

Reprinted by:
Dalley Book Service
90 Kimball Lane
Christiansburg, VA 24073
U.S.A.
(703) 382-8949

UNCLASSIFIED

ABSTAINER

The evaluations in this document represent the efforts of several working groups and critique panels of USAF officers who were knowledgeable in the subjects addressed. They were based on reports, letters, messages, etc., written during the course of the war without benefit of a long term perspective.

The CORONA HARVEST reports were prepared to acquaint present and future Air Force leaders with air power lessons learned during the Southeast Asia conflict. The CORONA HARVEST project was not undertaken to produce a historical report, but rather was designed to point out problems experienced, identify areas which deserved further study, and recommend future courses of action. Little effort was made to balance this material by pointing out the achievements of airpower during the conflict.

The document is the property of the U.S. Government and is not to be released in whole or in part without the specific permission of HQ USAF (AF/XCDD).

UNCLASSIFIED

UNCLASSIFIED

ABSTRACT

(U) This study addresses U.S. air operations in Laos during the 1970-1971 dry season. It documents significant developments in air interdiction operations and air support of friendly forces during COMMANDO HUNT V and Lam Son 719, enumerates lessons learned, and offers recommendations.

(U) This PACAF study was revised to incorporate the Air Staff editor's comments which enhanced clarity, consistency, syntax, and grammar. The result is a greatly improved, more readable volume.

UNCLASSIFIED

TABLE OF CONTENTS

	<u>Page</u>
DISCLAIMER	i
ABSTRACT	ii
LIST OF FIGURES	vii
LIST OF TABLES	vii
I. BACKGROUND	1
II. DISCUSSION	7
A. Overview	7
1. COMMANDO HUNT V Begins	7
2. Lam Son 719	9
3. Transition to the Wet Season	16
4. Air Interdiction Results	18
5. Summary	21
B. Interdiction	23
1. Concepts and Tactics	23
a. Introduction	23
b. CH V Strategy	26
1) Trucks	26
2) Lines of Communication	28
3) Truck Parks/Storage Areas	30
4) Air Defenses	31
c. Interdiction by Ground Forces	31
2. Operations	32
a. Summary of Events	32
b. New or Significant Developments	37
1) Gunships	37
2) B-57G	41
3) IGLOO WHITE	45
4) All-Weather Bombing Systems	49
5) The B-52 Role in Entry Interdiction	51
3. Results of U.S. Air Interdiction	58
a. Allocation of Effort	58
b. Reported Results for Each Target Category	62
1) LOC	62
2) Trucks	66
3) Truck Parks/Storage Areas	67
4) Air Defenses	69
5) Other Targets	71
6) Input/Throughput Estimates	74

c.	Credibility of Reported Results	74
1)	Truck BDA	74
2)	BDA Criteria	77
3)	Throughput Estimates	80
d.	The Impact of Interdiction on the Enemy	84
<hr/>		
C.	Support of RLG Forces	89
1.	Concepts and Tactics	89
a.	U.S. Objectives and Strategy in Laos	89
b.	USAF Role in Laos	95
1)	Air Strikes	95
2)	Helicopter Support	96
3)	Training/Maintenance	97
4)	Other Activities	97
5)	Command and Control	98
c.	The Increasing Role of the RLAF	100
d.	Ground Strategy for the Dry Season	101
2.	Operations	105
a.	Summary of the Ground War	105
1)	MR I	105
2)	MR II	106
3)	MR III	107
4)	MR IV	110
5)	MR V	111
b.	USAF Support of Friendly Forces, New or Significant Developments	111
1)	Reduction of U.S. Forces	111
a)	Increased Role of the RLAF	112
b)	Changes in USAF Support	112
2)	The Role of the Fast Mover	115
3.	Results	119
a.	USAF Sortie Allocation	119
b.	BDA	120
c.	RLAF	124
<hr/>		
D.	Lam Son 719	129
1.	Concepts, Planning, and Tactics	129
a.	Background	129
b.	Combined Operation	132
c.	Planning	134
1)	U.S. Approval	134
2)	Planning U.S. Air Support	134
d.	Objectives/Planned Tactics	136
e.	Planned U.S. Air Support	141
1)	Fixed-Wing Air Support	142
2)	Helicopter Support	144

f.	Estimates of Opposing Forces	145
g.	Enemy Awareness of the Operations.	146
2.	Operations	147
a.	Conduct of the Operation	147
1)	Phase I, the Build-up in Northern SVN.	147
2)	Assault to Ban Dong.	148
3)	A Change in Plans.	151
4)	Enemy Attacks.	152
5)	The Assault to Tchepone.	155
a)	Landing Zone Lolo.	156
b)	Landing Zone Liz	158
c)	Landing Zones Sophia and Hope.	159
6)	Reduced Contact, Search and Destroy Operations.	160
7)	Enemy Attacks, RVNAF Withdrawal.	161
8)	Summary.	166
b.	Employment of Air Support.	167
1)	Tactical Air Control	167
2)	TAC AIR Roles.	171
a)	Close Air Support.	171
b)	Interdiction Near the Battle Area.	173
c)	Support of Helicopter Assaults	174
d)	The Effort Against the Air Defense System	176
3)	B-52 Roles	178
4)	Targeting and Centralized Control Problems	183
3.	Results.	187
a.	Assessment of Overall Results	187
1)	Positive Aspects	188
2)	Negative Aspects	193
b.	Assessment of U.S. Support	198
1)	Contributions of U.S. Support	198
2)	Problem Areas	201
a)	Coordination of U.S. Support	201
b)	Inadequate Planning Prior to the Operation	205
3)	Tactical Air Support and Results	206
a)	Overall Results	206
b)	Special Considerations	209
4)	Losses	212
a)	Aircraft Losses	212
b)	Helicopter Losses	212

UNCLASSIFIED

III. LESSONS LEARNED/RECOMMENDATIONS.	215
A. COMMANDO HUNT V.	215
B. Lam Son 719.	223
FOOTNOTES.	235
BIBLIOGRAPHY	271
GLOSSARY	283

UNCLASSIFIED

UNCLASSIFIED

LIST OF FIGURES

<u>Figure No.</u>		<u>Page</u>
1	"Laotian Military Regions (U)"	2
2	"Route Structure and Base Areas in the Lam Son 719 Area (U)"	137
3	"Lam Son 719 Positions and Boundary (U)"	150

LIST OF TABLES

<u>Table No.</u>		<u>Page</u>
1	"SORTIES FLOWN IN STEEL TIGER BY U.S. STRIKE RESOURCES (U)"	59
2	"U.S. STRIKE SORTIES IN SL BY TARGET TYPE (U)"	60
3	"U.S. STRIKE SORTIES IN SL BY TARGET TYPE (IN PERCENTS) (U)"	61
4	"AIRCREW REPORTED STRIKE RESULTS (U)"	63
5	"AIRCRAFT PERFORMANCE AGAINST TRUCKS: CH III/ CH V (U)"	68
6	"TRUCK PARK/STORAGE AREA SORTIES AND AIRCREW REPORTED RESULTS (U)"	70
7	"HITS AND LOSSES INFLECTED BY AAA GUNS IN STEEL TIGER (U)"	72
8	"RESULTS OF SORTIES ATTACKING AAA DEFENSES (U)"	73
9	"USAF FIGHTER ATTACK SORTIES IN BR, CH III/ CH V (U)"	121
10	"BDA FOR USAF STRIKES IN BARREL ROLL (U)"	122
11	"RLAF ATTACK SORTIES (U)"	126
12	"TOTAL ENEMY LOSSES IN LAM SON 719 (U)"	189
13	"LAM SON 719 BDA RESULTING FROM AIR STRIKES, 8 FEB-31 MAR (U)"	208
14	"RESULTS OF TAC AIR ATTACKS AGAINST ENEMY TANKS DURING LAM SON 719 (U)"	211
15	"U.S. FIXED-WING LOSSES IN LAM SON 719 (U)"	213

UNCLASSIFIED

[REDACTED]

I. BACKGROUND

(S) [REDACTED] A broad U.S. goal in Southeast Asia (SEA) has been a peace in which the peoples of the region could devote themselves to the development of their own societies and could determine their own political future without outside interference. In support of this overall objective, U.S. activities in Laos were aimed at the preservation of a neutral buffer zone between Thailand and the People's Republic of China and North Vietnam (PRC/NVN). Further, the U.S. sought continued Royal Laotian Government (RLG) authorization of U.S. air interdiction operations in Laos, in return for U.S. support to the RLG in combating the NVN-directed insurgency. USAF activities in Laos were thus an essential element of U.S. strategy in SEA. ^{1/}

(S) [REDACTED] Air interdiction operations in Laos had assumed increased importance in November 1968 when the U.S. announced a bombing halt throughout North Vietnam. This action precluded the possibility of destroying enemy supplies before they entered the maze of roads and trails in Laos. During the 1968-1969 northeast monsoon, following the bombing halt, the U.S. mounted a concentrated air interdiction campaign, called COMMANDO HUNT I (CH I), with the objectives of reducing the flow of men and materiel from NVN through Laos into South Vietnam (SVN), and increasing the cost to NVN of waging war. During the 1969-1970 northeast monsoon season, another major interdiction campaign, CH III, was directed against the NVN in Laos. Although it had the same objectives as CH I, it was conducted



Figure 1: Laotian Military Regions (U)

with reduced resources, a reflection of a major redirection of U.S. strategy in SEA.^{2/}

(S) [REDACTED] During 1969 and 1970, although stated U.S. objectives in SEA remained the same, the strategy for achieving these objectives had undergone fundamental revision. The United States committed itself to the Nixon Doctrine in Southeast Asia, and a policy of Vietnamization and withdrawal from South Vietnam. Maintenance of a secure environment in SVN was considered essential to the success of Vietnamization during the critical withdrawal phase. The presence of enemy forces and supplies in sanctuaries along the SVN/Cambodian border threatened the security of friendly forces and major population centers throughout SVN. To forestall enemy offensives while Vietnamese forces were preparing to assume the burden of defense, U.S. and Republic of Vietnam Armed Forces (RVNAF), during the spring of 1970, struck a decisive blow against enemy forces and stockpiles in Cambodia. The incursion into the Cambodian sanctuary, together with subsequent FANK* and RVNAF operations, had a strong impact on the enemy. These operations denied him his Cambodian sanctuary, and tied down a significant number of his forces in fighting in Cambodia. This forced him to place almost total reliance on his Laotian infiltration system for external logistics support of his forces throughout Cambodia and South Vietnam.^{3/}

*FANK, *Forces Armees Nationales Khmers, Cambodian Armed Forces.*

[REDACTED]

(S) [REDACTED] Southern Laos thus became critically important to the enemy. NVN built up its forces there in preparation for both the dry season logistics surge, and a possible RVNAF thrust against its vital infiltration system. The U.S. prepared to meet the enemy's logistics surge with a maximum interdiction effort during the COMMANDO HUNT V campaign.* Continuing redeployment of U.S. air resources reduced the availability of attack sorties in Southeast Asia (SEA) to only half that which had been available during the period of CH I. However, by adjusting the allocation of these remaining resources, the USAF was able to concentrate its effort against targets in the Laotian panhandle.

(S) [REDACTED] To compensate for the reduction of U.S. air assets in SEA, U.S. air strikes projected for northern Laos, Cambodia and South Vietnam were cut back to minimum levels. In BARREL ROLL (BR, northern Laos), the RLG adopted a holding strategy in the ground war. This development, coupled with an expected increase in Royal Laotian Air Force (RLAF) capabilities, allowed the U.S. to significantly reduce its air support in that area. In South Vietnam, air strike requirements were at a lower level than in previous years. Additionally, increased reliance was to be placed on the Vietnamese Air Force (VNAF) to provide needed air strikes in Cambodia and South Vietnam. By reducing strikes in northern Laos, Cambodia and South Vietnam, the U.S.

**The plan for the 1970-71 dry season campaign, COMMANDO HUNT V, besides providing for interdiction operations in southern Laos (STEEL TIGER), also allocated U.S. air resources for support of RLG forces throughout Laos, air operations in Cambodia, and air operations in South Vietnam.*

SECRET

was able to allocate 70 percent of its total SEA air strike sorties to the interdiction effort in southern Laos. As a result, the projected sortie level for interdiction operations in STEEL TIGER (SL) during CH V was actually slightly higher than the level flown during CH III, and only about one-sixth less than the level attained during CH I.^{4/}

(S) [REDACTED] It had long been recognized that air interdiction alone could not completely cut off the flow of supplies from North Vietnam through the maze of roads in Laos.^{5/} Air interdiction in Laos, however, was considered a significant aspect of the overall strategy of attacking the enemy's logistics system in its entirety. As strikes against the source in NVN were prohibited, the most important aspect of the enemy's logistics system was off-limits to U.S. interdiction. That subject, however, has already been addressed in PACAF CORONA HARVEST volumes, Subtask IIId, pp. 9-10, and Subtask IIe, pp. 1-6. Therefore, for the purpose of this study, such terms as "all aspects," "all elements," and "the entirety of" the enemy's logistics system refer to all those elements of his logistics system beyond the borders of NVN.

(S) [REDACTED] Outside the borders of NVN, there was no single portion of the enemy's logistics system whose destruction would stop the flow of supplies, but attacks against all the parts of the system could have a serious cumulative effect on the enemy's efforts. Naval operations (MARKET TIME) countered North Vietnamese attempts to supply its forces in South Vietnam by sea. Continuing ground operations in Cambodia

SECRET

~~SECRET~~

denied communist use of Cambodian ports, compelled the enemy to defend his logistics system in Cambodia, and forced him to rely more heavily on resupply through the southern Laotian panhandle. U.S. air resources were marshalled for an all-out effort against the enemy in STEEL TIGER, and RVNAF ground units were readied for Operation Lam Son 719, a bold strike against the core of the enemy's Laotian logistics system. The stage was set for a major confrontation between friendly and enemy forces in southern Laos.^{6/}

[REDACTED]

II. DISCUSSION

A. [REDACTED] (U) OVERVIEW

I. (S) [REDACTED] (U) COMMANDO HUNT V Begins

(S) [REDACTED] COMMANDO HUNT V operations were patterned after the tactics and experiences of earlier campaigns in Laos. The central theme of CH V was to attack all aspects of the enemy's logistics system in Laos, with the concentration of effort at any given time against those targets whose destruction would be most damaging to the enemy. Trucks, truck parks/storage areas, lines of communication (LOC), and air defenses were the major target categories.

(S) [REDACTED] The air interdiction campaign started favorably as the enemy's initial logistics surge was delayed by unseasonably heavy rains during October and November 1970. The impact of the bad weather on enemy LOC was intensified by a concentrated B-52 and tactical air (TAC AIR)* bombing effort against the infiltration corridors entering Laos from NVN. Although the CH V campaign had officially started on 10 October 1970, it was not until late November that the weather started to improve, and enemy truck traffic into Laos began its seasonal surge.

(S) [REDACTED] During the first three months of the campaign, two-thirds of the attack sorties, including nearly all of the B-52 sorties,

*"Tactical Air" and "TAC AIR," as used in this study, refer to tactical strike aircraft, including fighters and fixed-wing gunships, but excluding B-52s. The term "tactical air support," however, encompasses strikes by B-52s when used in a tactical role.

~~SECRET~~

were flown against the entry corridors or other parts of the enemy's route structure. Some considered the size of this effort far out of proportion to the value of the strikes, and believed that the bombing of the entry areas had little impact on the enemy. Others, however, were convinced that the strikes, in conjunction with the poor weather, had caused the enemy numerous difficulties and had delayed the build-up of his logistics offensive. They considered this delay particularly important in light of the unexpectedly poor results from gunship operations during the first two months of the campaign.

(S) ~~SECRET~~ Trucks, generally considered the most vulnerable element of the enemy's system, were a prime target. With the improvements and expansion of the gunship fleet, together with the introduction into SEA of the B-57G aircraft, the truck-killing fleet promised to be the most effective ever employed in Laos. Although gunship achievements early in the campaign were poor, by the end of December initial difficulties were corrected and the gunships began to achieve impressive results.

(S) ~~SECRET~~ As trucks moved through the entry areas and supplies piled up throughout STEEL TIGER (SL), attacks against truck parks and storage areas assumed greater importance. As was expected, these targets were extremely difficult to observe and destroy due to dense foliage, the weather, and enemy dispersal, hardening, and camouflage tactics. Many sorties were expended by Forward Air Controllers (FACs) in an attempt to pinpoint lucrative targets within the general locations

~~SECRET~~

provided by intelligence. A large number of sorties thus reported little bomb damage; but when a lucrative target was located, results were sometimes spectacular.

(S) ~~SECRET~~ While U.S. air power was engaged in an all-out interdiction campaign in SL, RLG forces throughout Laos were surviving a fairly normal Communist dry season offensive with a minimum level of U.S. air support. In northern Laos, friendly forces were not experiencing unusually heavy fighting despite the fact U.S. air support was averaging less than 30 sorties per day. In southern Laos, Communist activities were normal for a dry season. The primary difference there between activities during CH V and the previous dry season was the launching of Operation Lam Son 719 in conjunction with multi-battalion sized forays by Laotian irregulars against the western portions of the enemy's logistics system. The scope and importance of these RLG interdiction operations, however, were far overshadowed by Lam Son 719, a major RVNAF thrust into Laos against the core of the enemy's logistics system.

2. (S) ~~SECRET~~ (U) Lam Son 719

(S) ~~SECRET~~ While the U.S. was waging its air interdiction campaign during January, last-minute planning was underway for an RVNAF invasion of the enemy's logistics system in southern Laos. Lam Son was a vitally important operation. The seizure and occupation of enemy LOC from the Laos border to and throughout the Tchepone area would deal a serious blow to Communist attempts to resupply their forces in South Vietnam and Cambodia. Even if it were

less than successful, the operation would end the restriction prohibiting major ground attacks against the NVN logistics system--in the future the enemy would have to take into account the possibility of such attacks. Perhaps most important, however, were the implications of Lam Son 719 with regard to Vietnamization. Success would score a significant psychological victory for the South Vietnamese and the Vietnamization process, while failure would cast doubts on the effectiveness of Vietnamization and the ability of South Vietnam to survive following U.S. withdrawal from SEA.

(S) [REDACTED] As the RVNAF prepared and began their incursion, requirements for U.S. air support grew rapidly. The heavy B-52 and tactical air effort which had been devoted to the entry areas was drastically cut back as air interdiction resources shifted to support Lam Son 719. At the same time, a surge in RLAF and USAF sortie rates was also needed in northern Laos to help resist a North Vietnamese Army (NVA) offensive there.

(S) [REDACTED] The out-country portion of Lam Son 719 got underway on 8 February as RVNAF forces began entering Laos in strength. Initial progress of the RVNAF was slowed by bad weather, enemy harassment, and unexpectedly poor road conditions. Even though the incursion was not met by heavy opposition, the RVNAF were unable to secure Route 9 adequately, thereby restricting their major source of ground logistics support. In view of the slow progress, the possibility of attacks from the northern flank and the inability to secure Route 9, President Thieu decided

to temporarily shift primary emphasis from Tchepone to the Ban Dong area.

(S) [REDACTED] As RVNAF westward momentum stopped, some units began to probe south, but others in and north of the Route 9 vicinity were less aggressive in their patrolling and preferred to stay close to their encampments. The enemy exploited this weakness by moving in around static RVNAF bases and subjecting them to standoff attacks and ground probes. By "hugging" RVNAF positions, NVA units reduced the effectiveness of friendly artillery and close air support, and increased the difficulty of resupplying these positions by helicopter.

(S) [REDACTED] By late February an enemy offensive was underway throughout the Lam Son* tactical area of operations. Key friendly positions were subjected to coordinated attacks by infantry, tanks and heavy artillery. Nearly all RVNAF encampments received intense artillery, mortar, and small arms fire which at some times precluded helicopter resupply or evacuation. Air strikes proved extremely valuable during the offensive, many times preserving positions which would otherwise have been lost. Though friendly casualties mounted, the RVNAF withstood the enemy's offensive and prepared to assault Tchepone.

(S) [REDACTED] During the first week of March, the RVNAF planned and executed a series of heliborne assaults which culminated in the temporary occupation of Tchepone. The first assault occurred at Landing Zone Lolo, about halfway between Ban Dong and Tchepone. The Army ignored a proposed Air Force support package for the insertion

*Historically, many RVNAF operations have been designated "Lam Son," with each operation assigned a different numerical suffix. Within this study, however, only Lam Son 719 is discussed, and any reference to "Lam Son" is a reference to "Lam Son 719."

and requested minimal preparatory strikes. A wall of fire greeted the assault helicopters. By the time the assault was completed at nightfall, nearly all the choppers had taken hits, 20 were shot down and unflyable, and seven more were totally destroyed.

(S) [REDACTED] After the disastrous Lolo assault, the Army was ordered to implement an Air Force preparatory strike package for its combat assaults. Increased tactical air support was used on the 4 March assault into Landing Zone Liz and helicopter losses, though still high, were significantly reduced. Extensive TAC AIR and B-52 preparation was used during the final two helicopter assaults which carried ARVN forces into the Tchepone area. Surprisingly light resistance was encountered in these latter assaults. The enemy had apparently withdrawn his forces to the west to defend his remaining LOC, which were still supporting the flow of supplies to the south.

(S) [REDACTED] During early March enemy activity was relatively light as he built up and positioned his forces throughout the combat area. By this time enemy forces in the battlefield area outnumbered the friendlies by two to one. During the relative calm, the RVNAF conducted search and destroy operations, pinpointed numerous targets for air strikes, and began preparing for their withdrawal.

(S) [REDACTED] As the RVNAF began redeploying east from the Tchepone area, the enemy unleashed an all-out offensive, designed to inflict a humiliating and unequivocal defeat upon the outnumbered RVNAF regardless of the cost. By 19 March all friendly ground units involved in Lam Son

were under attack. Intense attacks by fire and tank-supported ground assaults precluded resupply or evacuation of a number of key sites on the northern, western and southern flanks, and heavy fighting around Fire Support Bases (FSBs) near Route 9 in the vicinity of the Laos/South Vietnam border threatened to cut off thousands of ARVN troops struggling east from Ban Dong in a huge armored task force.

(S) Air strikes against the massed enemy inflicted severe casualties and at times were the only means of providing temporary breaks for defenders in contact with the enemy. However, the enemy offensive continued at peak intensity. In many cases, the inability of helicopters to effect resupply, together with heavy enemy fire and ground assaults, made RVNAF positions untenable. Defenders were forced to fight their way through main force enemy units to reach helicopter pickup points which were in more permissive locations. It was during these final, hectic days that friendly casualties and helicopter losses were most severe. However, by repeated attempts, supported by heavy air strikes, helicopters managed to extract most of the survivors of these beleaguered units from Laos.

(S) While RVNAF units at scattered FSBs were engaged in desperate fighting with the enemy, the huge ARVN task force withdrawing down Route 9 was being ravaged by enemy attacks. Short of petroleum, oil and lubricants (POL) and other supplies, the convoy struggled to within five miles of the border and bogged down at the Xepon River. With several thousand troops and the bulk of ARVN armor

SECRET

temporarily stranded, the enemy committed his tanks in broad daylight and sent them speeding down Route 9. Fortunately, FACs spotted the tanks and in what may have been the most crucial strikes of the Lam Son operation, fighter bombers hit and scattered them only five kilometers from their goal. Needed equipment and POL were flown in by helicopter, and the remains of the battered RVNAF task force crossed into SVN. However, the enemy attacks had only been partially thwarted. The ARVN entered Laos with 71 tanks and 127 armored personnel carriers (APCs); they left with only 22 tanks and 54 APCs.

(S) **SECRET** By the 24th of March, all RVNAF units were officially out of Laos, although stragglers continued to find their way to South Vietnam during subsequent days. The operation had ended on a bad note for the RVNAF. Although they inflicted heavy casualties on the enemy and destroyed a significant amount of supplies, they barely survived the offensive which hurled them out of Laos. The enemy was simply too strong in the area, and placed too much importance on his infiltration network, to allow an outnumbered RVNAF force to cut off his dry season logistics offensive. Although some major enemy LOC were blocked during the operation, the RVNAF failed to penetrate far enough to block vital routes in the western portion of the infiltration system, and the enemy by-passed the combat area by concentrating his movements on these western routes.

(S) **SECRET** As for U.S. participation in the operation, helicopter and tactical air support both proved to be essential elements

~~SECRET~~

of Lam Son 719. Even so, the effectiveness of these resources fell short of their potential due to the reluctance of the Army to work closely with the Air Force, particularly during the first month of the operation. In a large measure, the inadequate coordination was a reflection of the fact that Army helicopter assets used in the operation were not under the control of a single manager of air. Until staggering helicopter losses and direct order from General Creighton Abrams changed their minds, Army planners refused to coordinate their activities with the Air Force, or to take advantage of the extensive tactical air support available for their operations. Basically, this failure to exploit the potential of air strikes stemmed from their mistaken attitude that the helicopter could survive in a high intensity combat environment and did not need tactical air support.

(S) ~~SECRET~~ Failure to coordinate plans was not the only flaw in U.S. support. Army helicopters seriously aggravated already difficult airspace control problems. Besides presenting a serious safety hazard, the lack of communication and coordination between the helicopters and FACs was cited as a major reason for the failure of recce helicopters and TAC AIR to work effectively as a team. Many of these helicopter related airspace difficulties could have been avoided by designating a central airspace control agency with which all U.S. air resources were required to check in upon entering or exiting the area of operations.

~~SECRET~~

[REDACTED]

(S) [REDACTED] Desirable as it was, however, improved coordination between the Army and Air Force would not have entirely eliminated the immense problems faced by the helicopter in the combat environment. The intense concentration of enemy small arms and automatic weapons fire was just too much for the helicopter to cope with. Tactical air support, when employed properly, unquestionably reduced helicopter losses, but even heavy support could not always eliminate serious losses or guarantee completion of the mission. By the time the six-week operation was over, the number of Army helicopters destroyed or damaged was equivalent to the total projected VNAF helicopter strength.

3. (S) [REDACTED] (U) Transition to the Wet Season

(S) [REDACTED] By the end of March, the RVNAF were gone from Laos, but the effects of Lam Son continued to be felt as air strikes hit enemy targets uncovered during the operation. Analysts believed that although the operation had diverted air assets from the interdiction effort, the creation of lucrative targets as the enemy massed in reaction to the operation had more than compensated for the reduced effort in other areas of STEEL TIGER.

(S) [REDACTED] By the end of April, weather was deteriorating throughout SL. Although enemy truck traffic slackened with the fitful start of the rains, a significant level of truck activity continued further into the wet season than for the previous year. The enemy's logistics offensive had started, peaked, and was now ending, later than during CH III. During these final days of the CH V campaign,

[REDACTED]

TAC AIR and B-52s continued to strike a wide range of enemy targets, including trucks, storage areas, and air defenses. Also, a sizeable effort was devoted to closing the exit routes leading from Laos to South Vietnam and Cambodia. Although these routes were less suited to interdiction than the entry areas, continuous strikes were directed there in an attempt to further reduce enemy throughput. These strikes continued during May, well beyond the official 30 April termination date for CH V.

(S) [REDACTED] Meanwhile, the enemy offensive in northern Laos began to slacken with the coming of the rains. After suffering serious reversals in early February, the reinforcement of Meo irregular forces permitted them to hold on throughout the rest of the dry season. A significant contribution to this achievement was the surge in RLA and USAF sortie rates, and the concentration of almost all available air support in the battlefield area.

(S) [REDACTED] In southern Laos, the military situation appeared to be reasonably stable by the end of April. In early May, however, before the wet season was fully underway, the enemy launched a coordinated offensive in Military Regions (MRs) III and IV. Government forces were driven from the strategic Bolovens Plateau as the enemy captured Paksong, a key town on its western edge. To the north, overwhelming enemy forces swept RLG units from the Muong Phalane area and unexpectedly continued to drive west, capturing Dong Hene by the middle of May. The situation indeed looked grim, and once again friendlies in southern Laos were reminded that there would be no chance of defeating an all-out Communist offensive should it ever come.

[REDACTED]

(S) [REDACTED] Analysts felt that the major reason behind the Communist drive was the desire to forestall a repeat of RLG dry season interdiction operations. There was also speculation that the drive was aimed at the westward expansion of the enemy's route structure in reaction to the threat posed by Lam Son 719 or possible future incursions. Although the RLG dry season operations against the enemy route structure and Lam Son 719 both contributed to the interdiction effort, and therefore were in consonance with U.S. objectives relative to South Vietnam, these operations were less desirable from the standpoint of U.S. objectives in Laos. They both had run the risk of provoking either a strong NVA reaction which would topple the shaky Geneva Accords in Laos, or a lesser reaction which would result in a further erosion of RLG influence in southern Laos.

4. [REDACTED] (U) Air Interdiction Results

(S) [REDACTED] Assessing the results of CH V air interdiction operations proved a difficult task, but judging from the record BDA reported by aircrews, the campaign was more damaging to the enemy than any previous interdiction effort in Laos. Increased effectiveness of the strike force, particularly the truck-killing fleet, formation of lucrative targets as a result of Lam Son 719, and devotion of a high percentage of U.S. SEA strike resources to the interdiction effort all contributed to the increased impact of air interdiction during CH V.

[REDACTED]

[REDACTED]

(S) [REDACTED] As damaging as CH V was to the enemy, however, there were indications that claims of damage were excessive. Despite efforts to make truck BDA as accurate as possible, the truck attrition reported was out of proportion to other indicators of truck losses, such as the estimated number of trucks entering Laos during CH V, and the number of truck replacements requested by NVN from the Communist Bloc. Additionally, it was discovered near the end of the campaign that the criteria used by the AC-130 gunships for trucks claimed destroyed or damaged had been too lenient. More accurate criteria were put into effect early in May. However, even after the new criteria were applied retroactively to the results reported for CH V,* the number of trucks claimed destroyed or damaged exceeded the estimated number of trucks in the NVN inventory and were inconsistent with estimates of the number of trucks entering Laos. It appeared that either claims of truck attrition were inflated or the NVN truck inventory, inventory replacements, and truck entries into Laos were all grossly underestimated.

(S) [REDACTED] Estimates of enemy throughput reported by 7AF were also open to question. Experience during Lam Son 719 verified the suspicion that much of the enemy's LOC complex was unobservable from the air, and indicated that the enemy made greater use of these unmonitored roads and trails than was expected. Experience in the entry areas also indicated that a portion of the enemy's traffic was missed due to LOC proliferation and his use of sparsely monitored routes. In

**The results reported during CH V were not retroactively adjusted. The "retroactive" application referred to here was only for the purpose of analysis.*

[REDACTED]

addition, the enemy's use of waterways and non-motorized means of transportation in the exit areas further reduced the accuracy of throughput estimates.

(S) [REDACTED] There were other indications that the low throughput estimates for CH V did not reflect the enemy's logistics posture at the end of the dry season. Enemy logistics activity in southernmost Laos near the border areas occurred on a scale which seemed inconsistent with the low level of reported throughput and implied the existence of large stockpiles in the border areas. However, estimates as to the extent of those stockpiles varied greatly.

(S) [REDACTED] Limitations of BDA and throughput estimates notwithstanding, on a relative basis CH V was more effective than previous air interdiction campaigns in Laos. Damage to enemy resources and restriction of his flow of supplies were greater than during CH III. Although difficult to determine accurately, the absolute impact of CH V on the enemy's logistics posture--and ultimately on his ability to wage war--would provide a more meaningful measure of CH V than would a statistical comparison with previous campaigns.

(S) [REDACTED] Estimates of the enemy's logistics posture were difficult to make due to the uncertain validity of both estimates of minimum enemy requirements and of enemy supply throughput. However, an evaluation of the absolute impact of CH V operations on the enemy was made by the JCS in June 1971. They concluded that the men and materiel infiltrated through Laos during the dry season, together with those supplies stockpiled in southern Laos for later throughput, were adequate to meet the enemy's minimum requirements. With the level of logistics supply

[REDACTED]

achieved during CH V, the enemy could continue to wage war at the level of that conducted during the 1970-71 dry season, and would have enough additional supplies to launch isolated offensives in either Cambodia or the northern military regions of SVN. On the other hand, his resupply level was so close to his minimum needs, as estimated by the intelligence community, that he would not be able to support simultaneous, sustained offensives in more than one area.

5. (S) [REDACTED] (C) Summary

(S) [REDACTED] Another air interdiction campaign had come and gone in Laos. The U.S. had marshalled its diminishing SEA air resources and waged an all-out effort to interdict enemy supplies flowing through Laos. What is more, during the peak months of enemy resupply activities the RVNAF had launched a bold ground attack against the very core of the enemy's logistics system in southern Laos. The NVA reacted violently to the incursion, and in a dramatic confrontation they drove the RVNAF from Laos despite heavy U.S. air support. In doing so, however, they suffered heavy casualties and damage.

(S) [REDACTED] As the dry season drew to a close, it was apparent that CH V had been the most destructive campaign waged against the enemy's logistics offensive, yet the war dragged on throughout Indochina. Even at the modest resupply levels estimated for Communist forces during CH V, they could continue to wage protracted war and they clearly retained the capability to undertake damaging offensives. Still, it was believed that CH V air interdiction, together with the whole range of other

[REDACTED]

Allied operations against the enemy's logistics system, had restricted his capability to support simultaneous, sustained offensives throughout both Cambodia and South Vietnam. Whether or not these assessments of enemy capabilities were accurate would become more clear during the year following the campaign, as U.S. withdrawals and the Vietnamization program continued. Enemy activities during that crucial period would provide the ultimate answer as to the extent that Allied operations during CH V had restricted the enemy's capability to wage war.

[REDACTED]

B. [REDACTED] (U) INTERDICTION

1. (S) [REDACTED] (U) Concepts and Tactics

a. (S) [REDACTED] (U) Introduction.

(S) [REDACTED] For several years, Air Force planners had recognized that in the type of war being waged in Southeast Asia, and within the existing state of aviation technology, air interdiction could not by itself reduce enemy logistics support below the level needed for his survival as an effective fighting force. In the first place, the logistics level needed for enemy survival was so low that it was virtually unassailable. Indeed, there was little hope of forcing higher enemy supply consumption in a war which, by permitting sanctuaries near the battle area, allowed him the choice of engagement or disengagement. Second, the availability of Cambodian ports had enhanced the enemy's supply posture. Even if interdiction in Laos could block his resupply effort, he had the option of relatively unopposed resupply through Cambodia. Finally, air interdiction of the enemy's land lines of communication from NVN to Cambodia and South Vietnam was a difficult task. Strikes against the source of the enemy's logistics system in North Vietnam had been prohibited, restricting air interdiction to Laotian LOCs. The enemy, immune from significant ground attacks against his Laotian logistics system, built a maze of redundant jungle roads and trails which were extremely difficult to interdict by air alone. ^{7/}

(S) [REDACTED] COMMANDO HUNT I and III planners recognized the limitations of air interdiction. They insisted, however, that by

~~SECRET~~

reducing the flow of supplies and raising the cost to the enemy of supporting his military activities, air interdiction operations could limit the intensity of enemy activities in South Vietnam, and force him to devote an increasing portion of his resources to his logistics system. His capabilities, though considerable, were finite, and resources destroyed, consumed, or tied down in Laos could not be used to support the war in the south.^{8/}

(S) ~~SECRET~~ During the period between the end of COMMANDO HUNT III and the beginning of COMMANDO HUNT V there were some very basic changes in the situation which faced friendly and enemy forces in Southeast Asia. One of the long-standing factors which had limited the impact of air interdiction in Laos was removed. A marked change in the enemy's logistics posture resulted from the elimination of his Cambodian sanctuary, and the removal of the option to resupply his forces through Cambodian ports. This forced the enemy to place almost total reliance on his Laotian LOC for logistics support of his military needs. It was important that Allied forces counter the enemy's resupply efforts, particularly in view of continuing U.S. withdrawals from SEA, and the potentially vulnerable position into which remaining forces were placed. However, the level of U.S. air resources available in SEA to oppose the vital Communist resupply effort during COMMANDO HUNT V was below that available during previous campaigns. The monthly fighter attack sortie levels approved for Southeast Asia during the COMMANDO HUNT V period (14,000) were half those approved during the COMMANDO

[REDACTED]

HUNT I period (28,000), and 70 percent of those available during the COMMANDO HUNT III (20,000) time period. However, by devoting 70 percent of available tactical strike assets to the CH V interdiction effort (as compared to about 45 percent during CH I and CH III), U.S. forces were able to forecast a CH V interdiction sortie level slightly greater than that attained in COMMANDO HUNT III.^{9/}

(S) [REDACTED] During COMMANDO HUNT V, another of the long-standing factors which lessened the capability of interdicting the Communist flow of supplies through Laos was lifted: a sizeable RVNAF ground force entered Laos to disrupt enemy supply activities during a period of peak activity. The implications of this action, taken together with the increased importance to the enemy of the Laotian resupply effort, were significant. A maximum air interdiction effort, already recognized as critical before the ground incursion, became even more important as major NVN forces were tied down reacting to the ground forces threatening the heart of their Laotian infiltration system. During COMMANDO HUNT V, the contribution of air interdiction to the overall Allied effort assumed greater importance than it had since the halt of the bombing over NVN, and perhaps since the beginning of the Vietnam war.^{10/}

(S) [REDACTED] Allied planners recognized the importance of an effective interdiction campaign during COMMANDO HUNT V. The Military Assistance Command, Vietnam (MACV) considered the blocking, disruption and destruction of supply throughput vital to the successful accomplishment of its mission. Planners and analysts believed that a

successful interdiction campaign during the 1970-71 dry season could be a decisive factor in determining the outcome of the war in Indochina. Accordingly, an all-out air interdiction effort was planned for CH V. As previously stated, 70 percent of available U.S. fighter attack sorties were allocated to the campaign. Additionally, almost all of the B-52 sorties available in SEA were devoted to the interdiction effort, and an expanded, improved truck-killing fleet was fielded against the enemy. ^{11/}

b. (S) (U) CH V Strategy.

(S) The strategy for CH V was based upon the exploitation and refinement of concepts and techniques developed during earlier campaigns, the employment of new tactics and weapon systems which were considered valuable, and the flexible application of air strikes against targets whose destruction would be most damaging to the enemy. As in earlier operations, emphasis was placed on attacking all major elements of the enemy's logistics system in Laos, the primary target categories being trucks, lines of communication, truck parks/storage areas, and air defenses. ^{12/}

1) (S) Trucks. As was the case for CH III, the greatest weight of effort in CH V was to be applied against trucks, considered the most vulnerable component of the enemy's infiltration system. COMMANDO HUNT V planners forecast higher truck levels for the campaign than for any previous year, and they planned a greater weight of effort against trucks than the 32 percent of the strike sorties during CH III. More significantly, numerous modifications and improvements

had been made to truck-killing resources. Perhaps the most significant improvement was the expansion and modification of the AC-130 gunship inventory during the wet season preceding CH V. These reconfigured aircraft promised a considerably higher truck kill potential. Although the improved AC-130s could operate at somewhat higher altitudes than most of their CH III predecessors, the gunship fleet continued to be restricted from the higher threat portions of STEEL TIGER, and still required F-4 flak suppression escorts. Gunship capabilities were to be supplemented by fast mover strikes in the higher threat areas, and by the introduction into SEA of the B-57G.^{13/}

(S) [REDACTED] Eleven B-57Gs were introduced during CH V to augment the truck-killing force. They were equipped with sophisticated sensors and weapon systems, high-powered engines, crew armor, and an improved ejection capability. They were expected to be able to operate in the less permissive portions of the route structure, and under poor weather conditions. The B-57Gs [in conjunction with COMMANDO BOLT* operations employing Long Range Air Navigation (LORAN) equipped F-4s and Airborne Moving Target Indicator (AMTI) equipped A-6s] were to provide the strike force with the capability of attacking enemy trucks operating under the cover of weather.^{14/}

*For a description of COMMANDO BOLT operations, see p. 45.

[REDACTED]

2) (S) [REDACTED] Lines of Communication. COMMANDO HUNT V plans called for a concentrated, sustained TAC AIR/B-52 bombing effort against the Laotian entry corridors from NVN. Mounting a sustained TAC AIR effort against the enemy's input corridors into Laos was not in itself an innovation; it had been attempted in one form or another during every major interdiction campaign in Laos. Never before, however, had plans included the consistent employment of large numbers of B-52 strikes in the entry interdiction effort.

(S) [REDACTED] During CH I, 38 percent of the strike force was allocated against the critical choke points along the enemy's LOC, since this concept had proven successful in southern NVN. Most of these strikes were concentrated in the Nape, Mu Gia, Ban Karai, and Ban Nathon (Ban Raving vicinity) entry areas. During CH III, considerable effort was again devoted against the entry corridors, particularly during the early part of the campaign, but the overall percentage of the strike force employed against the entry corridors and other LOC targets throughout STEEL TIGER dropped to 23 percent for the campaign. The reduction in LOC attack sorties was prompted by the proliferation of routes, the inability to measure results of the attacks, and the reduced level of sorties available for the interdiction effort.^{15/}

(S) [REDACTED] CH V planners noted that the enemy route structure was likely to be even more extensive and redundant than during previous campaigns, making effective LOC interdiction that much more difficult.

[REDACTED]

SECRET

However, they felt that devoting a level of effort against the road network comparable to the level during CH III (23 percent of strike sorties), would produce results which justified the cost. Prior to the campaign, there were indications that the enemy would try to move record levels of supplies through Laos during CH V, and that his dry season push would start earlier than during CH III. Therefore, particularly heavy emphasis was placed on bombing the entry corridors into Laos to delay and hamper the expected early logistics surge. Most of the ARC LIGHT sorties available in SEA were to be employed in this concentrated effort against enemy movement through the entry areas. Essentially, B-52s were to deliver the weight of the ordnance, cutting the roads, while TAC AIR was to prevent repair activity and maintain a presence to deter movement through the areas. ^{16/}

(S) **SECRET** Near the beginning of CH III most entry point interdiction sorties were directed against the Mu Gia and Ban Karai passes, the two primary corridors used by the NVN to enter Laos. As the campaign unfolded, however, enemy development of new routes in the Ban Raving/Demilitarized Zone (DMZ) area had become apparent. His roads in the area were supplemented by POL pipelines which were hard to locate and by waterway systems which were difficult to interdict. The enemy's use of his LOC in the Ban Raving/DMZ area, small at first, increased steadily throughout the CH III campaign. During the month of April (1970), use of these routes had increased to the

SECRET

[REDACTED]

point that they accounted for more input than either the Mu Gia and Ban Karai areas.^{17/} Accordingly, CH V plans called for concentrated strikes against all four entry corridors.

(S) [REDACTED] Four major interdiction areas were established at vulnerable locations below the Mu Gia (Box A), Ban Karai (Box B), Ban Raving (Box C), and the DMZ (Box D) entry areas. Flexibility was to be maintained in relocating target boxes and in adjusting the level of strikes directed against each of them.^{18/}

(S) [REDACTED] Strikes against the entry corridors were not the only aspect of attacks planned against the enemy's LOC system. In addition, selective road cuts and timely strikes against vulnerable Interdiction Points (IDPs) were to be executed. Finally, strikes against enemy exit routes from Laos were planned to restrict the output of those enemy supplies which had evaded air strikes up to that point.^{19/}

3) (S) [REDACTED] Truck Parks/Storage Areas. During CH I and III, the NVN had practiced extensive dispersal, hardening, and camouflage of their complex system of truck parks and storage areas throughout the Laotian panhandle. Location and destruction of these targets had proven particularly difficult. The enemy was expected to continue to employ techniques during CH V which would reduce the vulnerability of his manpower, facilities, and supplies to air attacks. It was estimated that these targets would be less lucrative during CH V, and planners

forecast a decrease in the 31 percent of the strike force devoted to these targets during CH III.^{20/}

4) (S) ~~██████████~~ Air Defenses. The strategy against enemy air defenses remained unchanged for CH V operations; i.e., enemy Anti-aircraft Artillery (AAA) guns and Surface-to-Air Missile (SAM) sites in STEEL TIGER or on the NVN side of the border were to be attacked insofar as they threatened mission accomplishment. Since expanded employment of enemy AAA and SAM resources was expected during CH V, it was anticipated that the percentage of the force allocated against defenses would exceed the 14 percent used in CH III. A greater use of laser-guided bombs was planned, which promised to increase the effectiveness of strikes against enemy defenses.^{21/}

c. (S) ~~██████████~~ (U) Interdiction by Ground Forces.

(S) ~~██████████~~ During COMMANDO HUNT V, the Royal Laotian Government planned a number of ground actions in the Laotian panhandle. These operations were intended to harass enemy infiltration efforts, particularly in the western portions of his route structure. They were to be supported by Royal Laotian Air Force T-28 and AC-47 resources, and by U.S. air strikes when needed. The scale of these operations was to be small in comparison to Lam Son 719, and the number of sorties required to support them was expected to be a relatively insignificant fraction of the total sorties flown in STEEL TIGER. Though the impact of these RLG ground operations was not expected to be a major factor in the success of the campaign, they were considered to be supplementary to

air interdiction operations, and were in consonance with the concept of using every means available of attacking all permitted aspects of the enemy's logistics system.^{22/} A brief description of these operations can be found in Section C, Support of RLG Forces.

(C) [REDACTED] Lam Son 719, the South Vietnamese ground incursion into Laos, had a major impact on air interdiction operations and the strategy of interdiction during COMMANDO HUNT V. Detailed coverage of the operation is provided in Section D, Lam Son 719.

2. (S) [REDACTED] (U) Operations

a. (S) [REDACTED] (U) Summary of Events.

(S) [REDACTED] COMMANDO HUNT V operations officially began on 10 October 1970 with strikes against the entry corridor areas. Traditionally, enemy truck activity in Laos began to build-up in October or November, depending primarily on weather conditions. The last three months of the year were a transitional period between the wet and dry seasons in the Laotian panhandle, and the severity of weather conditions during these months varied considerably from year to year. During the 1967-1968 northeast monsoon campaign, favorable weather conditions had allowed the enemy to begin his truck surge in early October 1967. In the next campaign, CH I, traffic began to rise in early November 1968, slackened somewhat, and then rose again in mid-December. During CH III the wet season had subsided relatively early, and traffic had begun to increase by late October 1969. Weather during October and November 1970 (CH V) was unusually bad,

and a series of typhoons hampered both enemy truck activity and U.S. air strike operations. In the last half of November, the weather improved and truck activity began to build up, about three weeks later than it had during the previous campaign.^{23/}

(S) [REDACTED] The impact of the bad weather on enemy LOC during October and November 1970 was compounded by concentrated B-52 and TAC AIR bombing of key areas near the entry passes. Planners had established target boxes in areas below each of the entry corridors where the route structures converged, were constricted, or for other reasons were particularly vulnerable. These boxes were approximately one by two kilometers in size, and an average of 125 TAC AIR and 27 B-52 sorties were divided among them on a daily basis. General purpose bombs were the ordnance most often used. In order to harass and delay road repair, many of the bombs delivered by TAC AIR were time-delayed for periods up to five hours. The enemy responded to the bombing in a number of ways, primarily by surging supplies through the boxes between strikes, or by building bypasses around them. When it became obvious that a box was no longer effective because of by-passes around or movement through it, it was reestablished at a new, more suitable location.^{24/}

(S) [REDACTED] While a major effort was being devoted against the entry boxes during October through December, the expanding gunship fleet began searching out and destroying trucks throughout STEEL TIGER. Many of the gunships arriving in SEA, however, were not meeting

~~SECRET~~

expectations. Throughout November and early December, gunship problems, compounded by poor weather and low enemy truck activity, resulted in a low level of truck kills. By the end of December, however, the major difficulties had been overcome, and assessed truck kills were rising. ^{25/}

(S) ~~SECRET~~ Relatively few sorties were flown against truck park/storage areas during October and November, but by December enemy supply build-ups were creating lucrative targets throughout the STEEL TIGER area and the number of sorties flown against these targets began to rise. Although such targets were not normally observable from the air, when they were located and struck the results were impressive.

(S) ~~SECRET~~ One of the most lucrative truck park/storage area targets ever encountered during air interdiction operations in Laos was the Ban Bak target area uncovered during CH V. Since the beginning of the campaign, sensor and special intelligence had indicated the presence of a major storage complex in Ban Bak vicinity. Poor weather and the inability to locate the target from the air prohibited exploiting it throughout October, November, and most of December. On 19 December, strikes against a Forward Air Controller (FAC)-observed target in the area produced numerous secondary explosions and fire. In the next two and a half weeks, 331 air strikes were reported to have produced over 10,000 secondary explosions and fires in the Ban Bak storage complex. The air strikes against the Ban Bak storage complex amounted to only 3 to 4 percent of the total CH V tactical air strikes against truck parks/storage areas, but the 10,000 secondaries

~~SECRET~~

at Ban Bak represented one-third of the total secondary fires and explosions resulting from truck park/storage area attacks during CH V. ^{26/}

(S) **[REDACTED]** Sustained bombing of the entry boxes was maintained throughout January, but "portering, bypassing and surging of enemy supplies continued through and/or around all four interdiction areas." ^{27/} Seventh Air Force analysts remained convinced that the attacks against the entry corridors were delaying supply input and that results still justified directing a reduced level of sorties against them. They pointed out that the enemy was still being forced to react to the bombing. He had built numerous bypasses, surged his supplies in phase with lulls in the bombing rather than in phase with the moon (cyclical movement by moon phase was observed for traffic throughout the rest of STEEL TIGER), and increased the SAM threat in some entry areas. On the other hand, it was recognized that the boxes were becoming less effective. Continuous bombing leveled previously rugged terrain and pulverized the soil, reducing the number and severity of slides and diminishing the size and effects of bomb craters. At the same time, bypasses around the boxes proliferated, thus diluting the concentration of air strikes at a particular target area. In light of the diminishing effectiveness of entry interdiction, the number of sorties flown against the entry boxes during January was reduced from the record number flown during the previous month, but still remained high. Enemy logistics input was up during January, and for the first time in the campaign, CH V monthly input exceeded CH III monthly input. ^{28/}

[REDACTED]

(S) [REDACTED] On 8 February, the RVNAF launched Lam Son 719, a ground attack against the heart of the NVN logistics system in the Laotian panhandle. To meet growing RVNAF air support needs, there was a surge in U.S. sortie rates and a major shift of interdiction resources to support the ground combat. Almost all B-52 sorties were diverted from the entry interdiction program, and tactical air sorties against the boxes were heavily reduced. During the last three weeks of the operation, nearly half of the strike sorties flown in SEA were in support of Lam Son 719. Despite the shift of air interdiction resources to Lam Son, 7AF analysts considered that the ground operation had intensified rather than reduced the impact of air interdiction on the enemy. In reaction to the RVNAF incursion, the enemy massed his forces, thereby creating lucrative targets which were exploited by air strikes.^{29/}

(S) [REDACTED] Friendly and enemy activity in STEEL TIGER peaked during February and March, as a result of both Lam Son 719 and the enemy's logistics surge through the panhandle. During March, RVNAF ground operations in Laos, and the enemy reaction to them, reached their most intense level. U.S. air strikes flown in STEEL TIGER also crested during the month, and most categories of aircrew-reported Bomb Damage Assessment (BDA) in STEEL TIGER reached their greatest monthly levels. The reported BDA continued high throughout April, although enemy truck activity and U.S. strike sorties were down from March levels.^{30/}

[REDACTED]

(S) [REDACTED] During April, a maximum effort was directed against the known exit routes from Laos to South Vietnam and Cambodia. Unfortunately, these routes were less suited to interdiction than those in entry areas. There were few natural interdiction points in the exit areas, suitable alternates and bypasses were available to the enemy for most routes, and the best interdiction points had already been eroded by the bombing of previous campaigns. Nevertheless, concentrated attacks were made against the exit routes in an attempt to restrict the flow of supplies until the rains could again close the enemy LOC. These attacks continued well into May.^{31/}

(S) [REDACTED] By the end of April, weather was deteriorating throughout STEEL TIGER, as the transitional period between the dry and wet seasons in Laos got underway. Enemy truck activity finally began to slacken but was still at a significant level. During CH V, the enemy's logistics campaign had started and peaked later, and was also maintained further into the transitional period than during CH III. Air interdiction operations continued against the enemy's infiltration system in Laos, but were no longer referred to as part of CH V, which officially terminated on 30 April 1971.^{32/}

b. (S) [REDACTED] (U) New or Significant Developments.

1) (S) [REDACTED] Gunships. The gunships had been the most effective truck-killing systems used during CH III, accounting for 48 percent of the trucks reported destroyed and damaged while flying only 8 percent of the sorties. Vulnerability was a major limitation

[REDACTED]

of the gunships, necessitating fighter escorts for most missions. Even so, the gunships were considered the most effective night truck-killers available, and actions were taken to improve and expand the gunship fleet for COMMANDO HUNT V.^{33/}

(S) [REDACTED] During the CH III campaign, the gunship fleet in SEA had consisted of six AC-130 gunships, one specially configured AC-130 known as Surprise Package, and two AC-123 gunships. These aircraft were used almost exclusively in the truck-killing role in Laos. In addition, there was a larger number of AC-119* aircraft in SEA, only a portion of which were devoted to operations in Laos. Gunships flew 1,279 sorties on truck-killing missions in STEEL TIGER during CH III: 703 by AC-130s, 435 by AC-119s, and 141 by the AC-123s. At the end of CH III, most of the gunships returned to the United States for calibration and modification in preparation for CH V.

(S) [REDACTED] During CH V, the AC-130 fleet built up to a high of 14 aircraft. One was a Surprise Package configured AC-130, five were standard AC-130 gunships which had been equipped with BLACK CROW sensors and two 40 millimeter (mm) guns, and the rest were modified AC-130s patterned after the Surprise Package configuration. There were no AC-123s supporting CH V. AC-119 assets were about the same as had been available during the previous campaign.^{34/}

*AC-119Gs and AC-119Ks. Only the AC-119Ks were flown in Laos.

[REDACTED]

(S) [REDACTED] Near the beginning of CH V, as the number of gunships in SEA began to build up from the wet season low, it became evident that the AC-130s were not performing as well as expected. A large number of problems were being encountered in the arriving AC-130s, including leaking fuel tanks, missing parts, and faulty wiring. Perhaps more serious, however, were personnel training deficiencies. Training of aircrews and maintenance personnel had not kept pace with the rapid modification and expansion of the AC-130 force during the wet season, and 70 percent of the aircrews were inexperienced, as were many maintenance personnel.* Some "growing pains" had been expected while crews became proficient and equipment was brought up to peak performance, but gunship effectiveness during November failed to show the expected improvement.^{35/}

(S) [REDACTED] In late November 1971, 8th Tactical Fighter Wing (TFW) personnel expressed disappointment with the results and indicated that the interface between the sensor systems, the computer, and the boresight of the guns was causing the greatest difficulty, rather than the performance of the individual systems or the aircrews.^{36/}

(S) [REDACTED] An operational assistance team was dispatched to SEA to investigate, and if possible, remedy the AC-130 problems. By

**Although the AC-119 gunships were configured the same during CH V as in CH III, initial problems were also experienced in crew and maintenance training levels for them. Their problems resulted from large personnel turnovers during November and December.*

[REDACTED]

the end of December, reported BDA for the AC-130 gunships began to improve dramatically. The assistance team played a significant role in the improvement. However, better weather conditions, increased truck traffic, and the additional experience of air crews and maintenance personnel also had a positive influence on the situation. ^{37/}

(S) [REDACTED] The primary drawback of the gunships during COMMANDO HUNT V continued to be their vulnerability. F-4 escorts were required for most missions, but even with escorts, a number of constraining factors had to be considered before fragging the gunships on truck-killing missions over the Laotian route structure. Some of these factors were intelligence estimates of enemy defenses, defenses encountered during the mission, moon illumination and elevation factors, and weather conditions. The gunships did not fly over well defended portions of the route structure during conditions of high moon illumination. Besides the normal target detection and strike problems encountered during poor weather conditions, gunships did not operate under an overcast because of the silhouetting effect. Furthermore, gunship search and strike tactics were geared to minimize the enemy AAA threat. They operated from the maximum altitude which was compatible with their sensor equipment and aircraft capabilities. AC-130s generally flew armed reconnaissance at about 9,500 feet, while the AC-119s flew near 7,000 feet. Despite the problems of vulnerability, gunships operated, at one time or another, throughout the enemy route structure except for the most heavily defended portions in the entry/border areas. ^{38/}

[REDACTED]

(S) [REDACTED] The exact results of gunship attacks on trucks during CH V could not be determined, but truck destruction was clearly greater than that attained by gunships during any previous campaign. More gunships were flying than before, and they were equipped with better sensing devices and armament. Gunship crews reported more trucks destroyed and damaged during CH V than the total claimed by all strike aircraft during CH III. The BDA criteria used by AC-130 crews came into serious question toward the end of the campaign and were amended. (See section on Truck BDA Credibility.) Even so, revised estimates of the damage inflicted on the enemy's logistics system by gunships during CH V clearly indicated that they were--both individually and collectively--the most effective night truck-killing systems in the strike force. Based upon their success during CH V, plans were implemented to increase the gunship (AC-130) fleet to 18 aircraft during the next dry season campaign.^{39/}

2) (S) [REDACTED] B-57G. An important addition to the truck-killing force during COMMANDO HUNT V was the introduction into SEA of eleven B-57Gs. These specially modified B-57s were equipped with sophisticated target detection and acquisition systems, and with advanced weapons delivery systems. The aircraft was designed to provide a self-contained, single pass, night capability that would allow it to operate over some of the less permissive portions of the route structure which were not accessible to the gunships.^{40/}

SECRET

Secretary of the Air Force Robert Seamans, Jr., commented on the potential of the aircraft just before their deployment to SEA in September 1970:^{41/}

We have worked long and hard to achieve a truly effective night strike capability. Now in the B-57G we have the only aircraft of this type capable of operating in the more sophisticated enemy environment. I hold the highest expectations for the success of this pioneering program, but keep in mind that this equipment is just that - pioneering. It will take real dedication on the part of everybody concerned to make it work. . . . I see the B-57G as the vanguard of future night attack systems. Certainly it will provide the base line for evaluating new systems in the years ahead. . . .

(S) [REDACTED] Between 17 October 1970 and 14 January 1971, a combat evaluation of the B-57G was conducted to determine its effectiveness in the night interdiction role against fixed and moving targets. Particular emphasis was placed on evaluating its capability to detect, track, and destroy enemy traffic on the Laotian LOC. During October and November, poor weather and low enemy traffic hampered the evaluation. These factors, combined with some system deficiencies, resulted in initially low system performance. As the weather improved and truck traffic increased, and as initial deficiencies were overcome, system performance improved markedly. During the 90-day evaluation period, 543 sorties were flown resulting in 363 trucks reported destroyed, 28 damaged, and 2,025 secondary explosions and fires.^{42/}

[REDACTED]

(S) [REDACTED] The report summarizing the results of the 90-day combat evaluation of the B-57G concluded that the self-contained night attack system could "detect, attack and destroy trucks and other tactical targets at night," and that it was "effective in the night interdiction role in the environment in which it was evaluated." However, it fell short of the level of effectiveness "envisioned in the predeployment concept of operations."^{43/} One disappointment was the inability of the Moving Target Indicator (MTI) radar to detect targets at ranges great enough to permit one-pass attacks. A one-pass capability was important if the system was to operate in the higher threat portions of the enemy LOC. Fortunately, the poor performance of the MTI radar was partially offset by the unexpectedly long detection range of the Low Light Level Television (LLLTV) sensor, which frequently provided initial detection at sufficient range to allow one-pass attacks. The remaining sensor subsystem, the Forward Looking Infrared detector, complemented the LLLTV and also performed better than had been expected; however, its detection range was not sufficient to permit one-pass attacks using this system alone.

(S) [REDACTED] The evaluation report concluded that the B-57G was effective and should continue its role in interdiction operations in SEA, but that a concerted effort should be made to improve the aircraft's navigation and MTI radar detection capabilities. It stressed that follow-on systems should have greater bomb-load capabilities, better speed and maneuverability, improved navigation