope and attacks. Believe CAS is in process of determining possibility of relocating teams to best exploit those areas. If this action jells we should realize improved results."

Reports initiated by RWT were evaluated at Nakhon Phanom for timeliness. Those received within one hour of submission time were forwarded to the night ABCCC, Alley Cat, along with a suggested intercept point for the truck targets. If the intercept point was in an area not permissive to strike on flare operations, consideration was given to establishing a COMBAT SKYSPOT (MSQ) target in advance of the traffic, based on an average 10-km-per-hour speed of the convoys. Reports over one hour old were also evaluated and passed to the ABCCC, if they contained significant data. ^{37/}

At this time, April 1967, the Alley Cat mission was being flown by RC-47s based at Udorn. An additional radio was placed on the aircraft to facilitate direct communications with the RWT, and speed up the reports. CAS began a program to inspect and repair the RWT field radios and RWTs were positioned on the north-south axis of Delta and Echo sectors of STEEL TIGER. However, because the RC-47 could not contact all RWTs at once, an elliptical orbit was established with scheduled contact times for each team. ^{38/}

To eliminate the delays in reporting associated with the large, slow orbit of the RC-47, CAS in June 1967 proposes sending RWT reports to AIRA at Pakse or Savannakhet, and thence via relay through the 7/13th TACC at Udorn to Alley Cat. ^{39/} This was to be an interim measure, because plans were already

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being made to replace the ABCCC RC-47s with EC-130s in July. It was suggested that the RC-47s be maintained in a night mission of radio relay aircraft (RRA) between RWT and the EC-130 ABCCC, after the EC-130s replaced them. This was done in July 1967.^{40/} The language barrier was another obstacle which had to be overcome. Many of the RWT were comprised of foreign nationals. There were no Americans available with a speaking knowledge of the Laotian language. This problem was eliminated eventually by equipping the RWT with special transmitting equipment (Hark I). With this innovation, the activity observed by the RWT could be relayed electronically to the orbiting RC-47 without the need for verbal transmissions. This information was then relayed to the ABCCC. Later, a Lao-speaking Thai was placed on the EC-130 to orally interrogate the RWT about supplies and team needs.^{41/}

Additionally, coordination between 7AF and the U.S. Ambassador was maintained to more effectively position RWTs in Laos according to suspected lucrative areas and to accommodate the shifting airstrike resources.^{42/}

One of the most significant innovations which occurred in the development of U.S. airpower in Laos from 1 January 1967 to 30 June 1968 was the evolution of the MUSCLE SHOALS system, known as IGL00 WHITE after May 1968. This system was designed to use specialized aircraft, munitions, sensing devices, and related equipment to suppress and impede the enemy flow of men and supplies through Laos.^{43/}

On 6 March 1967, in response to the increasing enemy activity and to allow for the programmed increase of USAF operations in STEEL TIGER (among

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them MUSCLE SHOALS), a command and control element of 7AF was set up at Nakhon Phanom RTAFB. This element was called the STEEL TIGER Task Force, and its mission was to provide an on-the-scene agency responsible to the Directorate of Combat Operations at 7AF for decisions in the STEEL TIGER North area. ^{44/}

The SLTF Commander was to "effect" operational control and supervision of 7AF forces made available for strikes in STEEL TIGER. Overall direction and control of these offensive forces remained at 7AF at Tan Son Nhut AB, RVN. ^{45/} In carrying out its duties, the SLTF functioned less as an operational control agency than it did as a coordinating and analyzing extension of 7AF.

The Task Force was collocated in the 56th Air Commando Wing (ACW) TUOCC at Nakhon Phanom (NKP). It provided changes in tactics and operational guidance to forces operating from NKP. In particular, a number of directives were issued to help tactical units at NKP adjust to the increased effectiveness of the enemy air defenses in STEEL TIGER North in April 1967. ^{46/} A major task which the SLTF performed was supplying 7AF with advice and near-real-time intelligence on which decisions could be based. ^{47/}

In the fall of 1967, as enemy traffic began picking up once more through STEEL TIGER, the SLTF was absorbed into a new organization, Task Force Alpha (TFA). The operations order describing TFA functions stated: ^{48/}

"Task Force Alpha...at Nakhon Phanom AB, Thailand is responsible to 7AF for strikes and situational analysis in the STEEL TIGER area and for special operations as directed by the Commander, 7AF. Certain daily strike, support and photo recce sorties

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will be fragged for use by the 7th Air Force Task Force Commander. The 7AF DOCC (DCS Operations Command and Control) and ABCCC will insure close coordination with the 7AFTF (TFA) prior to diverting any of those sorties from the STEEL TIGER area."

Task Force Alpha also managed the MUSCLE SHOALS, later IGLOO WHITE, system from two facilities at NKP. These were the Infiltration Surveillance Center (ISC), which housed an automated data processing system, and the Task Force Operations Center. MUSCLE SHOALS was designed to augment the overall interdiction effort in STEEL TIGER. It consisted of an air-supported anti-personnel subsystem termed Dump Truck and an air-supported antivehicular subsystem called Mud River. As one PACAF publication outlined: ^{49/}

"The concept of operations includes use of air dispensed mechanical and electrical sensors emitting signals or sounds (including voice pickup) to continuously airborne EC-121 aircraft for relay to an Infiltration Surveillance Center (ISC)....The signals are relayed to the ISC both manually and automatically. When received, the Alpha Team will analyze the sensor information and request strikes from the on-station C-130 Airborne Command Control Communications Center (ABCCC) or the 7AF TACC."

If there were a FAC available, the ABCCC followed up the report (Spotlight Report) by sending a FAC to confirm the target; and, if he could confirm the target and strike aircraft were also on hand, the FAC directed the strike.

The 7AF COA Report 68-1 of 1 July 1968, on "Air Interdiction in Laos (IGLOO WHITE Final Evaluation Report)" included data through 1 May 1968. This evaluation proposed various parameters against which the system was measured, as stated in the following section extracted from the report: ^{50/}

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"IGLOO WHITE Effectiveness

"The information output of the IGLOO WHITE System in the Anti-vehicular area (Mud River) produced a general picture of truck movement that was accepted and acted upon by the Intelligence Surveillance Center (ISC) personnel who recommended strikes against specific moving truck targets and truck park areas.

"A comparison of the ISC output with visual observation from FAC aircraft has been used as a basis for judgments on the quality of this ISC output. Specifically:

"1. The general levels and distributions of truck traffic in Mud River as derived from the ISC output compares favorably with visual sightings results.

"2. The validation of the individual target recommendations by a FAC aircraft gave an average 35% confirmation rate. Actually 44 percent of the 'spotlights' passed were investigated; of these 35 percent were confirmed. There remain difficulties in relating this figure to system reliability. The validity of secondary information such as direction of movement, speed, and numbers of trucks per convoy are less well founded.

"IGLOO WHITE information was used by 7AF to (a) augment other intelligence means to develop trends and traffic patterns; (b) to aid in the identification of active truck parks; and (c) to provide immediate target information for strikes on moving trucks. Findings relative to these uses are:

"1. The general intelligence contribution of IGLOO WHITE is felt to have been valuable although this is difficult to quantify. Several examples where IW information played an identifiable and unique role can be cited.

"2. The use of IW in developing truck park targets improved throughout the season. Intensive efforts in April and May to develop truck park areas based on traffic patterns and specially implanted sensors in park areas became the basis for B-52 targeting of the parks.

"3. A detailed analysis of the use of IGLOO WHITE in directing immediate strikes yielded the following results:

"(a) The simple approach of forwarding every detection as a 'spotlight' report and attempting to place ordnance on the indicated target DID NOT improve the truck kills.

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"(b) There was room for improving the efficiency of strike aircraft utilization. The ISC output can be used more selectively to define the more lucrative targets for air strikes; simulation results tend to show this could provide an improvement in results. Steps to use IGLOO WHITE in a fuller 'Battle Management' role started in April."

It was apparent that the transmission to the ABCCC of every Spotlight Report was not improving the reliability of the system. The system, as others, was suffering from the enemy tactics of saturation. Commenting on this overall problem and relating it to the limited airpower available, the 7AF Force Improvement Plan stated that "the frequency of sightings is increasing beyond the resources available to 7AF to strike them"^{51/}. Furthermore, as noted earlier, 44 percent of the potential targets spotted and passed by MUSCLE SHOALS/IGLOO WHITE were sought by FACs; of these 35 percent were confirmed. This amounted to about 15 percent of the total being confirmed (35 percent of 44 percent). This result did not enhance the "credibility" of the system, when it was also demonstrated that FACs could develop as many targets by themselves as were found and confirmed via the sensor system.^{52/} Therefore, beginning in April 1968, the operators of the system practiced more selectivity and, instead of passing individual sightings, passed those determined by an aggregate of indications--for example, a convoy, not a truck.

This change, as well as others which were proposed, was incorporated in the enlarged "Battle Management" concept, mentioned previously. Begun on a trial basis, this idea consisted of:^{53/}

- Rescheduling aircraft to better match expected traffic.

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- Establishing a partial ground alert on a trial basis.
(This was three A-26s on alert during the early evening.)
- Initiating an extensive road cutting program.
- Modifying procedures in TFA to better exercise the ISC output in a broader role.

While previous methods of interdiction had resulted in an estimated 10 percent kill rate of the trucks which transitted the area, it was hoped these improvements would boost the rate to 13 - 15 percent. ^{54/}

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CHAPTER V

AIRPOWER RATIONALE AND RECOMMENDATIONS

This chapter concerns three issues which provide excellent examples of the rationale revealing the manner in which the air war in Laos was waged.

These are:

- Use of propeller aircraft as opposed to jets.
- Desires of the U.S. Ambassador to Laos and Seventh Air Force responses.
- Task Force Alpha as a command and control element.

These issues offer three views of what is essentially the question of how airpower should be applied. They also demonstrate high level concern that the airpower which was available was used in the most effective manner.

Props vs Jets

On 19 December 1967, a study was sent to the JCS by the Secretary of Defense which affirmed that propeller aircraft were nine times more effective per sortie in destroying trucks and water craft. Drawn from data taken from the first nine month os 1967, the study pointed out that in that period jets destroyed or damaged 366 moving vehicles, at a rate of 1.5 per 100 sorties. The cost was established as averaging \$700,000 for each truck and water vessel damaged or destroyed.^{1/}

By contrast, prop aircraft had destroyed and damaged 996 vehicles, or demonstrated a rate of 12.8 destroyed or damaged vehicles per 100 sorties. Hence, the cost, in the case of the prop, was \$55,000 per vehicle. It was

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recognized, however, that the prop aircraft loss rate was four times higher than the jet.

It was deduced, therefore, that it would be possible to substitute two A-1 squadrons for two F-4 squadrons in Thailand "without reducing the jet sorties available for use in North Vietnam". The authors of the study estimated that this change could result in the damage or destruction of an additional 1,200 moving vehicles in Laos over a 12-month period. Proponents of this plan estimated that it could save \$28 million per year. But it was also admitted that probably an additional 18 planes and eight pilots would be lost as a result of the proposed plan.^{3/}

JCS was required to reply to the proposal by 29 December, and the question was passed for comment down the chain of command with correspondingly shortened suspense dates.^{4/} The COMUSMACV, 7AF, and PACAF replies were based on a December study by the analysis section of 7AF (DOA) contrasting the value of props as compared to jets.^{5/}

The findings were best summarized in a message from CINCPACAF to CINCPAC on 23 December 1967:^{6/}

"...from an operational standpoint, consider such a tradeoff undesirable primarily because of the reduced flexibility that this force would provide.

"...Primary effectiveness in air operations to reduce the flow of materials to SVN is achieved by striking as close to the source as possible. It is of course essential to keep the rolling stock and material that has infiltrated throughout the system under attack but whenever we have the choice, our primary emphasis must be to stop or destroy this equipment before it is

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dispersed throughout the maze and mesh of highways, roads, and trails in NVN and Laos.

"...To attack at the source requires a force that can operate in the highly defended areas of Hanoi and Haiphong at maximum strength whenever the weather permits such activity.

"...In view of the necessity to have maximum forces available to exploit all breaks in the weather, we cannot afford the luxury of highly specialized squadrons which are capable of only killing trucks in relatively undefended areas. The commander should have the flexibility inherent in his forces to employ them where they are most needed in each particular situation. The only aircraft that provides a capability of this type in NVN/Laos is the jet fighter aircraft.

"...In order to take advantage of the marginal weather which prevails over the northern areas for extensive periods, we are forced to schedule maximum efforts into these areas, realizing in advance that it is highly probable that they will divert. These diversions are planned to make up a portion of the attack forces in RP I and Laos. However, because these aircraft are weaponized for maximum effectiveness against hard targets and because they normally can only stay in Laos for short periods (15 minutes), their effectiveness against trucks is reduced. This accounts for some of the relatively poor results when these attacks are compared with the A-1 which is weaponized and scheduled for this one purpose. We accept this poor truck killing configuration in order to retain the most effective effort against the primary targets in the north and to maintain maximum presence over the LOCs in Laos. If we were willing to assign the F-4s to a truck killing role only, relative effectiveness would improve. However, with the limited jet forces available, we cannot afford this luxury.

"...There is no argument that the A-1 has been relatively more efficient in the truck killing role in Laos. However, it should be pointed out that the operations are (confined) to one small part of the overall problem. They cannot attack at the source of the supplies and cannot contribute to the second essential requirement of attacking throughout the length of the LOCs from Hanoi/Haiphong through NVN into Laos. The A-1 cannot operate even in RP I. Therefore, this secondary requirement also requires a large force of jet-propelled aircraft because of the heavy defenses in this area.

"...If we view the problem only (in) Laos, we are confronted with

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the fact that the enemy defenses are steadily increasing and that it is but a matter of time until the A-1s will be restricted from substantial areas because of exorbitant losses. They are already denied areas of Laos in which we have to rely on jet-propelled aircraft for all attack forces. The enemy has repeatedly shifted his defenses in Laos to conform to the monsoon cycle, moving in considerable 37/57mm AAA and AW during the NE Monsoon Season. The 67-68 period experienced a faster build-up than in previous years and forced A-26s and T-28s off the LOCs during the daytime. We can anticipate continuation of this trend and increasingly greater dependence on jet aircraft where defenses are concentrated.

"...Sec Def Study not available for analysis; however, factors such as flak suppression, escort (F-102, F-104), and attacks against fixed targets (F-100) by jet forces, if not excluded from jet attack sorties, could account for low truck damage versus sortie ratio. Recent comparative analysis by 7AF, excluding such factors, found that on a sortie for sortie basis in permissive air defense environment, under conditions where jet forces cannot maximize ordnance load to destroy trucks, the propeller aircraft has demonstrated 2 to 1 capability over jets in destroying/damaging trucks. However, on year around operation basis requiring attacks in both Laos and RP I where equal numbers of aircraft committed to same mission, jet force kills more trucks than propeller forces.

"...Addition of two A-1 squadrons to programmed force structure would provide additional effective capability to meet requirements in Laos. However, anticipated increased need for jet aircraft to counter defenses in this area and to provide flexibility for operations in other areas dictates requirement to retain present jet aircraft forces.

"...In summary, while we agree that the A-1 is an effective anti-truck weapon in a very selective environment, we do not believe that we can afford this weapon at the expense of critically needed jet fighter aircraft. It degrades our flexibility, reduces the effort in the highly defended areas, and is probably going to be further restricted in operational area in the near future. We would, of course, be able to utilize any additive A-1 forces in STEEL TIGER and BARREL ROLL areas if such forces were made available to PACAF."

On 24 December 1967, COMUSMACV, using the same 7AF report as a basis, in essence, seconded the CINCPACAF response. Concerning the uses of the F-4, the message stated: ^{7/}

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"...It also operates in the MIG CAP role, and with the recent deployment of the F-4D, in the all-important, all weather strike activities. To consider substituting propeller aircraft for F-4 capability is to deny the air component commander much needed flexibility and versatility in optimizing the out-of-country air campaign...This Headquarters supports the 7AF rationale."

On 26 December, CINCPAC advised JCS against the substitution. Covering much of the same ground, the fact that prop losses could increase at any time was emphasized, as well as the seasonal nature of the war and the faster jet reaction times.^{8/}

Ambassador's Needs and 7AF Responses

Previous portions of this study have outlined the scope and limits of the responsibilities of the Ambassador to Laos and the 7AF Commander. In addition, the lines (State Department and Department of Defense) through which each received authority have been discussed. It was natural that on some matters, there would not be unanimous agreement. For example, one party would be directly concerned with the ground war in Laos--the other indirectly. 7AF would have to weigh priorities and plan for air requests; the Ambassador would express needs. Many of the needs for air support that the Ambassador expressed were brought to him through CAS advisors. Some of the problems in establishing and meeting these needs were pointed out in a letter from a CAS advisor in late December 1966. The following portion ("VP" refers to Meo Gen. Vang Pao, Commander of Military Region II in northeastern Laos) is quoted:^{9/}

"...The big problem is timing. VP does not and cannot operate like an American Army General! He does not have the staff to implement the ops order. He does not have sufficient commanders to pull off these operations. For example, the Muong Peun operation depends on

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a Lieutenant Ba Kri. Ba Kri is not the most aggressive of people but this time he and his troops seem to be in a hell of a good mood and he has decided that his troops can take Muong Peun. So we kick off the operation. It's not that Ba Kri has refused to go in the past. He merely regrets that his troops are sick, he doesn't have enough supplies, etc, etc. And the sad thing is that VP does not have another field commander to replace him. So VP must cajole and then finally order after providing supplies and reinforcements and things do get done...eventually!

"This, of course, complicates our air support. When VP decides that today is the day for the beginning of the movement against Muong Peun, as he has, we cannot wait... to come up with the air support. So we ask for the sorties scheduled against hard targets. Also I couldn't possibly predict three days in advance when the field commanders and the ground troops and VP will decide that the time is propitious for a move. So if we can convince the people at Udorn and Saigon that the operation here is a bit different than in SVN and that 8 or 12 sorties quickly provided can mean a big difference in our little war, we can really make some improvement in the ground situation in northern Laos...."

During 1966 a number of F-4s and F-105s had been in a ground "alert" status to provide strike sorties for requirements of the U.S. Ambassador in BARREL ROLL. This concept had been nicknamed Bango/Whiplash. It was the 7AF position that with increasing demands for air throughout the theater, and the enhanced capability for responsiveness in improved command and control procedures, more use could be obtained from these aircraft, if they were taken off alert and made available for other missions. Therefore, Bango/Whiplash was terminated in November 1966. In stopping the concept, however, it was envisioned that 12 A-1, 18 F-104, and 4 A-26 strikes would be fragged daily into BARREL ROLL.^{10/} A number of factors mitigated against supplying what would have amounted to more than 1,000 sorties per month to BARREL ROLL. Among them were the shortage of FACs for direction; a limited number of lucrative, validated targets in the

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area; theater-wide commitments; and, perhaps the most important, extended periods of bad weather.^{11/} Figure 9 indicates the monthly totals of strikes in BARREL ROLL.

Although there was concern expressed over the falling rate,^{12/} the ground situation in Laos was apparently satisfactory enough in 1967 so that the lessened USAF support for Laotian forces was not a crucial point to Vientiane. As the enemy became more aggressive in the dry season of 1967-68, this was not to be the case. It should be kept in mind, however, that the sharp increase in enemy activity was not limited to Laos--the battle for Khe Sanh and the nationwide TET offensive in SVN were only two examples.

An accumulation of problems induced the Ambassador to request a revision in the provision of air support. The issue that capped the difficulties involved A-1 aircraft.

In February 1968, escort duties and sensor planting missions associated with the MUSCLE SHOALS system required a temporary cutback in the number of A-1 sorties available to provide air cover for CAS infiltration/exfiltration missions in Laos.^{13/} A-1s were also being used to support search and rescue missions, in armed recce roles, and as FAC/strike aircraft in BARREL ROLL. In a message to the Secretary of State on 20 February 1968, the Ambassador to Laos reported:^{14/}

"...I have been troubled particularly by the problem of obtaining sufficient airstrike support directed on key targets in Laos at the time such air support is required.

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"My concern has been highlighted by the recent 7th AF decision to withdraw CAP support from CAS infiltration/exfiltration mission in central and south Laos for an undertermined period of time. I understand informally that this period will extend for at least two to four weeks. CAS road watch and enemy harassment mission in central and south Laos are carried out in direct support of COMUSMACV's objectives and our own counterinsurgency mission in Laos. The withdrawal of CAP support to CAS missions in effect neutralizes CAS's capability to perform its primary missions in those areas.

"Taking into consideration our own requirements for tactical air support in combatting enemy threat in Laos and the priorities that 7th AF must fulfill, I would suggest that "high level" consideration be given to a fundamental re-ordering of our air support resources....This proposal is not new but given current tactical pressures in Laos, I believe it merits serious reconsideration."

The Ambassador went on to emphasize that the only regular sorties for BARREL ROLL were eight A-1 sorties, which the 602d Squadron at Udorn provided daily. He stated that these were required solely for the defense of Lima Sites 85 and 36. (These same aircraft operated as FACs for diverted ROLLING THUNDER jet sorties, also.) However, the Ambassador pointed out that, while attention was being directed in these areas, the enemy was building up east of Sam Neua. The reason this occurred was simply that there were insufficient air resources to be devoted against them "on a continuing and sustained basis"^{15/}.

In a message to 7AF, also on 20 February 1968, the Ambassador covered much the same ground:^{16/}

"...The fact is that our 'air resources' for Laos have been those which, on any given day, Seventh Air Force has been able to spare from other operations...."

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"I fully appreciate why this has been so, and what management problems you have faced in trying to meet our regular local needs, as well as vagrant emergencies which arise in this or other parts of your parish in the ebb and flow of the war. I am not sure that you, in Saigon, are able to appreciate just how impossible this situation renders our task in seeking to manage the counterinsurgency here.

"For various reasons, including a treaty which is 'supreme law of the land,' we are a separate operational entity here in Laos. As such, it would be logical for us to have at least one air unit which could be a known quantity in our operations and which we could task with a foregone assurance that said unit would be responsive. I wish to stress that I am not repeat not talking about operational control or frag responsibility for any one unit. The word which I guess I want is 'dedication'.

"For this 'dedication', I would like to suggest the 56th ACW at Nakhon Phanom...."

The "dedicated" support of the 56th Air Commando Wing would have provided the Ambassador an estimated additional nine A-26, eight T-28, and eighteen A-1 sorties per day. Also, U-10s and a C-123 would have been available for FAC/flaeship roles, an area in which the Ambassador felt BARREL ROLL was handicapped. ^{17/}

The Ambassador envisioned 12 A-1 and four T-28 day sorties, along with seven A-26 night sorties in BARREL ROLL daily. The southern end of STEEL TIGER would have received six A-1 day sorties and two A-26s at night. The remaining four T-28s would have been devoted to infiltration operations. ^{18/}

Furthermore, the Ambassador was clear in pointing out that: ^{19/}

"... 'dedicating' this unit to our counterinsurgency program would in no sense limit your ability to frag other missions into Laos as resources are available

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to you, as diversions from other targets, or as aborts from Vietnam strikes. Nor would it, we would expect, dispose you in any fashion against rapid response with other resources to immediate emergencies or the need for 'package strikes' when lucrative targets develop in Laos."

Particularly, the Ambassador stressed that: ^{20/}

"...it would not eliminate the need for special jet packages to be used against hard targets and troop concentrations which cannot be hit by prop driven aircraft."

Seventh Air Force opposed the "dedication" of the 56th ACW. In a number of messages in late February, the reasons for the opposition were detailed. They are summarized in the following message of 28 February from CINCPAC to JCS. CINCPAC concurred with 7AF opposition on the grounds that there were: ^{21/}

"...increased pressures from other military areas, and the limited Tac Air resources available precluded specific allocation of 'dedicated' attack sorties to Laos in the quantities desired...."

"The position...is sound and basic to the principle of effective use of air resources. The necessity for maintaining flexibility to meet the varying tasks in support of our objectives in SVN, NVN, and Laos precludes the dedication of any portion of Tac Air resources... (Flexibility was needed to permit the concentration of air)...in Laos or elsewhere when the need is critical."

"Target nominations in Laos are considered in conjunction with target nominations from other areas in the primary allocation of available strike sorties. Air attack sorties have been and will continue to be provided as necessary to meet situations in Laos."

"MUSCLE SHOALS operations require that a greater part of the sortie capability of the A-1 squadron at Nakhon Phanom be used at this time against MUSCLE SHOALS generated targets."

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Tactical air effort in addition to the A-1 assets in Laos has been provided by the increased use of the A-26s and other assets. Although additional A-1 assets will become available for use in SE Asia with the closure of an approved Program Five A-1 squadron at Pleiku in Mar 68, flexibility in the use of this squadron is necessary in order to realize the most effective employment of these assets.

"The requirement for Tac Air support in Laos is recognized and targets nominated will be given due priority. However, there are not sufficient assets available in SE Asia to permit the designation of a dedicated wing or squadron for exclusive use in Laos or elsewhere. Tac Air assets must remain flexible to ensure that they are available for use when and where most needed."

While the issue of the dedication of the 56th ACW was, in effect, closed, the problem of finding additional air support continued. The increasing deterioration of the Laotian ground situation, in particular the threats to Sites 85 and 36, continued to prompt the Ambassador to seek additional regular-
22/
ized air support.

Plans underway to increase the number of A-1s for Laotian operations and the cessation of bombing in NVN above 20° North, by Presidential order, created altered conditions for Laos. Significantly, the fact that USAF strikes were no longer sent to the northern parts of NVN eliminated a considerable number of divers which had, in the past, been sent to northern Laos.

Therefore, in May 1968, the Ambassador to Laos resumed his efforts to get more air. Now, he requested 35 strike and two flare sorties in northern Laos and 30 strike sorties in south Laos daily. He preferred propeller aircraft, but would accept jets, if they were the only kind available. At that time, 7AF provided from 35 to 39 strikes daily (not counting those associated with normal SVN infiltration strikes) to Laos. Additional sorties were sent

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to respond to Vientiane requests and emergencies. ^{23/}

In a 25 May message, 7AF commented on the Ambassador's request and the need for two additional A-1 squadrons. The contents of the message stressed that the projected increase was needed for many tasks, not only for the Ambassador: ^{24/}

"...The daily requirement of 65 sorties is considered excessive and more than can be efficiently utilized on a day-to-day basis, especially during the Southwest Monsoon. However, the requirement for support of RLG counterinsurgency operations are only part of current operations for which A-1s can be utilized and are needed. Validation of the requirement for the two additional A-1E squadrons is based on the total 7th Air Force mission requirement...."

"Current 7th Air Force support and capabilities as indicated... (35-39 sorties)...can be provided on a continuing basis as long as the bombing restriction above 20 degrees north remains in effect. If the restriction were to be lifted, adjustment would probably be required. However, some mixture of propeller and jet sorties could be provided with the mixture depending upon the availability of the additional A-1 squadrons and other factors such as enemy defenses."

On 28 May 1968, Secretary of State Dean Rusk supported the Ambassador's request for "assured" tactical air missions. It was significant to note that, while 7AF had been wary of committing additional air on a regularized basis in case bombing in the north might be resumed, the Secretary took an opposite view. To the Ambassador he stated: ^{25/}

"...We also note your need for propeller driven act (aircraft) primarily in support of counterinsurgency operations and to be supplemented by high performance aircraft against targets for which latter are peculiarly more capable. Additional argument in favor of augmentation U.S. prop capability especially for missions in north Laos is that if there should be complete cessation of bombing of NVN, we anticipate jet assets will

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need concentrate on targets in HCM (Ho Chi Minh) Trail area. If we wish RLG to accept such concentration with its obvious political liabilities for Laos, U.S. should be prepared to satisfy RLG's own needs in northern Laos.

"Assume...(revalidation of justification for the two A-1 squadrons)...is proceeding smoothly and that recommendation will be to increase prop sorties for your needs. Please keep us informed so that we may lend appropriate support from this end as required."

On 1 June 1968, in a message to JCS, CINCPAC summarized the events which had transpired in the issue and affirmed: ^{26/}

"Forces requested...are considered adequate to fully support the stated counterinsurgency requirement. The two A-1 squadrons, four A-26 aircraft, and four C-123 aircraft would provide 7th AF with an increased capability in conjunction with jet aircraft (and) would provide the desired sortie mix to meet the requirements."

Through the remainder of the period of this report, the issue remained in abeyance. The projected increase had not been approved by the Office of the Secretary of Defense. As a result, the sortie rate for the Ambassador did not increase substantially.

TFA, Command and Control Element

As has been covered, one of the reasons the SLTF was established in March 1967, was to serve as a forerunner to TFA and the MUSCLE SHOALS operation. According to the operations order, the SLTF was to function as a command and control element which would operate with near-real-time intelligence. However, this task force did not exercise operational control over aircraft striking in STEEL TIGER. It was to "effect" operational control. While the SLTF Commander

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was given a degree of latitude by possessing the power to launch or cancel sorties from NKP, the function of the SLTF was limited almost wholly to presenting recommendations to 7AF. It was true that generally 7AF followed these suggestions.^{27/}

Nevertheless, 7AF continued to frag sorties to specific targets, and maintained a "blanket" policy on weather cancellations.^{28/} These factors de-emphasized the operational side of the SLTF. In addition, the ABCCC functioned on near-real-time intelligence, and diverted sorties within STEEL TIGER, many times without notifying the Task Force.^{29/} In July 1967, the SLTF was bypassed to a greater degree when, in the interest of faster reactions, RWT reports were forwarded directly from CAS/AIRA to the orbiting ABCCC.

This status did not change appreciably with the establishment of MUSCLE SHOALS. In the 7AF Operations Order which covered MUSCLE SHOALS, TFA was defined as:^{30/}

"A subordinate element of 7AF Headquarters which includes the ISC and a Task Force Operations Center. The TF is the central point of determining requirements for emplacement and maintenance of the sensor-munition emplacements, and the collection, processing and evaluation of sensor and other intelligence data for target determination and recommending appropriate air missions."

The ABCCC continued to have divert authority, which was limited by TFA, only in that some sorties were, in essence, fragged for TFA/MUSCLE SHOALS operations and could be diverted from these missions only with TFA permission. TFA, upon evaluating intelligence available from the system, could pass divert or target recommendations to the ABCCC; however, it was not mandatory that the

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ABCCC implement them. Response depended upon availabilities and the tactical situation.^{31/} The question of whether or not TFA should exercise operational control in STEEL TIGER North, in place of the ABCCC, was raised in a visit by the Secretary of the Air Force to the TFA facility in April 1968.

The Commander, 7AF maintained that while it was technically possible to allow TFA (a ground facility) to replace the ABCCC, a number of factors mitigated against that move. Among these were:^{32/}

- Additional personnel and communications would be needed.
- An adequate radio relay aircraft to overcome ranges and blocking terrain was not available in theater.
- Such a move would hinder flexibility and centralized control.
- Such a move could be inadequate and unnecessary due to other more advantageous command and control systems which were being developed.

In a letter to the Secretary of the Air Force, the Commander, 7AF, explained his views:^{33/}

"The TFA Infiltration Surveillance Center is an imposing facility with its many sensor-receiving stations, up-to-date computers and the capability of developing live intelligence for immediate exploitation. Adjacent to this is an Operations Center which plans and monitors air activity in the MUSCLE SHOALS area. This Operations Center does not possess the authority to control airborne strike resources. This is a paradox which is seized on immediately by those oriented solely to the MUSCLE SHOALS project. I understand their feelings completely and without criticism. However, as single manager of USAF and, more recently, Marine air resources, I am faced with the task of supporting the total war with its innumerable individual tasks. There is the CINCPAC war in NVN up to 19° North, COMUSMACV faced with extensive operations through SVN, the interdiction program in Laos and Route Package I, SOG, CAS and MUSCLE SHOALS to

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mention but a few of those competing for air support. Each individual or task has a responsible and well meaning sponsor, intelligently and forcefully driving for more air support in his particular area of responsibility.

"The dedication of strike forces to make MUSCLE SHOALS a self-contained operation was discussed at the outset and shelved... (the system and concept were new, with many attendant problems. A detailed analysis and evaluation followed every phase of its progression. While a final analysis was not complete)... the potential value of this system is encouraging as a supplement but certainly not as a substitute for the overall interdiction program. In my judgment, the time has not arrived to allocate strike assets to Task Force Alpha because of the need to retain centralized control of my limited air resources to meet the demands of the overall campaign and future contingencies like Khe Sanh, NEUTRALIZE, and the Tet offensive...."

This letter described plans that were well along in development to provide 7AF with automated subsystems which would offer a near-real-time command and control capability. The system would be completed before an adequate capability could be established at TFA. ^{34/}

The Commander, 7AF, also offered a clear summarization of his views: ^{35/}

"...It has long been my desire to centralize air resources, management tasking and decision-making at my Command Center. This will soon be a reality with the assistance of automated systems which will permit me and my staff to selectively monitor all air operations and the MUSCLE SHOALS activity. All necessary air, not just a dedicated force, can then be quickly switched via ABCCC to exploit lucrative targets developed by the Infiltration Center, FACs, or any other intelligence collection source. This centralized control and ability to quickly concentrate forces is not possible if the available strike force is fragmented, or if numerous control centers are used to direct operations in individual sectors of responsibility.

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CHAPTER VI

SUMMARY OF OPERATIONS

A number of observations concerning the overall operations in Laos from 1 January 1967 to 1 July 1968 are offered:

Dual Character of War

The dual character of the war was a necessary concept to grasp. That duality connotated uniqueness is understood, but in Laos, this did not mean isolation, one from the other. The air war in Laos was not always separable from the war for Laos. The primary mission of the USAF in Laos was armed reconnaissance of the enemy LOCs. However, support for Laotian military operations was also to be extended on a "recurring basis".

The frequency of support for Laos depended, primarily, on the situation of the ground war in Laos. In the 1967-68 dry season, the friendly position deteriorated. No ratio could be established between armed reconnaissance and Laotian support missions. Airpower was allocated to assist the Laotian military forces according to priority demands for support, but an inflexible standard could not be applied to measure priorities. Therefore, in essence, each request had to be measured against military and "political" benefits which could be derived.

U.S. Ambassador-Commander, 7AF, Relationship

It was important to understand the relationship between the U.S. Ambassador to Laos and the Commander, 7AF, as well as the sources from which they drew their respective responsibilities (and the limits thereon). One

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expressed needs; the other attempted to meet them within the context of available resources, priorities, and established restraints.

In general, the Ambassador formulated his needs from inputs from the RLG and CAS. He also obtained advice of the Air Attache Office in Vientiane. Accordingly, it was vital that personnel in AIRA be selected on the basis of their experience and familiarity with current tactical air operations, as well as their knowledge of more routine attache duties.

USAF-RLAF Performance

Along a similar line, it must be remembered that while the USAF sent more than 60,000 strike sorties into Laos during this period, the RLAF contributed an additional 12,000. This was about 20 percent of the USAF effort. These RLAF sorties were expended in support of ground forces. While their performance was generally good, numerous problems have been indicated. Among these were morale, leadership, coordination, communications, and a lack of flexibility.

Expanding and improving RLAF operations could increase the effectiveness of the total airpower available to support Laotian military operations. It was essential that advisors (at the AOCs) available to the Laotians should be as experienced and knowledgeable as possible in the application and coordinated uses of tactical airpower.

Improving the Air Effort

USAF airpower was employed under the basic guidelines of flexibility in theater-wide operations and centralized control. To improve the effectiveness of the air effort in meeting increasing enemy activities, more sophisticated

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and integrated methods were continually sought. SLAM and SHOCK operations were adapted to Laos to weld together complementing resources. The "Hub and Wheel" concept was another attempt. KNIGHT WATCH operations were designed to better utilize the jets diverted from northern ROLLING THUNDER. Improved Hunter-Killer procedures were implemented for nighttime operations.

Steps were taken to enhance target acquisition, especially at night. The Starlight Scope was the most effective airborne innovation along this line, but developments were made in Low-Light Television, infrared, and Side Looking Airborne Radar. Road Watch Team activities were expanded and their communications enhanced in an effort to improve the currency of their reports and scope of their operations.

The evolution from the STEEL TIGER Task Force to Task Force Alpha with the MUSCLE SHOALS/IGLOO WHITE system was also a very significant attempt to improve the target acquisition capabilities of the USAF. Operational control of strikes was withheld from the Task Force in the interest of centralized command and control and flexibility of operations.

Yet, it was interesting to note that despite attempts to automate and integrate sophisticated systems and procedures, the "rules" continued to demand that most of the targets had to be visually acquired by a FAC, who would then direct strike aircraft.

Advantages of the Enemy

The enemy exhibited increased activity in this period, both in apparently sending more supplies through Laos, and in the heightened aggressiveness of

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his ground forces in Laos. While it is true that a part of the increased number of truck sightings for the 1967-68 period could be attributed to more efficient acquisition and observation techniques, the increased activity of the enemy in Laos and SVN revealed greater demands on materiel and the enhanced ability to supply them. Many of the advantages which accrued to the enemy were matters of fortune; i.e., vegetation which obscured his movements and bad weather that plagued USAF responses.

The Communists have displayed a determination to continue their aggression and supply in and through Laos by pushing through more traffic, building by-passes, accepting their losses, and shifting their defenses. No turning point had been reached from 1 January 1967 to mid-1968 in the air war over Laos.

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APPENDIX I

USAF STRIKES IN LAOS 1 JAN 67-30 JUN 68*

<u>Date</u>	<u>Sector</u>	<u>Thailand Based</u>			<u>Vietnam Based</u>			<u>Total</u>
		<u>Day</u>	<u>Night</u>	<u>Total</u>	<u>Day</u>	<u>Night</u>	<u>Total</u>	
<u>Jan 67</u>	A	35	-	35	3	-	3	
	B	195	6	201	-	-	-	
	C	142	20	162	8	-	8	
	BR	102	7	109	-	-	-	
Total		474	33	507	11	0	11	518
	D	84	14	98	4	10	14	
	E	1,319	414	1,733	128	99	227	
	F	193	39	232	395	150	545	
	G	64	7	71	358	36	394	
	SL	14	1	15	51	12	63	
Total		1,674	475	2,149	936	307	1,243	3,392
<u>Feb 67</u>	A	102	1	103	-	-	-	
	B	113	8	121	-	-	-	
	C	99	20	119	-	-	-	
	BR	48	3	51	-	-	-	
Total		362	32	394	0	0	0	394
	D	87	27	114	-	4	4	
	E	100	562	662	50	40	90	
	F	245	52	297	316	182	498	
	G	216	25	241	642	167	809	
	SL	38	6	44	122	4	126	
Total		686	672	1,358	1,130	397	1,527	2,885

* Breakdown of data is for sectors A through G. BR and SL indicate those strikes which were placed outside the lettered sectors. Source: DOSR, Hq 7AF, 3 Jun 68; 1 Jul 68.

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<u>Date</u>	<u>Sector</u>	<u>Thailand Based</u>			<u>Vietnam Based</u>			<u>Total</u>
		<u>Day</u>	<u>Night</u>	<u>Total</u>	<u>Day</u>	<u>Night</u>	<u>Total</u>	
<u>Mar 67</u>	A	68	-	68	-	-	-	
	B	142	17	159	-	-	-	
	C	160	16	176	-	-	-	
	BR	66	6	72	-	-	-	
<u>Total</u>		436	39	475	0	0	0	475
	D	54	17	71	-	2	2	
	E	589	489	1,078	30	172	202	
	F	156	11	167	584	222	806	
	G	36	1	37	425	87	512	
	SL	8	2	10	131	11	142	
<u>Total</u>		843	520	1,363	1,170	494	1,664	3,027
<u>Apr 67</u>	A	12	-	12	-	-	-	
	B	62	15	77	-	-	-	
	C	117	12	129	-	-	-	
	BR	23	-	23	-	-	-	
<u>Total</u>		214	27	241	0	0	0	241
	D	103	16	119	-	2	2	
	E	733	552	1,285	73	104	177	
	F	169	34	203	671	150	821	
	G	22	1	23	337	85	422	
	SL	22	2	24	204	30	234	
<u>Total</u>		1,049	605	1,654	1,285	371	1,656	3,310

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<u>Date</u>	<u>Sector</u>	<u>Thailand Based</u>			<u>Vietnam Based</u>			<u>Total</u>
		<u>Day</u>	<u>Night</u>	<u>Total</u>	<u>Day</u>	<u>Night</u>	<u>Total</u>	
<u>May 67</u>	A	38	-	38	-	-	-	
	B	194	30	224	-	-	-	
	C	66	30	96	-	-	-	
	BR	10	2	12	-	-	-	
Total		308	62	370	0	0	0	370
	D	39	31	70	-	-	-	
	E	421	386	807	6	32	38	
	F	4	11	15	222	154	376	
	G	-	2	2	243	83	326	
	SL	2	-	2	191	35	226	
	Total	466	430	896	662	304	966	1,862
<u>Jun 67</u>	A	68	10	78	-	-	-	
	B	129	30	159	2	-	2	
	C	106	31	137	-	-	-	
	BR	28	6	34	-	-	-	
Total		331	77	408	2	0	2	410
	D	36	19	55	-	-	-	
	E	191	166	357	2	7	9	
	F	24	33	57	267	69	336	
	G	2	22	24	99	23	122	
	SL	24	-	24	22	3	25	
	Total	277	240	517	390	102	492	1,009

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<u>Date</u>	<u>Sector</u>	<u>Thailand Based</u>			<u>Vietnam Based</u>			<u>Total</u>
		<u>Day</u>	<u>Night</u>	<u>Total</u>	<u>Day</u>	<u>Night</u>	<u>Total</u>	
<u>Jul 67</u>	A	22	3	25	-	-	-	
	B	131	21	152	-	-	-	
	C	106	29	135	-	-	-	
	BR	26	2	28	-	-	-	
<u>Total</u>		285	55	340	0	0	0	340
	D	8	9	17	4	2	6	
	E	207	102	309	17	22	39	
	F	20	46	66	178	29	207	
	G	20	26	46	117	16	133	
	SL	30	4	34	48	14	62	
<u>Total</u>		285	187	472	364	83	447	919
<u>Aug 67</u>	A	29	2	31	-	-	-	
	B	213	11	224	-	-	-	
	C	109	15	124	-	-	-	
	BR	66	7	73	-	-	-	
<u>Total</u>		417	35	452	0	0	0	452
	D	6	18	24	-	4	4	
	E	153	117	270	22	50	72	
	F	10	46	56	190	64	254	
	G	-	4	4	28	6	34	
	SL	8	6	14	66	9	75	
<u>Total</u>		177	191	368	306	133	439	807

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<u>Date</u>	<u>Sector</u>	<u>Thailand Based</u>			<u>Vietnam Based</u>			<u>Total</u>
		<u>Day</u>	<u>Night</u>	<u>Total</u>	<u>Day</u>	<u>Night</u>	<u>Total</u>	
<u>Sep 67</u>	A	24	-	24	-	-	-	
	B	270	2	272	-	-	-	
	C	92	5	97	-	-	-	
	BR	22	-	22	-	-	-	
Total		408	7	415	0	0	0	415
	D	8	18	26	2	4	6	
	E	307	150	457	81	75	156	
	F	4	51	55	234	145	379	
	G	-	6	6	64	24	88	
	SL	24	10	34	42	13	55	
Total		343	235	578	423	261	684	1,262
<u>Oct 67</u>	A	148	-	148	-	-	-	
	B	86	6	92	-	-	-	
	C	200	18	218	-	-	-	
	BR	148	2	150	4	-	4	
Total		582	26	608	4	0	4	612
	D	28	-	28	5	-	5	
	E	432	482	914	174	174	348	
	F	30	29	59	129	289	418	
	G	12	4	16	177	84	261	
	SL	19	12	31	116	102	218	
Total		521	527	1,048	601	649	1,250	2,298

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<u>Date</u>	<u>Sector</u>	<u>Thailand Based</u>			<u>Vietnam Based</u>			<u>Total</u>
		<u>Day</u>	<u>Night</u>	<u>Total</u>	<u>Day</u>	<u>Night</u>	<u>Total</u>	
Nov 67	A	131	-	131	-	-	-	
	B	144	5	149	-	-	-	
	C	311	7	318	-	-	-	
	BR	74	2	76	-	-	-	
Total		660	14	674	0	0	0	674
	D	18	2	20	6	-	6	
	E	610	762	1,372	402	308	710	
	F	60	68	128	179	346	525	
	G	27	11	38	265	97	362	
	SL	19	3	22	127	105	232	
Total		734	846	1,580	979	856	1,835	3,415
Dec 67	A	108	1	109	-	-	-	
	B	471	19	490	-	-	-	
	C	237	11	248	-	-	-	
	BR	56	-	56	-	-	-	
Total		872	31	903	0	0	0	903
	D	18	1	19	-	2	2	
	E	1,102	748	1,850	380	368	748	
	F	122	81	203	139	315	454	
	G	101	17	118	206	229	435	
	SL	50	16	66	233	215	448	
Total		1,393	863	2,256	958	1,129	2,087	4,343

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<u>Date</u>	<u>Sector</u>	<u>Thailand Based</u>			<u>Vietnam Based</u>			<u>Total</u>
		<u>Day</u>	<u>Night</u>	<u>Total</u>	<u>Day</u>	<u>Night</u>	<u>Total</u>	
<u>Jan 68</u>	A	193	22	215	-	-	-	
	B	262	15	277	-	-	-	
	C	142	31	173	-	-	-	
	BR	133	-	133	-	-	-	
Total		730	68	798	0	0	0	798
	D	64	3	67	12	-	12	
	E	878	536	1,414	258	410	668	
	F	324	199	523	942	444	1,386	
	G	65	27	92	287	189	476	
	SL	56	11	67	144	157	301	
	Total	1,387	776	2,163	1,643	1,200	2,843	5,006
<u>Feb 68</u>	A	133	16	149	-	-	-	
	B	475	25	500	-	-	-	
	C	195	12	207	-	-	-	
	BR	136	3	139	-	-	-	
Total		939	56	995	0	0	0	995
	D	59	-	59	2	2	4	
	E	648	389	1,037	70	264	334	
	F	489	154	643	950	511	1,461	
	G	58	15	73	167	75	242	
	SL	86	4	90	61	47	108	
	Total	1,340	562	1,902	1,250	899	2,149	4,051

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<u>Date</u>	<u>Sector</u>	<u>Thailand Based</u>			<u>Vietnam Based</u>			<u>Total</u>
		<u>Day</u>	<u>Night</u>	<u>Total</u>	<u>Day</u>	<u>Night</u>	<u>Total</u>	
Mar 68	A	36	9	45	-	-	-	
	B	280	59	339	-	-	-	
	C	162	3	165	-	-	-	
	BR	385	44	429	4	2	6	
Total		863	115	978	4	2	6	984
	D	20	-	20	6	1	7	
	E	605	358	963	112	264	376	
	F	501	101	602	1,005	521	1,526	
	G	53	38	91	160	70	230	
	SL	192	10	202	48	74	122	
Total		1,371	507	1,878	1,331	930	2,261	4,139
<u>Apr 68</u>	A	-	-	-	-	-	-	
	B	2	4	6	-	-	-	
	C	8	-	8	-	-	-	
	BR	320	15	335	-	-	-	
Total		330	19	349	0	0	0	349
	D	33	-	33	-	-	-	
	E	977	567	1,544	144	330	474	
	F	283	224	507	247	279	526	
	G	427	30	457	174	57	231	
	SL	325	5	330	82	46	128	
Total		2,045	826	2,871	647	712	1,359	4,230

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<u>Date</u>	<u>Sector</u>	<u>Thailand Based</u>			<u>Vietnam Based</u>			<u>Total</u>
		<u>Day</u>	<u>Night</u>	<u>Total</u>	<u>Day</u>	<u>Night</u>	<u>Total</u>	
<u>May 68</u>	A	-	-	-	-	-	-	
	B	71	2	73	-	-	-	
	C	195	2	197	-	-	-	
	BR	559	48	607	-	-	-	
<u>Total</u>		825	52	877	0	0	0	877
	D	34	8	42	-	-	-	
	E	466	385	851	86	201	287	
	F	224	188	412	141	238	379	
<u>Total</u>	G	64	37	101	126	48	174	
	SL	120	7	127	45	21	66	
		908	625	1,533	398	508	906	2,439
<u>Jun 68</u>	A	12	2	14	-	-	-	
	B	64	-	64	-	-	-	
	C	229	51	280	-	-	-	
	BR	256	4	260	-	-	-	
<u>Total</u>		561	57	618	0	0	0	618
	D	18	4	22	-	-	-	
	E	326	252	578	48	199	247	
	F	103	58	161	91	195	286	
<u>Total</u>	G	46	30	76	67	40	107	
	SL	62	14	76	20	14	34	
		555	358	913	226	448	674	1,587

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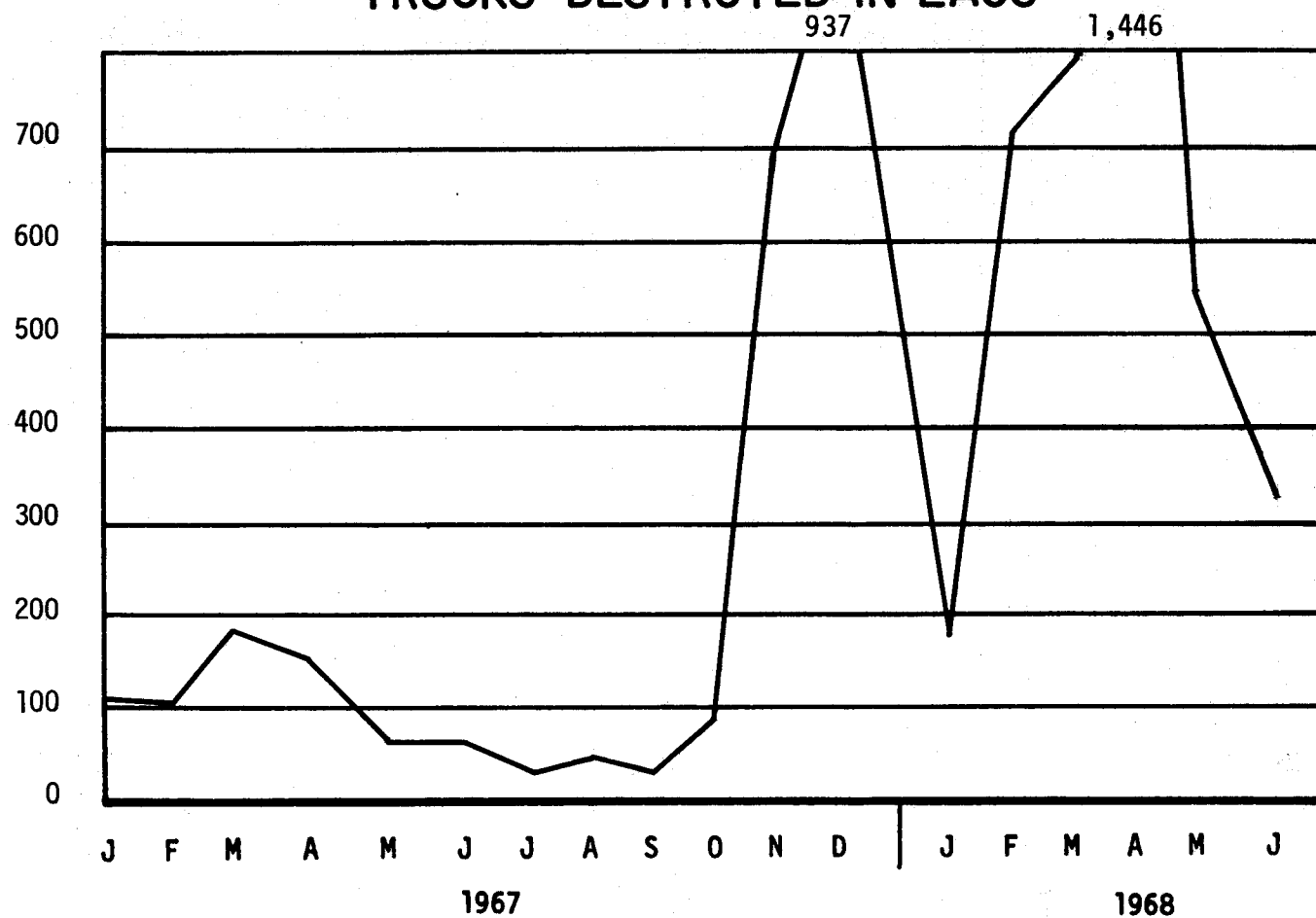
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APPENDIX II
RESULTS OF USAF ATTACKS

TRUCKS DESTROYED IN LAOS

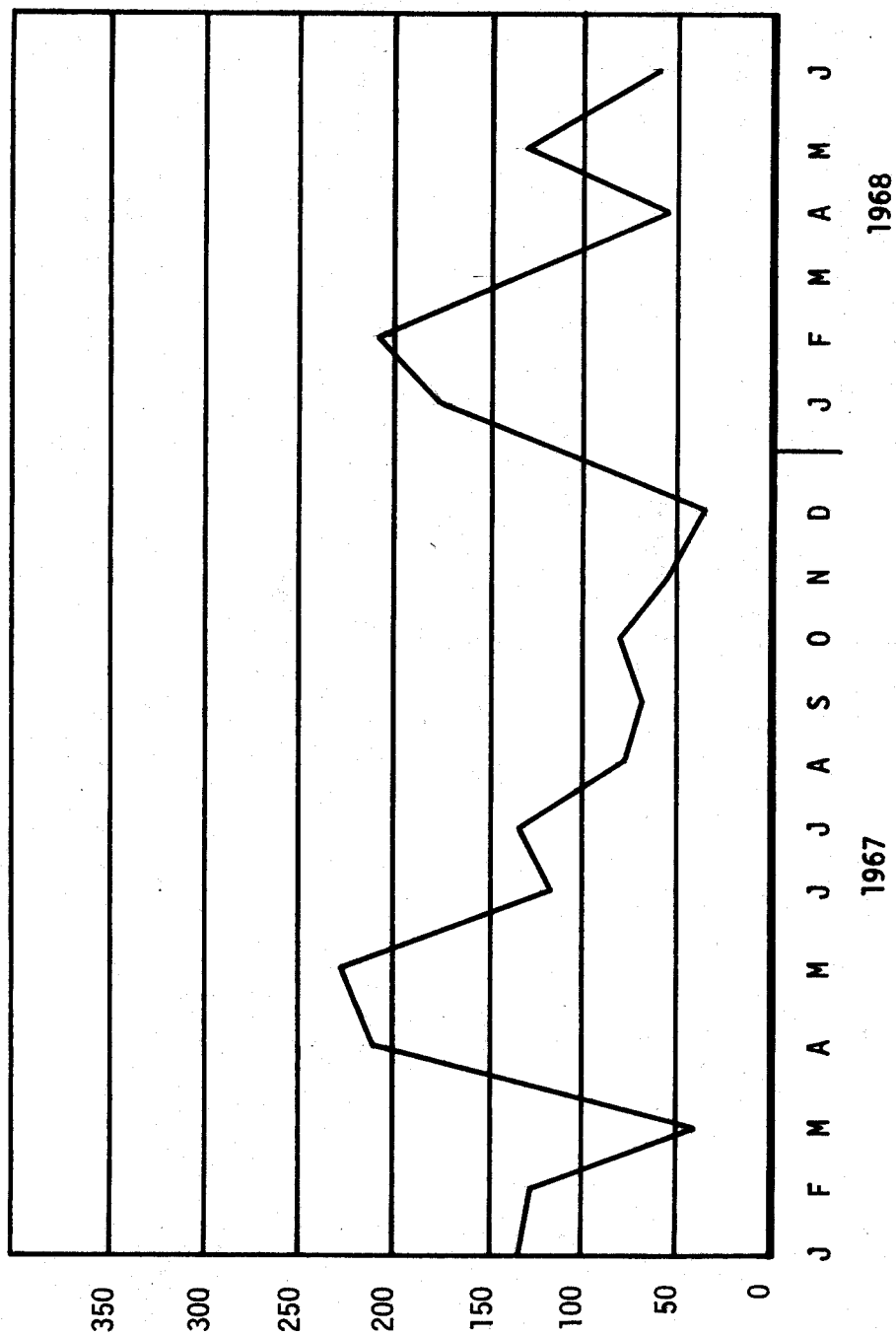


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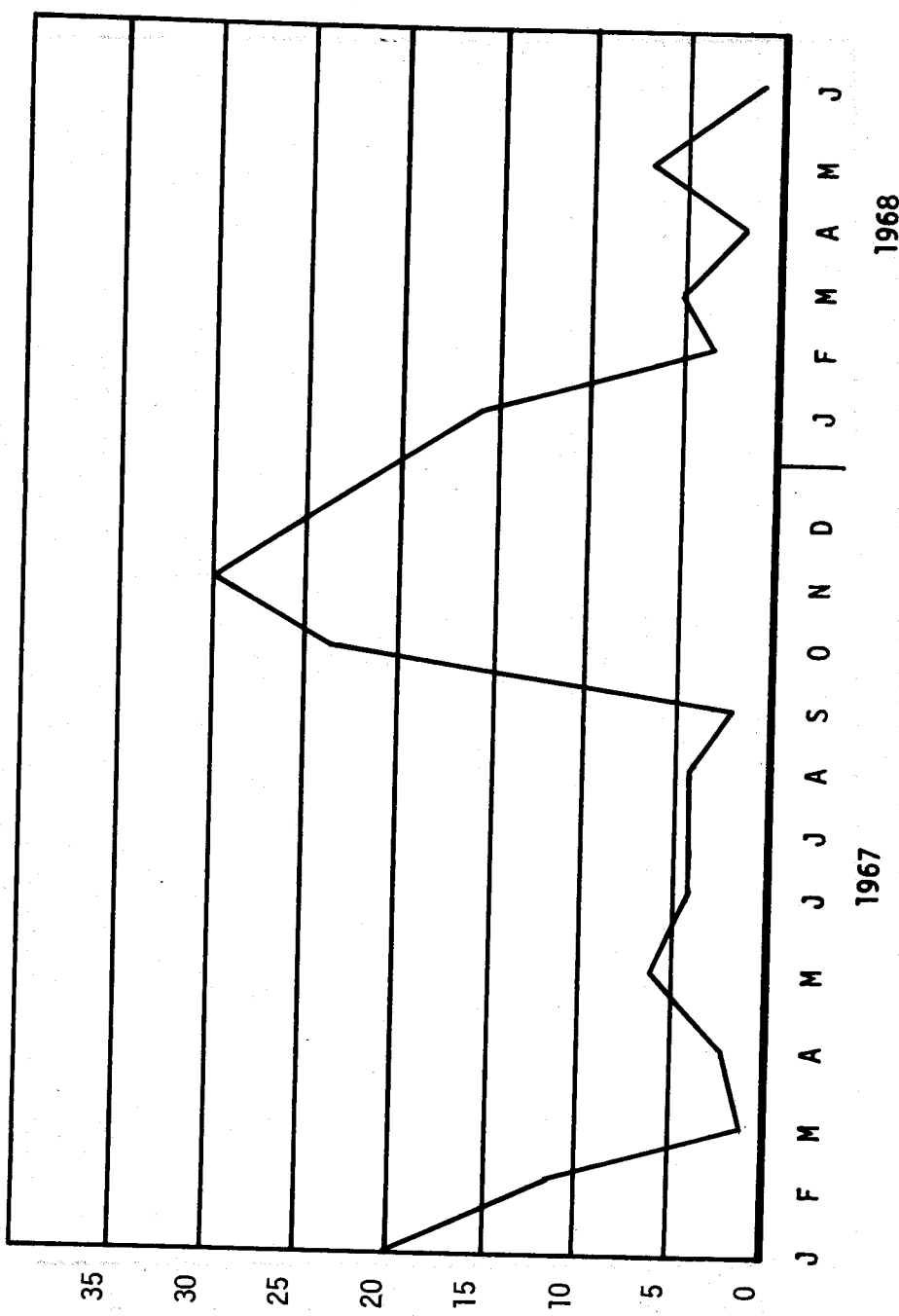
STRUCTURES DESTROYED IN LAOS



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BRIDGES DESTROYED IN LAOS



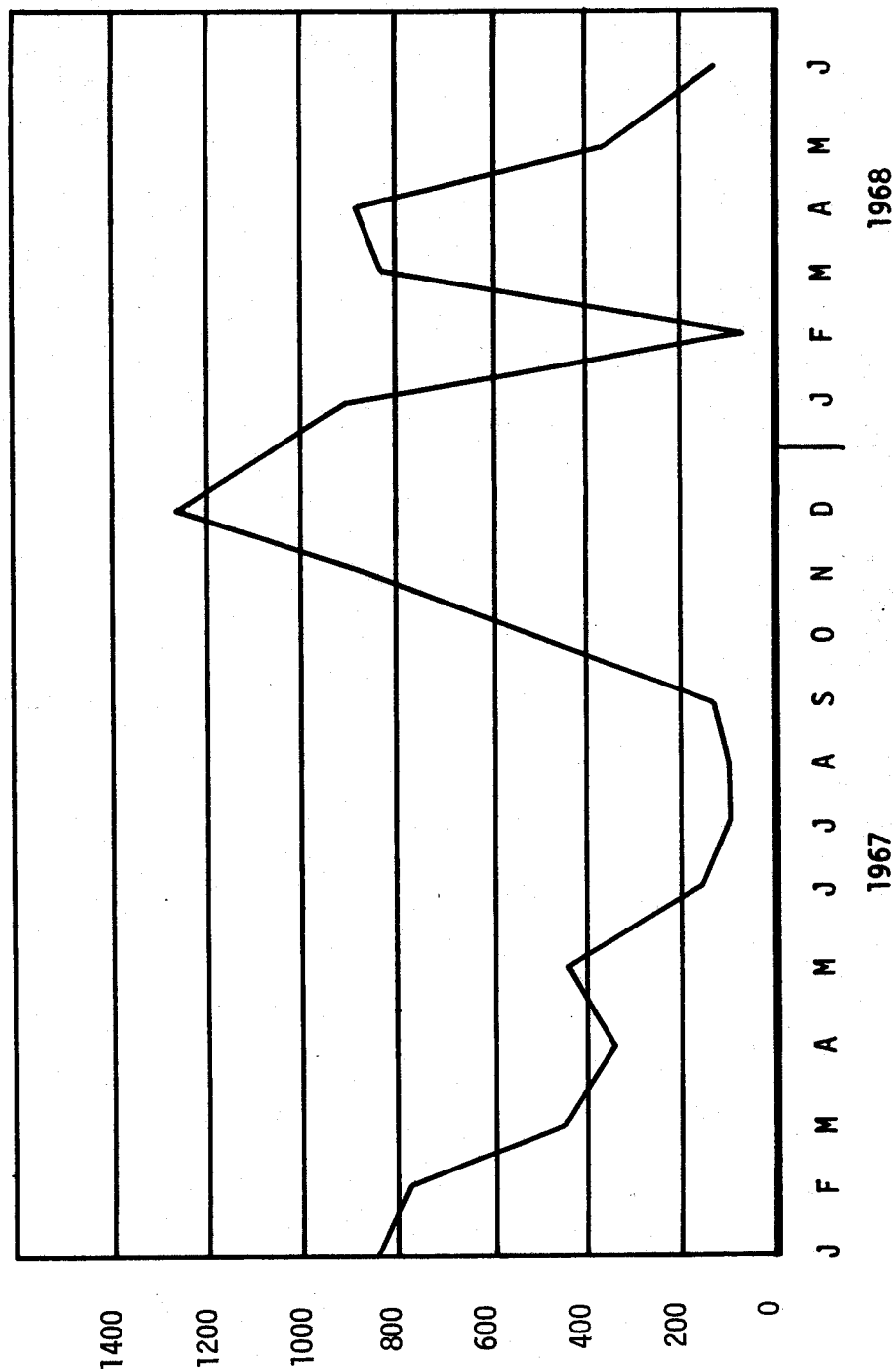
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ROAD CUTS AND LAND SLIDES IN LAOS



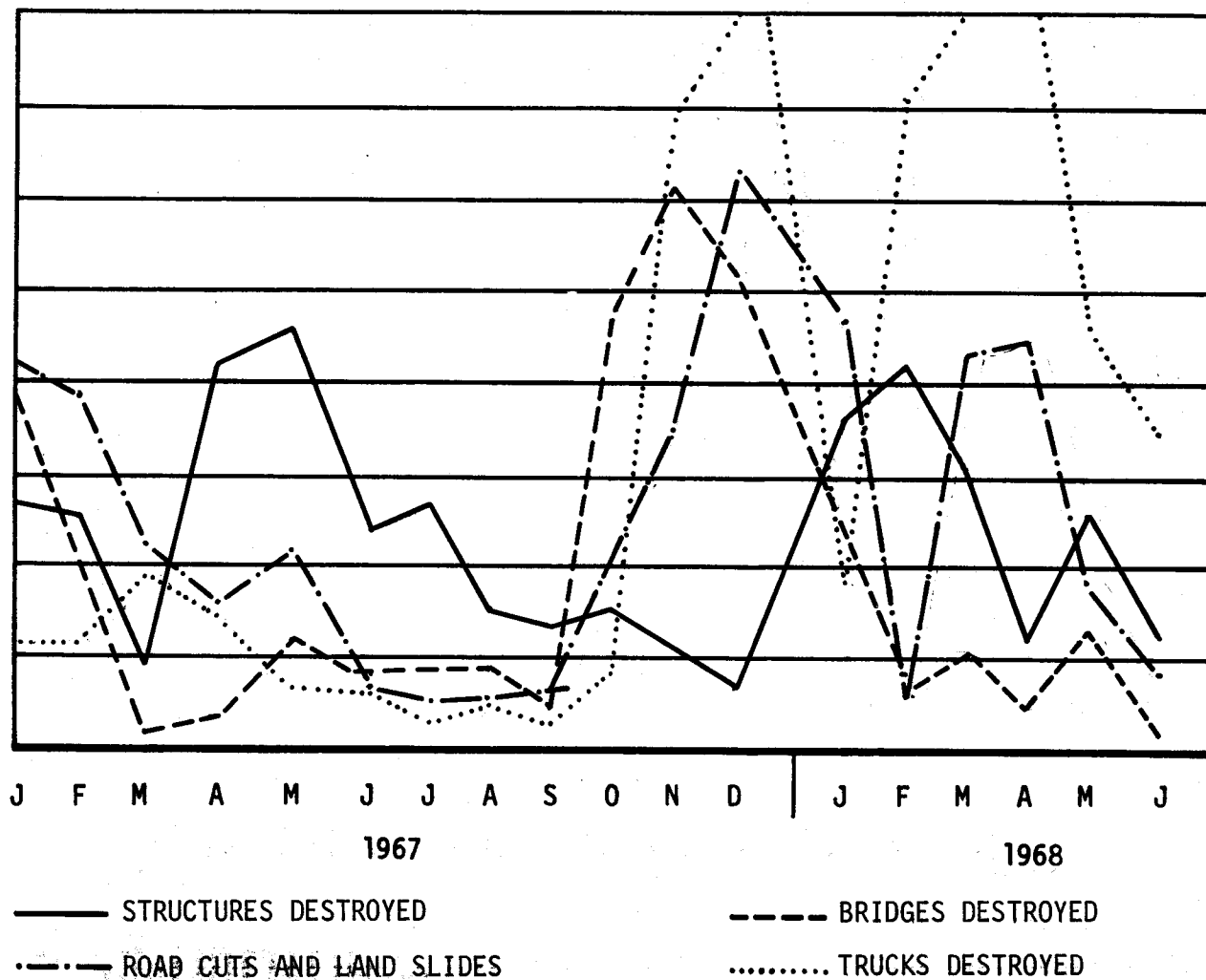
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COMPOSITE OF DESTRUCTION EFFORTS

128



— STRUCTURES DESTROYED

--- BRIDGES DESTROYED

-.-.- ROAD CUTS AND LAND SLIDES

..... TRUCKS DESTROYED

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GLOSSARY

AA	Antiaircraft
AAA	Antiaircraft Artillery
AAIRA	American Air Attache
ABCCC	Airborne Battlefield Command and Control Center
ACW	Air Commando Wing
ADC	Auto Defense de Choc
AOC	Air Operations Center
ARMA	Army Attache
CAP	Combat Air Patrol
CINCPAC	Commander in Chief, Pacific Command
CINCPACAF	Commander in Chief, Pacific Air Forces
CINCPACFLT	Commander in Chief, Pacific Fleet
COMUSMACV	Commander, U.S. Military Assistance Command, Vietnam
CP	Command Post
CRC	Control and Reporting Center
CRP	Control and Reporting Post
DMZ	Demilitarized Zone
DOCO	Director of Operations Command and Control
FAC	Forward Air Controller
FAN	Neutral Army Forces
FAR	Forces Armee Royale
IFF/SIF	Identification Friend or Foe/Selective Identification Feature
ISC	Infiltration Surveillance Center
JCS	Joint Chiefs of Staff
LLTV	Low-Light Television
LOC	Line of Communication
LS	Lima Site
MAAG	Military Assistance Advisory Group
NKP	Nakhon Phanom
NVA	North Vietnamese Army
NVN	North Vietnam
PL	Pathet Lao

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Recon	Reconnaissance
RLAF	Royal Laotian Air Force
RLG	Royal Laotian Government
ROE	Rules of Engagement
RP	Route Package
RRA	Radio Relay Aircraft
RTAFB	Royal Thai Air Force Base
RWT	Road Watch Team
SAC	Strategic Air Command
SLAR	Side Looking Airborne Radar
SLTF	STEEL TIGER Task Force
STOL	Short Takeoff and Landing
SVN	South Vietnam
TACAN	Tactical Air Navigation
TACC	Tactical Air Control Center
TASS	Tactical Air Support Squadron
TFA	Task Force Alpha
TFS	Tactical Fighter Squadron
TUOC	Tactical Unit Operations Center
USAID	U.S. Agency for International Development
USAIRA	U.S. Air Attache
UTM	Universal Transmitter Mercator
VC	Viet Cong
VR	Visual Reconnaissance

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