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BARREL ROLL, 1968-73:
An Air Campaign in Support of National Policy

by

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ABSTRACT

TITLE: BARREL ROLL, 1968-73: An Air Campaign in Support of National Policy

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BARREL ROLL was the US air campaign conducted over northern Laos in support of the Royal Lao Government (RLG). Although the campaign supported US national policy in Southeast Asia (SEA), it was constrained by US military strategy and objectives in South Vietnam and responded to North Vietnamese military strategy and objectives. The mission of BARREL ROLL was to conduct air operations in support of the RLG by: 1) the interdiction of enemy supplies moving through northern Laos, and 2) providing air support for Laotian ground forces fighting the North Vietnamese and Pathet Lao. The last four years of BARREL ROLL–November 1968 to February 1973–are especially interesting due to changes in US national and military strategy in SEA. Examination of air operations uses the "campaign model" found in Department of Defense Joint Publication 3-0, "Doctrine for Joint Operations," and answers five questions: 1) *Why* is the campaign conducted; 2) *What* is to be accomplished; 3) *How* will it be accomplished; 4) How much *resource* is applied; and, 5) What were the *results*. Results are assessed in terms of effects and effectiveness of airpower. *Effects* are the direct or immediate outcome, for example, the destruction of a target. *Effectiveness* examines the indirect outcome at the operational or strategic level, for example, defeating the enemy in battle or achievement of theater objectives. From the perspective of achieving objectives, BARREL ROLL was an effective air campaign in support of national, strategic, and operational objectives in SEA. Relevant lessons of BARREL ROLL are the central control of airpower, the employment of airpower in an undeveloped country, and use of airpower in unconventional combat. Cost is assessed in terms of attack sorties, ordnance delivered, and bomb damage assessment results. These data are provided in an appendix.

BIOGRAPHICAL SKETCH

Colonel Perry L. Lamy (BS, USAF Academy; MA, Central Michigan University; MS, University of Idaho) is a graduate of the Air War College, Class of 1995. Colonel Lamy has enjoyed a diverse career in bomber operations, acquisition, flight test, overseas joint duty, and as a staff officer at USAF, major command, and theater-headquarters. Following an operational tour as a combat crewmember in B-52s, Colonel Lamy completed an Air Staff Training (ASTRA) assignment at Headquarters, US Air Force. In 1983, Colonel Lamy graduated from the USAF Test Pilot School and was selected as a project pilot for the B-1B flight test program. In 1987 he attended Armed Forces Staff College followed by a joint assignment on the Combined Forces Staff in South Korea. Upon returning from overseas, Colonel Lamy was the program element manager for the B-1B at Headquarters, Strategic Air Command. His most recent assignment was squadron commander of 100-person test organization responsible for planning, execution, and reporting 4000-hour B-2 flight test program at Edwards AFB. He is a command pilot with over 3000 hours flight experience in 25 different aircraft to include the B-1, B-2, B-52, FB-111, A/T-37, and T-38. Following graduation from Air War College, Colonel Lamy will be a System Program Director at the Sacramento Air Logistic Center.

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INTRODUCTION

Laos was not all that goddamned important.[1]

—Chester Cooper, National Security Council Staff Member, 1961 - 1967

When US aid to Laos ended in 1975, twenty-five years of US military involvement concluded–most of it conducted in secret. Despite the publicity from presidential disclosure and congressional hearings in 1969, the totality of US operations continues to unfold from recently declassified US military records. However, most Central Intelligence Agency (CIA) and State Department records continue to be inaccessible. This lack of public awareness obscures the awesome US airpower effort: 551,552 fighter attack sorties–almost 60% of the "out-of-country" effort–and an additional 391,380 support sorties. The costs of this contest are equally staggering: 493 aircraft lost, over 400 US military killed, 505 missing in action, a generation of Hmong tribesmen, and $1.4 billion in US military assistance.[2]

The nature of the conflict in Laos created a theater of operations separate from the rest of Southeast Asia (SEA). "Out-of-country", "up-country", "extreme western DMZ", "over-the-fence", and the "secret war" were terms used to characterize US military involvement in Laos. After twenty years very little is written about the covert war. Almost nothing is written about the effectiveness of air operations in support of US strategic and national objectives in Laos.[3]

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[1] Charles A. Stevenson, *The End of Nowhere: American Policy Toward Laos Since 1954 (*Boston: Beacon Press, 1972), 1.

[2] See Senate, *United States Security Agreements and Commitments Abroad: Kingdom of Laos, Hearings before the Subcommittee on United States Security Agreements and Commitments Abroad of the Committee on Foreign Relations*, Part 2, 91st Cong., 1st sess., 1970 (hereafter cited as *Laos Hearings*). CIA and State Department classified documents see Timothy N. Castle, *At War in the Shadow of Vietnam: U. S. Military Aid to the Royal Lao Government, 1955-1975 (*New York: Columbia University Press, 1993) xi. Sortie data are from Department of the Air Force, "Summary of Air Operations in Southeast Asia", vol. 103, Hickam AFB, Hawaii: Headquarters, Pacific Air Forces, February 1973, 4-A-1 for period 18 May 1965 to 28 February 1973. Attack and support sorties include USAF, USN, and USMC sorties and do not include B-52 sorties, Royal Lao Air Force, Vietnamese National Air Force, or US Army sorties. Southeast Asia sorties in support of combat outside of South Vietnam where considered "out-of-country." These areas consist of North Vietnam, Laos, and Cambodia. Cost of military assistance program from Department of the Air Force, "MAP Aid to Laos, 1959-1972," Project CHECO Report, Captain Peter A. W. Liebchen, USAF, Hickam AFB, Hawaii: Headquarters, Pacific Air Forces, 25 June 1973, 171.

[3] Two recent books provide a fresh examination of this conflict. Castle's *At War in the Shadow of Vietnam* gives a historical account of US military assistance to Laos from the early 1950s until 1975. It is a very detailed study of events and provides an excellent overview of the entire conflict. The bibliography is exceptionally thorough and must list about every source available on the subject. However, the book does not examine the employment of airpower from an airman's perspective. Jacob Van Staaveren, *Interdiction in Southern Laos: 1960-1968* (Washington: Center for Air Force History, 1993) is a USAF Office of History account of the STEEL TIGER campaign in eastern Laos. Both are highly recommended for any study of the conflict in Laos.

The war in Laos had a dual character: it was first, a struggle for the survival of Laos–basically, a civil war, and second, a spillover of the conflict in South Vietnam. Lacking the will to commit US ground forces in Laos, the direct US combat involvement was with airpower. Consequently, two distinct air wars resulted in the skies above Laos between 1964 and 1973. In the southern panhandle, STEEL TIGER, involved the interdiction of the Ho Chi Minh Trail used by North Vietnam to prosecute their war in South Vietnam. In northern Laos a very different war was fought. BARREL ROLL provided air support for the ground forces of the Royal Lao Government (RLG) fighting Communist insurgents. The survival of the RLG and ultimately Laos as a neutral country was the object of this war.[4] The impetus for US involvement in both of these air wars stems from US national policy and objectives in Southeast Asia (SEA). Air operations in STEEL TIGER directly supported US military activities in South Vietnam and were conducted with consent from the RLG. Those in BARREL ROLL directly supported the RLG and were the "price of admission" for US operations in STEEL TIGER.

Objective. This paper focuses on air operations during the last four years of BARREL ROLL, from 1 November 1968 to 21 February 1973. Four questions are answered. *Why* did the US conduct BARREL ROLL? *What* was it suppose to accomplish? *How* were US operations in support of BARREL ROLL conducted? What were the *results*? To answer the "why," the development of US involvement, US national objectives, and military strategy is examined. The "what" examines how the military strategy is transformed into a course of action. Next, the "how" is analyzed in the context of a campaign plan. Did BARREL ROLL constitute an (implicit) air campaign plan? Finally, to address the "results" of BARREL ROLL the costs, effects, and effectiveness of US air operations are discussed. Did US airpower as applied in northern Laos support US objectives in SEA? Was airpower effective? What are the lessons learned?

Thesis. Airpower employed by the US in northern Laos between 1968 and 1973 supports US national policy in SEA; is constrained by US military strategy and objectives in South Vietnam (both policy and resources); and, is responsive to North Vietnamese military strategy and objectives.

Approach. A campaign analysis will be used to examine BARREL ROLL. Both the US Air Force "JFACC Primer" and Joint Pub 3-56.1, "Command and Control for Joint Air Operations," provide a useful model to observe

[4] Department of the Air Force, "Air War in Northern Laos 1 April-30 November 1971," Project CHECO Report, Major William W. Lofgren, USAF and Major Richard R. Sexton, USAF, Hickam AFB, Hawaii: Headquarters, Pacific Air Forces, 22 June 1973, 2.

the connection between national objectives and tactical action. Both describe the evolution of a campaign plan. Accordingly, the employment of airpower in BARREL ROLL will be examined at three levels: strategic, operational, and tactical. Objectives and results exist at each of these three levels and will be part of the discussion. Figure 1 shows the hierarchical relationship between these three levels. The paper will concentrate principally on the strategic and operational levels. [5]

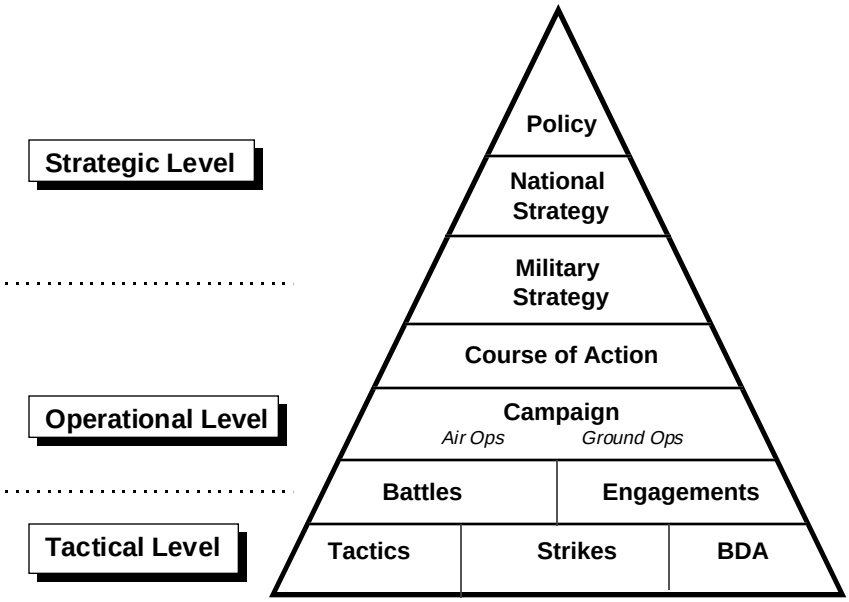

Figure 1: The Levels of War

Prior to conducting air operations, a "strategic appreciation" of the theater and conflict is necessary–the "why" for the conflict. Based on the strategic appreciation, the commander can formulate a "course of action" that defines "what" will be accomplished. The campaign plan states "how" the course of action will be conducted. An "air operations plan" is devised to support the campaign. Finally, execution of daily operations (tactics, strikes, targeting, and bomb damage assessment) is performed by daily guidance that adjust the plan based on the dynamics of the conflict.[6]

[5] Department of the Air Force, "JFACC Primer," 2d ed., Washington: Deputy Chief of Staff, Plans and Operations, Headquarters, United States Air Force, February 1994, 19-24 and Department of Defense, Joint Publication 3-56.1, "Command and Control for Joint Air Operations," 14 November 1994, A-1 to A-5.

[6] Department of the Air Force, "JFACC Primer," 36.

Airmen cannot appreciate campaign planning or the operational art without practice or experience. History offers a method to gain this insight. Use of a campaign plan format to analyze a historic conflict provides a structured way to examine the conflict, along with an opportunity to exercise and appreciate the thought process of campaign planning. Table 1 outlines the approach used in this paper to analyze BARREL ROLL. This approach is offered as a model that can be used to historically analyze other campaigns.

Table 1: Analysis Model and Roadmap for this Paper

ANALYSIS QUESTION	ELEMENT	SECTION OF PAPER
Why the Campaign is conducted?	Political Objectives National Strategy	STRATEGIC APPRECIATION
What will be accomplished?	Military Strategy Concept of Operations Course of Action	MILITARY SITUATION
How will it be accomplished?	Campaign Plan	THE AIR CAMPAIGN PLAN
How much *resource* is applied? What were the *results*?	Effort Effects Effectiveness Lessons Learned	ANALYSIS
Was BARREL ROLL an (implicit) air campaign plan?	Objectives versus Campaign Plan	CONCLUSIONS

Why Look at BARREL ROLL? An academic treatment of all of BARREL ROLL awaits accomplishment. For now, the period November 1968 to February 1973 provides an interesting time period during the war. The termination of bombing in North Vietnam, a new administration in Washington, declining aircraft resources, political constraints, changing objectives, and a unique theater which has not been previously scrutinized combine to produce a treasure of information ripe for examination and analysis.

CHAPTER ONE

STRATEGIC APPRECIATION

> *The basic U.S. policy toward Laos is that of support for its independence and neutrality. The United States has undertaken no defense commitment–written, stated, or understood–to the Royal Lao Government.* [7]
>
> —Ambassador William H. Sullivan, 1969

> *This is the end of nowhere. We can do anything we want here because Washington doesn't seem to know it exists.* [8]
>
> —An American official, Vientiane, Laos, November, 1960

To establish the purpose of BARREL ROLL (the "why" question), understanding its strategic context is necessary. The environment, the national policy and objectives, and the national strategy provide the strategic appreciation for "why" the operation was undertaken.

Laos--The Country

Upon briefing President-elect Kennedy, President Eisenhower identified Laos as the strategic key to SEA. Then within weeks, Laos becomes the principal focus of the Kennedy Administration. *Why did US policymakers regard Laos as so important?* Part of the answer lies with the characteristics of Laos–its geography, its people and culture, its politics, its government, and its history. [9]

Geography. The location and geography of Laos are the first aspect of its strategic significance. Laos occupies a key position in SEA as a landlocked country that borders six other countries. Three prominent geographical features play an important role in the Laotian conflict: the Annam Cordilla mountain range, the Mekong River, and the Plaine de Jarres (PDJ) or Plain of Jars. The Annamite Chain forms the eastern boundary of Laos and extends from China south to the Gulf of Thailand, along the entire 1324-mile border with Vietnam. The Mekong River, along the western border of Laos, flows from China south to Cambodia. The PDJ, located between these two features

[7] U.S., *Laos Hearings*, 367.

[8] Stevenson, vii.

[9] *The Pentagon Papers: The Senator Gravel Edition*, (Boston: Beacon Press, 1973), V:260.

in the center of northern Laos, is a rolling grassland surrounded by high mountains. The PDJ is particularly strategic as crossroads for trade and armies at war. Two major lines of communications run south through Laos. The first, on the west side of the Annamite Chain and including parts of the Mekong River, becomes the Ho Chi Minh Trail and the focus of the war in southern Laos. The second, the crossroads on the PDJ connecting China and North Vietnam with Cambodia and Thailand forms the arena for the war in northern Laos. Figure 2 is a map of Laos.[10]

Climate. The seasonal weather pattern also plays a prominent role in the war. Laos is part of Monsoon Asia. Between mid-September and March, the dry season coincides with a yearly communist offensive and their logistics movement through Laos, while the period between May and September sees heavy rains and the Royal Laotian Government (RLG) counter-offensive. Eighty-five percent of the economy is agricultural. While rice is the principal crop, opium is a lucrative cash crop and a principal objective of external aggressors. [11]

People and Culture. Laos, about the size of Great Britain, is sparsely populated with approximately 3 million people from four ethnic groups: Lao Lum (45%), Lao Theung (30%), Lao Tai (20%), and Lao Soung (5%).[12] The majority group, the Lao Lum or "Lao of the lowland valleys," are Theravada Buddhist and ethnically identical to people of northeast Thailand.[13] The Lao Lum are the best educated and the most influential people in Laotian society and government. The royal family is ethnic Lao Lum. The three other minority groups share a

[10] The Plain of Jars takes its name from large stone jars believed to be ancient Chinese funeral urns. More than 100 of these jars, large enough to hold a small, squatting man, are found in meadows at the center of the plains. The jars are about 2000 years old. The plain has an average elevation of 3600 feet and resembles the dairy land of southern Wisconsin. See Arthur J. Dommen, *Conflict in Laos: The Politics of Neutralization* (New York: Praeger Publishers, 1971), 2-3. For additional information on strategic value of Laos see Dommen, *Conflict in Laos,* 1-3, and Roger Hilsman, *To Move a Nation: The Politics of Foreign Policy in the Administration of John F. Kennedy* (New York: Doubleday & Company, Inc., 1967), 93-94.

[11] Raphael Littauer and Norman Uphoff, eds., *The Air War in Indochina* (Boston: Beacon Press, 1972), xviii and Dommen, *Conflict in Laos,* 137-138.

[12] The total population number is the popular estimate for the period. The first official census took place in March 1985 and according to United Nations statistics was just over 3.5 million. See Castle, 141, note 13. The principal difference between the ethnic groups, outside language, history, and customs, are their societal status, living altitude, and method of agriculture. See Stevenson, 11.

[13] In fact, there are eight times as many Lao in Thailand than in Laos. Castle, 141, note 16.

Figure 2: Map of Laos with Military Regions and Ho Chi Minh Trail depicted

common characteristic as animist. The Lao Tai or "Lao of the upper valleys" are tribes who migrated into the area with the same language. The Lao Theung or "Lao of the mountainside" are the slave tribes (Kha) of Laos and descendants of the aboriginal inhabitants displaced by the Lao Lum. Finally, the Lao Soung or "Lao of the mountain tops" are Hmong and Yao tribesmen who migrated from southern China. The Hmong grow opium poppy and are the natural warriors of Laos. Historically, the Lao Tai and Lao Theung are mistreated and discriminated against by the Lao Lum. In contrast, the independent lifestyle and cash from the sale of opium permit the Hmong to escape the influence of the Lao Lum.[14]

Politics and Government. The RLG was a constitutional monarchy composed of a prime minister, council of ministers, and a national assembly. The government was dominated by the elite lowland Lao Lum while the minorities–Lao Tai, Lao Theung, and Lao Soung–have little or no representation.[15]

A nationalist movement developed in 1945 to oppose the return of French colonialism. Two half-brothers from the movement are prominent. Prince Souvanna Phouma, a neutralist, becomes a leading figure in the nationalist movement and RLG. Prince Souphanouvong, joins the communist Viet Minh in Vietnam and forms a nationalist guerrilla organization that evolves into the Pathet Lao (Land of Laos).[16]

The communists in Laos form the Neo Lao Hak Sat (NLHS, Lao Patriotic Front) which becomes the political party of the Pathet Lao and a front organization for the secret Lao People's Revolutionary Party (LPRP). The LPRP is principally North Vietnamese and reports directly to Ho Chi Minh.[17]

History before 1964. Laos shares a modern history similar to Vietnam. The French occupied the area from 1856 to 1954, with a brief intermission by the Japanese during World War II. The Laotian conflict begins in 1953, as part of the First Indochinese War. The People's Army of Vietnam assisted by Pathet Lao troops attack the French on the PDJ. Their objective was to deal a psychological blow to the French and capture the opium crop that provided cash for weapons. But the monsoon rain prevents the continuation of a Vietnamese offensive. The French deny the

[14] Castle, 4-6 and Arthur J. Dommen, *Laos: Keystone of Indochina* (Boulder, Colo.: Westview Press, 1985), 3-6.

[15] Castle, 4.

[16] The nationalist movement was organized by Prince Phetsarath and his two younger brothers, Prince Souvanna Phouma and Prince Souphanouvong. Together they form a government called the Lao Issara or "Free Lao." However, the return of French rule in 1946 forced this government into exile. By 1949, the Lao Issara dissolves and the three brothers go separate ways. See Dommen, *Conflict in Laos*, 18-36.

[17] Dommen, *Laos*, 105-106.

Viet Minh their objective by buying all of the opium crop. The French deployed to the outpost at Dien Bien Phu to prevent future incursions into Laos. However, in May 1954 the French defeat there sets up the agreements in Geneva.[18]

The Geneva Accords of 1954 made Laos an independent, neutral buffer between China and Thailand. Unlike Vietnam, Laos was not partitioned by the Geneva Accords of 1954. Instead, the provisions call for a cease-fire, the withdrawal of all external military, and the establishment of a Pathet Lao administration zone in the northeastern provinces of Phong Saly and Sam Neua pending further negotiations.[19]

The RLG is recognized and French rule is expelled, but the Vietnamese never depart Laos as required by the Geneva Accords. In support, the US provides economic aid to assist the RLG repel the communist. Thus, a nationalist struggle against foreign influence continues: the RLG fighting North Vietnamese infiltration and the Pathet Lao fighting US involvement.[20]

In November 1957, the first coalition government with representation from the NLHS and led by Prime Minister Souvanna Phouma is formed. Unfortunately, the coalition is short-lived. Widespread corruption due to the influx of large amounts of US aid allows the Pathet Lao to show substantial strength in the 1958 election. The RLG's flirtation with communism leads to a cutoff of US aid and the coalition government falls in July 1958. A US-sponsored, right-wing government that is hostile towards Pathet Lao representation takes control. In May 1959 civil war begins. The RLG with US-supplied arms fights the Pathet Lao in open conflict.[21]

In 1960 a neutralist coup followed by a right-wing counter-coup created additional confusion. The civil war continues with neutral forces, now allied with the Pathet Lao and supported by Russian airdrops, fighting the right-wing forces supported by US aid. By the end of 1960, two legal governments are in charge of Laos: Souvanna

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[18] Edward G. Lansdale, *In the Midst of Wars: An American's Mission to Southeast Asia* (New York: Harper and Row, 1972), 103-113 and Gary D. Wekkin, "The Rewards of Revolution: Pathet Lao Policy Towards the Hill Tribes since 1975," in *Contemporary Laos: Studies in the Politics and Society of the Lao People's Democratic Republic*, ed., Martin Stuart-Fox (New York: St. Martin's Press, 1975), 186-187. Also, Dommen, *Conflict in Laos*, 16-17.

[19] The countries represented in Geneva included France, the Soviet Union, the US, the People's Republic of China, Great Britain, the Democratic Republic of Vietnam under Ho Chi Minh, the Republic of Vietnam under Bao Dai, Laos, and Cambodia. Although the US did not sign the agreement, it recognized the importance of maintaining an independent Laos, Cambodia, and South Vietnam outside the communist sphere. From this viewpoint, President Eisenhower did not consider the US bound by decisions made at Geneva. See Castle, 11-12, Dommen, *Conflict in Laos*, 53 and *Pentagon Papers: Gravel Edition*, V:249.

[20] Stevenson, 9 and Dommen, *Laos*, 61-62.

[21] *Pentagon Papers: Gravel Edition*, V:250-258.

Phouma's neutral government supported by the communist and Prince Boun Oum's right-wing government supported by the US.[22]

In 1961, the new Kennedy Administration calls for a review of US policy in Laos. Despite favoring a diplomatic solution, Kennedy takes a firm stand by making US military aid to Laos visible to the Soviets and Hanoi. A confrontation between the superpowers begins. In May 1961, a cease-fire is called and the three parties–Souphanouvong, Boun Oum, and Souvanna Phouma–negotiate a coalition government. Despite discussion of Laos between Kennedy and Soviet Premier Nikita Khrushchev in Vienna, talks in Geneva will continue for over a year. During this time, Kennedy increases covert operations in Laos.[23]

In 1962, a communist offensive advancing towards Thailand with implications of Chinese communist involvement causes Kennedy to deploy US forces to the area. The crisis ends and the three princes agree to form the second coalition government in June. On 23 July 1962, new set of Geneva Accords is signed and forms an international agreement of neutrality for Laos. In support of the Geneva Accords, the US immediately withdraws all 666 military personnel from Laos; however, only 44 North Vietnamese officially leave Laos. As the extent of North Vietnamese presence in Laos is revealed, the US establishes a disguised military aid mission called the Requirements Office staffed with "retired-military" civilians; trains Laotian pilots in Thailand; and, supplies T-28s to the Laotian Air Force. By May 1963 the coalition government unravels and Laos is again in open conflict Fearful of North Vietnamese insurgents and unable to defend his country, Souvanna relies on security measures offered by US.[24]

Laos--The Conflict

The next eleven years in Laos are best characterized as chaotic. The Kingdom of Laos starts the 1960s at the forefront of superpower confrontation only to become a "war in the shadow of Vietnam" and ultimately forgotten when

[22] Captain Kong Le, an army battalion commander, frustrated by the direction of the right-wing government, seizes control of the capital at Vientiane. Kong Le, a neutralist, calls for an end to the civil war, an end to aid corruption, and the removal of all foreign troops and foreign influences. After a brief period, he hands power over to Souvanna Phouma who the king appoints as prime minister. Souvanna attempts without success to establish a neutral coalition government, as existed in 1957. US pressure against this course causes Souvanna Phouma to request assistance from the Soviet Union. Meanwhile, Col Phoumi Nosavan, supported directly by US military aid, stages a counter-coup and establishes a right-wing government, under Prince Boun Oum. Dommen, *Laos,* 60-65.

[23] Kennedy upgrades the US military mission to a full-scale Military Assistance Advisory Group (MAAG) with 400 personnel. The US military personnel are a strong signal to North Vietnam and the USSR of US and Kennedy's resolve. See *Pentagon Papers: Gravel Edition,* V:260-265.

[24] Ibid., V:265-267.

the communist take over in 1975. Throughout the years of US involvement, the war in Laos comes to be known by many names. The "secret war" or the "CIA war," define the participants: Department of Defense, State Department, and CIA. In "Sullivan's war" we find the covert nature of a war required strict in-country direction by the US Ambassador. Laos becomes the area "out-of-country" or "over-the-fence" for Americans stationed in SEA. US servicemen in Thailand refer to the area as "up-country" while those in South Vietnam call it the "extreme western DMZ". The war was also known as the "forgotten war" which reflects a perception that this war was secondary to other US foreign policy issues. [25]

Combatants. The combatants divide into two camps: forces supporting the RLG and forces supporting the NLHS. Supporting the RLG, the Royal Lao Army, also known as the *Forces Armee Royale* (FAR), organize into five Military Regions (MR) with a "warlord" general in command of each region. These forces will prove marginally effective throughout the conflict–thus a surrogate ground force is needed to fight for the RLG. Likewise, the North Vietnamese seek surrogates to advance their military agenda.

Both sides target the minority peoples of Laos to be their agents. The population provides a political base for future negotiations and a legitimate government. These people also form a labor base for armed forces, food production, and supply porters. Consequently, control of the population in northern Laos is an objective of both sides. To maintain access to this labor pool, during the conflict each side must move and protect large groups of people.[26]

US officials focus on the Lao Soung or Hmong tribesmen. Special Guerrilla Units (SGU) or the *Clandestine Armee* of Hmong tribesmen, organized into an irregular army, are both financed by the US and trained by the CIA. In 1960, the US solicits the legendary General Vang Pao to lead the SGU against the communist. Subsequently, he

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[25] "War in the shadow of Vietnam" is taken from the title of Castle's book. Journalist used "secret war" and "CIA war" because northeastern Laos was "off-limits" to them during much of the conflict. Despite the common knowledge of the war among journalist, they found no one who would discuss operations. Jane Hamilton-Merritt, *Tragic Mountain: The Hmong, the Americans, and the Secret Wars for Laos, 1942-1992* (Bloomington, Ind.: Indiana University Press, 1993), xi-xviii. Stevenson, 208-9 used "Sullivan's War" in referring to the conflict in Laos. William Sullivan was the US Ambassador to Laos from 1964 until 1969 and acted as Commander-in-Chief of the ground and air campaigns in Laos. President Kennedy in 1961 gave the ambassador to Laos extraordinary powers over all US government agents in-country. Effectively, the US Ambassador to Laos was in command of all US operations from 1961 until 1975. In Castle, Chapter 6 is titled "William Sullivan's War" and contains a detailed description of Sullivan's role. Laotian Prime Minister Souvanna Phouma called the struggle in Laos "the forgotten war" because of the overshadow of the Vietnam conflict. See Paul F. Langer and Joseph J. Zasloff, *North Vietnam and the Pathet Lao: Partners in the Struggle for Laos (*Cambridge, Mass.: Harvard University Press, 1970), 1. Walt Haney called it "the forgotten war" because the US government hid its existence from the Congress and the people. See Haney's article in *Pentagon Papers: Gravel Edition*, V:248.

[26] Department of the Air Force, Headquarters 7/13 AF End-of-Tour Report of Major General Louis T. Seith, USAF, 19 June 1968 to 27 May 1969, Udorn, Thailand, 25 June 1969, 1.

commands the Hmong SGU in Military Region 2 in northern Laos. It will be the most effective anti-Communist ground combat unit during the war. Additionally, the US employs Thai "volunteers" to fight in Laos.[27]

The Pathet Lao appeals to the discriminated people of Laos–the Lao Tai and Lao Theung–for support. This naturally pits them against RLG forces dominated by the Lao Lum and the SGU made up of Hmong tribesmen. The North Vietnamese Army (NVA) enters Laos very early in the conflict to provide aid and manpower to the Pathet Lao ranks. By 1970 approximately 80,000 North Vietnamese are in Laos.[28]

North Vietnamese Involvement. Early in their struggle for a unified Vietnam, the North Vietnamese realize the strategic importance of Laos. The North Vietnamese are politically and militarily in Laos immediately after World War II. Ho Chi Minh sends military agents to Laos in 1945, to insure the security of the common border and keep the "imperialist" out. The fight against the French in 1953 culminates in Dien Bien Phu. In December 1960, North Vietnam decides to intervene in Laos as part of a strategy against South Vietnam. During 1961, the North Vietnamese presence transforms from a semi-covert advisory role for the Pathet Lao into a full blown operational theater. Although they never leave Laos following the 1962 Geneva Agreement, like the US they will not acknowledge their presence in Laos for the rest of the war.[29]

To avoid looking imperialist, beginning in 1955 Ho Chi Minh's secret communist party, the Lao People Revolutionary Party, hides behind the NLHS. Consequently, the NLHS becomes a front for the North Vietnamese communist who actually make all the important decisions. They view Laos as crucial to their security and as a conduit to spread their influence west into Thailand. The LPRPs ultimate goal is complete dominance of the Lao government and society. Meanwhile, NLHS participation in the coalition government is allowed as a tactical expedient to the LPRP's ultimate goal.[30]

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[27] Dommen, *Conflict in* Laos, 295-296 provides a description of General Vang Pao's life. Vang Pao was born in Nong Het, a village east of the Plain of Jars. At the age of 13, he fought against the Japanese as a resistance fighter. Alongside the French, he later fought the Viet Minh forces and in 1953 led a 300-man rescue attempt of Dien Bien Phu. Despite being a Hmong, he was commissioned in the Royal Lao Army and in 1960 took command of Military Region 2 which contains the Plain of Jars area. He was extremely loyal to the government, the King, and to Laos. His leadership was paramount in SGU successes during the conflict in Laos. Additional information about Vang Pao and the SGU is found in Hamilton-Merritt, 89; *Pentagon Papers: Gravel Edition,* V:273; and Castle, 30-31, 34-43, 57-61.

[28] Castle, 6-7.

[29] Department of Defense, *United States–Vietnam Relations, 1945-67,* (Washington: U.S. Government Printing Office, 1971), vol. 2, IV, A5, Tab 4, 66-77.

[30] Dommen, *Conflict in* Laos, 105-108.

Causes. Given the geographic, political, and military importance of Laos in SEA, the conflict reaches its climax with US involvement in the 1960s. The causes for this war are listed in Table 2. The war, disguised as a civil

Table 2: Causes of the war in Laos, 1962-1973

Primary Causes	• Vietnam's traditional attempt to assert hegemony over SEA. • North Vietnam's struggle to take over South Vietnam. • Civil war between Lao communist (left) and anti-Communist (right).[31]
Secondary Causes	• Communist capture of SEA strategic crossroads and "keystone." • Laotian desire for independence, free of foreign influence (neutralist). • The Cold War, US versus China and USSR. • Control of Hmong opium harvest by Viet Minh.[32] • Class struggle between Lao Lum dominated society and Laotian minorities.

war, is actually an extension of the conflict in Vietnam. As the "keystone" of SEA, Laos provides the communist access to Thailand, Burma, and South Vietnam.

US National Policy for Laos

US policy toward Laos was very dependent on US interests in SEA. Each administration deals with Laos somewhat differently. The course selected by the United States was largely a result of objectives in SEA, particularly after the US becomes militarily involved in Vietnam. Initially, US interests were to limit communist influence in SEA; however, following the Tet Offensive in 1968, the Nixon Administration viewed withdrawal and a negotiated settlement as policy. A broader understanding of the 1968-73 BARREL ROLL campaign requires a knowledge of the evolution of US policy. The following will help answer the "Why" question of BARREL ROLL.

Containment. Through the Truman and Eisenhower administrations, the guiding policy with respect to Laos was containment of communism. This view regarded all communist as a threat spreading to the West, and SEA was considered vulnerable as one of the "dominos" in Eisenhower's monolithic communist model. Eisenhower viewed the loss of Indochina to the Communist as a severe strategic consequence. Unwilling to commit ground troops, he used

[31] Langer, 1 list these as the primary causes of the war in Laos.

[32] Lansdale, 109-113.

economic and military assistance to fill the void left by the departing French and in support of a pro-West/anti-communist government.

Neutralization. Kennedy's first international crisis was Laos. With communist insurgencies threatening South Vietnam, Thailand, and Laos, and a possible confrontation against the Soviets over Laos, he preferred a negotiated settlement to a direct military intervention. US policy changes from supporting a right-wing, anti-Communist government to support of a neutral Laos led by a coalition government that includes the communist in control of the eastern part of the country. In addition, Khrushchev assured Kennedy that the USSR would not fight the US over Laos. As the "keystone" of SEA, Laos acted as a buffer in two dimensions between North Vietnam and Thailand, and between North Vietnam and South Vietnam. The US viewed Geneva as offering a choice between which buffer would receive the most attention. Since Kennedy believed that South Vietnam, with military aid, counter insurgency assistance, and air support, could defeat the Viet Cong insurgents, the US chose a stalemate in Laos in order to protect Thailand. A neutral government in Vientiane, assisted by covert US aid would maintain the buffer for Thailand. [33]

Military Solution. Johnson became focused primarily on US support for South Vietnam. He initiated a large military intervention–an air bombing campaign and introduction of ground forces–to coerce North Vietnam out of the south. Laos was an important part of the strategy for interdicting North Vietnamese supply lines to South Vietnam which secretly began as BARREL ROLL. The war in Laos was fought covertly due to the 1962 Geneva Accords, the tacit agreement with the Soviets, and to avoid the public appearance of expand the war. ROLLING THUNDER was the air campaign against North Vietnam. But after three years, unable to coerce the North, Johnson terminated ROLLING THUNDER in October 1968 and air operations focused primarily on interdiction of the Ho Chi Minh Trail in eastern Laos.

Withdrawal. The Nixon Administration brought another change and a new policy for SEA: shifting the burden for the war to the South Vietnamese accompanied by a slow withdrawal of US forces. This made the bombing

[33] Dommen's book calls Laos the "Keystone of Indochina." Department of the Air Force, Oral History Interview, Ambassador William H. Sullivan, Maxwell AFB, Ala., 91-92. Ambassador Sullivan was involved in the 1962 Geneva Agreements. Interestingly, he described the general US strategy as two fold: 1) achieve protection for Thailand, and 2) achieve protection for South Vietnam by a combination of the fighting capabilities of South Vietnam and US forces coming into Vietnam and cutting off the Ho Chi Minh trail on the ground in Laos. One has to wonder if this strategy would have been more effective had it been pursued when the US introduced ground forces into SEA in 1965.

campaign in Laos more important for several reasons. The bombing halt of North Vietnam provided untasked tactical aircraft (tacair) assets now available for employment in Laos. In addition, bombing the trail was critical to protecting the flank for US withdrawal and the air war in Laos changed from a support role to the main effort. Consequently, maintaining access to the country of Laos became the primary motivator for supporting the RLG. This change in policy altered the purpose of BARREL ROLL operations. Up to this point, BARREL ROLL was intended to keep Laos neutral; but with the war in Vietnam turning sour, BARREL ROLL would ultimately buy the US time to withdraw from SEA, and the fate of Laos would ultimately be determined by the outcome in Vietnam.

US National Strategy for Laos

In support of the national policy, each administration developed a national strategy for Laos that synchronized with US strategy for SEA.

Eisenhower. The US pursued its policy for containment of communism in Laos by providing economic and military aid to the country. Eisenhower viewed Laotian security as dependent on a strong Army with a right-wing government in control. Unfortunately, the strategy was poorly coordinated within the US bureaucracies involved in Laos. The uncoordinated execution of the strategy resulted in graft, corruption, inflation, and finally the overthrow of the US-backed government in August 1960. A subsequent counter coup by right-wing Army factions caused the country to erupt in civil war when the neutralists joined the communist.[34]

Kennedy. The switch in US policy to support a neutral Laos was key for US strategy in SEA. The strategy removed the requirement for a military solution in Laos and created a buffer against communist infiltration of South Vietnam and Thailand. It also made South Vietnam an internal insurgency problem ideal for development and employment of counter-insurgency doctrine. Of course, this strategy assumed the North Vietnamese would abide by the terms of the 1962 Geneva Agreement and depart Laos.[35]

Johnson. In early 1963, US intelligence estimates that 8 North Vietnamese Army battalions, about 4000 troops, plus 2000 advisers were in Laos. Convinced that the North Vietnamese would not leave Laos, the US turned to a new strategy: counter insurgency and guerrilla warfare. Not wanting to commit ground combat forces in Laos

[34] Hilsman, 111-112, 114 and Department of the Air Force, Oral History Interview, Colonel William Von Platten, USAF, 10 May 1975, Maxwell AFB, Alabama, 13.

[35] Norman Hannah, *The Keys to Failure: Laos and the Vietnam War* (New York: Madison Books, 1967), 33-34.

caused the US to enlist the aid of the CIA. The CIA got this task due to US desires to minimize any violation of the Geneva agreement and because the State Department believed that US military management would lead to greater pressure to introduce ground combat troops. The CIA employed the indigenous Hmong tribesmen, who they organized and trained prior to the Geneva agreement, to fight the ground war while USAF Air Commandos trained RLAF pilots in T-28s to provide air support for these ground forces. In addition, in 1964 the USAF began covert direct air support and interdiction of North Vietnamese supply lines. This strategy was employed in Laos until the end of the war. [36]

Nixon. Another policy change in Vietnam, altered the strategy for Laos. The US employed massive airstrikes against of North Vietnamese supply lines. Not wanting to escalate the war in northern Laos, airpower in support of the ground forces was used to hold the North Vietnamese in place. Airpower was leveraged against each increase in North Vietnamese combat power on the ground. The war effort in Laos became a war of attrition: killing enemy trucks on the trail and destroying communist ground forces in the north. US strategy also continued with the finance of Hmong tribesmen to fight North Vietnamese conventional forces, military assistance to the RLG, and the employment of US airpower to support the light ground forces and for interdiction of communist supply lines.

Objectives for Laos

US. The political end state of US efforts in Laos was withdrawal of all North Vietnamese followed by the re-establishment of the 1962 Geneva provisions. To accomplish this goal, US objectives were:

1) Maintain an outward appearance of strict neutrality for diplomatic reasons (covert operations);

2) Maintain a relatively stable balance of political, military, and economic position between the communist and the pro-US factions in Laos (support for Hmong ground forces);

3) Maintain a friendly or at least neutral government on the borders of Thailand, while maintaining strict control on the levels of aid and military effort in support of and consistent with objective 2 (support of government); and,

[36] DoD, *United States-Vietnam Relations,* vol. 2, IV A5, tab 3, 62; Hamilton-Merritt, 123; and, Douglas S. Blaufarb, *The Counterinsurgency Era: U.S. Doctrine and Performance, 1950 to Present* (New York: The Free Press, 1977), 147.

4) Achieve maximum attrition and disruption of North Vietnamese logistics flow through the use of air power (interdiction campaign).[37]

North Vietnamese. The North Vietnamese, interestingly enough, had very similar objectives:

1) Maintain access to the Lao panhandle as their support of the war in South Vietnam is dependent on using the Ho Chi Minh Trail;

2) Balance the force used to maintain a foothold in northern Laos and avoid escalation of force which would cause the US to introduce ground troops in Laos;

3) Pressure the RLG militarily to seek a negotiated settlement and expel US from Laos; and,

4) Maintain an appearance of neutrality and hide all involvement in Laos.

The primary objective for the North Vietnamese was always South Vietnam. All other objectives are subordinate or in support of this goal. The North Vietnamese continued to hide their presence in Laos to avoid an overt violation of the Geneva agreements and Laotian neutrality. They also desired to maintain the illusion that the war in South Vietnam is a popular uprising.[38]

[37] William H. Sullivan, *Obbligato 1939-1979: Notes on a Foreign Service Career* (New York: W. W. Norton and Company, 1984), 209 and Seith, End-of-Tour Report, tab B, 2.

[38] John Morrocco, *Rain of Fire: Air War 1969-1973* (Boston: Boston Publishing Co., 1985), 26.

CHAPTER TWO

MILITARY SITUATION

We still must consider our interest in Laos...as the protection of the flank of Thailand.[39]

–Ambassador William H. Sullivan, 1968

US Military Strategy

Instead of overt military aid or military intervention with US ground forces in Laos, the US decided to fight the North Vietnamese on their own terms using an indigenous force employing guerrilla tactics, supplied through a deniable system of paramilitary assistance, and directed by a US country team. The CIA advised the ground forces to avoid the presence of US military advisors in Laos. Accordingly, the US military strategy consisted of three components.[40]

Military Assistance Program. Military assistance was used to develop an RLG military capability and support active combat operations. This assistance provided the training and equipping of the CIA-led Hmong irregulars and Thai mercenaries. The Hmong were selected due to their aggressiveness and location in northern Laos. These troops do the majority of the ground combat. In addition, the USAF provided training, equipment, intelligence, and maintenance to the Royal Lao Air Force (RLAF). Project Waterpump at Udorn Air Base in Thailand trained Thai and Laotian pilots in the T-28 and AC-47 and instructed aircraft maintenance personnel. USAF advisors also provided aircraft maintenance to the RLAF, as well as, USAF reconnaissance and intelligence capabilities.[41]

US Air Support. The lack of a dependable road system in Laos and the need for mobility and fire support by the US-led guerrilla force made the need for flexible and accommodating air support. An air transportation system was developed by constructing a set of landing strips, called Lima Sites, throughout the country. In addition, Air America, Continental Air Transport, and Byrd Air–all financed by the CIA–provided contract airlift support. The

[39] Department of the Air Force, "Air War in Northern Laos 1 April-30 November 1971," Project CHECO Report, Major William F. Lofgren, USAF and Major Richard R. Sexton, USAF, Hickam AFB, Hawaii: Headquarters, Pacific Air Forces, 22 June 1973), 4.

[40] Sullivan, *Obbligato*, 210.

USAF provided reconnaissance, close air support, and interdiction using tactical aircraft based in Thailand and South Vietnam.[42]

Covert War. There were a variety of reasons for covertness. The ruse of neutrality was primary, along with the desire of the US to avoid embarrassing the Soviets. Since Khrushchev and Kennedy had jointly agreed on Laotian neutrality in 1961, overt involvement by the US in Laos would have forced the Soviets to respond directly. Overt action or public disclosure of US involvement would then force the Soviets to "close ranks" with their communist brothers. The Soviets were satisfied to "look the other way" in order to limit Chinese hegemony in SEA.[43]

William Bundy asserts the war was anything but "secret." However, the Laotian desire to preserve an apparent neutral posture was paramount. Keeping the war secret served many interests. For the State Department, secrecy avoided a violation of the 1962 Geneva agreement. The Laotian government did not want to appear as a US "puppet." Washington policy had South Vietnam as the center of US activity and public recognition of involvement in Laos would appear as an expansion of the war effort. This covert aspect of the war was paramount in selecting the US country team to control all military activity out of the US Embassy in Laos.[44]

The Old Course of Action

Ground Operations. The battlefield in Laos was divided into five Military Regions (MR) as shown in Figure 2. Each MR has its own component of FAR ground forces led by a Laotian general.

The war in Northern Laos was primarily fought in Military Region 2. Operations in this area centered on a 130-mile long contested battlefield with each side established in a stronghold at the ends. To the northeast in Sam Neua province are the Pathet Lao and NVA. To the southwest at Long Thieng are General Vang Pao's CIA-financed Hmong forces. The battlefield between them is the PDJ. Each dry season (September to March) found the communist on the offense pushing west toward the PDJ. As the offensive progressed to the west, long lines of communication became vulnerable to interdiction by air or guerrilla infiltration causing the North Vietnamese to approach a culminating point and stalling their offense. The wet season (May-September) caused the initiative to go over to the

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[41] Ibid., and Blaufarb, 160-161.

[42] Hamilton-Merritt, 74-75.

[43] Dommen, *Conflict in Laos,* 305.

[44] Blaufarb, xii and Morrocco, 29.

RLG. The intractability of the roads together with friendly air support caused the enemy to retreat back into its sanctuaries near the North Vietnamese border. The North Vietnamese spent the season building up supplies in preparation for the next dry season when the cycle is repeated. [45]

During his watch (1964-68), Ambassador William Sullivan gradually increased operations against an aggressive North Vietnamese threat. The Hmong infantry grows to about 40,000 troops. From 1965 until 1968 the war in northern Laos was a military stalemate. Each dry season saw the communist offensive across the PDJ followed during the subsequent wet season with an Hmong counter-offensive. Since the Hmong were lightly armed and depended on airpower for mobility and fire support, they opted for a defensive guerrilla strategy, using time and space in defensive operations against enemy offenses. Civilian villages left behind enemy lines provided a valuable intelligence network against North Vietnamese location and supply routes. During enemy withdrawal, the Hmong exploited their advantage in mobility and fire support to attack the enemy. Sullivan's war depended on "good comm, rapid mobility, intrepid hill-fighters, and friendly village population." Despite a massive interdiction campaign in the panhandle, the US was unsuccessful in stopping the flow of North Vietnamese supplies. Neither could it force the North Vietnamese out of Laos. Consequently, a slow escalation in US aid resulted in a military stalemate and the slow attrition of its surrogate force, the Hmong tribesmen.[46]

Air Operations. In 1964, US involvement in Vietnam expanded dramatically. Intent on stopping the flow of supplies from North Vietnam to the South, the US began bombing the Ho Chi Minh Trail in southern Laos. This operation was the first air campaign of the war and began as BARREL ROLL on 14 December 1964. BARREL ROLL continued through the duration of US involvement in SEA. Later with the start of ROLLING THUNDER the objective of BARREL ROLL was to punish North Vietnam and make continued support of the Viet Cong insurgents unproductive. By June 1965, it was apparent that the limited bombing operations of BARREL ROLL failed to deter North Vietnamese transit through Laos and the operation was divided into two air campaigns: STEEL TIGER, to interdict North Vietnamese supply routes to South Vietnam in the panhandle of Laos; and BARREL ROLL, to support RLG ground forces fighting Pathet Lao and North Vietnamese regulars in northern Laos. In exchange for allowing

[45] Department of the Air Force, Headquarters 7/13 AF End-of-Tour Report of Major General Dewitt R. Searles, USAF, 1 July 1971 to 8 September 1972, Udorn, Thailand, 9 September 1972, 11.

[46] Sullivan, *Obbligato,* 210-212.

these operations, the Souvanna Phouma government requested additional covert US aid and bombing operations in northern Laos.[47]

Air operations in Laos had a dual nature due to political and military considerations. Each required a different application of airpower. First, STEEL TIGER, was a war of interdiction waged by a military organization in support of the ground war in Vietnam. The other war, BARREL ROLL, was direct air support of the indigenous forces waged by the Ambassador. Both wars depended on the same USAF tactical air resources.[48]

A New Course of Action

By November 1968, Laos was engulfed in complete chaos. The RLG was in dubious control of the country and enthralled in a five-year civil war against the Pathet Lao and the North Vietnamese who controlled about two-thirds of the terrain. The FAR was barely able to defend itself let alone protect the Kingdom. CIA-trained indigenous minorities were taking the fight to the enemy along with CIA-financed Thai-mercenaries, however, the situation in northern Laos remained a military stalemate. Chinese road crews were building a road across the northern part of the country. Thousands of refugees were displaced from their homes due to the war. Meanwhile, representatives from each side of the conflict conducted business in Vientiane as if the war did not exist.

On 31 October 1968, President Johnson suspended the bombing of North Vietnam, unable to coerce the North Vietnamese out of South Vietnam. US policy shifted toward withdrawal and turning the fight over to the South Vietnamese. To protect US servicemen during the pullout and give the South Vietnamese time to assume a greater role in their conflict, interdicting the flow of North Vietnamese supplies to South Vietnam became the new US military strategy. Accordingly, due to the increased availability of attack sorties, focus of the air war turned to Laos and interdiction of the Ho Chi Minh Trail. The US pursued a new military course of action.

BARREL ROLL operations intensified to protect the northern flank of STEEL TIGER and maintain the "neutral" RLG that supports US operations in the panhandle. Despite its low priority, BARREL ROLL competes for a share of diminishing tacair resources until the end of the war. This then became the US military strategy and the course of action pursued in BARREL ROLL between 1 November 1968 and 23 February 1973.

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[47] Dommen, *Laos*, 89.

[48] Lofgren and Sexton, 5.

With this background information on the conflict in Laos, along with an overview of the strategic elements–US policy, strategy, and military situation–we are now ready to look at the operational level of the conflict. This examination will be organized using a campaign plan format.

CHAPTER THREE

THE AIR CAMPAIGN PLAN

A series of related military operations aimed at attaining common objectives, normally in a finite period of time and which can achieve strategic results. [49]

—Definition of a campaign

A plan for a connected series of joint air operations to achieve the joint force commander's objectives within a given time and theater of operations.[50]

–Definition of a joint air operations plan

The five parts of an air campaign plan as defined in the "JFACC Primer" are listed in Table 3. No single historical document exists that constitutes the BARREL ROLL air campaign plan. Instead, fragments of historical evidence are assembled here to provide an indication of which elements of the air campaign plan existed. Some

Table 3: Elements of a Campaign Plan

	Plan Name	
	Command Relationship	
I	Situation	• *Strategic Guidance* • *Enemy Forces* • *Friendly Forces* • *Allied Forces*
II	Mission	
III	Air Operations	• *Strategic Concept* • *Phasing* • *Coordination*
IV	Logistics	
V	Command, Control, and Communications	• *Command* • *Communication*

[49] DoD, Joint Publication 1-02, "Department of Defense Dictionary of Military and Associated Terms," 23 March 1994, 60. The "JFACC Primer" gives this definition of a campaign in an airpower context. The Joint Pub 1-02 defines "campaign" as "a series of related military operations aimed at accomplishing a strategic or operational objective within a given time and space. Since the principal focus of this study is the airpower contribution to the war in northern Laos, we will refer to BARREL ROLL as an air campaign, noting that current joint doctrine does not recognize this concept.

[50] DoD, "Command and Control for Joint Air Operations," GL-6. The definition for "joint air operations plan" has been approved for inclusion in the next publication of Joint Pub 1-02, "DOD Dictionary of Military and Associated Terms." Although the "JFACC Primer" uses the term "Air Campaign Plan," the recently released Joint Pub 3-56.1 defines a "Joint Air Operations Plan" as the air plan in support of the theater "Campaign Plan." According to joint doctrine there is only be one campaign plan, which is the domain of the theater commander. The component portions of the campaign are referred to as joint (air, land, or naval) operations plan.

elements of the air campaign were initially formalized, but most evolved over the course of the conflict.[51] By reviewing the historical data in context of the elements of the air campaign plan, an answer to the question, "Did BARREL ROLL constitute an (implicit) air campaign plan?" can be found.

Theater Air Campaign Plan: BARREL ROLL (1 Nov 68 - 21 Feb 73)

The area of operation was principally northern Laos but the campaign also included the area know as STEEL TIGER WEST as shown in Figure 3. The STEEL TIGER EAST area involved the interdiction effort against the Ho Chi Minh trail and was not included as part of this campaign.

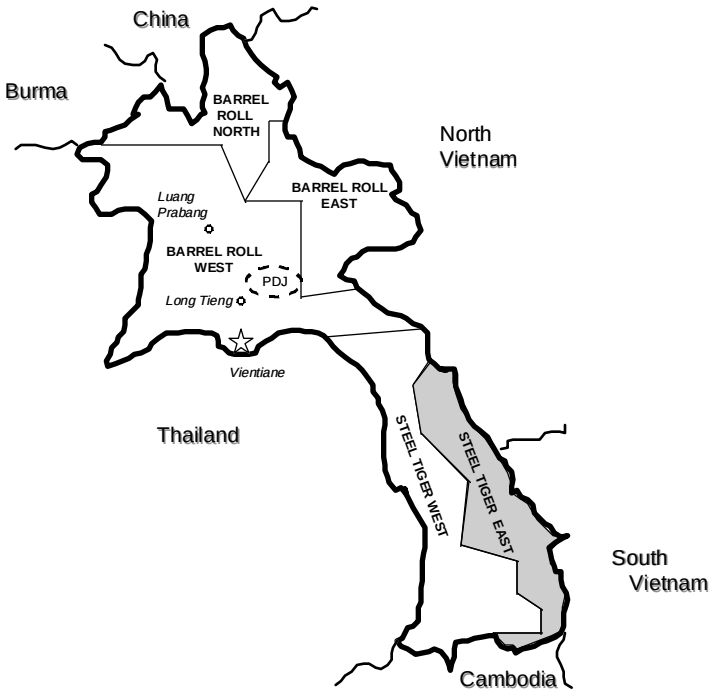

Figure 3: BARREL ROLL and STEEL TIGER Areas of Operation in Laos

[51] Primary sources used were holdings of the USAF Historical Research Agency and the Air University Library. The interview of participants would add valuable detail and follow-on research should definitely seek first hand witnesses, participants, and decision makers for their views and perspectives.

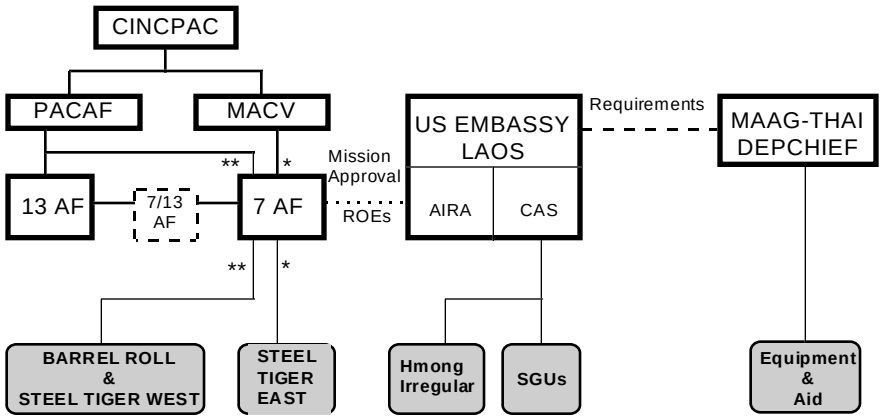

Figure 4: Command Structure for Laos Operations

Command Relationship:

As shown in Figure 4, a complex command relationship existed due to the military and political aspects of the campaign. USAF managed all tacair resources employed in Laos. All USAF and Navy tactical aircraft were under the operational control of Headquarters, Pacific Air Forces (PACAF). PACAF exercised operational control through Headquarters, Seventh Air Force at Tan Son Nhut Air Base in South Vietnam and retained operational control of all tacair sorties flown into Laos, to include BARREL ROLL and STEEL TIGER WEST. Meanwhile, the Military Assistance Command Vietnam (MACV) exercised operational control of tacair sorties flown into South Vietnam and STEEL TIGER EAST through Seventh Air Force.[52]

A Kennedy directive in 1962, placed the US Ambassador in Vientiane in charge of all US activities in Laos. Effectively, the Ambassador was the Joint Force Commander in Laos. The Embassy and staff organized to conduct a covert war. The Ambassador submitted and validated targets for strike and approved all strikes in Laos. He controlled the air war using a set of stringent rules of engagement. Within the Embassy were several agencies that advised the Ambassador on the war effort. Controlled American Source (CAS) was the pseudonym for the CIA. CAS directed the ground war by training and advising the Hmong and Thai SGU forces. The Air Attaché office (AIRA)

[52] Searles, End-of-Tour Report, 1-7; Liebchen, 25-27; and, Department of the Air Force, Headquarters 7/13 AF End-of-Tour Report of Major General Andrew J. Evans, Jr., USAF, 16 October 1970 to 30 June 1971, Udorn, Thailand, 30 June 1971, 2-3.

advised the Ambassador on the employment and use of airpower. Finally, the Deputy Chief, Joint US Military Assistance Advisory Group Thailand (DepChief) located in Bangkok was responsible for the Military Assistance Program.[53]

The last organization, Deputy Commander, 7th/13th Air Force at Udorn AB exercised administrative control over all Thai-based USAF units. Without operational control, it served principally as a conduit between the American Embassy and Headquarters, Seventh Air Force.

Situation

The bombing halt of North Vietnam made interdiction of the Ho Chi Minh trail the principal military strategy for limiting enemy activity in South Vietnam. Consequently, access to the country of Laos was crucial to US objectives in SEA. This access was dependent on a RLG favorable to US interests. Since the fate of Laos did not depend on a military solution in the air or on the ground in Laos and could only be decided by the outcome in Vietnam, winning the war against the North Vietnamese in northern Laos was *not* the objective. Instead, maintaining access to the country was paramount and keeping the RLG in power became the primary objective of BARREL ROLL.[54]

Strategic Guidance. The US desired to remain within the provisions of the 1962 Geneva Agreement as much as possible. In addition, the RLG desired complete deniability of US actions in Laos. Therefore, military involvement in Laos required all activity be conducted covertly. With limited control over the employment of air strikes and the need for deniability, the Ambassador employed strict Rules of Engagement (ROE) to govern air operations in Laos. The ROEs were necessary to balance the application of force within the delicate political and military situation. The presence of Chinese and Russian diplomats, friendly villages, and refugees also dictated strict control over the use force.[55]

Enemy Forces. The enemy's capability to employ air in Laos was very limited. Following the cessation of US bombing in North Vietnam, MIGs were an occasional but insignificant threat to US air operations in Laos. The

[53] Lofgren and Sexton, 5.

[54] Blaufarb, 164 and Ambassador Sullivan to Senate Foreign Relations Committee Hearing, U.S., *Laos Hearings*, 398.

[55] Department of the Air Force, Oral History Interview, Colonel Paul Pettigrew, USAF, 5 March 1970, Maxwell AFB, Alabama, 9-10.

principal enemy threat to air operations was on the ground. These consisted of anti-aircraft defenses that target friendly tacair and the capture of Lima Sites that deny air mobility of friendly forces. [56]

Ground forces consisted of Pathet Lao guerrillas operating principally in Military Region 2 and North Vietnamese regulars and advisors. By 1971, about two divisions of NVA (approximately 16,500 troops) were in Military Region 2. The supplies must be portered and estimates state that four porters were required to sustain every man engaged in combat. Consequently, of the 16,500 troops, approximately 3,000 were actually combatants at the front lines. The North Vietnamese had the capability to employ sufficient combat power to defeat RLG forces; however, such an operation would have risked escalation of force by the US with the possibility of US ground combat troops. This was counter to their objectives. Accordingly, they employed only sufficient force to maintain at least a stalemate in northern Laos. [57]

As a conventional road-bound army, the enemy ground forces were dependent on resupply using long vulnerable lines of communications during the dry-season offensive. This was an enemy operational-level center of gravity. To mitigate this liability, the enemy used North Vietnam, now safe from US aircraft, as a sanctuary to stockpile resources and continually upgraded the road infrastructure in Laos. These two actions indicated a new intent to sustain forward locations through the wet season.

Friendly Forces. The US provided the preponderance of attack sorties and all airlift support for the war in Laos. Principal USAF air assets available were located in Thailand and South Vietnam. Limited US naval air were available from carriers in the Task Force 77. At the start of the campaign in December 1968, approximately 700 USAF strike aircraft were in theater and available for employment. During the period, consistent with President Nixon's withdrawal strategy, USAF aircraft began to depart SEA. Consequently, available tacair resources decreased throughout the four-year period of the campaign. During this drawdown, the RLAF assumed an increasing share of the

[56] An action in 1968 demonstrates the state of North Vietnamese capabilities to employ air in support of ground objectives in Laos. On 12 January 1968, two Soviet built AN-2 Colt biplanes conducted an attack on Phu Pha Thi (Lima Site 85) with minimal results. The site was located about 20 miles from the North Vietnamese border, just 160 miles west of Hanoi. It contained USAF navigation equipment used to help AF aircraft bomb North Vietnam. The AN-2 Colts dropped converted 120mm mortar rounds and fired machine guns and inflicted minor injuries and damage to the facility. Both airplanes were shot down and the damage inflicted to the site was minimal. One aircraft was shot down by an Air America UH-1 helicopter while the other crashed trying to evade. See Castle, 94-95, and Carl Berger, ed., *The United States Air Force in Southeast Asia, 1961-1973: An Illustrated Account,* 2d ed., (Washington: Office of Air Force History, 1984), 126.

[57] Lofgren and Sexton, 5-6; Dommen, *Conflict in Laos,* 386; and Pettigrew, Oral History Interview, 34.

Table 4: USAF Attack Aircraft in SEA[58]

Base	30 Dec 68	30 Dec 71	30 Dec 72
S. Vietnam			
Bien Hoa	60	–	5
Binh Thuy	4	–	–
Cam Ranh Bay	49	–	–
Da Nang	59	62	15
Nha Trang	9	–	–
Phan Rang	84	–	–
Phu Cat	3	–	–
Pleiku	22	–	–
Tan Son Nhut	–	9	–
Tuy Hoa	74	–	–
Total	428	62	20
Thailand			
Korat	54	52	122
Nakhon Phanom	56	30	–
Takhli	55	–	47
Ubon	76	101	119
Udorn	40	42	121
Total	281	287	409
Grand Total	709	287	429

attack sortie tasking. Table 4 shows the Air Order of Battle at the start of the campaign in 1968, prior to the North Vietnamese invasion of South Vietnam in 1972, and near the end of the campaign in 1973.

As previously stated, suspension of bombing operations against North Vietnam provided more sorties for employment in the Laotian theater. Slow moving aircraft were especially well suited for the kind of war encountered in Laos, but as air defense threats increased these aircraft became more vulnerable. In response, jet aircraft were employed for survivability with a corresponding tradeoff of decreased effectiveness. Tactical aircraft used in BARREL ROLL for strike operations included USAF A-1, B-57, F-105, F-4, F-100, and F-111. Gunships–AC-47, AC-119, and AC-130–were employed for truck interdiction and night air support to defend Lima Sites. The O-1, O-2, U-17, T-28, and OV-10 were used to provide visual reconnaissance and strike control. B-52 ARCLIGHT sorties were occasionally employed beginning in February 1970 against tactical targets with operational level results.

[58] Data compiled from Department of the Air Force, "Summary of Air Operations," December 1968 to January 1972.

Combat missions included interdiction, support of friendly ground troops, and armed reconnaissance. Apportionment of sorties for SEA was determined by Seventh Air Force with a recommendation from MACV and 7/13 Air Force.[59]

No US ground combat forces were stationed in-country, however, about 200 military advisors assisted the embassy and RLG military.[60]

Allied Forces. The RLAF was equipped with T-28s and AC-47s. RLAF strike sorties tripled from 10,000 T-28 combat sorties in 1968 to over 30,000 in each year, 1970, 1971, and 1972.[61]

The Laotians provide all ground forces that fight in-country. Ground forces consist of the Royal Lao Army (FAR), the Neutralist Army (FAN), Hmong Irregulars, and Special Guerrilla Units (SGU). The FAR and FAN quality and motivation are far short of the standard required to deal with Pathet Lao and North Vietnamese Army. These forces were unable to conduct offensive operations and reluctant to conduct guerrilla warfare. The brunt of the ground fighting is borne by the Hmong tribesmen and SGU who become an air mobile guerrilla force. These forces were light but skilled in guerrilla tactics, collecting intelligence, and operating behind enemy lines. They were not suited to hold ground against a determined conventional attack.[62]

The allied ground forces contributed to the strategic objectives by performing the following tasks: sealing off the southern Mekong Valley, thus providing a buffer for Thailand; insulating the Vientiane government from direct communist threat; draining North Vietnamese manpower and resources; and, interdiction of the northern approaches to the Ho Chi Minh Trail.[63]

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[59] Ibid. and Searles, End-of-Tour Report, 7-9.

[60] As of September 1969, approximately 950 personnel were stationed in Laos as part of the US war effort. Ambassador William Sullivan, in testimony to a Senate Foreign Relations subcommittee in 1969, provided the following breakout. On the Embassy staff: Department of State, 59; Marine Guards, 15; direct hires for US Agency for International Development (USAID), 338; US Information Service (USIS), 19; and, Military Attaché, 127 for a total of 558. Contract personnel included 53 international voluntary service personnel; Air America, 207; and, Continental Air Service, 73 for a total of 333. The Military Attaché numbers included the Project 404 special forces augmentation, but did not include 91 additional military personnel on temporary duty for up to six months in Laos. These 91 plus the 127 attached to the Military Attaché results in 218 military personnel in-country during this period. See U.S., *Laos Hearings*, 369.

[61] Data compiled from Pratt, "The Royal Laotian Air Force: 1954-1970," Figure 12 and Department of the Air Force, "Summary of Air Operations," January 1971 to December 1972.

[62] Seith, End-of-Tour Report, tab E, 1,5.

[63] Blaufarb, 161.

The SGUs were very dependent on air support. The Pathet Lao and NVA outnumbered RLG forces, therefore, airpower provided a tactical equalizer to the enemy. Airpower offered the ground forces mobility, static defense, reconnaissance, and long-range fire support. It was an operational center-of-gravity of the allied ground forces.[64]

Mission

The mission of US air forces was to conduct air operations in support of the RLG by: 1) the interdiction of supplies moving through northern Laos, and 2) providing air support for RLG ground forces fighting insurgents in BARREL ROLL and STEEL TIGER WEST. RLAF forces assist in support of FAR and irregular troops.[65]

Air Operations

Strategic Concept. The primary objective of the campaign was to keep the neutralist government and political solution in place. This was accomplished by providing support to ground forces and interdicting enemy forces in northern Laos, thus preventing the destruction of irregular combatants and denying the Pathet Lao and NVA additional territory and population.[66]

Force applied must be consistent with US objectives and must balance between two thresholds. Too much force would escalate the war beyond an upper threshold that would cause the North Vietnamese to further escalate force or lead to intervention of Chinese ground forces. In addition, escalation of the violence would force the RLG to seek a negotiated settlement with the Pathet Lao that would be unfavorable to the US–subsequent termination of all air operations in Laos. Insufficient force, below a lower threshold, would result in the destruction of Vang Pao and RLG forces threatening the population centers of the Mekong Valley. In this situation the RLG would transform into a government with stronger representation or even dominance by the Pathet Lao. Likewise, this alternative would be unfavorable to the US for the same reasons. Therefore, the amount of force applied must respond to the political and military situation in Laos, but remain between the two thresholds.

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[64] Searles, End-of-Tour Report, 11.

[65] Liebchen, 24-26; Pratt, "Royal Lao Air Force," xix-xx; Seith, End-of-Tour Report, tab B, 1; and Department of the Air Force, "Rules of Engagement, October 1972-August 1973," Project CHECO Report, Captain William R. Burditt, Hickam AFB, Hawaii: Headquarters, Pacific Air Forces, 1 March 1977, 9.

[66] Blaufarb, 164 and Burditt, 9.

Phasing. The campaign can be divided into three distinct phases. Each phase was characterized not only by a different approach to achieving the objectives and the declining availability of US tacair resources, but also by the operational situation in Laos and South Vietnam.

***Phase I (November 1968 to July 1970) -- Offensive*.** During this period USAF provided air support for the RLG ground forces to maintain the tempo of combat operations dictated by the traditional seasonal pattern. The period was characterized by an escalation in force by both sides. In 1969, assisted by a large increase in air support, Vang Pao's forces in MR 2 made their deepest penetration into Pathet Lao/NVA territory. The NVA brought in additional forces and during the following dry season pushed the Hmong back past the PDJ and threatened Long Thieng, the MR 2 headquarters. War weary and facing a strong enemy conventional force, Vang Pao must call up 13 and 14 year olds. The siege of Long Tieng was broken with the aid of US air strikes, B-52 bombing, and additional Thai mercenaries.[67]

From the summer of 1970 until the end of the war in February 1973, a tactical stalemate resulted on the battlefield along almost the original 1962 cease fire lines. The Hmong defended against sieges around the Laotian tactical centers of gravity, Long Tieng and Luang Prabang. The NVA with the benefit of an improved road structure and the safe supply lines within North Vietnam, continued the pressure around both sites. Only US tacair kept the Hmong in the field and the RLG in power.[68]

Phase II (August 1970 to March 1972) -- Defensive. The seasonal pattern of ground combat in northern Laos that has occurred every year since 1962 was broken in 1970. Instead of withdrawing east, the enemy held onto the territory it gained during the dry season offensive. A MACV concept paper in August 1970, initiated this phase of the campaign by reflecting a Washington SEA policy to disengage from direct offensive combat and reduce US casualties. The document states that the US objective remained the maintenance of a neutral buffer in Laos between Thailand and North Vietnam/China; however, it recognized the enemy had the capability to take over all of Laos and Cambodia. The loss of Cambodia was determined to be of greater significance than the loss of Laos. Consequently,

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[67] Blaufarb, 162-163.

[68] See Department of the Air Force, "Air Support of Counterinsurgency in Laos July 1968-November 1969," Project CHECO Report, Major John C. Pratt, USAF, et. al., Hickam AFB, Hawaii: Headquarters Pacific Air Forces, 10 November 1969; Department of the Air Force, "Air Operations in Northern Laos 1 November 1969-1 April 1970," Project CHECO Report, Kenneth Sams, Lieutenant Colonel John Schlight, USAF, and Major John C. Pratt, USAF, Hickam AFB, Hawaii: Headquarters Pacific Air Forces, 5 May 1970; and, Department of the Air Force, "Air Operations in Northern Laos 1 April-1 November 1970," Project CHECO Report, Lieutenant Colonel Harry D. Blout, USAF, Hickam AFB, Hawaii: Headquarters Pacific Air Forces, 15 January 1971.

airpower was employed in Cambodia. Public awareness of US activity in Laos, due to Congressional hearings and President Nixon's disclosure of the conflict, further limited the force that can be applied.[69]

Despite General Vang Pao's desire to attack enemy positions (as in previous years), the ground situation became defensive. The US employed sufficient support to defend the area around the Military Region 2 headquarters, Long Thien/Moui Soui, and the capital at Luang Prabang. When enemy strength on the ground increased, the US air forces surged to provide additional air support to maintain the ground held by RLG forces and prevent the further loss of territory.

The enemy offensive in 1970/71 dry season was stronger and the NVA put enormous pressure on Long Tieng. Employment of air again broke the enemy's determination and the site remained in RLG control.[70]

Political and fiscal decisions in 1971 further limit US air support in SEA. This decreasing pool of tacair resources was spread thin between South Vietnam, Cambodia, STEEL TIGER, and BARREL ROLL. The reduction in airpower made close coordination of air and ground operations vital to extract the maximum effectiveness from every sortie. Accordingly, more attack sorties were dedicated to Raven FACs who selected the targets and directly employed airpower. Some officers at Seventh Air Force felt this violated the doctrine of centralized control by making airpower reactive to the ground battle. Nevertheless, sufficient air was effectively employed to defend RLG positions throughout the phase.[71]

Phase III (April 1972 to February 1973) -- Withdrawal. Once the decision was made to begin withdrawing forces from SEA, airpower was employed to cover the withdrawal of US forces and be in a posture to support renewed fighting in South Vietnam (by increasing the tempo of activity against the trail and keeping pressure on activity in northern Laos).

The invasion of South Vietnam by NVA in March 1972 brought additional tacair resources back to the theater. The tempo of air operations in Laos increased to support the defense of South Vietnam with the priority of air

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[69] See Department of the Air Force, "Air Operations in Northern Laos 1 November 1970-1 April 1971," Project CHECO Report, Lieutenant Colonel Harry D. Blout, USAF, and Mr. Melvin F. Porter, Hickam AFB, Hawaii: Headquarters Pacific Air Forces, 3 May 1971 and Lofgren and Sexton, 29.

[70] Blout and Porter, 5.

[71] Budget limitations on air support to SEA are 10,000 tacair, 1,000 B-52, and 750 gunship sorties/month. This is a 50% reduction over the previous year. Lofgren and Sexton, 6, 34-35.

support going to North and South Vietnam, Cambodia, then STEEL TIGER EAST. Following the reinitiation of US bombing in North Vietnam, the NVA in northern Laos lacked sufficient strength to reinitiate a strong offense against Long Tieng and Luang Prabang. However, they were able to hold territory and were well postured for the peace negotiations.[72]

Coordination. The target selection and approval process evolved over the course of the campaign. Initially, target recommendations for strike were submitted to the Ambassador for approval. Approved targets were then forwarded to Seventh Air Force through 7/13 Air Force. The mission was scheduled based on available assets and other SEA priorities. The process required up to five days to complete and did not exploit the flexibility of air power. The number of organizations involved, the political sensitivity, and the covert nature of the war further complicated effective targeting and efficient use of strike aircraft. In response, several methods were devised to enhance the targeting process. These included the use of strike boxes, quick reaction alert strike aircraft, and improved coordination between agencies.[73]

Administration and Logistics

Several aspects of logistics were important for the conduct of the BARREL ROLL air campaign. These included the Military Assistance Program, the use of Lima Sites, and contract airlift support.

Military Assistance Program. The US military assistance program (MAP) provided the Laotian military with equipment and advisors. Between 1962 and 1973, a total of $1.4 billion dollars of aid was provided. To support US objectives in Laos the DepChief intent was to build "an effective Air Force within Laos, while simultaneously supporting active combat operations within the country." The American advisors did an effective job training the Laotians in technical skills, for example, flying and aircraft maintenance, but by 1970 the greatest deficiency in the RLAF was command, control, and middle management. The operational nature of the war dictated that US personnel perform these duties precluding RLAF personnel from learning on the job. Consequently, despite

[72] Department of the Air Force, "The Air War in Laos, 1 January 1972-22 February 1973," Project CHECO Report, Major William W. Lofgren, Jr., USAF, Hickam AFB, Hawaii: Headquarters Pacific Air Forces, 15 October 1974.

[73] From the ambassador's viewpoint, these criticisms did not reflect a "big picture" view of the world and the situation in Laos. In Ambassador Sullivan's opinion, the nature of the war in Laos made these inefficiencies necessary to attain US objectives. See Sullivan, Oral History Interview, 10-15.

becoming an effective fighting force, the RLAF lacked some vital components necessary to continue the fight after the US withdraws.[74]

Lima Sites. A system of almost 200 airfields were developed during the early 1960s. Throughout the war, these Lima Sites proved vital to the ground operations of the Hmong irregulars. These sites insured the delivery of aid to indigenous population and refugees, as well as, supplied Vang Pao's forces. By using these sites, the Hmong forces employed guerrilla tactics–attacking the NVA rear and lines of communication. Often built into mountain tops or along hillsides, the Lima Sites provided the ground forces mobility and maneuver. Together with tacair support, the airfields allowed these lightly equipped fighters to execute vertical operations in depth. [75]

Contract air support. Air America, a contract airline was principal to the air campaign by providing airlift within Laos. As a private enterprise providing subsistence to indigenous population, refugee evacuation, and search and rescue, Air America was not prohibited by the Geneva Accords. Obviously, other tasks–such as, the movement of guerrillas, intelligence gathering, and the airlift of munitions and weapons–were not within the intent of the agreement. For this reason, Air America's involvement in the war was strictly covert. Nevertheless, the airlift provided by Air America and other contractors was invaluable to guerrilla operations against the Pathet Lao and NVA forces and movement of population loyal to the Hmong cause.[76]

Command, Control, and Communications

The US Ambassador was responsible for the "overall direction, coordination, and supervision" of US military operations in Laos. He directly controlled the war in BARREL ROLL and STEEL TIGER WEST while delegating targeting and control of the war in STEEL TIGER EAST to Seventh Air Force and MACV. Command and control of USAF tacair was performed using rules of engagements (ROE), Air Operation Centers, and Raven Forward Air Controllers. Command and control was complicated due to the command relationship, the political sensitivity of the conflict, the desire to limit civilian casualties, turnover of personnel in the many organizations providing support,

[74] Liebchen, 171; although MAP is a critical part of the US military strategy in Laos, the amount of aid and the number of organizations involved complicate coordination between each. See Pratt, "Royal Laotian Air Force," xx.

[75] Department of the Air Force, Oral History Interview, Colonel Harry C. Anderholt, USAF, 5 March 1970, Maxwell AFB, Alabama, 116-119 and Hamilton Merritt, 103.

[76] Liebchen, 21,22; Department of the Air Force, Oral History Interview, Lieutenant Colonel Drexel B. Cochran, USAF, 20 August 1969, Maxwell AFB, Alabama, 133; Hamilton-Merritt, 118-123; and, Christopher Robbins, *Air America* (New York: G. P. Putnam, 1979) provides an anecdotal account of the airlift operation.

and the unconventional nature of the war. The following excerpt from a USAF report on the war describes this command and control challenge:

> *USAF FACs were flying secretly from Laos, under the control of the Air Attaché for a Meo [Hmong] ground commander advised by the CIA, to direct strikes by USAF planes based in Thailand under control of a command center in Vietnam.*[77]

Rules of Engagement. The Ambassador employed a well-defined set of ROEs to restrict the employment of US tacair. Each area of operation had different rules. In addition, free strike zones, restricted areas, and special operating areas were established to provide more flexibility for the employment of tacair.[78]

Operations Centers. The war in Laos was controlled through two sets of operating areas. The ground and RLAF effort was divided into five Military Regions each with its own ground forces and air force squadron. Each region had an Air Operations Center to control the employment of RLAF resources in that Military Region. Each Air Operations Center was staffed with USAF advisors who coordinate the air-ground operations in that Military Region.[79]

The US tactical operating areas were subsets of BARREL ROLL (that is East, West, and North) and STEEL TIGER (East and West) areas. Each area had a specific ROE for employment of tacair.[80]

Ravens. In 1968, the Ambassador requested the deployment of combat experienced USAF forward air controllers (FAC) to control the employment of US tacair. Ravens were volunteers with 500 combat flying hours (usually 6 months) experience as a FAC in Vietnam. They were assigned directly to the Air Attaché and operated in Laos covertly for a tour length of six months. Small groups of Ravens were attached to the Air Operations Center of each of the five Military Regions. The Ravens exercised decentralized control of airpower by formulating their own plans and operations to support the ground campaign in each Military Region. Raven FACs assisted in the

[77] Blout, 5.

[78] See Burditt for details of ROE during October 1972 to August 1973 timeframe.

[79] Searles, End-of-Tour Report, 4.

[80] Lofgren, 42.

management and control of airpower in that area. Over the course of the campaign, they directly control and employ between 1/3 and 2/3 of the tacair sent to BARREL ROLL.[81]

This air campaign plan for BARREL ROLL supported US strategy and policy in Laos and SEA. The operational-level concept dictated tactical action and specific targets in support of US objectives. This information provides the "how" of BARREL ROLL. The next task is to analyze the results and costs of the campaign.

[81] Blout, 5; Pettigrew, 60; for a first hand account of Raven activity see Christopher Robbins, *The Ravens: The Men Who Flew in America's Secret War in Laos* (New York: Crown Publishers, Inc., 1987).

CHAPTER FOUR

ANALYSIS

> *The military student does not seek to learn from history the minutiae of method and technique. In every age these are influenced by the characteristics of weapons currently available and the means at hand for maneuvering, supplying, and controlling combat forces. But research does bring to light those fundamental principles, and their combinations and applications, which, in the past, have produced success.*[82]
>
> —General Douglas MacArthur

> *The idea that superior air power can in some way be a substitute for hard slogging and professional skill on the ground is beguiling but illusory. Air support can be of immense value to an army; it can fight–and not only defensively–in the face of almost total air superiority.*[83]
>
> —Air Marshal Sir John C. Slessor

At the time of the cease fire at 2400 hours on 21 February 1973, the NVA controlled approximately two-thirds of the land area of Laos and one-third of the population–virtually the same situation that existed at the cease fire in 1961. Over a four-year period, the expenditure of approximately 1.7 million tons of ordnance and 401,296 tacair sorties resulted in no net gain in terrain or population from the enemy. However, the RLG remained in power and the legitimate government of Laos.[84]

Having focused on the "why," "what," and "how" of BARREL ROLL, the two questions that remain are: "How much resource is applied?" and "Was BARREL ROLL effective?" The answer to these questions must consider the strategic objectives, the campaign objectives, the cost, and the results. This section will analyze the air campaign from a perspective of airpower effort, effects, and effectiveness.

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[82] Lieutenant Colonel Charles M. Westenhoff, USAF, *Military Air Power: The CADRE Digest of Air Power Opinions and Thoughts* (Maxwell AFB, Alabama: Air University Press, 1990), 11.

[83] Ibid., 47. Air Marshall Slessor was a War World I pilot and the architect of British air strategy in World War II, 212.

[84] Department of the Air Force, "Summary of Air Operations," February, 1973, 1-1. Totals are shown for BARREL ROLL and STEEL TIGER during the period 1 November 1968 to 28 February 1973. Ordnance total includes all US tacair and B-52, but not Royal Lao Air Force or Vietnamese National Air Force. The breakout by area of operations for the same period is 316,880 tacair sorties to STEEL TIGER and 84,416 tacair sorties for BARREL ROLL. Tacair ordnance is 955,544 tons and B-52 is 743,703 tons. Data obtained from Department of the Air Force, "Summary of Air Operations" for November 1968 through February 1973.

Airpower Effort, Effects, and Effectiveness

To answer the questions of cost and results, consider the employment of airpower in BARREL ROLL from three aspects: effort, effects, and effectiveness. Each of these three dimensions has tactical, operational, and strategic

Table 5: Airpower Effort, Effects, and Effectiveness

		STRATEGIC	OPERATIONAL	TACTICAL
COST	**EFFORT**	• National Resources allocated to the theater/conflict • Type of weapon systems/ ordnance committed	• Theater assets allocated to a campaign • Apportionment • Allocation • Losses	• Resources allocated to a specific task • Number of aircraft for a target or in a strike package • Ordnance expended against a target • Sorties flown
RESULTS	**EFFECTS (direct)**	• Destruction/damage of a target with strategic level consequences • *Target examples*: Critical industry, Government, National leadership, Weapons of Mass Destruction	• Destruction/damage of a target with operational/theater level consequences • *Target examples*: Supply depots, Corps headquarters, TACC, C^3 nodes	• Destruction/damage of a target at the tactical level • *Target examples*: Tank, bridge, runway, road cut, troops, buildings, air defense sites
	EFFECTIVENESS (indirect)	• Achieves national objectives • Enemy defeated	• Achieves campaign objectives • Enemy terminates a seasonal offensive	• Decides outcome of a battle

components. Table 5 summarizes this concept and provides examples for each dimension.[85]

Cost of Airpower. The *cost* of a campaign is a question of resource allocation and effort. With limited resources or competing military tasks, effort reflects priority. Effort translates available resources into the accomplishment of military tasks. Airpower effort considers the number and types of assets made available for employment. In its simplest form, the number of tactical aircraft deployed to SEA defines the strategic effort. The number of sorties these aircraft are capable of generating provides an indication of the priority of the objective. At the operational level, effort is measured in the amount of resources allocated for a campaign or to achieve theater

[85] Mr. Barry D. Watts and Dr. Thomas A Keaney provided the inspiration for these dimensions in *Gulf War Air Power Survey*, (Washington: U.S. Government Printing Office, 1993), vol. 2, pt. 2, 27-57. They define airpower effects and effectiveness as described here. I expanded the concept to include effort along with the three dimensions of each of the aspects of cost and results.

objectives. The apportionment or allocation of sorties is an operational level measure of effort.[86] Finally, effort at the tactical level may be viewed as the number of sorties against a target or the number of aircraft in a strike package. The expenditure of resources on the battlefield will determine the effort applied to accomplish an objective. Effort must be compared to effects and effectiveness and vice versa because some minimum level of resource exist below which objectives, whether tactical, operational, or strategic, cannot be achieved.

Direct versus Indirect Effects. The results of airpower strikes are direct and indirect. The implication of direct results relates to the *effects* of airpower, while the indirect results are considered the *effectiveness* of airpower. Airpower *effects* are the immediate outcome of the employing airpower against a target of significance to the enemy. The physical destruction or damage of the target is a "first-order" result of airpower. Because targets can be strategic, operational, and tactical, the destruction of the target will influence the conflict at these three levels. For example, the destruction of a single tank is the tactical effect of airpower, but the destruction of a division of tanks will remove that unit from the battlefield and has operational consequences. Likewise, the destruction of several operational targets may result in strategic effects.

Airpower *effectiveness* is the "second-order" or indirect outcome of the employment of airpower. These are not often directly apparent as they deal with objectives. Like effort and effects, effectiveness plays at the three levels of warfare. If airpower decides or influences the outcome of a battle, it has tactical effectiveness. Take the destruction of the enemy's armor, for example. The destruction of 8 tanks is the effect of airpower but if the loss of this armor forces the enemy to withdraw or terminate an offensive, that result measures airpower's effectiveness. Measuring effectiveness is most evident in terms of objectives achieved. If a national objective is attained through the use of airpower, then airpower effectiveness is obtained.

Airpower because it operates in three levels of warfare provides a unique asset because tactical effort may result in strategic effectiveness. Analyzing BARREL ROLL in terms of these three aspects will assist in formulating a conclusion as to the success and effectiveness of the air campaign.

[86] DOD, Joint Pub 3-56.1, "Command and Control for Joint Air Operations" defines apportionment as the determination and assignment of the total expected effort by percentage and/or by priority that should be devoted to the various air operations and/or geographic areas for a given period of time. Allocation is defined as the translation of the apportionment into total numbers of sorties by aircraft type available for each operation/task.

Resource Allocation - Measuring Air Power Effort in BARREL ROLL

The lack of complete historical records that delineate specific airpower apportionment data during the course of the campaign, requires we find an alternate measure. Effort is derived by examining the resources committed to the theater, the sorties generated, the sorties allocated by tasks, and the ordnance expended. By analyzing this data, we can draw a conclusion on the issue of cost and priority of the BARREL ROLL campaign.

Resources Available. Table A-1 (p. 55) shows the air order of battle for USAF strike aircraft in SEA during the period of analysis. Figure A-1 (p. 58) displays this information graphically and shows a decline in total available USAF strike aircraft in SEA, which is consistent with the US policy of withdrawal. The data shows a significant decrease in the South Vietnam-based attack aircraft while the level in Thailand remains relatively constant until the 1972 North Vietnamese invasion of the South. The decline in aircraft means that less resources are available in theater and we would assume a decrease in the attack sorties available for tasking to BARREL ROLL.

Sorties Flown. Examining US sorties flown by theater is one aspect of determining priority or effort of BARREL ROLL within the context of the total SEA effort. Table A-2 (p. 56) illustrates these priorities in each phase of BARREL ROLL by showing the relative distribution of attack sorties throughout SEA for each period. The table indicates that BARREL ROLL was the third overall SEA priority until Phase 3 when the North Vietnamese invaded South Vietnam. During Phase 3, 80% of the tacair was employed in Vietnam, and BARREL ROLL is the lowest priority in SEA next to Cambodia. The other significant conclusion is that the amount of effort applied toward Laos during Phases 1 and 2 of BARREL ROLL is indicative of the area's importance during this time frame. Overall, for the 52-month campaign, BARREL ROLL received 10% of the total US tacair effort of SEA. Thus, effort, in terms of attack sorties flown, show BARREL ROLL to be a low SEA priority during the four year period.

Ordnance Delivered. Looking at ordnance delivered (Table A-3 and A-3a, p. 57) provides a similar indication of effort. The available data does not distinguish between BARREL ROLL and STEEL TIGER, however the trends are somewhat similar to the attack sorties flown. Nevertheless, looking at the ordnance expended provides another dimension to measure effort. The addition of B-52 strike sorties adds about 2 million tons of ordnance distributed across all theaters and phases and only a minor effect on priority. Laos turns out to be one of the most heavily bombed areas during the SEA conflicts–the large majority of ordnance employed along the trail in STEEL TIGER EAST.

Sorties by task. Some apportionment data for BARREL ROLL was available for the period January 1970 to August 1971, thus enabling some conclusions. Sorties were tasked against three roles: interdiction of trucks and storage areas, distributed to Raven FACs for support of ground forces, and against enemy air defenses. Figure A-4a shows the distribution of US attack sorties. Interdiction was the top priority between June 1970 and February 1971 with approximately 75% of the sorties dedicated to this effort. The period January 1970 to April 1970 and February 1971 to June 1971 finds the support of ground forces as the primary role. This coincides with the seasonal enemy offensive. Both periods were characterized by deeper enemy starting positions, which had not occurred in previous years, along with the use of sieges around Long Tieng and Luang Prabang.

BARREL ROLL was the Third Priority in SEA. Having examined the resources available, attack sorties flown, ordnance delivered by theater, and sorties by task within BARREL ROLL, we conclude that this operation was third in priority behind South Vietnam and the interdiction effort in STEEL TIGER. Once the NVA invade South Vietnam during Phase III, 83% of the attack sorties went to directly support the war in Vietnam and BARREL ROLL draws less than 5% of SEA attack sorties.

Within BARREL ROLL, the air effort is divided between interdiction and support of ground forces with the preponderance of the air being dedicated to the interdiction effort against enemy supply lines. Since this is the enemy's center of gravity, it follows that interdiction of enemy lines of communication is consistent with trying to stop or defeat the enemy's offensive capability.

BDA - Measuring Air Power Effects and Effectiveness of BARREL ROLL

Translating effort into effects is measured by examining targets destroyed in comparison to sorties flown or ordnance expended. In other words, how were the resources expended converted into enemy targets destroyed or damaged. In BARREL ROLL, airpower effects were reported using Bomb Damage Assessment (BDA).

What to Measure. BDA was collected against five target sets: vehicles, buildings, anti-aircraft guns, bridges, and road cuts. BDA was the product of direct observation by the crew of the strike aircraft, the FAC or Forward Air Guide,[87] or by post-strike reconnaissance aircraft or ground team. Results for these targets are shown in Figures A-4 and A-4a (pp. 70-71). Except for the period December 1969 to August 1970, the BDA shows good trend

[87] Forward Air Guides were US or allied personnel who help direct attack fighter sorties to the target from the ground.

correlation with attack sorties flown (also shown on Figure A-4). The Spring of 1970 was a precarious time due to the siege of Long Tieng and many attack sorties were dedicated to support of ground forces. The effect of the interdiction effort against vehicles, buildings, bridges and roads is reflected in these results. Likewise, the effort against enemy air defenses also correlates with the results.

Reporting BDA. Using reported BDA from historical records comes with liabilities. Report of BDA in Laos suffers from the same affliction that the Army experienced with "body count." The management influence of the USAF reduced each strike sortie to its contribution for the war effort. "Truck kills" became a measure of effectiveness. Inflated reports were common. During one year, the number of trucks damaged or destroyed exceeded the total number of trucks in North Vietnam almost by a factor of three. Other reports became equally inflated. Accordingly, recorded BDA may not provide a totally accurate measure of effects and must be used with caution. Since it is the only measure available, BDA is used in relative terms to compare between phases or roles. BDA may not be valid in the absolute, for example, how many total trucks are destroyed during a given period.

Another problem in determining airpower effects is the lack of BDA report from the employment of airpower in support of ground forces. The source of the problem is twofold. First, observations of enemy dead is more difficult than other targets. The second source is the issue of accuracy described above. The forward air guides (FAGs) who help direct strikes often provided BDA following the attack. FAGs reasoned that a higher kill rate would look good for the pilot and FAG at headquarters. The standard BDA was 100 body count, which headquarters began to question and demand a more realistic and accurate count. In one instant a US pilot received a BDA report from a FAG as "You killed ninety-eight bad guy." The pilot replied "Oh come on Pogo. What dya mean, ninety-eight?" After a short silence, Pogo responds with, "Okay, you kill one hundred and two."[88] Because of these problems, more often, only the second-order results of airpower or effectiveness become apparent when air is employed in support of ground forces; that is, the overall results of the engagement in terms of terrain held or taken, sieges broken, or enemy attacks repelled.

Congruence with National Policy - Measuring Airpower Effectiveness

The indirect results of force employment measures airpower effectiveness. Where airpower effects are most apparent at the tactical level (tank destroyed or damaged), airpower effectiveness manifests itself principally at the operational or strategic level (battle won or objective achieved). Determining effectiveness must look at how well

airpower achieved the strategic and operational objectives of the campaign. An example of each level will be described.

Tactical Level - The Siege of Long Tieng. In March 1970, North Vietnamese backed Hmong irregulars into the Military Region 2 headquarters at Long Tieng. The enemy put intense pressure on the RLG forces hoping to capture the site. Loss of this installation would have seriously compromised the RLG's ability to maintain control of the country. As a tactical target, Long Tieng had operational level significance for the RLG forces. Airpower–tacair and B-52s–was used in support of the ground forces attempting to hold Long Tieng. Although the *effects* of the employment of these strike sorties may not be apparent, airpower broke the siege, which was the tactical objective of employing the airpower. Airpower's effect at the tactical level had operational and strategic level effectiveness by achieving the objectives, of support of RLG forces and preservation of the RLG.[89]

Operational Level - Allowed the Prosecution of the Trail War. Whether or not it was an effective strategy for the war in South Vietnam, interdiction of the Ho Chi Minh Trail was a primary objective of airpower in Laos during this period of the war. Given that objective, maintaining access to Laos was critical to the US strategy and support of the neutralist government providing that access. Consequently, the second order results of the BARREL ROLL campaign was the ability of the US to conduct STEEL TIGER. Since this campaign was executed in total, we conclude that BARREL ROLL achieved its operational level objectives and was effective.

Strategic Level - Security of Thailand. Preventing the communist insurgency of Thailand by denying the Chinese and North Vietnamese access to Thailand was a strategic objective of the US. Although South Vietnam and Laos eventually fell, the security of Thailand was secured principally through the war fought in northern Laos. North Vietnamese forces where prohibited from using Laos as a sanctuary or staging area for action against Thailand. Since Thailand remains free of communist insurgency today, we conclude that BARREL ROLL had some effectiveness in achieving this strategic objective.

Political Level - Royal Lao Government. Finally, maintaining the RLG in power was a political objective of US strategy in Laos. The government remained in power through the end of the Vietnam war which allowed US access to the country to prosecute the interdiction campaign against the Ho Chi Minh trail. Consequently, while the US

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[88] Morrocco, 45.

needed access to Laos to support the withdrawal of US forces from SEA, BARREL ROLL was effective in achieving this political objective. The original objectives of keeping Laos neutral had been previously abandoned and were not objectives of this period of BARREL ROLL. The campaign's principal contribution between 1968 and 1973 was in support of US interests and objectives in SEA, mainly South Vietnam.

[89] Sams, 1-4.

CHAPTER FIVE

CONCLUSION

> *The pronounced characteristics of the air war in Laos was that the USAF was reacting rather than acting in the employment of its air assets.*[90]
>
> —Lt. Gen. James D. Hughes, Deputy Commander, 7/13 AF, 1972-73

> *U.S. tactical air has been the major factor in preventing wholesale reverses and making these friendly moves possible. USAF and the RLAF T-28 force have performed remarkably well in defense of friendly ground positions, in providing close air support for offensive moves, and in destroying enemy supplies, equipment and bivouac areas. But air forces cannot substitute for ground force; they can only supplement them and increase their fire power and maneuverability.*[91]
>
> —Maj. Gen. Louis T. Seith, Deputy Commander, 7/13 AF, 1968-69

Having addressed the four aspects of the campaign analysis–the "why," the "what," the "how," and the "results"–this section will examine the last question: "Did BARREL ROLL constitute an (implicit) air campaign plan?" The answer to this question must consider the tenets of a campaign. The "JFACC Primer" states a campaign should convey the commander's intent, define success, orient on enemy centers of gravity, phase a series of operations, provide direction, and synchronize joint forces.[92] In addition, the campaign must link strategic objectives with tactical actions. This section concludes by providing several "lessons learned" from the campaign.

Barrel Roll As An Air Campaign

Throughout the period November 1968 to February 1973, BARREL ROLL was executed to protect friendly centers of gravity, exploit enemy centers of gravity, and achieve the operational and strategic objectives defined during the course of the campaign. Despite complicated command and control, the use of airpower as long-range artillery, and questionable coordination between ground and air efforts, this phase of BARREL ROLL accomplished US objectives in support of the overall SEA war effort and the force employed (resource allocated) was consistent with US policy.

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[90] Department of the Air Force, Oral History Interview, Lieutenant General James D. Hughes, USAF, September 21-22, 1982, Maxwell AFB, Alabama. Lt. Gen. Hughes was the last Deputy Commander of 7/13 Air Force before it reverted to Detachment 7 of Thirteenth Air Force in March 1973, 152.

[91] Seith, End-of-Tour Report, tab C, 3.

Friendly Center of Gravity. The fate of the RLG was vested in the Hmong irregular forces ability to remain in the field and engage with the Pathet Lao and NVA. The Hmong army was an operational center of gravity in Laos. Its defeat would have compromised the RLG with accompanying strategic ramifications–most of all, the lost of US access to the country for the mission of interdicting NVA supply lines into South Vietnam and supporting US objectives in Vietnam. A primary objective of BARREL ROLL was the support of the RLG forces. The US identified this as a friendly center of gravity and airpower was used to keep Gen Vang Pao's forces in the fight. Although airpower could have never won this war, the absence of airpower would certainly have resulted in the defeat of Vang Pao's forces and leads to the fall of the RLG.

Tactically, the Lima Sites were centers of gravity because the Hmong used these to gather intelligence and to prosecute a guerrilla-style war against the conventional NVA. Air mobility support by contract airlift and Lima Sites provided the Hmong an advantage over the road-bound NVA. The employment of gunships in defense of the Lima Sites demonstrated a recognition by the US of the importance of these airfields to the conduct of the ground war against the Pathet Lao and North Vietnamese.

The effectiveness of the Pathet Lao and NVA in identifying friendly center of gravity must also be discussed. The NVA focus on the Hmong guerrillas and their siege of Long Tieng demonstrates a recognition of importance of this site and the friendly ground forces. The concentration on and capture of Lima Sites also shows an NVA understanding of how the Hmong utilized these facilities. Finally, the NVA identified the importance of airpower for the RLG forces. Attacking the Lima Sites disrupted the air mobility of the guerrillas and improving the road structure inside Laos minimized the effects of air interdiction against NVA supply lines allowing the enemy to remain forward during the wet season and negate the effectiveness of tacair.

Enemy Center of Gravity Identified. The North Vietnamese had several vulnerabilities. Without a developed infrastructure in northern Laos, the NVA were constrain by long lines of communications for resupply. Without roads that were useable during the monsoon season, the North Vietnamese quickly confronted a culminating point and were forced to withdraw. In addition, the ability to use Vietnam as a sanctuary for supplies without the threat of interdiction was also to their advantage. The build-up of supplies prior to the start of the seasonal offensive allowed them to increase the level of force and violence in 1969 and 1970. With a larger cache of supplies and by

[92] "JFACC Primer," 19.

weather proofing the roads, the NVA were eventually able to hold their gains and not be forced to withdraw during the monsoon season. The ability of the North Vietnamese to wage an offensive campaign was dependent on prepositioning of supplies and maintaining year around use of their lines of communication. These were the enemy's centers of gravity. The NVA road improvements where the enemy's effort to protect these vulnerabilities. Conversely, the US recognized the importance of interdicting the NVA lines of communication. The development and use of all-weather bombing techniques and the continued emphasis on interdiction throughout the campaign demonstrate a recognition of the enemy's center of gravity. When interdiction fell short of stopping the seasonal offensive as it did in 1970 and 1971, the US intensified support for the ground forces in the besieged areas until the concentrated attacks of the enemy were defeated. In correctly identifying the enemy's centers of gravity and minimizing the friendly vulnerabilities, the BARREL ROLL air campaign was effective.[93]

Consistent Employment with US Objectives & Military Strategy. Tactical actions supported US objectives and military strategy. The goal of the US was not to defeat the Pathet Lao or NVA in Laos but to support engaged irregulars and SGUs while keeping the RLG in power. This was accomplished through the use of strict rules of engagement, covert operations, and the employment of airpower to make up for the ground force deficiency in firepower. Given the large amount of airpower available, the US was careful not to escalate the conflict beyond the bounds determined by the enemy and the objectives. In addition, despite being a low priority for airpower with respect to other theaters in SEA, when airpower was needed to support the RLG, it was available.

Accomplished Objectives. From the standpoint of achieving objectives, BARREL ROLL as an effective air campaign in supporting national, strategic, and operational objectives in SEA. In this regard, BARREL ROLL supported the US withdrawal from Vietnam and the interdiction campaign against the Ho Chi Minh trail. Given the command and control structure, the political constraints, the number of agencies involved, and the environment and geography the employment of airpower carefully balanced these conditions to achieve its objectives.

Although the campaign succeeded in containing the conflict and forces a stalemate in Laos, it failed to accomplish the original policy objectives in Laos and withdrawal of all North Vietnamese from the country. The political end-state was defined as the restoration of the 1962 Geneva Agreement conditions, that is, a neutral Laos. This was never achieved as Laos fell to the communist in December 1975. Subordination of this campaign to a

[93] Searles, End-of-Tour Report, 17-20.

redefined US policy and objectives in South Vietnam resulted in modifying the military strategy and course of action in Laos.

With respect to BARREL ROLL as an (implicit) air campaign, no record or description of a defined military end-state or success criteria was found in the historical documents. The lack of a military success criterion is a severe deficiency in the BARREL ROLL campaign. Today's standard for campaign planning requires these criteria be clearly identified and related to the political objectives. In this regard, BARREL ROLL cannot be considered a campaign according to current doctrine.

Cost of the Conflict. This study would be incomplete without some mention of the cost expended in execution BARREL ROLL. The cost of this effort was enormous in terms of Hmong lives, aircraft loss, and US aircrew losses. US military advisors and Ravens serve finite lengths of time in Laos: six months to one year tours. However, the Hmong fought this war until they died. An entire generation of Hmong men were killed in this conflict. Likewise, the RLAF aircrew flew until the war ended or they died. Several hundred thousand refugees lost their homes and were displaced. Ultimately, the cost to the Laotians was their country and the subsequent communist retribution taken against the minority people of Laos who fought the North Vietnamese. This punishment continued well into the 1980s.[94]

During the four-year period of this study US air loses numbered 80 aircraft. Total aircraft losses for BARREL ROLL starting with the first sortie on 18 May 1964 were 131. Total attack sorties for the four year period were 84,416 which was about 9% of the tacair employed in Laos. As the data shows, clearly the largest effort was in STEEL TIGER against the trail. In dollars, although there is no way to breakdown the cost by campaign, the US spent $1.4 billion in military aid for Laos.

Relevant Lessons

No analysis of a military operation would be complete without identifying the important lessons that may be applicable to future conflicts. Countless books have been written about the employment of airpower in SEA, but few

[94] Hamilton-Merritt's book, *Tragic Mountains* focuses primarily on the Hmong people who fought with the French, the Royal Lao government, and the Americans during all three Indochina wars. The book highlights the tragic plight of these people at the hands of the communist North Vietnamese.

have looked at the unique contributions of airpower as applied during BARREL ROLL. The following four areas are recognized as being most important to the prosecution of future conflicts the US may encounter.

Central Control of Airpower. Despite enormous pressure from the Ambassador, who wanted operational control of the airpower, the USAF resisted providing the embassy with its own "private air force." To have done so would have violated the fundamental tenet of "centralized control, decentralized execution." By maintaining operational control of USAF air assets, Seventh Air Force was able to apportion assets where they were most needed in the theater. Several instances occurred where the embassy claimed it had insufficient air or the USAF lacked responsiveness, but given the environment–complex command and control, political restrictions, covert war, limitations on the amount of violence–airpower was employed based on prioritized needs as seen by Seventh Air Force. Future conflicts may necessitate inefficient utilization of airpower, but the tenet of central control should never be compromised.[95]

Fighting in an Undeveloped Country. The lack of an airpower infrastructure in Laos, the need to operate from outside the country, the use of airpower in support of indigenous troops, and the covert employment of US forces are all relevant to future US military involvement in the world. The reduction of forward presence in today's world makes reflecting on the required infrastructure needed for operations and the ability to operate from outside the country a vital consideration. In addition, the current US aircraft inventory may not be adaptable to this type of situation. The difficulties posed by interoperability in an environment of different languages, culture, and unsophisticated weapons makes the cause for a capable special operations capability, as well as, a way to project airpower from outside an area of employment. Africa, South America, and SEA are all areas the USAF could have difficulty conducting future operations due to poor airpower infrastructure.

Use of Air in Unconventional Ways. There are many critics who feel that airpower was poorly utilized in Laos.[96] These were principally USAF senior officers at 7/13 Air Force or Seventh Air Force who lacked a first-hand view and understanding of the situation in Laos. Employment of tacair during BARREL ROLL often did not conform to airpower doctrine. The criticisms of "serving targets" or "use of air as long-range artillery" are common in historical references examined. The nature of guerrilla warfare–its mobility and light firepower–may transform

[95] Sullivan, Oral History Interview, 5-19 and Searles, End-of-Tour Report, 3-9.

[96] An example of this view is the quote of Lt. Gen. Hughes presented at the beginning of this section.

airpower into long-range artillery. However, in this manner the use of air for mobility and for fire support was invaluable to the ground scheme of maneuver. What the critics overlooked is that a guerrilla force does not fight like a conventional army. Preplanned and coordinated operations in Laos were more the exception than the norm. Accordingly, the employment of airpower had to be responsive to the politics and dynamics of the tactical situation.

The mobility provided to Gen Vang Pao's forces by airpower must not be overlooked. The ability of these lightly-equipped forces to effectively engage a conventional and heavier-equipped force was not only due to the fighting spirit of the Hmong but also to their ability to move around the battlefield. Unfortunately the special airlift assets needed for this kind of conflict do not exist in the USAF inventory; but, the US Army's helicopter force could provide the support needed in this type of environment.

Employment of Special Operations Forces. A principal success story was the effectiveness of special operations forces in this unique environment. Air commandos, through Project Waterpump, developed an air force and ground commandos trained an effective guerrilla force. The covert employment of special forces provided presence without visibility. Perhaps such employment in future operations, given the open media environment that now exists, is not possible; nevertheless, the use of special forces to train and advise foreign military units and governments maybe more necessary today than during the Cold War years. The lessons of special forces' operations in Laos should be studied for relevant application in future situations.

EPILOGUE

> *No one starts a war–or rather, no one in his sense ought to do so–without first being clear in his mind what he intends to achieve by war and how he intends to conduct it.*[97]
>
> —Clausewitz

The Gulf War created new standards from which to judge all future air campaigns; however, caution must be employed in light of potential future air wars. Today's world appears to be more unconventional than the type of war encountered during Desert Storm. The desert was a unique environment that favored airpower, unlike the conditions that existed in Laos during the 1960s and early 1970s. US military forces would be wise to remember the lessons learned in Vietnam, but should especially study those learned in Laos.

The application of airpower, at times conflicting with the strict interpretation of Air Force doctrine, made a definite contribution in BARREL ROLL. Like most conflicts--airpower alone was unable to completely defeat the enemy in northern Laos, but the lack of air support would have doomed the Hmong guerrillas early in the conflict. Air made the difference in keeping pressure on the North Vietnamese and maintaining the RLG in power. The political and geographical constraints of Laos ultimately resulted in a war of attrition both on the ground and in the air.

Unfortunately, the tragedy of this story remains the loyal Hmong tribesmen who having fought so valiantly for their beloved Laos were left to wilt after the US departed. Like airpower, these individuals became a tool in achieving US objectives in Laos. Their attrition became part of US strategy to maintain the military stalemate. Sadly, this will forever remain the dark side of BARREL ROLL and US involvement in the secret wars of Laos.

[97] Carl von Clausewitz, *On War,* ed. and trans. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1976), 579.

APPENDIX

The following tables and charts are a compilation of data obtained during the course of research for this project. The majority of the data was obtained from Headquarters, Pacific Air Force, "Summary Air Operations in Southeast Asia" archived at the Historical Research Agency, Maxwell Air Force Base. These documents are organized in 109 volumes, one for every month, beginning July 1964 and ending August 1973. The reports present a summary by theater (Laos, North Vietnam, South Vietnam, Cambodia) of sorties, ordnance, bomb damage assessment, losses, and an overview of the month's activity. Most of these reports have been recently declassified and offer a wealth of data awaiting analysis.

The charts in this section provide information for the period of this study, mid-1968 to early 1973. Comparing the effort of air activity in BARREL ROLL to other areas in SEA provides a good perspective for the priorities and utilization of available tacair sorties. The data was plotted to support the analysis and conclusions of this study. Complete analysis and correlation will be a task for another study or paper. Nevertheless, this data provides an interesting perspective of the employment of airpower and relationship between theaters in SEA.

Table A-1: Air Order of Battle, USAF Attack Aircraft, July 1968 - December 1972

SOUTH VIETNAM		31 Jul 68	30 Dec 68	30 Jun 69	30 Dec 69	30 Jun 70	30 Dec 70	30 Jun 71	30 Dec 71	30 Jun 72	30 Dec 72
Bien Hoa	A-1	3				2	2				
	AC-47	5	5	5							
	AC-119									4	5
	F-100	47	55	50	22	19					
Binh Thuy	AC-47	4	3								
Cam Ranh Bay	F-4	54	49	47	42						
Da Nang	A-1		2	3	11	9	2	2	2	2	
	AC-47	4	4	5							
	AC-119				6	9	8	4	5	3	15
	F-4	55	53	57	47	48	48	55	55		
Nha Trang	AC-47	7	9	13							
	AC-119			7							
Phan Rang	AC-47	3	3								
	AC-119			6	11	9	9	13			
	B-57	23	15	9							
	F-100	68	66	67	77	65	75	59			
Phu Cat	AC-47	4	3	3							
	AC-119				3	6	1				
	F-4			34	34	30	32	36			
	F-100	69	65								
Pleiku	A-1	18	18	17							
	AC-47	3	4	3							
Tan Son Nhut	AC-119			5	5	5	9	10			
Tuy Hoa	AC-119				4						
	F-100	88	74	86	88	86					
TOTAL, S. Vietnam		**455**	**428**	**417**	**350**	**288**	**186**	**179**	**62**	**9**	**20**

THAILAND		31 Jul 68	30 Dec 68	30 Jun 69	30 Dec 69	30 Jun 70	30 Dec 70	30 Jun 71	30 Dec 71	30 Jun 72	30 Dec 72
Korat	A-7										67
	F-4		20	40	34	32	27	32	38	53	31
	F-105	55	34	18			11	12	14	30	24
Nakhon Phanom											
	A-1	33	39	54	70	47	25	25	19	16	
	A-26	12	17	16							
	F-105						5	7	11	8	
Takhli	F-4									96	
	F-105	55	55	54	74	65	55				
	F-111										47
Ubon	A-1					2	1				
	AC-130	1	4	4	7	3	10	8	18	12	13
	B-57						9	10	10		
	F-4	74	72	73	67	67	73	56	73	100	106
Udorn	AC-47			2	3						
	AC-119					3					
	F-4	39	40	35	35	34	27	37	42	104	121
TOTAL, Thailand		**274**	**281**	**296**	**290**	**253**	**243**	**187**	**225**	**419**	**409**

GRAND TOTAL		**729**	**709**	**713**	**640**	**541**	**429**	**366**	**287**	**428**	**429**

Table A-2: US Attack Sorties (Tacair) by Phase of BARREL ROLL

	Phase 1 Nov 68 - Jul 70		Phase 2 Aug 70 - Mar 72		Phase 3 Apr 72 - Feb 73		Total	
	Sorties	% of Total	Sorties	% of Total	Sorties	% of Total	Sorties	% by Country
S. Vietnam	239952	48.8%	38767	18.8%	80921	53.9%	359640	42.4%
N. Vietnam	867	0.2%	1702	0.8%	44431	29.6%	47000	5.5%
Cambodia	9266	1.9%	25065	12.2%	5479	3.6%	39810	4.7%
Laos - Steel Tiger	186755	38.0%	118038	57.4%	12087	8.0%	316880	37.4%
Laos - Barrel Roll	54986	11.2%	22179	10.8%	7251	4.8%	84416	10.0%
Total	491826		205751		150169		847746	

Table A-3: US Tacair Ordnance Delivered by Phase of BARREL ROLL (tons)

	Phase 1 Nov 68 - Jul 70		Phase 2 Aug 70 - Mar 72		Phase 3 Apr 72 - Feb 73		Total	
	Tons	% of Total	Tons	% of Total	Tons	% of Total	Tons	% by Country
S. Vietnam	471825	45.0%	87908	20.2%	201933	50.6%	761666	40.4%
N. Vietnam	1559	0.1%	4989	1.1%	121701	30.5%	128249	6.8%
Cambodia	0	0.0%	20547	4.7%	17396	4.4%	37943	2.0%
Laos	575590	54.9%	321540	73.9%	58414	14.6%	955544	50.7%
Total	1048974							

Table A-3a: US Tacair & B-52 Ordnance Delivered by Phase of BARREL ROLL (tons)

	Phase 1 Nov 68 - Jul 70		Phase 2 Aug 70 - Mar 72		Phase 3 Apr 72 - Feb 73		Total	
	Tons	% of Total	Tons	% of Total	Tons	% of Total	Tons	% by Country
S. Vietnam	1044024	53.0%	203941	20.9%	541062	58.5%	1789027	46.2%
N. Vietnam	1559	0.1%	4989	0.5%	230588	24.9%	237136	6.1%
Cambodia	21384	1.1%	76856	7.9%	45305	4.9%	143545	3.7%
Laos	902223	45.8%	688935	70.7%	108089	11.7%	1699247	43.9%
Total	1969190		974721		925044		3868955	

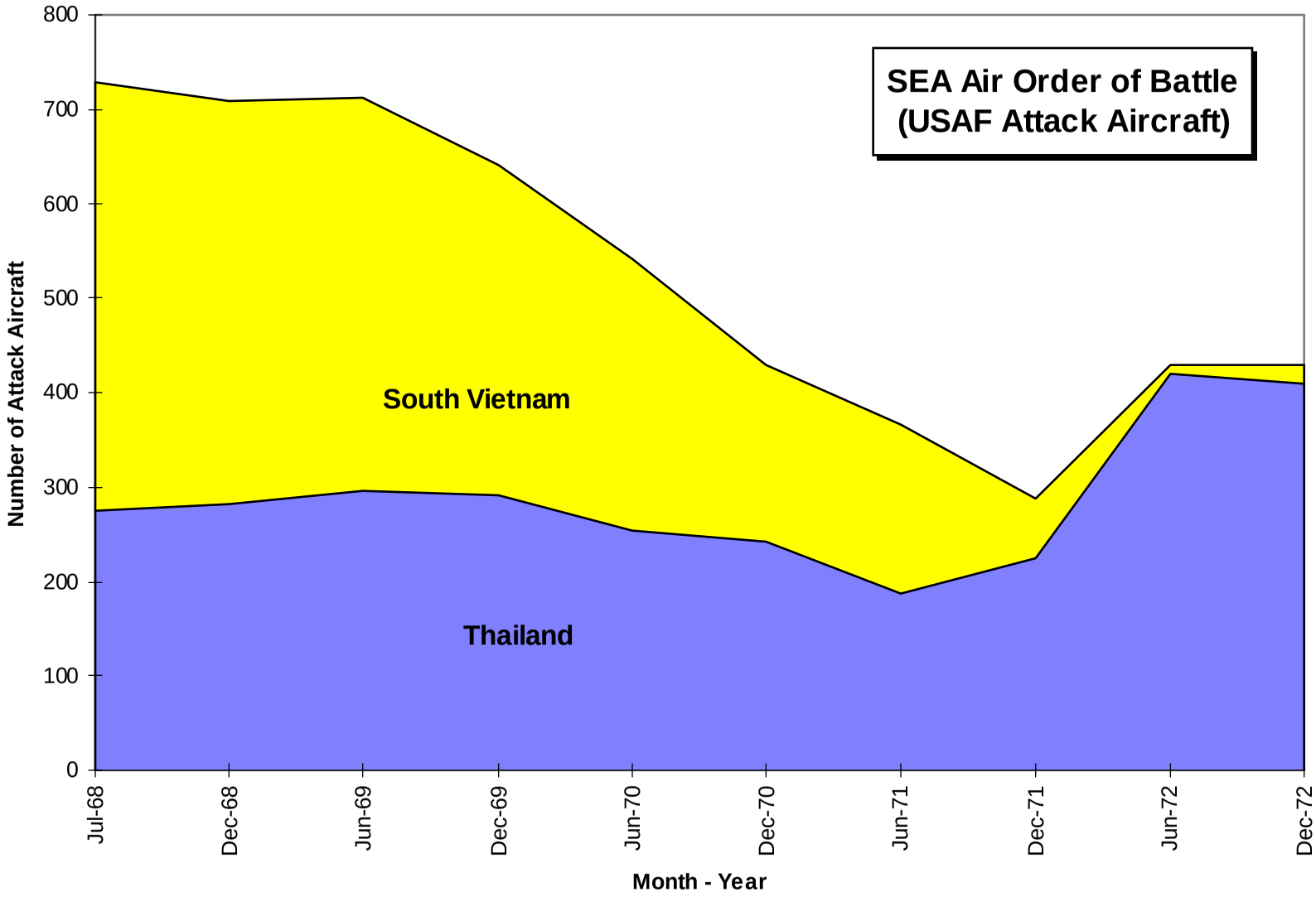

Figure A-1: Total USAF Attack Aircraft (distributed by country) during BARREL ROLL, July 1968 - December 1972

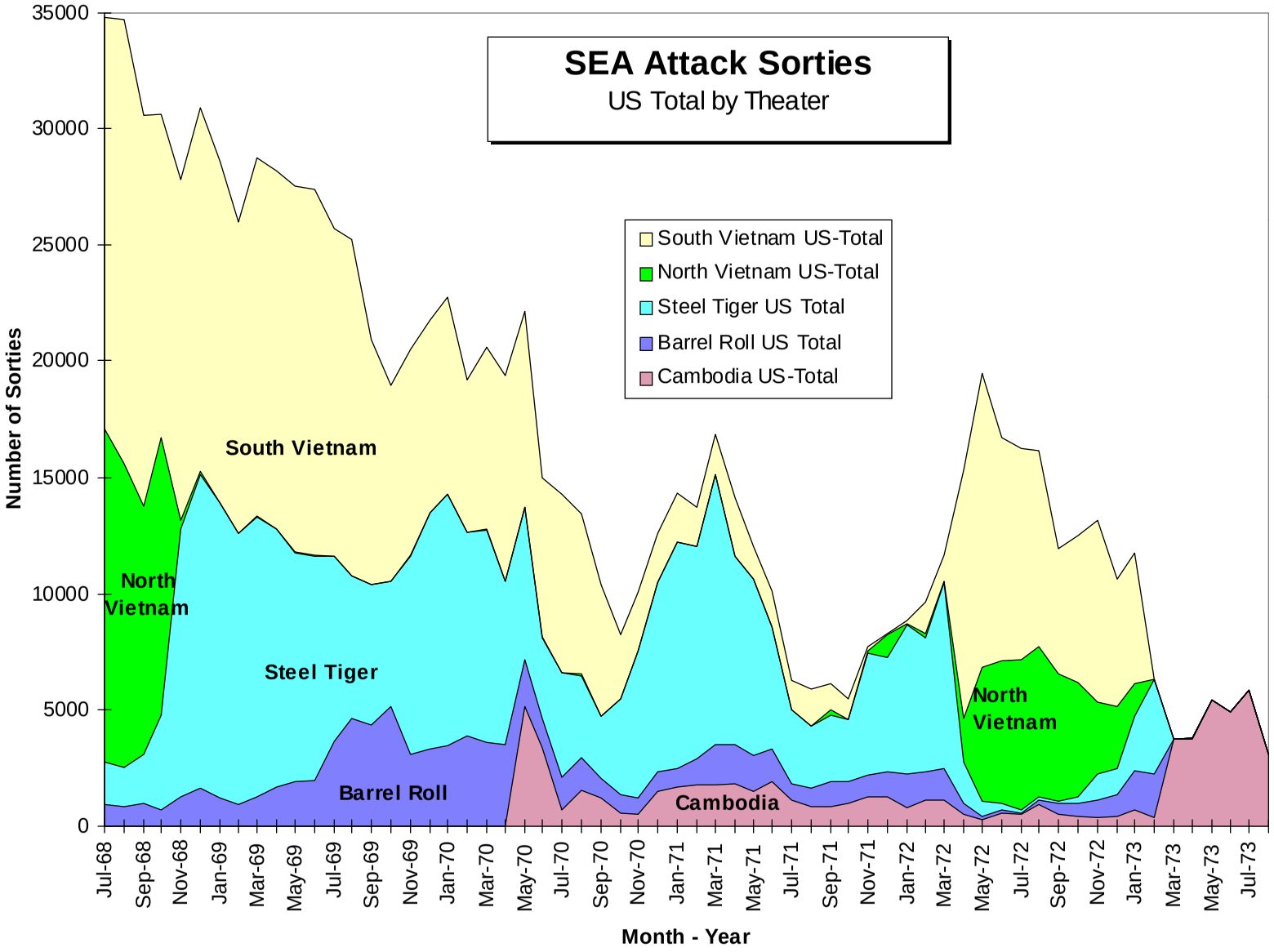

Figure A-2: Total US Attack Sorties by Theater, July 1968 - August 1973

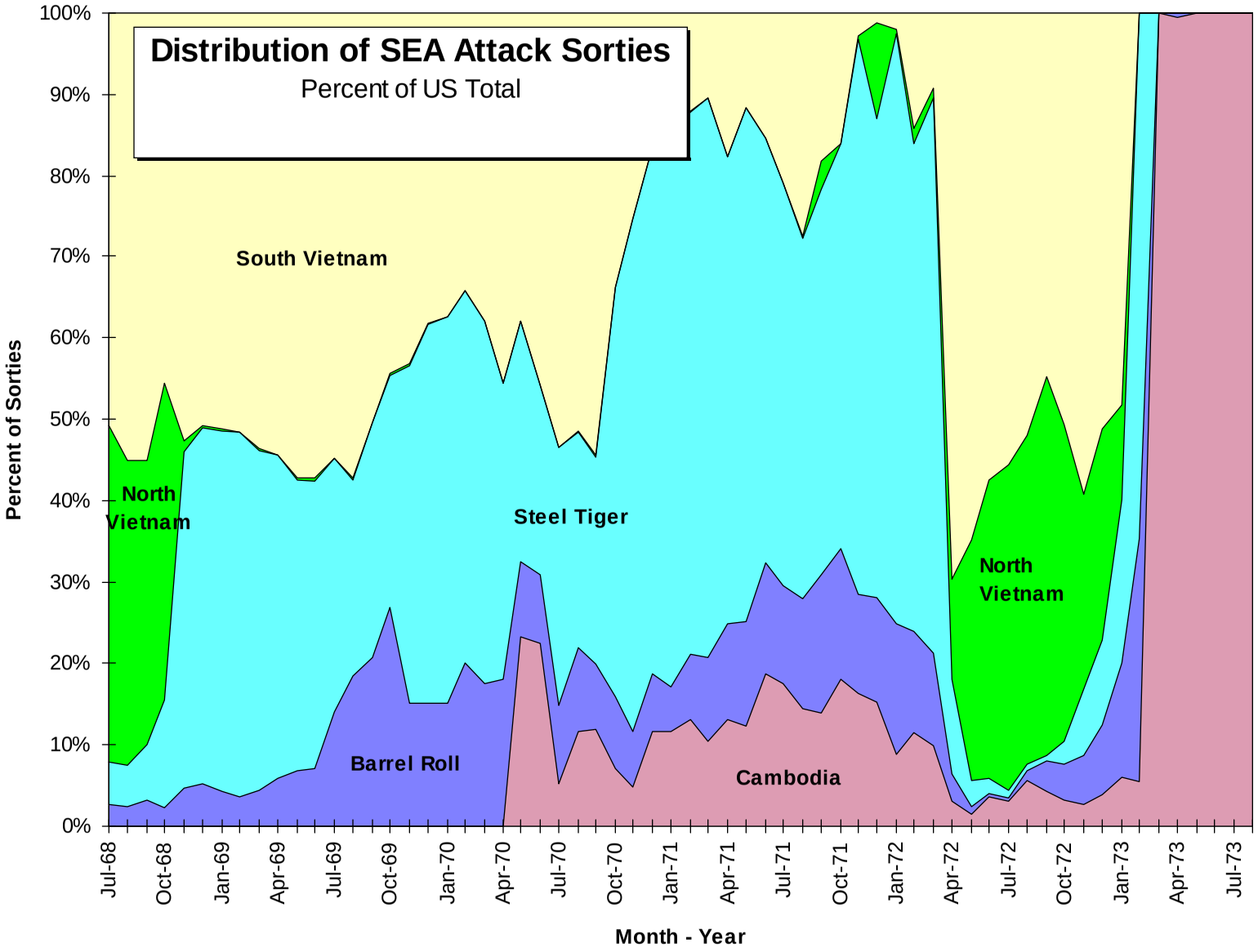

Figure A-2a: Distribution of Total US Attack Sorties by Theater, July 1968 - August 1973

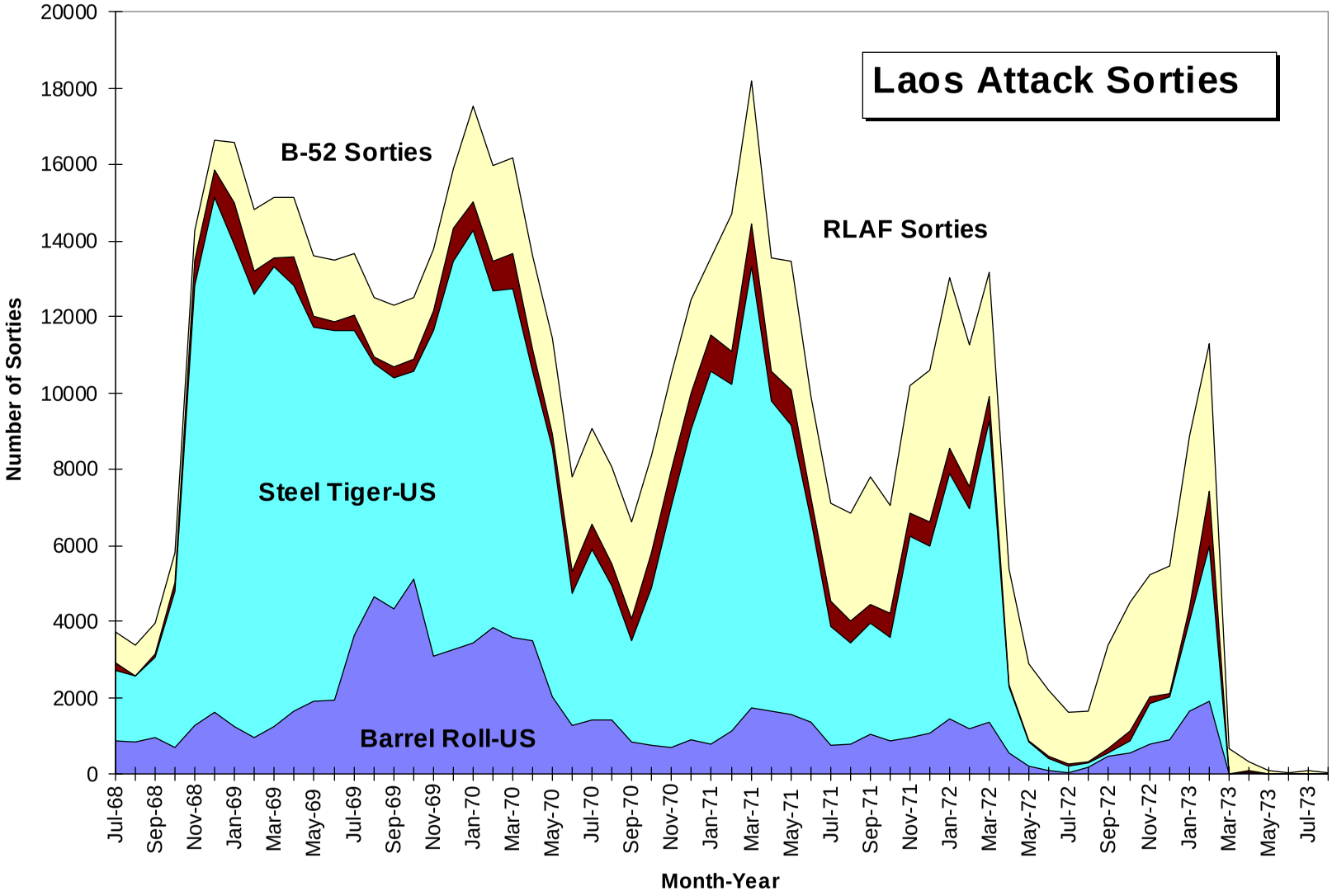

Figure A-2b: Total Attack Sorties (US, RLAF, and B-52) against Laos Targets, July 1968 - August 1973

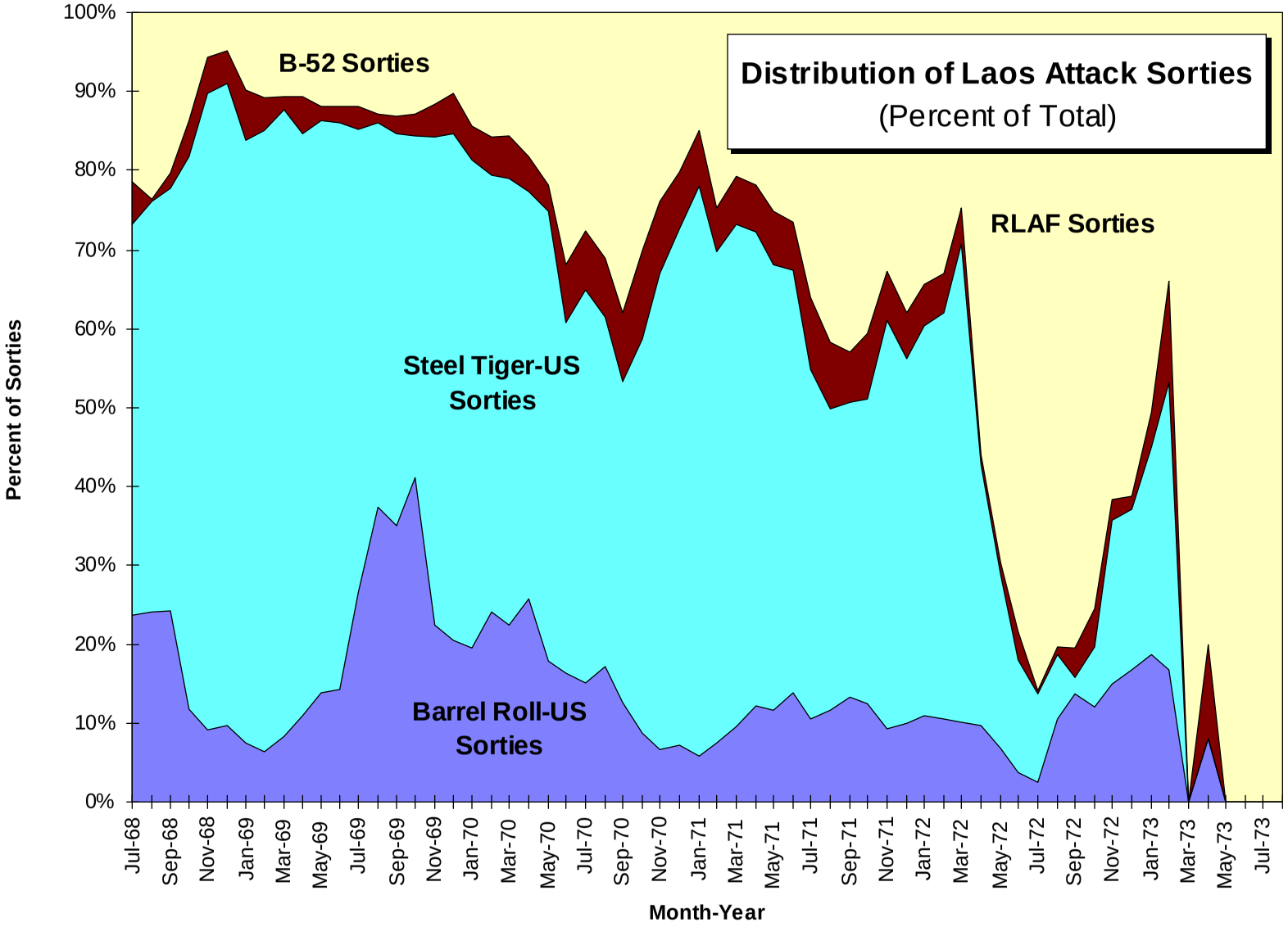

Figure A-2c: Distribution of Total Attack Sorties (US, RLAF, and B-52) against Laos Targets, July 1968 - August 1973

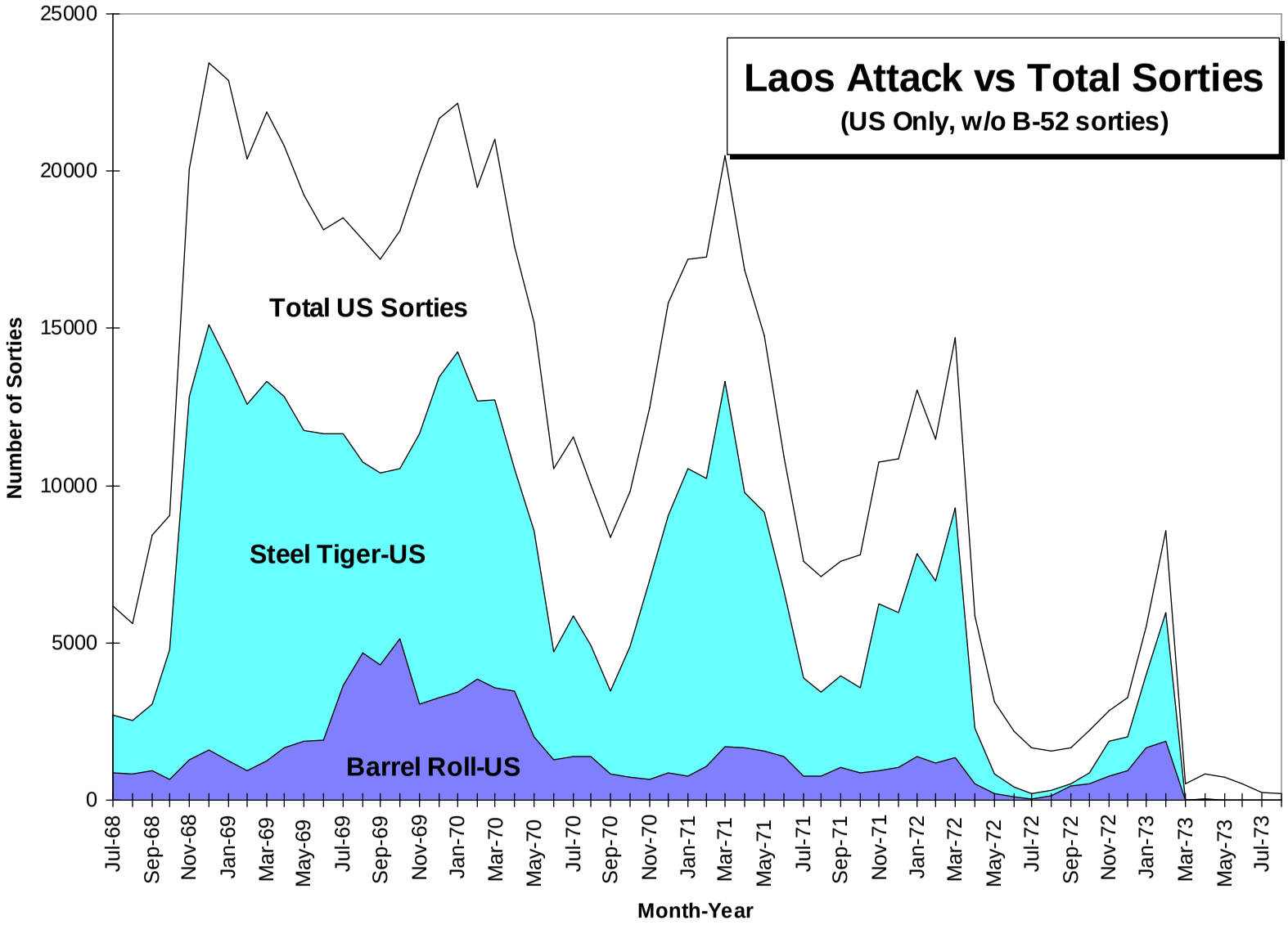

Figure A-2d: Comparison of US Attack Sorties against Laos Targets with Total US Attack Sorties for SEA, July 1968 - August 1973

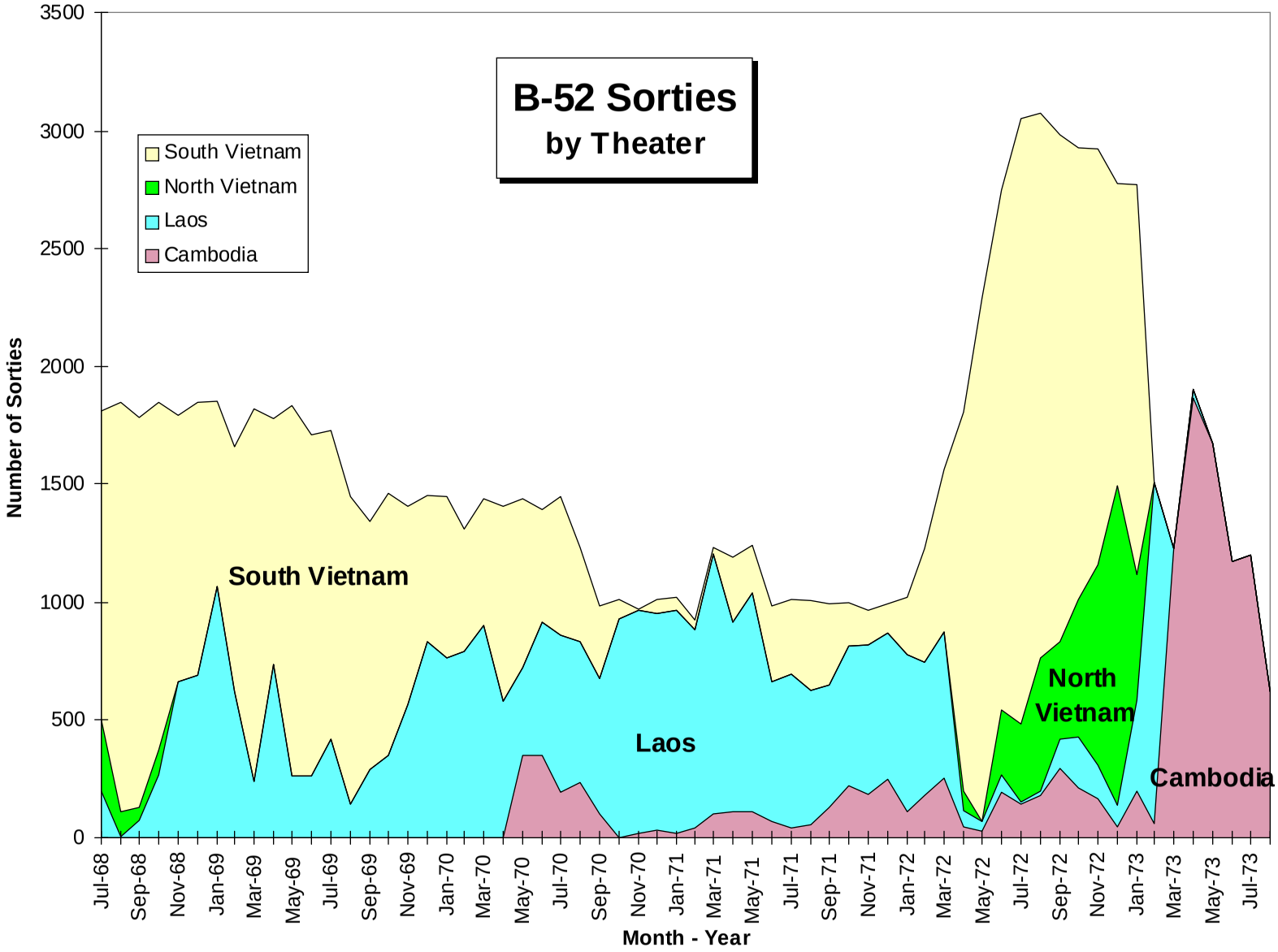

Figure A-2e: Total B-52 Sorties by Theater, July 1968 - August 1973

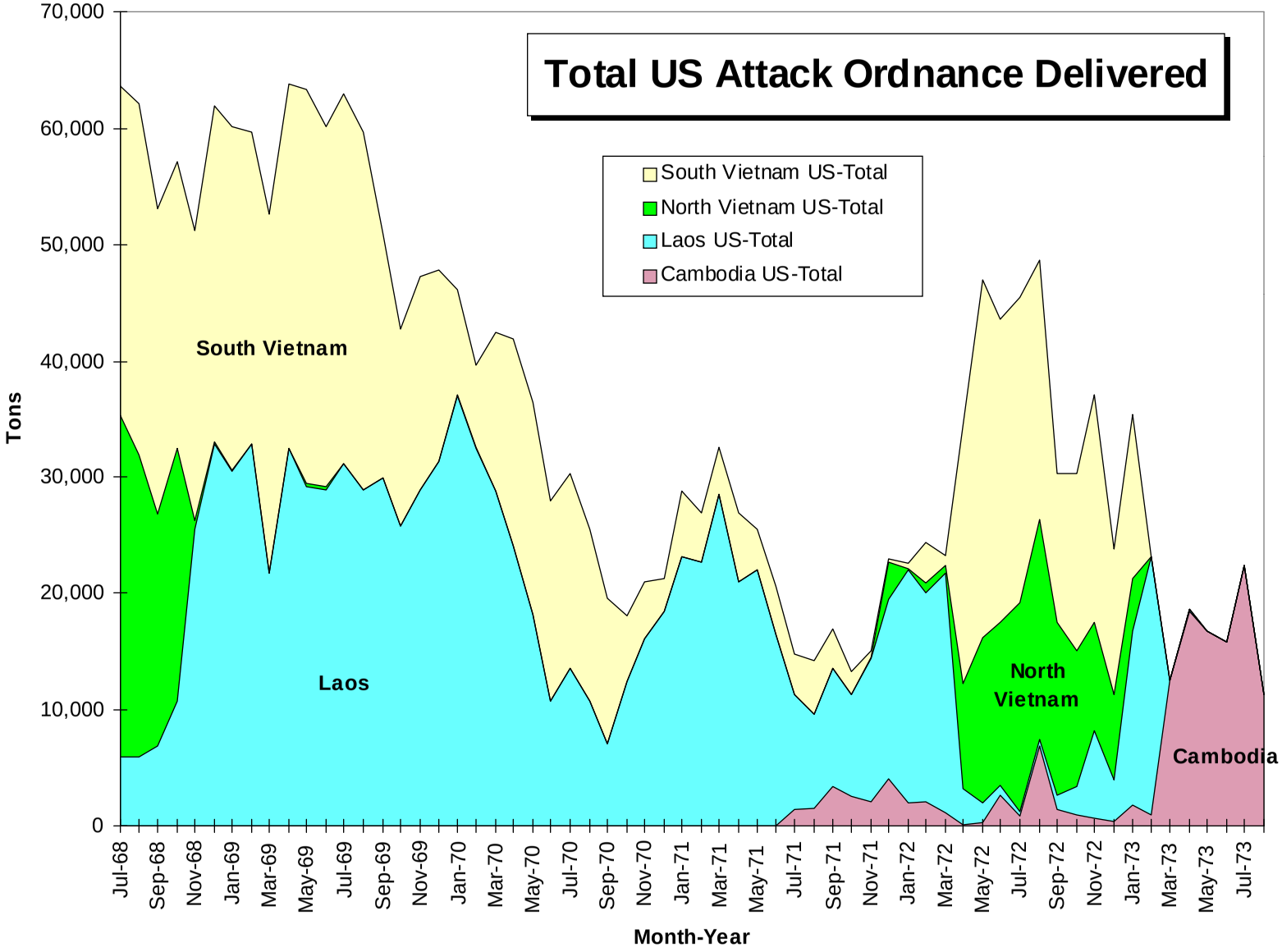

Figure A-3: Total US Attack Ordnance by Theater, July 1968 - August 1973

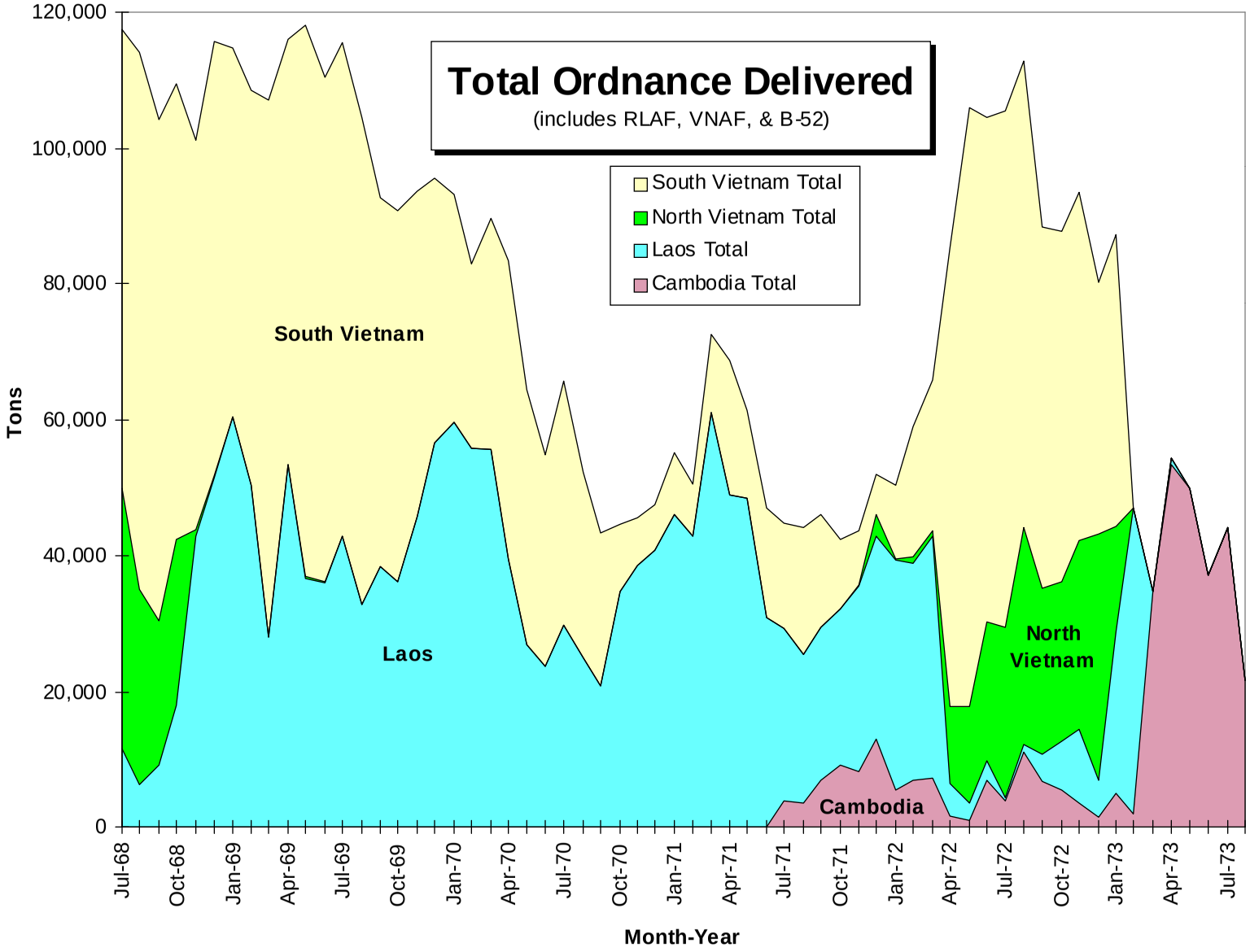

Figure A-3a: Total Ordnance Delivered (US, RLAF, VNAF, and B-52) by Theater, July 1968 - August 1973

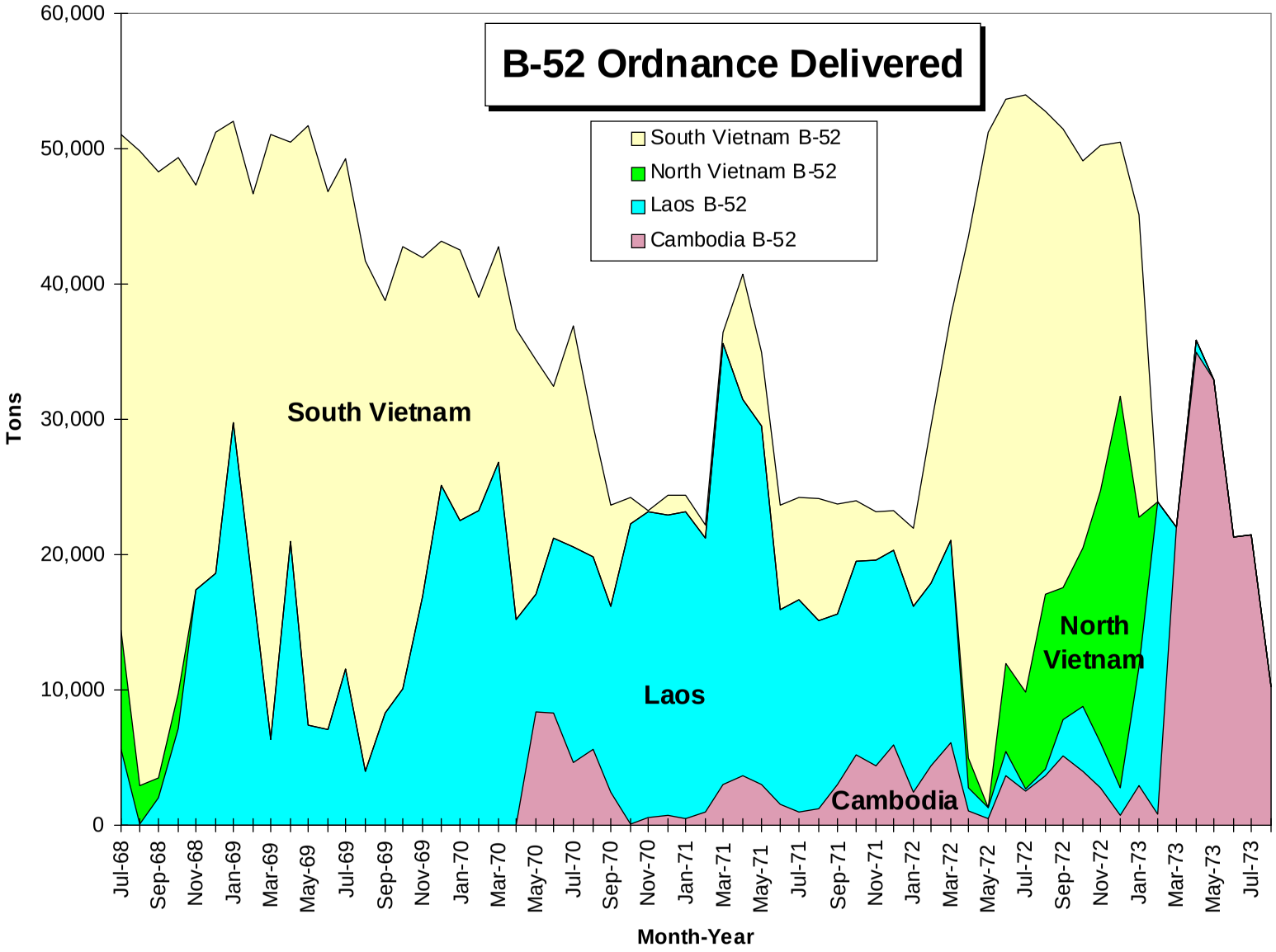

Figure A-3b: Total B-52 Ordnance Delivered by Theater, July 1968 - August 1973

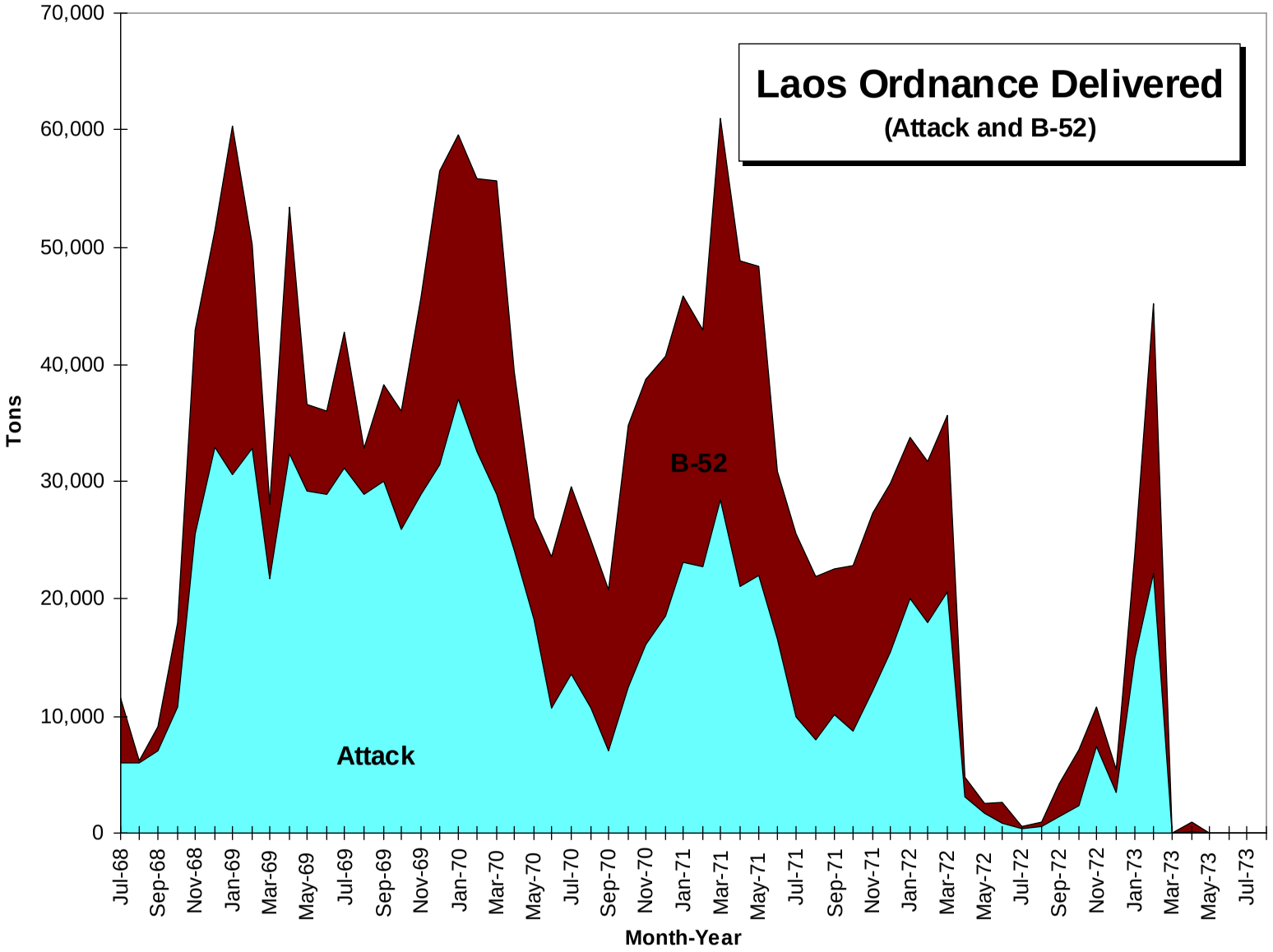

Figure A-3c: Total US Ordnance Delivered (Attack and B-52) against Laos Targets, July 1968 - August 1973

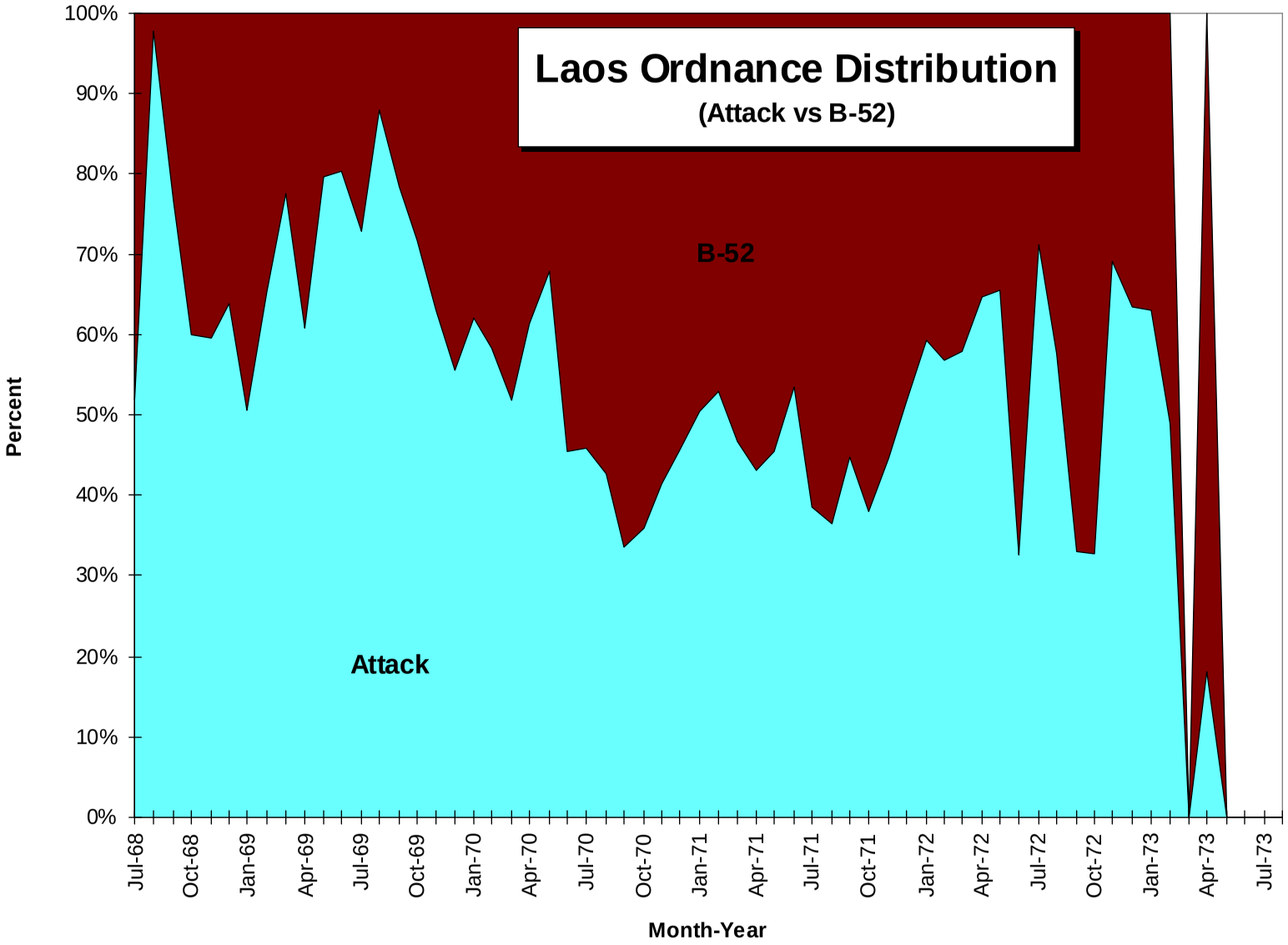

Figure A-3d: Distribution of Total US Ordnance (Attack vs B-52) against Laos Targets, July 1968 - August 1973

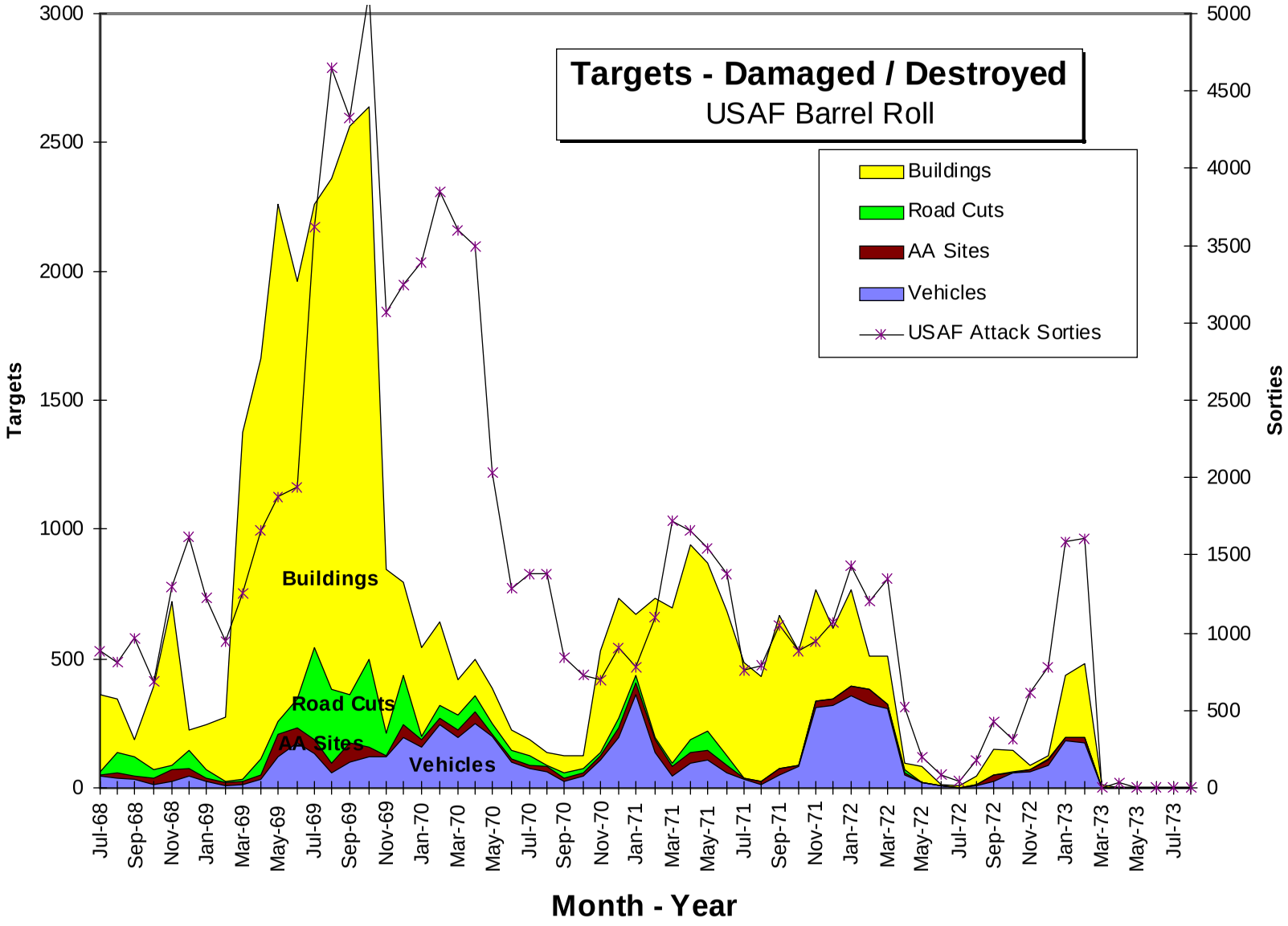

Figure A-4: Target Set Bomb Damage Assessment vs. USAF Attack Sorties (excludes B-52) for BARREL ROLL, July 1968 - August 1973

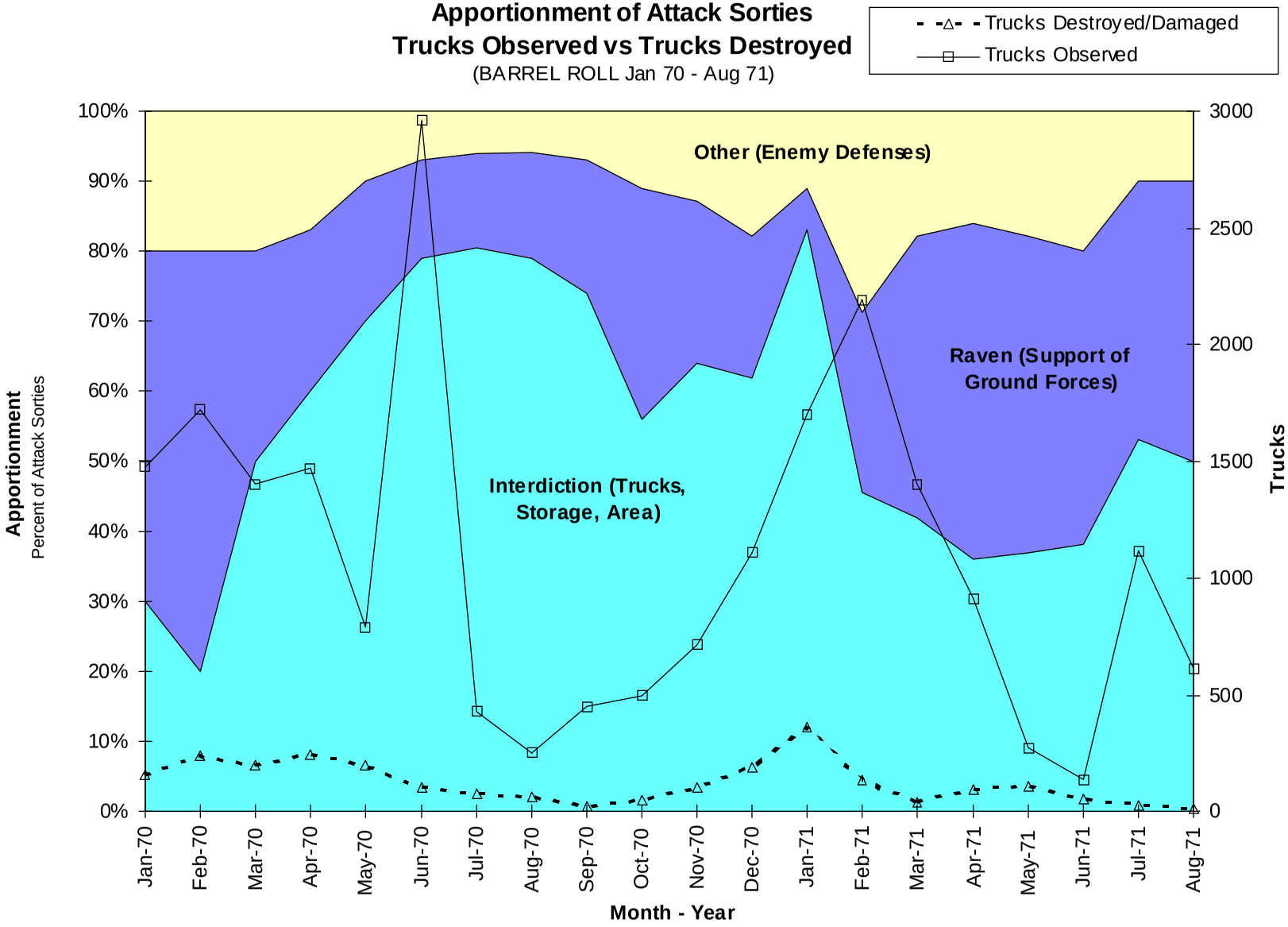

Figure A-4a: Apportionment of Attack Sorties vs Truck Targets for BARREL ROLL, January 1970 - August 1971

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