A SHAU VALLEY CAMPAIGN
DECEMBER 1968 - MAY 1969

HQ PACAF
Directorate Tactical Evaluation
CHECO Division

Prepared by:
Col. Bert Aton
Mr. William Thorndale
Project CHECO 7th AF, DOAC
A SHAU VALLEY CAMPAIGN
December 1968 - May 1969

Reprinted by
Dalley Book Service
90 Kimball Lane
Christiansburg, VA 24073
United States of America
(703) 382-8949
The counterinsurgency and unconventional warfare environment of Southeast Asia has resulted in USAF airpower being employed to meet a multitude of requirements. These varied applications have involved the full spectrum of USAF aerospace vehicles, support equipment, and manpower. As a result, operational data and experiences have accumulated which should be collected, documented, and analyzed for current and future impact upon USAF policies, concepts, and doctrine.

Fortunately, the value of collecting and documenting our SEA experiences was recognized at an early date. In 1962, Hq USAF directed CINCPACAF to establish an activity which would provide timely and analytical studies of USAF combat operations in SEA and would be primarily responsive to Air Staff requirements and direction.

Project CHECO, an acronym for Contemporary Historical Examination of Current Operations, was established to meet the Air Staff directive. Based on the policy guidance of the Office of Air Force History and managed by Hq PACAF, with elements in Southeast Asia, Project CHECO provides a scholarly "on-going" historical examination, documentation, and reporting on USAF policies, concepts, and doctrine in PACOM. This CHECO report is part of the overall documentation and examination which is being accomplished. It is an authentic source for an assessment of the effectiveness of USAF airpower in PACOM when used in proper context. The reader must view the study in relation to the events and circumstances at the time of its preparation—recognizing that it was prepared on a contemporary basis which restricted perspective and that the author's research was limited to records available within his local headquarters area.

ROBERT E. HILLER
Chief, Operations Analysis
DCS/Plans and Operations
there were times when ground commanders would not pull back to put in tactical air. These and other situations are examined to show the rationale of their actions.
FOREWORD

In the A Shau Valley in 1969, U.S. ground and air forces waged what may come to be regarded as a classic campaign of air mobility. Their hit-and-run operations so disrupted and debilitated the enemy that he was forced to withdraw to Laotian sanctuaries beyond the reach of Allied ground troops. The first six months of this campaign (December 1968 - May 1969) presented an opportunity to examine the tactical employment of fixed-wing airstrikes in support of air mobile U.S. troops in a mountain-jungle environment.

Chapter I explains the broad Allied and enemy modes of operation and documents how the A Shau Valley was the largest enemy supply complex in South Vietnam. Briefly chronicling the fighting in the campaign, it shows how the enemy logistics network in nearly all of I Corps depended on use of the A Shau Valley and how the U.S. seizure of the valley--including the battle for Hamburger Hill--was a major Allied victory.

Chapter II--the crux of the report--examines the use of tactical air in a mountain jungle terrain for road interdiction, troops in contact, and bunker assaults. Rather than organizing the events chronologically, this chapter presents the A Shau campaign in terms of tactical situations, showing when the ground commanders preferred airstrikes and when they did not. The two most productive friendly/enemy kill ratios in jungle fighting came from U.S.-prepared ambushes and assaults on bunker complexes where sizable enemy forces chose to stand and fight. In the first case, airstrikes were not desired because the ambush was clandestine and the enemy appeared in small numbers; in the second case, the airstrikes were invaluable. Even in the latter instance, however,
# UNCLASSIFIED

## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOREWORD</td>
<td>x</td>
</tr>
<tr>
<td>CHAPTER I - GROUND WAR</td>
<td></td>
</tr>
<tr>
<td>Mountain Jungle Warfare</td>
<td>1</td>
</tr>
<tr>
<td>The Vital Valley</td>
<td>7</td>
</tr>
<tr>
<td>Border Campaigns</td>
<td>11</td>
</tr>
<tr>
<td>CHAPTER II - AIR ROLE</td>
<td>23</td>
</tr>
<tr>
<td>Tactics</td>
<td>23</td>
</tr>
<tr>
<td>Air Interdiction</td>
<td>30</td>
</tr>
<tr>
<td>Close Air Support</td>
<td>40</td>
</tr>
<tr>
<td>GLOSSARY</td>
<td>62</td>
</tr>
<tr>
<td>FIGURES</td>
<td></td>
</tr>
<tr>
<td>1. (C) Medevac in Battle for A Shau Valley</td>
<td>xi</td>
</tr>
<tr>
<td>2. (C) Initial Clearing for FSB Fury (Hill 825)</td>
<td>4</td>
</tr>
<tr>
<td>3. (C) Border Operations in XXIV Corps in 1969</td>
<td>4</td>
</tr>
<tr>
<td>4. (C) Early 1968 Logistics Tonnage of 559th NVA Transportation Gp</td>
<td>6</td>
</tr>
<tr>
<td>5. (C) Enemy Supply Lines from the A Shau Valley</td>
<td>8</td>
</tr>
<tr>
<td>6. (C) Enemy Bunker</td>
<td>10</td>
</tr>
<tr>
<td>7. (C) Interdiction of Route 548 on Southern Face of Tiger Mt</td>
<td>12</td>
</tr>
<tr>
<td>8. (C) 1969 FSB Locations in A Shau Valley</td>
<td>14</td>
</tr>
<tr>
<td>9. (C) Arms Cache Near Route 614 in MASSACHUSETTS STRIKER</td>
<td>18</td>
</tr>
<tr>
<td>10. (C) Truck and Supplies in A Shau Valley</td>
<td>34</td>
</tr>
<tr>
<td>11. (C) Choke Point #2</td>
<td>36</td>
</tr>
<tr>
<td>12. (C) NVA Bulldozer Trapped at Tiger Mountain</td>
<td>36</td>
</tr>
<tr>
<td>13. (U) Hill 937 (Dong Ap Bia)</td>
<td>50</td>
</tr>
</tbody>
</table>

---

UNCLASSIFIED
CHAPTER I
GROUND WAR

Mountain Jungle Warfare

In early 1968, the North Vietnamese Army (NVA) supply depots in and around the A Shau Valley fed and armed most of the enemy troops in central and southern I Corps. The supplies that sustained the 1968 Tet Offensive against Hue arrived through the valley. The NVA even rushed completion of a 25-kilometer road to support the heavy fighting in the former Imperial Capital. According to one NVA document, this and similar road improvements in early 1968 eliminated seven days of pack transport from delivery times at the front. Unquestionably, the situation, in early 1968, was alarming for South Vietnam and its Allies. Yet, a year later, Allied troops occupied the valley so effectively that large NVA units in Laos could not break through the Allied shield to reach Hue or the coastal lowlands. This Allied conquest of the A Shau Valley thus ranked as one of the most successful campaigns of the Vietnam War.

In addition to curtailing enemy logistics, the A Shau Valley campaign was notable for its employment of air mobile tactics. Fighting in enemy-infested territory, the Allies were at first without land links to Allied base areas. Consequently, helicopter mobility, extensive airborne reconnaissance, and heavy airstrikes compensated for the enemy's advantage of rapid reinforcements and resupply from Laotian sanctuaries free from U.S. combat units. U.S. ground commanders developed special mountain jungle tactics.

In South Vietnam's two northernmost provinces--called XXIV Corps by U.S.
forces—the NVA hid from the Allies in the western mountains by exploiting the heavy jungle canopy, the rugged terrain, and the Laotian sanctuaries. The NVA built a complex, interlocking network of roads, trails, supply depots, and command posts to supply and support forays of the populated eastern lowlands. For several years, the enemy built his supply, communications, and infiltration lines beneath the jungle canopy. The few Allied Special Forces camps and government outposts in the A Shau area were overrun to eliminate prying eyes. Any potential helicopter landing zones (HLZ) and artillery fire support bases (FSB) were mined and watched to curtail the air infiltration of Allied reconnaissance teams. Having thus excluded Allied presence, the enemy developed his lines of communication (LOCs) with near impunity. Such installations and operations were generally safe, so long as they were not visible from the air.

After mid-1968, the ground war in the coastal lowlands went badly against the NVA and Viet Cong, forcing them to seek even more the protective safety of the mountains. For instance, a captured NVA document dated 10 November 1968 said the Allied "strong point is that he can mass up his air forces" and therefore "because we [the NVA] operate in jungles and mountainous areas, the enemy cannot easily conduct attacks against us and make the best use of his air forces." Another document revealed that during a trip to Hanoi, Commanding General Tin of the Tri-Thien-Hue Military Region (including Hue and the A Shau Valley) was told to maintain a foothold in the lowlands, but to fight in the mountains. A summary of his captured personal notebook recorded the following instructions from Hanoi:

"Van [apparently a ranking official in Hanoi] told Tin that in the future, local and guerrilla forces..."
must be utilized to create pressure in the lowlands.... In the mountainous areas, attention should be directed to the preparation of many routes to insure communications with North Vietnam and an effective rear service support network. Emphasis will be placed on certain areas such as Route 14.... Tin must pay special attention to Hue and Da Nang cities by creating heavy pressure along Route 12 /The NVA designation for the road from a Shau to Hue/ and by dividing enemy-controlled areas into many portions. Simultaneously, intensive efforts should be made to expand military and political forces, especially in the lowlands. Generally speaking, these activities should be implemented in such a way that they will, in the future, provide friendly forces with a foothold in all areas.... In regard to attacks against U.S. forces, Tin was instructed to attack only those U.S. elements which operate in the mountainous areas and not to increase attacks against U.S. elements in the lowlands as this may cause unfavorable effects."

Through a convergence of Allied and enemy aims, the mountain jungles became the battlefield. The Allies sought to root the NVA from the mountain base areas, to forestall attacks on the lowlands, and to dry up supplies going to the Viet Cong. To achieve these goals, intelligence had to be gathered. This was done by flying intensive visual and photo reconnaissance using sophisticated airborne sensors, emplacing reconnaissance teams to uncover and map enemy LOCs and installations, and exposing the trails by chemical and "explosive" defoliation. In substance, the Allies had to tear away the shroud that hid the enemy. In XXIV Corps, these activities and other intelligence media, such as agent and prisoner reports and captured documents, had by 1968 provided a general picture of enemy LOCs.

The Allies employed air interdiction campaigns and troop helicopter assault operations to strike anywhere along the western borders. Limitations were the small number of American troops available for extended mountain fighting, the
vast areas of jungle to be searched, and the long common border with Laos which gave the NVA sanctuary from Allied ground troops. Once the 1968 Tet and Khe Sanh emergencies had been met, the XXIV Corps commanders made hit-and-run brigade attacks deep into enemy territory. At first, helicopter landing zones had to be laboriously cleared in the vast forests. (Fig. 2) Then the inserted troops set about building fire support bases and night defensive positions from which they could probe outward to map trails, locate and destroy bunker complexes, and uncover caches.

Operation DELAWARE, in April, was the first in the A Shau Valley. The 1st Cavalry Division, which formerly did the same thing in the Central Highlands from An Khe, sent two brigades into the valley in a highly successful operation. The 3d Marine Division and the 101st Airborne Division followed in the next 18 months with other Operations: DEWEY CANYON, MASSACHUSETTS STRIKER, APACHE SNOW, MONTGOMERY RENDEZVOUS, and LOUISIANA LEE. To the north in western Quang Tri Province, the 3d Marine Division also entered the mountains, though its primary task of defending Da Nang precluded releasing troops for operations all the way to the Laotian Border. Figure 3 shows the location of several border operations.

As operation followed operation, the enemy lost his advantage of secrecy and the Allies became more and more at home in the mountains. Eventually, when all-source intelligence pointed to an enemy troop concentration in a particular valley or on a specific mountain, the Allies could rapidly attack, armed with knowledge of the terrain, existing HLZs/FSBs, proven tactics, and veteran troops. At the same time, Air Force interdiction campaigns hammered away at
roads along the western border, curtailing truck traffic and destroying supplies. Relentlessly in 1969, the enemy was pushed toward the Laotian sanctuaries. Soon the order of battle showed major enemy headquarters located in Laos, whereas formerly, they had been in base areas near the eastern lowlands. This was the measure of success of air mobile, mountain jungle tactics.

The Vital Valley

In its heyday in 1968, the enemy logistics network in the A Shau Valley was an impressive, high-volume operation. It supplied the troops attacking Hue and Da Nang and provided way stations for troops and supplies destined for southern I Corps. Except for the area near the DMZ and along Route 9, the A Shau Valley was the keystone of enemy logistics and troop infiltration in I Corps.

The geographical hub was a 25-mile long, northwest-southeast valley, 2,000 feet above sea level and surrounded by ridges 3,000 feet above the rolling valley floor. Nearby peaks reached 6,000 to 7,000 feet above sea level. Its width varied from three kilometers around Ta Bat and A Luoi to a mere 150 meters north of the latter airstrip.

Lying deep in the Annam Mountains, the valley received the moist winds of both the Northeast and Southwest monsoons. Heavy rains came in the late summer and fall (an average of 21 inches in both September and October), while the dry months of winter (1.5 inches in both January and February), were periods of low clouds and fog. Like the terrain, weather conditions set marked limits on Allied operations. DEWEY CANYON bogged down twice in inclement weather that favored enemy attack and curtailed Allied airstrikes and resupply. APACHE SNOW,
BORDER OPERATIONS IN XXIV CORPS IN 1969

FIGURE 3

CONFIDENTIAL
on the other hand, had nearly perfect weather for airborne operations. Any major airborne operation projected into the A Shau Valley was a gamble for weather good enough to use aircraft.

As one important segment of the Ho Chi Minh Trail, the A Shau Valley sheltered a sizable number of personnel assigned to NVA logistic units. The whole Trail was managed by the 559th NVA Transportation Group with rear headquarters in Ha Tinh Province, North Vietnam, and forward headquarters in Laos, west of the A Shau Valley. Estimates on the number of personnel assigned to the group ranged from 16,000 to 30,000. The fragmentary records available to Allied intelligence and the seasonal fluctuations in strength account in part for the uncertainty of Allied estimates.

Subordinate to the 559th Transportation Group were military stations called Binh Trans. These units each controlled a portion of the NVA logistics network in Laos and South Vietnam. Their subordinate units (engineers, transportation, medical, antiaircraft) kept the roads open and the trucks rolling through a particular segment of the Ho Chi Minh Trail. Figure 4 shows the military stations in early 1968 with Binh Tran 7 (BT 7) in the A Shau Valley. Later, BT 7 was redesignated BT 42. Although the size of BT 42 was unknown to Allied intelligence, comparable important stations had from 2,000 to 3,200 personnel.

According to the I Corps analyst for enemy order of battle, BT 42 had three infantry battalions, four engineering battalions, two antiaircraft battalions, two transportation battalions, and one artillery battalion. Antiaircraft defense of the valley was divided between the 37th AA Battalion in the north

SECRET
STYLIZED MAP OF EARLY 1968 LOGISTICS TONNAGE OF 559TH NVA TRANSPORTATION GROUP

THOUSANDS OF TONS OF LOGISTICAL SUPPLIES

HUNDREDS OF TONS OF LOGISTICAL SUPPLIES

LOGISTICAL SUPPLIES FOR THE BATTLEFIELD

MILITARY STATIONS AND LOGISTICAL POINTS

CONFIDENTIAL

FIGURE 4
and the 45th in the south. The engineer battalions included a couple of bulldozer companies that did possess bulldozers, unlike BT 43 to the south, whose "bulldozer" units were men using shovels and two-man scrapers. The transportation battalions each had four companies, with each company nominally authorized 25 trucks, usually GAZ-63 two-ton Russian trucks. However, the theoretical total of 400 seems far higher than actually existed in BT-42, especially in 1969 when the Allies seized the valley and drove BT 42 units out of their assigned operating areas.

Supplies from North Vietnam moved down the Trail and then east to BT 42. Figure 4 shows several roads branching east off the Trail to enter northern I Corps. Route 922 was by far the most important of these—the only road the NVA tried to keep open in the I Corps area during the 1968 and 1969 summer wet seasons. (Fig. 5) One of the largest supply depots on the Trail was located in the vicinity where Route 922 left the main north-south Trail. This depot, under the responsibility of BT 4, also housed the forward headquarters of the 559th Group. A large proportion of the supplies reaching BT 4 was directed east over Route 922 to Base Area 611, an NVA complex of depots and truck parks carefully located just outside South Vietnam to escape U.S. ground attacks. In March 1968, Seventh Air Force analysts estimated that four out of five tons of materiel passing down the Trail in the Tchepone area—north of Route 925—were sent into I Corps and that Route 922 was "one of the most heavily used roads in the Tchepone area." So important was A Shau that 15 months later, analysts at Headquarters USAF could draw a stylized map of the Trail and anchor the southern end firmly in the valley, though actually the Trail extended south in Laos almost
From Base Area 611, the supplies were trucked into South Vietnam on Route 548 or portered on trails from the base area into the central part of the valley. Movement east of the valley was by porter and bicycle along trails and in places by sampan. Trucking supplies east out of the valley had occurred briefly in early 1968 when the NVA built Route 547A toward Hue and Route 614 toward Base Area 112. The U.S. operations soon stopped this construction. Route 547A was closed by 101st Airborne Division operations working west along the road, while Route 614 was closed by air interdiction.

Figure 5 shows the relationship between the A Shau Valley and enemy base areas along the eastern lowlands of Hue and Da Nang. Allied intelligence documented the movement of supplies north to both Base Areas 101 and 114, east in the Route 547 area, and south to Base Areas 127 and 112. (Base Area 112 was termed by MACV the most active in I Corps in mid-1969.) In early 1969, a supply depot called Warehouse 54 was located northeast of Base Area 611 and confirmed as a major source for supplies going to Base Areas 101 and especially 114. (By late 1969, both these base areas were dropped by MACV from its active list.) Supplies heading south through the valley went to Base Area 607 in a Laotian salient and then east to Base Area 112. At one time in 1968, the 559th Transportation Group directed that eight tons a day be delivered to Base Area 112 from the logistics pipeline out of the A Shau Valley. Porters, bicycles, and sampans carried these supplies.

The enemy facilities to sustain this logistics network were scattered along
FIGURE 5

ENEMY SUPPLY LINES FROM THE A SHAU VALLEY

BASE AREA BOUNDARIES UPDATED QUARTERLY BY MACV.BA 101 AND 114 DROPPED AS INACTIVE BEFORE BA 127 CREATED.
Figure 5

BASE AREA BOUNDARIES UPDATED QUARTERLY BY MACV. BA 101 AND 114 DROPPED AS INACTIVE BEFORE BA 127 CREATED.
Some feeling for the enemy network of facilities comes from the account of the infiltration of Hung Cao Ho. Ho and 46 other men left Hanoi in late 1968 and rode by truck to the vicinity of the 559th Group forward headquarters in Laos. The trucks had auxiliary gas tanks to complete the trip without refueling. At the 559th headquarters, Ho worked as a telegrapher for 27 days while waiting to infiltrate into South Vietnam.

On 19 January 1969, Ho, three other NVA soldiers, and two Liaison guides left for the A Shau Valley. They walked for 12 days on a one-meter wide path, completely covered by canopy, and probably not visible from the air. According to a station chief, this path was one of 40 infiltration routes in the area. The men walked from 0600-0630 hours until early afternoon, putting up their hammocks each night at a liaison station with 25 to 100 other soldiers, similarly traveling infiltration groups, using other trails. The typical station had three or four small thatch huts set in a cleared, clean area under thick canopy. After 12 days, Ho reached the area where he was to be a telegraph/radio operator for BT 7. The next day, he surrendered to the Allies.

Traffic in and out of the valley along the LOCs varied with enemy needs and Allied presence. Thus the NVA used Allied preoccupation with the heavy fighting in Hue in early 1968 to divert attention from the building of Routes 547A and 614. At this time, BT 42 supplied most of the tonnage supporting Military Region Tri-Thien-Hue (estimated strength: 16,000-18,000) and passed along much of the tonnage destined for Military Region 5 in southern I Corps. For February 1968, enemy documents recorded a goal for BT 42 of 1,000 tons for Tri-Thien-Hue and 1,200 tons for Military Region 5. Due to its large-scale
organization and its huge logistical support capability, there is little wonder that MACV called the A Shau Valley "the most important VC War Zone in South Vietnam." 28/

Once the Allies recaptured Hue and won the battle of Khe Sanh, they made both 547A and 614 impassable for trucks. The enemy had to adjust. This also happened when the Marines in DEWEY CANYON attacked portions of Base Area 611 and closed the northern segment of Route 548. The NVA rerouted supplies over Route 926 (the Marines responded with MAIN CRAG), and over trails in Base Area 611 to the central part of the A Shau Valley near Dong Ap Bia. An even more drastic alteration of LOCs occurred by mid-1969 when permanent Allied control of the valley forced the NVA to supply Base Area 112/127 by detouring south down the Ho Chi Minh Trail to Chavan, east by Route 165/966 to the I Corps/II Corps Border, and then northeast along Route 14. This lengthy detour to the south more than doubled the distance to Base Area 112. These adaptations were just the most notable shifts made by the NVA to sustain a supply network in central I Corps once the A Shau Valley was lost.

Border Campaigns

Early Allied Campaigns. The criticality of the A Shau Valley for enemy resupply in I Corps had always been known to the Allies. Because of more pressing priorities, however, more than two years passed between the fall of the A Shau Special Forces Camp and the Allied reoccupation in Operation DELAWARE. In late 1967, COMUSMACV had conceived a four-step border campaign to encompass the length of South Vietnam. He singled out the valley as one of the prime targets. YORK II, projected for the valley, was eventually canceled after the
Tet Offensive and the siege of Khe Sanh; DELAWARE replaced YORK II.

DELAWARE (19 April - 17 May 1968) lifted the lid on a maze of enemy roads, trails, and storage areas in the valley. Two brigades of the 1st Cavalry Division and a few small ARVN units held the whole valley floor, disrupting the enemy's May offensive in Thua Thien Province (Hue and environs). The capture of more than 90,000 documents exposed for the first time in detail the 559th Group and its management of the Ho Chi Minh Trail. It also resulted in capturing twelve 37-mm guns, 2,500 individual weapons, and large amounts of other supplies and equipment, including more than 60 truck frames.

After Allied troops left, aircraft took over the suppression of enemy activities in the valley. On 31 May 1968, all the valley was designated a Specified Strike Zone (SSZ), thus allowing forward air controllers (FACs) to put in airstrikes without obtaining the usual military and political clearances.

The air interdiction campaign was suspended during August when ARVN troops and one brigade of the 101st Airborne Division heli-assaulted onto the valley floor at A Luoi and Ta Bat. Called SOMERSET PLAIN (4-20 August 1968), the operation met little enemy resistance, claimed 181 NVA killed (nearly half killed by the ARVN), and only 58 weapons captured.

The greatly reduced enemy presence in August was undoubtedly due to the heavy seasonal rains and the enemy's reluctance to duplicate his vulnerability to Allied operations which he had displayed in DELAWARE. Therefore, five months went by before Allied troops returned to the general valley area. Instead, the SSZ was reinstated and the Direct Air Support Centers (DASCs) at XXIV Corps and
I Corps directed an air interdiction campaign. A similar campaign was run on Route 614 in SSZ Tango.

Air Interdiction Campaign. In early December 1968, a stepped-up air interdiction campaign employing choke points was implemented to match the enemy dry season surge of activity. The initial three choke points on Route 548 were #1 along the south face of Tiger Mountain (Fig. 7), #2 where the valley narrowed to 150 meters just north of A Luoi (Fig. 11), and #3 at the south end of the valley on a narrow ridge.

In the first week (9-15 December), the bombing closed #1, failed at #2 because the narrow point was still too wide to be a good choke point, and accomplished little at #3 because of unsuitable weather. At this time, the enemy apparently built a new road around the north side of Tiger Mountain. During the next week, three additional points--#7, 8, and 9--were attacked along Route 548 between point #1 and the Laotian Border. Thus, until DEWEY CANYON began in late January 1969, the air campaign concentrated on the area between the border and Tiger Mountain. During this time, point #11 was established in the same area. During DEWEY CANYON, the DASC-directed interdiction campaign shifted to the central and southern part of the valley away from the U.S. ground troops and eventually the SSZ was absorbed into MASSACHUSETTS STRIKER. From 9 December 1968 to 6 February 1969, more than 2,300 tactical air sorties were directed into the campaign area, an average of 38 daily.

The air interdiction campaign was a notable success. Four types of evidence proved this: the enemy attempts to repair road cuts dwindled as the campaign wore on; new enemy roads had to be built to bypass effective choke
points; the FACs found and destroyed trucks and storage sites—notably on 19 January when one site produced 33 secondaries and seven trucks destroyed or damaged—and most significantly, the Marines swept the border area in DEWEY CANYON and found large amounts of hastily hidden supplies. DEWEY CANYON made "the largest discovery of arms and ammunition ever found in Vietnam." 35/

DEWEY CANYON. The 3d Marine Division's assault into the north end of the A Shau Valley region was only one of several operations using airmobile concepts to the limit of the division's capability. This operation had the distinction of being the most isolated from the division's western logistic hub at Vandegrift Combat Base on Route 9. Actually, DEWEY CANYON (22 January-18 March 1969) was not in the A Shau Valley, but along Route 548, north of the valley.

The original plan called for a four-phase operation with the last phases left very flexible. In Phase I (17 - 21 January 1969), the Marines planted several fire support bases south from Vandegrift to provide overlapping fields of fire. These included Henderson, Tun Tavern, and Shiloh. In Phase II (22 January - 11 February 1969), the 9th Marine Regiment heli-assaulted into the southern Da Krong Valley to open Fire Support Bases Razor, Cunningham, and Erskine, all north of Tiger Mountain. At this time, the regiment conducted a great number of patrols and small sweeps, thoroughly combing and crisscrossing the area, looking for all enemy facilities. The most notable find was the 88th NVA Field Hospital. The Marines also discovered numerous caches and encountered wire from two major communication lines running across the hills. In this phase, the regiment very carefully kept north of the Da Krong River, which was designated "Phase Line Red." (Fig. 8).
Then on 12 February, the Marine regiment, which had given the appearance of milling around, suddenly attacked south across the river. Three battalions fought their way for a week on foot up the southern slope of the valley to the Laotian Border. The maneuver took the enemy by surprise and disrupted his command and control. Each U.S. battalion had an objective: the 3d to secure Tiger Mountain (called FSB Turnage) and capture Tam Boi; the 1st to seize the area where Route 548 entered South Vietnam, and was farthest west, the 2d to gain the height overlooking Route 922. All objectives were gained and Tam Boi was exposed as a very elaborate and important tunnel/cave complex that withstood an ARC LIGHT strike. Phase III (12 February - 18 March 1969) closed DEWEY CANYON.

The most notable action was the 2d Battalion's attack a few kilometers into Laos. On 21 February, the battalion stood on the border looking down on Route 922. Regimental intelligence said the hard pressed enemy was attempting to withdraw west over the road and regroup his artillery in Laos. After dark, a company of Marines moved downslope into Laos, crossed the road, and sprang an ambush on a convoy, destroying three trucks, five tons of ammunition, and killing ten NVA. The company then returned upslope to the border with no casualties.

The battalion then waited through 22 February on the border hilltop, while commanders considered the implications of having U.S. Marines in Laos. The regimental commander requested authority "to maneuver into Laos" on the rationale that Route 922 gave the enemy a short and rapid resupply capability that could seriously endanger the Marines, especially if bad weather conditions curtailed U.S. aerial resupply. The commander said, "Put another way, my forces should not be here if ground interdiction of Route 922 is not authorized." He obtained
his authorization and the battalion entered what the enemy had thought was a Laotian sanctuary.

From 23 February to 2 March 1969, the battalion worked east along Route 922 laying ambushes, destroying caches, and capturing enemy artillery pieces, including a complete 85-mm battery of four guns (spiked) and 600 rounds of ammunition. The Marines found supplies stashed all along the road and especially hidden in bomb craters, thus indicating how effective the air interdiction campaign had been at halting much of the tonnage at the border. The Marines were pulled out of the area on 3 March 1969, although DEWEY CANYON ran another 15 days, mainly because bad weather conditions hampered extraction.

DEWEY CANYON was a decisive success for the Allies. The results included 130 friendly killed in action (KIA) versus 1,617 enemy KIA. The Allies captured or destroyed 1,223 individual and 243 crew-served weapons, eleven 122-mm and four 85-mm artillery pieces, 56 AAA mostly 12.7-mm and 20-mm guns, and 110 tons of rice. Enemy vehicles destroyed or damaged included 66 trucks, 14 tractors, three armored personnel carriers, and six artillery prime movers. Air Force records showed 15 bulldozers captured or destroyed. The operation received 54 B-52 sorties and 1,410 tactical strike sorties.

According to the Marine After Action Report, the 461 close air support (CAS) missions produced the following partial bomb damage assessment (BDA): 175 killed by air; 32 trucks destroyed, 3 damaged; 1 bulldozer damaged; 2 armored personnel carriers destroyed; 7 artillery guns (122-mm) destroyed, 1 damaged; 3 machine guns (7.63 cal.) destroyed; 51 AA positions destroyed; and 190 secondary explosions.

16
Aside from the enemy materiel and men destroyed, DEWEY CANYON swept the previously untouched Da Krong Valley and the eastern part of enemy Base Area 611. Especially notable was the capture of Tam Boi Mountain, the base complex for the 37th NVA Engineer Battalion and an enemy nerve center for operations in the north end of the valley. The operation showed that isolated base areas and sanctuaries just over the border in Laos were not inviolable. The operation also showed the effectiveness of combined air and ground forces in curtailing AAA and stopping supplies. That DEWEY CANYON caused the enemy second thoughts was proved later in Operation APACHE SNOW when the same brigade returned to the area in May. The enemy had not reoccupied the area in any significant numbers and the Marines met so little opposition that the 2d Battalion Commander called the Marine portion of APACHE SNOW "a real dull operation."

MASSACHUSETTS STRIKER. The inclement weather which prolonged DEWEY CANYON also disrupted the beginning of MASSACHUSETTS STRIKER (1 March - 8 May 1969). However, the operation did search the mountains east of the valley's southern end and also seized Route 614 farther south. Forces included the 3d ARVN Regiment and the 2d Brigade of the 101st Airborne Division.

On D-4 (1 March), U.S. engineers began clearing FSB Whip as the headquarters for both U.S. and ARVN units. Heavy rain and fog, however, prevented the insertion of troops on D Day. When the weather continued bad, the U.S. troops were sent into FSB Veghel on Route 547 to work southwest toward Don A Tay, a mountain near the unusable part of Route 547, into the valley. So many enemy were encountered that plans to send the battalion into Whip were abandoned and most of the fighting in MASSACHUSETTS STRIKER occurred around Dong A Tay. Numerous
trails, caches, and bunker complexes were found there, including the recent headquarters of the 816th Battalion.

However, two battalions of ARVN troops assaulted into the FSB Whip area and by 20 March, the weather had cleared enough to allow the assault of two U.S. battalions into the mountains around FSB Whip and east of the abandoned A Shau Special Forces Camp. No major enemy concentrations or caches were found. Fighting was light and scattered. On 16-17 April 1969, the U.S. battalion in the Dong A Tay/Veghel area was lifted south of the FSB Whip area to interdict Route 614, the road leading out of the south end of the A Shau Valley that angled east toward the Da Nang lowlands. In the next three days, this battalion discovered three significant ammunition caches, one called by the 2d Brigade After Action Report as "perhaps the largest ever discovered by the Division." (Fig. 9)

MASSACHUSETTS STRIKER ended on 8 May 1969 with 223 enemy killed versus 59 friendly killed. Although called a success by participating units, the operation was more notable for its systematic exploration of the terrain southeast of the A Shau Valley and along Route 614 rather than for the enemy encountered or supplies captured. The 2d Brigade After Action Report stated: "By all indications, the enemy main force units had pulled back into their Laotian Base area."

Warehouse 54. In April and May 1969, the Allies completed closing the A Shau Valley for enemy use. When the intelligence inputs from a large variety of sources were integrated, a comprehensive picture of the enemy's operations became much clearer. An example was the discovery and destruction of Warehouse 54. An enemy prisoner captured in February 1969 in BA 701, northeast of the
valley described a major supply station located in the north end of the valley. The prisoner said porters from BA 101 walked two days west and three days south to reach "Warehouse 54." This part fell within the area of operation of the 3d Brigade, 101st Airborne Division, and by 1 April, the brigade's intelligence officer had enough information to give the brigade FACs a probable location. Persistent visual reconnaissance finally located the storage complex on 17 April 1969, where intelligence information had placed it, and airstrikes were directed on the suspected position.

Numerous secondary explosions in the next few days led to the insertion of an exploratory assault team on 23 April, just after an ARC LIGHT strike. The squad encountered heavy resistance and was reinforced by a troop and then by a battalion. The latter spent its first night split between two LZs under heavy enemy fire and had to call for night airstrikes, which drove away the enemy. Subsequently, the battalion built FSB Airborne and swept the area, uncovering bunkers and caches. This general area proved so rich in enemy presence that once Hill 937 had been captured, the 101st Airborne continued operations in the locale in May and June 1969. Although the enemy attempted to defend this major storage area, the NVA ultimately had to retreat to Laos.

APACHE SNOW. By May 1969, the Allies had effectively disrupted the whole enemy logistics net in the valley and had torn to tatters his elaborate supply lines. By then, Allied mountain-jungle campaigns were meshing well, bringing into play all the advantages of growing intelligence sources and familiarity with terrain. That the Allies had the upper hand was proved in APACHE SNOW (10 May - June 1969) when the 29th NVA Regiment and two of its battalions were
surrounded and crippled on a mountain called Dong Ap Bia (Hill 937). The methodical way in which Allied intelligence traced the NVA activities following DEWEY CANYON and MASSACHUSETTS STRIKER was eloquent testimony to the integrated, all-source intelligence capability of the U.S. Air Force and Army.

During April when the FACs were searching for Warehouse 54, they also flew general visual reconnaissance in the valley. They found heavily traveled trails coming out of Laos into the Dong Ap Bia area. Other intelligence sources reported increased enemy troops moving into the upper part of the valley, south of the DEWEY CANYON operating area. The 3d Brigade After Action Report of 25 June 1969 related how intelligence information led to implementing APACHE 49/ SNOW.

"Concurrently with the beginning of Operation MASSACHUSETTS STRIKER, a URS [a special agent report] indicated deployment of a major North Vietnamese Command in the A Shau area and in Base Area 6111 in Laos. Three of these commands were identified as Regimental size headquarters, each regiment having under its command three or more battalions. Discovery of parts of a coaxial cable tended to buttress the idea of a major comm facility located somewhere in the valley. By early May, a URS report had identified a regimental headquarters as being 5-8 kilometers west of Dong Ap Bia and moving easterly.

"Photographs and captured documents played a major role in selecting the landing zones and general axis of advance of the battalions participating in the Combat Assaulting of multiple battalions along the Laotian Border. The Bde II and Asst S2 officer under the guidance of the S2 and S3 selected specific areas for photographs. The study and analyses of these photographs were instrumental both to the S2/3 and later to the BN Commanders in their planning of assigned missions."
"Although agent reports were plentiful in the early stages of formulating a data base and preparing plans for APACHE SNOW, the information was general and not in depth. The 225th MI Det in Hue directed specific questions concerning the area of interest to the jet OIC. He was able to respond immediately with some of the information and levied the remaining requirements on his agents.

"As the data base grew or developed, plans were made by the 3d Bde to begin Operation APACHE SNOW to fully exploit the situation."

APACHE SNOW began on 10 May 1969 with helicopter assaults into four LZs almost on the Laotian Border (Fig. 8). The ARVN entered the northernmost LZ, and the 3d Brigade, 101st Airborne, took the southern three LZs. All were cold. But on the second day, the battalion situated between the Laotian Border and Dong Ap Bia made heavy contact with the 27th NVA Regiment on the mountain. The resulting week-long fight was one of the largest of the year. It made headlines in the United States as the battle for Hamburger Hill, and a few U.S. Senators criticized the aggressive U.S. tactics which initiated the fighting. The question of whether the U.S. ground troops should have pulled back to let airstrikes destroy more of the enemy is discussed later in this report.

APACHE SNOW was a major success. The U.S. casualty figures were 78 Americans killed versus 691 enemy killed (by body count) and five enemy captured; the ARVN totals were 31 friendly and 229 enemy dead. Most significantly, Allied intelligence had accurately located a battle-ready NVA regiment trying to infiltrate, and U.S. troops responded by surrounding and destroying the regiment. APACHE SNOW proved the enemy had lost control of the valley: the 27th NVA Regiment, with orders to move near Hue, got no more than three kilometers into South
Vietnam before it was surrounded, severely mauled, and driven back to Laos.

The 101st Airborne remained in the valley for the next few months conducting Operations MONTGOMERY RENDEZVOUS (8 Jun - 15 Aug 1969) and LOUISIANA LEE (16 Aug - 28 Sep 1969). Army engineers rebuilt Route 547 so supplies could be trucked into the valley. U.S. tanks also entered the valley for the first time in June to conduct armored operations. (The NVA had armor in the valley in 1968.)

The engineers also built a new 1,500-foot dirt airstrip for FSB Currahe which lay on the valley floor two kilometers west of Ta Bat. The divisions settled down to hold the valley and permanently deny it to the enemy. However, in late September, all Allied troops were withdrawn when the 101st Airborne redeployed to Quang Tri Province to replace the 3d Marine Division being pulled out of Vietnam. For a time, the enemy was cautious about reentering the A Shau Valley in strength, but it was only a matter of time before NVA logistics would again move through terrain the Allies had once securely held.
CHAPTER II
AIR ROLE

Tactics

To the ground commander, tactical air support was one of several fire support weapons on call to attack the enemy. An airstrike, like artillery fire, went where and when a ground commander ordered it. The most casual reading of Army After Action Reports will reveal many sentences similar to "Mortar, artillery, [helicopter] gunships, and airstrikes were used in support of B Company," or "The 1-502 Inf was supported by artillery, ARA [airborne rocket artillery], gunships, tac air, and diesel drum drops." Mentioning airstrikes in the same breath with mortars did not mean they were equivalent weapons, but rather that each was available from the fire support inventory for the job the ground commander thought most suitable. This chapter elaborates on the ways commanders in the A Shau Valley in 1969, employed tactical air in relation to other fire support weapons. (Most of the tactical sorties supporting troops in the valley campaign were flown by Marines. Air Force fighters flew 14 percent of the tactical sorties in APACHE SNOW, which included the heavy Army fighting on Hill 937.)

In large part, the ground commanders regarded all airstrikes in their tactical areas of responsibility (TAOR) as close air support. The Third Marine Amphibious Force (III MAF) had claimed this when 7AF requested in 1968 that Specified Strike Zones (SSZs) be established on enemy supply lines away from friendly forces. Specifically, III MAF said planning for harassment and interdiction airstrikes would be processed through the ground commanders as close
air support sorties. MACV had then ordered the establishment of SSZs where Air Force planners could conduct air interdiction campaigns. MACV thus ruled that not all in-country airstrikes were close air support.  

This made all the more surprising the following statement from the "Operations and Intelligence Policy Guide" of the 101st Airborne Division dated 1 July 1969:

"Tactical air support consists of two categories: Close air support and tactical air reconnaissance. Close Air Support is the attack by high performance aircraft of hostile ground and naval targets which are so close to friendly forces as to require detailed integration of each air mission with fire and movement of these forces."

There was no hint of the need for airstrikes against enemy LOCs far from Allied troops or even for attacks against enemy bunkers and facilities discovered somewhere in the TAOR away from friendly forces.

Airstrikes were not used when organic Army weapons could serve. This policy had the logic of economy since it established a progression from lightest weapon to heaviest and discouraged overkill. The 101st Division's Policy Guide clearly made this point:

"Close air support should not be used in lieu of organic means.... Target selection is a key factor with respect to the effectiveness and desirability of close air support. The general principle is to select those targets or airstrikes which are beyond a reasonable capability of available ground force or ARA weapons."

On the whole, this policy also recognized that the heavier the weapon, the
greater the requirement for approval of higher echelons of the Army or Marines, and, accordingly, a longer response time.

The helicopter gunships came from within the Army, but tactical fighter divers had to be requested through the DASC and B-52 strikes were authorized by MACV. Sometimes, a brigade had a flight of fighter overhead when a need for firepower arose. Diverting the fighters to the new target would take no time, yet the Army might still prefer another weapon such as the 90-mm recoilless rifle, called in one After Action Report "the best close in weapon against bunkers." 6/

The ground commanders had clear tactical reasons for the sometimes seemingly restrained use of airstrikes and these stemmed from the nature of mountain jungle warfare. In the summer of 1969, the Deputy Commanding General of II Field Force (FFV), Long Binh, queried five Army divisions in Vietnam on jungle operations. The general asked that exceptional commanders of maneuver battalions and companies fill out the questionnaires and 87 did so, including 20 from the 101st Airborne. To the question as to which type of operation produced the most and least enemy and friendly killed in action (KIA), the results* were as follows:

* Not all respondents answered every question, therefore, all totals are not 87.
<table>
<thead>
<tr>
<th>Enemy KIA</th>
<th>Friendly KIA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Most</strong></td>
<td><strong>Least</strong></td>
</tr>
<tr>
<td>Ambush</td>
<td>48</td>
</tr>
<tr>
<td>Recon in Force</td>
<td>12</td>
</tr>
<tr>
<td>Plat Recon in Force</td>
<td>13</td>
</tr>
<tr>
<td>Squad Recon in Force</td>
<td>1</td>
</tr>
<tr>
<td>Defense of FSB</td>
<td>2</td>
</tr>
<tr>
<td>Atk on Bunkers</td>
<td>2</td>
</tr>
<tr>
<td>Cordon &amp; Search</td>
<td>3</td>
</tr>
<tr>
<td><strong>Most</strong></td>
<td><strong>Least</strong></td>
</tr>
</tbody>
</table>

The battalion and company commanders clearly thought that in jungle operations, the ambush produced the most enemy and least friendly deaths. Conversely, reconnaissance in force (RIF)—sweep and destroy operations with sizable forces—produced the least enemy and most friendly deaths. Recognizing that attacks on bunkers usually occurred in RIFs, commanders were nearly unanimous that friendly KIA was most likely in RIF/bunker fights and least likely in ambushes. These results were in consonance with 101st responses: the friendly versus enemy kill ratio was most favorable in ambushes and least favorable in RIF/bunker operations.

The II FFV report also included some selected comments, including these from three 101st Airborne officers which stressed the clandestine nature of ground operations not readily using tactical air except in emergencies:

"I stressed security by quietness while moving day or night. Tried to not have overflights into my AO. Cut down on radio transmissions to higher headquarters and subordinate units."
"I do not believe in reconnaissance by fire with small arms. Artillery reconnaissance by fire is OK sometimes. We move by stealth.

"I stressed quick kill for pointmen. Traveled as much as possible without rucks [packs]. Seldom moved at night in jungle. Searched off ridges and near water supplies. Reacted violently to every contact. In retrospect, this may have been a mistake. Believe best results to small contacts in jungle are in rapid displacement by unit in contact in immediate pursuit. Believe in the long run we'd have killed more enemy had we not relied on supporting weapons and pressed on with small arms. This is eventually what we got around to doing."

When troops moved under cover of artillery and airstrikes, the FACs and helicopter gunships overhead were aware of the ground situation and troop positions. This was not so for furtive forces, who had to spend precious time orienting the fire support. So the emphasis on the clandestine put a premium on getting heavy firepower when it was needed. Usually artillery and helicopter gunships responded appreciably faster than tactical air. In fact, the 101st Airborne Policy Guide reminded the commander who requested immediate airstrikes that he accepted a "delay" that could be expected.

Not only did the Army think airstrikes took longer to arrive on station, but the officers of the II FFV survey said artillery and ARA/gunships produced more enemy KIA. To the question of which supporting weapon produced the most KIA, the five division respondents gave the following answer:
ARA/ Tac Gunships Arty Tac Air

<table>
<thead>
<tr>
<th>Division</th>
<th>Artillery</th>
<th>Tac Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Cav Div</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td>1st Inf Div</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>25th Inf Div</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>101st Inf Div</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>4th Inf Div</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>36</td>
<td>33</td>
</tr>
</tbody>
</table>

Each type of fire support presented problems. Artillery had to be adjusted by an aerial observer or by "walking" it onto the target. Sometimes continuous fire was laid in front of maneuvering troops as a reconnaissance by fire; this kept the artillery continually oriented to friendlies. But such "walking fires" were hardly stealthy.

Helicopter gunships had the proven value of delivering direct fire. However, the very lack of sophistication that made it practical and economical to keep them around for quick responsiveness, also made them less than ideal attack aircraft. The Army had nothing comparable to the Air Force's Tactical Air Control System with its airborne FACs, marking procedures, and integrated radio nets. Short rounds occurred most notably on Hill 937, where the ground commander at one point ordered the ARA out of his area. The U.S. Army APACHE SNOW After Action Report summarized the situation:

"On three occasions, the ARA mistakenly placed fire on 3/187 troops, resulting in total casualties of 4 killed and 63 wounded. The principal cause of this was an ARA lack of orientation about the ground situation and troops location. The policy had been for the ARA to report directly on an artillery frequency to artillery personnel, bypassing the Battalion.
Commander. This procedure was used over the repeated objections of the Battalion Commander 3/187."

Faced with a need for better control of artillery and ARA fire, the Army relied on aerial observers, who often flew the light observation helicopter (LOH). These helicopters had inadequate radios and lacked accurate marking equipment for such responsibilities. The MASSACHUSETTS STRIKER After Action Report stated this about the marking problem:

"In addition, a means to mark targets from the LOH, similar to the system employed by FAC aircraft, is needed. Current procedures to mark by hand-thrown grenades are not adequate. Hand-thrown grenades are not accurate and take too long to penetrate the thick jungle canopy. WP (white phosphorus) grenades are not authorized due to safety considerations. LOHs should be modified to accept a WP grenade launcher similar to those on FAC aircraft."

To further control ARA strikes, the 101st Airborne Division recommended that every man carry at least one smoke grenade, as many would then be available for marking unit positions. Using smoke was a more popular method than mirrors or panels. It had the weakness that the enemy could also pop smoke when a request went over the U.S. common net radio. This happened on Hill 937 during tactical airstrikes and caused initial confusion. But the FAC overhead could also see the friendlies and suspected what was happening. The ground commander suggested that his units show three colors as the NVA could not duplicate this technique. (The incident also illustrated the enemy's radio monitoring capability, which was further shown when a Vietnamese voice came on the radio and repeated a battalion commander's code name of Blackjack. Artillery on the suspected enemy location brought the sound of explosions over the radio.)
During the A Shau Valley campaign, the ARA fired nothing heavier than the 2.75-inch rocket and this was acknowledged by the 101st Airborne to be inadequate in thick jungle canopy. In such an environment, the ground commanders had to rely on heavy artillery or airstrikes. Tactical air had the advantage of direct delivery of heavy ordnance that could blow away the jungle or cave in an enemy bunker. Though airstrikes could also put napalm on an enemy hugging friendly forces, the major use of tactical air in the jungles was to exploit its massive explosive power—on roads, bunkers, landing zones, and enemy artillery. Conversely, employing tactical airstrikes against small, fleeting bands of enemy could be disadvantageous, as stated in the MASSACHUSETTS STRIKER After Action Report:

"Contact with enemy trail watcher and local security forces was characterized by a heavy volume of AW fire and RPG (rocket propelled grenade) fire. Initial reaction was to return a heavy volume of small-arms fire and then employ artillery and tac air.

"It was soon determined that the enemy forces being encountered were usually less than 5 men and the delay in pursuing the enemy which resulted from the employment of artillery and tac air was allowing the enemy to escape from the area. As a result of this analysis, when contact was made with this small enemy force, the infantry immediately assaulted the positions and artillery and tac air were employed to the rear of the enemy to cut off their escape routes."

Air Interdiction

The Air Force Glossary of Standardized Terms distinguished between close air support and interdiction depending upon whether the airstrike was so close to friendly forces as to be directly integrated into the fire and movement of the ground forces. This report uses the broad definition of air interdiction,
which means seeking to destroy, neutralize, or delay the enemy's military potential before it can be brought to bear effectively against friendly forces. The distance from friendly forces is such that detailed integration of each air mission with the fire and movement of friendly forces is not required. In this sense, air interdiction included attacking the enemy anywhere away from friendly ground forces.

The intelligence needed to locate the enemy was obtained from a wide variety of available sources. The APACHE SNOW After Action Report listed these:

- Visual reconnaissance: FACs in the O-2, Army O-1s from the 220th Reconnaissance Airplane Company, and helicopters of the 2d/17th Cavalry.
- Airborne Personnel Detectors: The "People Sniffer" that located the ammonia of troop concentrations.
- Aerial Photography: "Although no specific photo missions were flown, prior photo coverage was used."
- Side-looking Airborne Radar (SLAR) and Red Haze Infrared: flown by XXIV Corps daily.
- Agent reports.
- Prisoner interrogations and captured enemy documents.

The reference concerning aerial photography may refer to the complete photo coverage of the valley provided by the Air Force to the 101st Airborne during SOMERSET PLAIN. The division was able to get by with the resulting mosaics and its own hand-held camera program. However, the Air Force flew many photo reconnaissance missions and read out the film for its interdiction campaign. One mission of 7 April 1969 revealed five camouflaged trucks and numerous POL
drums northwest of A Luoi in the vicinity where troops a year earlier found large caches. Naturally enough, discoveries such as this possible truck park impressed the enemy. One captured document called aerial photography "the most effective and dangerous means of collecting intelligence information," because it revealed gun sites, trenches, trails, everything down to the "smallest changes" such as a new bush or a telephone wire. This document also mentioned the "Tactical Reconnaissance Unit 460," presumably the 460th Tactical Reconnaissance Wing at Tan Son Nhut.

During the air interdiction campaign, FACs used a 35-mm camera equipped with a telephoto lens to record trucks and other discovered targets. The camera was borrowed from the Army. A report by Horn DASC strongly endorsed the use of such a camera:

"The hand-held photography was one of the most important innovations of the program, and was completely dependent upon Army resources, from camera to processing to final prints. It seems that Air Force intelligence would benefit from more FAC hand-held photography. This means the Air Force must provide and encourage the use of cameras and film."

Airborne observers supplied the most usable intelligence, combining accuracy and timeliness. Visual reconnaissance (VR) was greatly hampered by the heavy jungle canopy and the enemy's camouflage. For instance, an Air Force evaluation of the early 1969 air interdiction campaign in SSZ Victor stated how effectively the jungle hid the NVA movement of supplies:

"It was nearly impossible to follow the route these supplies were taking. The density of foot traffic along established trails could not be judged."
"The best means of detecting truck and foot traffic was visual observation of road cuts and tracks through fresh dirt.... It was nearly impossible to follow the route these supplies [carried on foot or bicycle] were taking. The density of foot traffic along established trails could not be judged. New trails were plotted as they were discovered, but few of these appeared. Some intelligence was obtained through Army channels, but generally the question of where supplies went from the north end of the valley remains unanswered. Possible solutions are sensors or reconnaissance teams."

The NVA made things difficult for the spotters. Exposed trails were covered by trellis work or camouflaged with ashes, sand, leaves, even potted plants. Bomb craters on Route 922 became storage pits covered over with tarps and soil so that, in the words of 7AF, "the sites resembled nothing more than that which they actually were, bomb craters." Decoy depots were built to draw airstrikes and the enemy boasted in documents that thousands of tons of bombs went on these phoney targets.

Despite such ruses, the FACs spotted good targets. About 1 April 1969, the 3d Brigade, 101st Airborne, intelligence officer told the brigade FACs that an enemy supply point was located within two kilometers of YO 355075, a point east of Tiger Mountain and 2,000 feet above the valley floor. The FACs were skeptical, especially when told there was a truck in an area where no known road existed. The FACs saw very little but kept looking due to the insistence of the intelligence officer. Occasionally bombs were put on likely looking sites. The FACs called this "fishing"--employing airstrikes "that we really didn't have anything better to do with and dropping in that area around these coordinates...."

On 17 April 1969, a FAC put a flight on some bunkers and huts and got nine secondaries. After being weathered out the next day, they attacked on the 19th.
and 20th and got more secondaries. Warehouse 54 had been found.

In a second example, a FAC observing Interdiction Point 11 in mid-January 1969 thought he saw something under the trees around a side road, but he could not confirm it after looking for an hour. On 19 January 1969, this FAC and his partner spotted some dull metallic green at the same place. They circled for 45 minutes, dropping lower until they were near enough and the angle of the sun was right. They spotted a truck in a revetment, requested fighters from DASC Victor at XXIV Corps, and got a Marine flight 20 minutes later. They got secondary explosions and POL fires. By the third flight, there was 12.5-mm antiaircraft fire and later some 37-mm fire. Strikes went in all day and for the next several days. Post-strike photography confirmed seven trucks destroyed in this truck park. (Fig. 10)

The Marines especially praised the airborne spotters as valuable for pinpointing the enemy, reporting on terrain, flying ground commanders for orientation, and locating enemy artillery. This latter mission loomed large because the NVA had the better artillery. The NVA 122-mm guns fired 21,000 to 22,000 meters versus the 10,500-11,000 meters of the 105-mm howitzer, the largest gun the Marines carried into DEWEY CANYON. FSB Erskine was built specifically to place 105-mm howitzers five or six kilometers nearer to Laos, but even so the Marines were outgunned. Having observers overhead helped to right the balance, because the enemy gunners quickly learned to expect airstrikes if they fired under the watchful eye of an airborne spotter. The After Action Report put the situation in the strongest terms:

"Aerial observers and TAC(A)s [tactical air controllers--airborne] were invaluable as 'eyes of the commander' and...
for control of air strikes and adjustment of artillery fires. They were absolutely essential in the counter-battery effort for their presence over the suspected enemy artillery position areas suppressed the enemy's fires, and in those occasions when the enemy risked firing, delivered accurate artillery fires and air strikes on the position."

A Marine Battalion Commander agreed:

"...What I suspected as a battalion commander, I more than confirmed as a regimental commander. Over in Laos, the NVA would not fire their artillery if there was air in the immediate vicinity and the trick of this was to keep air over them enough to keep artillery off your back. Every time an AO literally turned his back, out would come a gun and you'd take an incoming round."

Aircraft were credited with destroying seven 122-mm guns and damaging five during DEWEY CANYON.

The A Shau Valley campaign also included the classic interdiction of enemy roads. In the 60 days from 9 December 1968, an average of 32 tactical strike sorties went into the campaign, almost all of them to close Route 548 and attack trucks. Horn DASC and JASC Victor directed the campaign, which originally sought to close Route 548 at the top, center, and bottom. Later several additional interdiction points were placed between Tiger Mountain and the Laotian Border. The plan was simple: to bomb the road until craters and slides made it impassable and then keep the point closed with gas (CS), delayed bombs, and harassment bombing. Meanwhile, special attack aircraft such as the Marine A-6 and USAF AC-119 would cruise the roads searching for moving targets.

In the first week, attempts to crater interdiction points got mixed results.
Point 2 proved too wide to cut (Fig. 11) and #3 along a ridgeline in the south of the valley was too often in low clouds to permit visual bombing. Accordingly, #1 and several other points near Tiger Mountain became the real test of the choke point campaign.

Delayed-fuze bombs and CS gas were dropped on the choke points to prevent night repairs. Horn DASC in a postmortem analysis was not impressed with the results of the CS (BLU-52):

"One of the problems with this ordnance was the difficulty of assessing its effectiveness. BLU-52 was used extensively on one of the interdiction points after the road had been thoroughly cratered. The repairs continued with little, if any, decrease in the reconstruction accomplished each night. Vehicle and foot traffic passed directly through the BLU-52, and it appeared that there had been no attempt to remove it from the area. It is possible that the enemy was equipped with gas masks and was affected very little."

The delayed-fuze bombs were much better at preventing repairs, but they had the disadvantage of having to be delivered visually and precisely on target.

Night radar bombing (MSQ) was also used by the Air Force to stop enemy repairs and generally suppress enemy activity. This COMBAT SKYSPOT was very effective, as shown in Figure 12. Sometimes map errors and equipment maladjustments caused the drops to miss targets by a consistent distance. By having a FAC help orient drops through trial and error, the correct grid coordinates could be learned and fed into the computers. The Marines also employed radar bombing (TPQ), especially for suppressing enemy artillery at night. They established a field TPQ unit at FSB Cunningham, which was "believed to be the first installed forward under field operations."
The Marine A-6 also used the Air Force's COMBAT SKYSPOT system after its own internal radar bombing system proved highly inaccurate. Throughout the 60-day campaign, twelve A-6 sorties a night were fragged uniformly from 1900 to 0600 hours. The Army "Mohawk OV-1 using side-looking airborne radar (SLAR) detected possible moving targets. Being notified, the A-6 attempted a lock-on using its moving target indicator to release bombs on the target. Accuracy was very poor. In one case, a FAC watched an A-6 miss a target by 200 meters and then miss again by 1,000 meters after being told of the first miss. In the Horn DASC postmortem analysis, the conclusion was:

"Although this is insufficient evidence for a valid conclusion, it does not indicate a need for further investigation of the system. When used for visual bombing or for COMBAT SKYSPOT, the A-6 proved very satisfactory."

The air interdiction of Route 548 was successful, though naturally it never achieved the degree of closure and destruction that Allied troops straddling the road could. The road on the valley floor could not be cut even at its narrowest gap, but the mountain terrain around Tiger Mountain could and was. Not only did the enemy build a bypass north around Tiger, but the NVA built a new road north of the whole area, one that came in from the west through the Da Krong Valley. Such multiplication of roads was always a sign that air interdiction was causing the enemy much grief.

The NVA showed great tenacity in trying to keep the roads open. Bulldozers smoothed out the craters, while work crews reinforced stretches with corduroy logs and trees, sometimes those blown down by U.S. bombs. The Marine battalion commander who went into Laos on Route 922 praised the NVA engineers for their
and overhead in case the NVA tried to repulse the helicopter landings.

In APACHE SNOW, the planning and execution of the air cap won praise from all who observed it. The assault area was divided into north and south halves, each with a FAC. Flights of fighters were scheduled for 20-minute intervals, allowing about five minutes between flights and 15 minutes to put in the air-strikes. With airstrikes directed within four kilometers of each other, the fighters had air patterns arranged to have them pulling away from each other. The Tactical Air Control Party at Camp Evans north of Hue received the fighters, put them on a holding pattern, and handed them off to the two FACs. The time schedule was planned so closely that 25 seconds after the last fighter left the southern area, the artillery prep began.

During the air cap when the troops were arriving, the fighters held on station for 15 minutes and then put their ordnance on nearby preplanned secondary targets such as bunkers and trails. At that time, the next flight would check in, be briefed on the secondary targets, and then hold on station for 15 minutes as air cap. The FAC in the southern area that morning was surprised at the clockwork precision:

"That operation—the actual insertion and the preparation of the landing zones by air—has got to be one of the smoothest, most organized operations I've ever seen in a year over here. I can't imagine anything anywhere in this war going any smoother....The timetables ran to within 30 seconds to a minute."

Lt. Gen. Richard G. Stilwell, Commanding General, XXIV Corps, also praised the operation:
25 January at the south end of the valley. Both were on visual bombing runs and both crews were recovered. After this, strike aircraft were more often fragged flights of four and given antipersonnel CBU-24 to suppress ground fire. Also, an A-6 was lost on 17 January 1969 from an unknown cause and the pilot never found. Horn DASC acknowledged the AA had some effect, but not enough:

"Low-angle ordnance was seldom used and FACs and fighters were advised to fly at higher altitudes than would have been required in a more permissive environment. Visual reconnaissance was more difficult from higher altitudes and weapons accuracy was reduced. To some extent, therefore, the enemy succeeded in hindering the interdiction program, but they failed to keep their truck routes open. Toward the end of the campaign, as trucks and bulldozers were destroyed, rock cuts and slides became more permanent."

Yet more proof of the partial stranglehold on the enemy's A Shau Valley network was evident along Route 614. During 1968, the interdiction campaign in SSZ Tango had stopped construction, but not before the NVA built a truck route part of the way to Base Area 112. However, there was no evidence of truck traffic after November 1969. When troops in MASSACHUSETTS STRIKER entered the Route 614 area, they discovered a map with three overlays that led them to a carefully prepared cache just inside Vietnam near 614. It contained weapons (Fig. 9), medicine, radio equipment, ammunition, and 14 trucks. Not visible from the air, the trucks were under heavy canopy and prepared for long-term storage with greased windows and blacked out or removed headlights. The cache was old but in good condition, suggesting that the enemy had deferred truck traffic along Route 614. Thus interdiction--both air and later ground--had decisively curtailed the NVA's hauling capacity toward Da Nang.
"admirable field engineering," and a FAC who participated in the whole campaign said he was "continually impressed" with the rapid repairs. He described the enemy's persistence:

"We would go in at last light with 750 and 1,000 lb. delayed bombs in a highly vulnerable area—a cliff base or narrow valley—and, as soon as we got a satisfactory out, we would go in with a flight of A-6s, carrying twenty to forty 400-pound bombs with slick delayed fusing. The bombs would detonate once an hour, once every 30 minutes. We even went so far as to put powdered CS on top of these sandy, dusty areas. We'd come back the next morning and trucks had driven across the strikes. They'd bypassed the craters or they'd filled them and driven trucks over them."

The enemy's recuperative powers were worn down, his bulldozers and trucks had been destroyed, the road cuts and slides were harder to repair. But repairs in the Tiger Mountain-Tam Boi area never ceased until the Marines approached overland. Proof of the campaign's success came when the Marines seized the whole area and discovered "the largest supply and ammunition storage area ever found in Vietnam"—DEWEY CANYON captured 450 tons. In this northeast corner of Base Area 611, cargo near the border was dumped under trees and hidden in bomb craters. For instance, the U.S. battalion in Laos placed its command post in one crater for the night and 90 minutes later found itself atop 400-500 gallons of gasoline in drums. The next crater down contained 50 rounds of 122-mm artillery shells. Horn DASC interpreted this to show "that passage through the northern end of the valley became so difficult that supplies had to be stored there."

More evidence of success was the increase in NVA antiaircraft to drive off U.S. aircraft. Enemy AA fire increased, finally claiming an F-4 on both 24 and