The boundaries for the overall Area of Operations in Lam Son 719 varied in the early stages of the campaign. Figure 34 shows the AO that was finally established for reporting purposes.

Source: COMMANDO HUNT V, Headquarters 7AF
May 1971
along Route 925 to screen the northern flank. Battalions of the 1st Airborne Division established fire support bases along the ridge north of Route 9, while units of the 1st Infantry Division operated south of the highway. The armored force operated along Route 9 and 92. By 10 February South Vietnamese forces in Laos numbered more than 10,000. Fire support bases were constructed on high ground overlooking Route 9.

Enemy resistance to the ARVN movements was light in the first four days. By 12 February communist troops had encircled them with infantry, artillery, mortars and rockets. Then the ARVN received attacks by fire and infantry probes as they searched for the enemy’s supply caches and fortifications. Although U.S. air forces struck heavily, the intensity of the enemy attacks increased. Using coordinated tank and infantry attacks under the cover of heavy mortar and rocket fire, the enemy overran a ranger battalion on 18 February and an airborne fire support base on 25 February. The whole northern flank and the westernmost positions on the southern flank were engaged in heavy fighting with the enemy until 27 February. Then a lull permitted each side to replenish and reinforce. The NVA increased its strength to 35,000 by adding five infantry regiments. The South Vietnamese increased its force to 17,000 with two marine brigades, an infantry regiment, and two armored units.

On 3 March the South Vietnamese 1st Infantry Division began heli-borne leapfrog maneuvers to Tchepone. One battalion was lifted to Landing Zone (LZ) Lo Lo on 3 March, another to LZ Liz on 4 March; two
were lifted to LZ Sophia on 5 March, and two to LZ Hope, north of Tchepone on 6 March. These last two battalions operated in the Tchepone area for four days and returned to the area near Sophia on 10 March.

The 1st Infantry Division redeployed to the east, conducting harassing probes against Route 914 as they moved. The enemy offensive began on 14 March. By 19 March all South Vietnamese units were in heavy contact. The battalions of the 1st Infantry fought desperately as did the airborne units holding on the north to cover the withdrawal of the armored task force along Route 9. After extraction of the 1st Infantry the Vietnamese marines received the brunt of the enemy attacks from the south. As the armored column moved east, it was ambushed several times and nearly overtaken by NVA tanks. In their accelerated withdrawal RVNAF units abandoned an unknown amount of equipment. Fortunately, tactical air strikes broke up the attack and covered the task force until it crossed back into RVN on 24 March. All South Vietnamese units were out of Laos by nightfall.

Reconnaissance and harassing units re-entered Laos on 24 and 31 March and 6 April for short periods of time. Operation Lam Son 719 ended on 8 April.

**Tactical Air Support**

Prior to Lam Son 719, about 10 percent of the strike sorties flown in Steel Tiger (Area of Southern Laos) supported Lao guerrilla operations against the Ho Chi Minh trail. For the multi-division Lam Son 719 operation, the tactical air effort shifted from interdiction to support of
Sortie rates increased with the shift to close air support. During peak periods fighter aircraft flew 1.5 sorties per day and some units achieved a 2.0 rate. The Navy had three carriers on station for seven days during March. This increased the number of sorties available for Lam Son 719. The high of 337 tactical air sorties occurred on 10 March. Air operations in Lam Son 719 were provided without decreasing support in RVN, Cambodia, or Barrel Roll (Northern Laos).

Allied air forces flew 8,512 tactical air, 1,358 Arc Light, and 2,856 tactical airlift sorties in Lam Son 719. Total tactical air sorties included 147 by VNAF A-37s. Hammer FACs flew 1,291 sorties from 8 February through 24 March, averaging 29 sorties per day.

Role of Tactical Airlift

Tactical airlift was an important factor in Lam Son 719. Transport aircraft brought the troops to the deployment area, provided sustained airlift support during the operation and returned the troops to home bases during the redeployment phase.

Phase I - Preparation

Secrecy

The entire operation was planned and launched under a veil of secrecy. Initially the operation was referred to as Dewey Canyon II to make the enemy think the operation was similar to Dewey Canyon I--a sweep in the A Shau Valley. If the enemy was confused, so were many HQ 7AF staff officers. Lam Son 719 had been in operation several days
before it became clear that only one allied action was taking place.

Preparations for Lam Son 719 were so secretive that only the 7AF Commander and selected members of his staff attended the initial Top Secret SPECAT LIMDIS* briefing given by G-2, XXIV Corps, U.S. Army on 21 January. Among this group was the 834th Commander and two of his staff officers.

Initial Planning

The following day the 834th received more definitive instructions from MACJ-45 via a Top Secret message. The 1st ARVN Airborne Division and a Vietnamese marine brigade were to be moved from Tan Son Nhut to Quang Tri and Dong Ha, from 31 January through 4 February. Based on factors of 12.5 tons and/or 130 combat troops per C-130 and a 15 hour crew duty day, planners estimated that 222 sorties could move the 9,970 troops and 1,810 tons.

The 834th was unaware that U.S. forces would also be airlifted in the operation. This information came in unannounced in successive groups of Combat Essential requirements (CEs). This required extensive reprogramming of flow schedules, coordination with 834th Detachments 1 and 2 for crew availability, and coordination with MACJ-45 to establish priorities within the group of CEs. The C-130 Common Service Airlift and SEA scheduled passenger runs were discontinued and more off-shore

* Security designation, Special Category Limited Distribution.
C-130s were brought in to meet the additional requirements.

Only a few people were involved in the initial planning. Most of the airlift plan was verbal and lacked sufficient detail. The XXIV Corps published a detailed operations order, supplemented by a Seventh Air Force operations order. The order emphasized tactical air operations, with little attention to airlift. After the operation began an airlift plan was written as an annex to the 7AF operations order.

The original planners overlooked the fact that the operation coincided with the Vietnamese celebration of Tet. The Vietnamese, unaware of the impending operation, were on a holiday and could not state their airlift requirements. Ultimately U.S. advisors to the marine and army units determined the number of people and amount and type of equipment that would move in what sequence and when. However, there were no repercussions as the Vietnamese were satisfied with the decisions of the U.S. Advisors.

Management

The 834th AD planned to direct the airlift through the ALCC at Tan Son Nhut and ALCEs at Dong Ha, Quang Tri, and Da Nang. Thus a forward airlift task force element was established at Da Nang to perform the required planning and liaison functions with the XXIV Corps staff. As the operation progressed, this task force element was expanded to include a detachment of C-130 aircrews and operations and maintenance personnel.
A mission commander, combat control team, and a five-man maintenance team were deployed to Quang Tri and Dong Ha airfields. An aerial port mobility team was deployed to Dong Ha and the aerial port operating location at Quang Tri was augmented with additional personnel and equipment. Their task was to ensure that arriving aircraft unloaded and departed in minimum time.

Airfield survey and TALC personnel evaluated facilities, selected appropriate routes, established operational procedures, and coordinated these arrangements with Da Nang Departure Control, Panama Control at Monkey Mountain, Hue Approach Control, Pamper Control at Quang Tri, and the 834th AD. A preferred routing system was established since air traffic and approach control facilities in the northern area of South Vietnam were limited.

The airfield at Dong Ha had been closed for seven months and had to be reactivated. An Army Ground Control Approach (GCA) system, temporary airfield lighting, tower (operated by one man), nondirectional beacon, and an Air Force TACAN* were installed to permit 24 hour a day operations.

* Tactical Air Navigation (radio air navigation system).
Phase II - Deployment

The airlift of U.S. troops and equipment into Military Region (MR) I bases at Dong Ha and Quang Tri to provide air and ground support began on 27 January and continued through 6 February. The in-country C-130 fleet was augmented with ten additional aircraft from off-shore wings, bringing the number of C-130 aircraft in Vietnam to 58. The entire fleet was utilized on a 24-hour basis when the movement of the Vietnamese forces began on 30 January 1971. The movement of the ARVN 1st Airborne Division and the 258th Vietnamese Marine Brigade from Tan Son Nhut Airfield to Dong Ha and Quang Tri occurred between 30 January and 6 February with 247 sorties airlifting 9,280 passengers and 680 tons of cargo for a total payload of 1,715 tons. Twelve C-123 sorties were flown during the deployment—the only time these aircraft were used in the operation. In all, 4,609 tons were airlifted in the first phase.

During the three months preceding this operation the 834th AD averaged three priority sorties per day, carrying 190 tons a day. During the deployment, these sorties increased to 49 daily and carried 379 tons a day. The high of 102 sorties, carrying 758 tons of cargo and passengers, occurred on 4 February.

The deployment was completed on 6 February despite a number of aircraft delays at Dong Ha and Quang Tri. These delays were caused by limitations of the Army GCA equipment which was not designed to control multiple aircraft simultaneously. To compound this problem, the GCA was
inaoperative a large part of the time because of maintenance problems and a lack of spare parts.

TABLE 4
DEPLOYMENT AIRLIFT FOR LAM SON 719
26 January-6 February 1971

<table>
<thead>
<tr>
<th>Cargo</th>
<th>Passengers</th>
<th>Total</th>
<th>Sorties</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Number)</td>
<td>(Tons)</td>
<td></td>
</tr>
<tr>
<td>C-130</td>
<td>3,269</td>
<td>11,770</td>
<td>4,551</td>
</tr>
<tr>
<td>C-123</td>
<td>26</td>
<td>271</td>
<td>58</td>
</tr>
<tr>
<td>Total</td>
<td>3,295</td>
<td>12,041</td>
<td>4,609</td>
</tr>
</tbody>
</table>


Phase III - Resupply

Tactical airlift resupplied allied forces from 7 February through 27 March. Quang Tri, Phu Bai, and Da Nang Air Bases were the primary resupply points until 15 February when Khe Sanh was reopened.

Runway Construction

C-130s could not off-load at the main resupply base of Khe Sanh until a runway was constructed. The 3,900 foot airstrip had been closed since its abandonment in 1968 by U.S. forces and the entire area had to be cleared of mines left by the Americans. On 31 January U.S. Army engineers began constructing a new runway since the old airstrip was marred by shell holes and erosion. Work began on the old strip as well to provide backup capability. These two runways, with a new 350 X 800 foot steel
SECRET

A massive resupply effort to sustain the Allied forces was mounted at the Khe Sanh combat support base. It was vital that adequate stores of JP-4 fuel and ammunition of all types be maintained at Khe Sanh. Since delivery by aircraft was delayed until reopening of the runway on 15 February, all supplies had to be transported by Army trucks or CH-47 helicopters and U.S. Marine CH-53 helicopters. The resupply strained the Army's transport capability as the engineering force struggled to keep Route 9 passable.

The ARVN were resupplied almost entirely by helicopter. The armored task force and the airborne units designated to secure Route 9 could not insure safe passage for ARVN truck convoys. Consequently, it was not a reliable means of resupply.
Artillery Free Corridors

The Khe Sanh Combat Support Base was surrounded by artillery fire zones. In order to accommodate the airlift operation, artillery free corridors had to be established through the area for the transport aircraft. Planners from the 834th AD contacted the XXIV Corps Artillery Officer and the air control agencies serving MR I to create a corridor from Hue, a terminal control zone at Khe Sanh, and an exit corridor to Quang Tri.

The U.S. Army installed a low frequency radio beacon at Khe Sanh and the Air Force installed a TACAN for navigation in the corridors. The radio beacon could not be received beyond 10 miles and was not reliable for an ADF* approach into Khe Sanh. The TACAN coverage was excellent and reliable. Lock-on would occur before entering the corridor at Hue and hold even on the runway at Khe Sanh.

This corridor and air traffic control arrangement permitted the airlift aircraft continuous access to Khe Sanh and exit from the area during daylight hours. Communications were established between the artillery and the air traffic control agencies in the event that the Commander XXIV Corps closed the corridor for firing during an emergency. Without this arrangement the required volume of resupply could not have

* Automatic direction finding (equipment)
Aircraft Control

Although the U.S. Army was responsible for the Khe Sanh airfield, Army aviation facilities were not adequate to meet Air Force needs for all-weather, round-the-clock operations. Consequently, the USAF 1st Mobile Communications Group installed, maintained and operated a GCA unit, control tower, TACAN, and runway and approach lighting. To ensure efficient and rapid cargo handling and C-130 turn-around, the 834th Air Division sent to Khe Sanh a mission commander, TALO, combat control team (one officer, two airmen), mobility team (one officer, 15 airmen), transportable airlift control element (TALCE). (one officer, three airmen), and a maintenance turn-around team (three airmen).

Mission Commander and TALOs

A mission commander, responsible to the 834th AD Commander, directed airlift operations on the scene. TALOs were located at Khe Sanh and XXIV Corps (Forward). They coordinated Army airlift requirements and prepared emergency and special airlift requests. Operating with jeeps and radio equipment, they provided instant communications with XXIV Corps, the mission commander, and the 834th AD Command Post without interfering with the CCT's control of air traffic.

Combat Control Team

The Combat Control Team arrived on the first C-130 into Khe Sanh on 4 February. Since the airfield did not reopen until 15 February,
the CCT remained to provide long range HF (high frequency) radio communications. After the field reopened the CCT began flight following duties. This continued until 11 March when the TALCE was installed. The CCT then remained as a reserve for air traffic control and HF communications; and they were available to implement the emergency aerial resupply plan.

The helicopter traffic about Khe Sanh caused difficulties for arriving and departing C-130 aircraft, especially during the periods when only one runway was available. These difficulties were attributed to the extremely high density of rotary wing traffic, a lack of air discipline on the part of some U.S. Army helicopter pilots, and the low level of experience of Army tower operators in controlling fixed wing and rotary wing air traffic at Khe Sanh. This situation was partially resolved by the use of an Air Force control tower and USAF operators. Despite the difficulties, however, the resupply effort was adequate to sustain the combat units.

On 1 March a TALCE command module and six personnel were flown into Khe Sanh to support resupply operations. Deployment of the dormitory and sanitation modules and support components was delayed until 8 March when the new airfield ramp was completed. The TALCE became operational on 11 March and assumed the flight following and communications role.

Aerial Port Mobility Teams

Several aerial port mobility teams were used at Khe Sanh because of the large volume of cargo flowing into the base. Each team was equipped with adverse terrain fork lifts and able to unload an aircraft.
with palletized cargo in less than five minutes. During peak operations a C-130 arrived on the average of every eight minutes.

Aerial port personnel and others worked around the clock despite marginal weather, primitive living conditions, and enemy harassment. Khe Sanh received over 500 rocket, artillery, and mortar rounds; and enemy ground probes and sapper attacks in 17 incidents from 9 March through 31 March.

**Da Nang Operating Location**

The sortie effort at Khe Sanh was sustained primarily by positioning 11 aircraft with supporting equipment, personnel, and aircrews at Da Nang under a special airlift headquarters. Aircraft flow into the corridor to Khe Sanh was controlled on the basis of ground capacity at Khe Sanh—to park, off-load, and relaunch the aircraft.

Only four delays were attributed to maintenance throughout the operation. This record was achieved by 68 maintenance specialists and 22 crew chiefs. Their equipment included 17 CONEX (container express) tools and spare parts, 11 equipment pallets with parts, and C-130 engines and propellers.

A rocket attack on Da Nang in late February destroyed one C-130 and damaged three others. Thereafter the aircraft were dispersed during the hours of darkness.
The Resupply Payload

C-130s flew 2,047 sorties during the resupply phase. This accounted for 21,200 tons of cargo and 13,717 passengers, totaling 22,509 tons. The most active days were on 3 March when 94 sorties carried 1,271 tons and 28 February when 114 sorties carried 1,202 tons. Khe Sanh was the most active resupply point with 14,585 tons off-loaded there. (See Table 5).

TABLE 5
RESUPPLY AIRLIFT FOR LAM SON 719
7 February-27 March 1971

<table>
<thead>
<tr>
<th>Location</th>
<th>Cargo Tons</th>
<th>Passengers</th>
<th>Total Tons</th>
<th>Sorties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khe Sanh</td>
<td>14,141</td>
<td>4,657</td>
<td>14,586</td>
<td>1,168</td>
</tr>
<tr>
<td>Quang Tri</td>
<td>3,941</td>
<td>2,508</td>
<td>4,206</td>
<td>418</td>
</tr>
<tr>
<td>Dong Ha</td>
<td>252</td>
<td>1,017</td>
<td>344</td>
<td>43</td>
</tr>
<tr>
<td>Phu Bai</td>
<td>1,000</td>
<td>2,279</td>
<td>1,834</td>
<td>225</td>
</tr>
<tr>
<td>Da Nang</td>
<td>1,043</td>
<td>2,831</td>
<td>1,221</td>
<td>137</td>
</tr>
<tr>
<td>Other</td>
<td>243</td>
<td>425</td>
<td>318</td>
<td>56</td>
</tr>
<tr>
<td>Total</td>
<td>21,220</td>
<td>13,717</td>
<td>22,609</td>
<td>2,047</td>
</tr>
</tbody>
</table>

SOURCE: Command Briefing, 834th Air Division, undated, pages 1 - 55.
Commando Vault missions were important to the mobile tactics of the RVNAF forces. During the Lam Son offensive C-130 aircraft dropped 25 BLU-82/B 15,000 pound bombs for Helicopter Landing Zone (HLZ) preparation and destruction of targets. Of the 25, 11 were dropped on tactical targets such as enemy troops, truck parks, base camps and cache sites. The remainder were used to create HLZs and fire base sites. The majority of the HLZs could accommodate three to four aircraft simultaneously.

Aerial Resupply

The 834th AD could airdrop supplies to the South Vietnamese units operating in Laos at any time. The airdrop plan provided for a two-mile wide artillery-free air corridor over Route 9 from Khe Sanh to Tchepone. A TACAN was installed for navigation in the corridor by the 1st Mobile Communications Group. The TACAN was located four nautical miles southwest of Khe Sanh.

The 834th AD took extensive precautions to ensure safe use of the corridor. Routing, control of artillery fire, and airdrop procedures were coordinated with specific ARVN combat units; ARVN Corps, G-4; U.S. XXIV Corps, G-4; and Headquarters MACV. Only the ARVN I Corps Commander could activate the corridor and clear the area of other air traffic and artillery fire. Once the corridor was activated, the plan called for a combat controller at Khe Sanh to deploy to Red Lion, the joint US/ARVN
artillery control center (located one mile west of the airfield), to ensure positive control of Allied artillery.

At Da Nang more than 350 tons of ammunition, POL, and rations specially configured for various type Vietnamese units were palletized, inspected, and rigged for Container Delivery System (CDS) airdrop. A platoon of U.S. Army riggers stood ready to rig an additional 50 tons per day if required.

If airdrops were to be used, C-130s would proceed from Da Nang along the Hue-Khe Sanh corridor. Once over Khe Sanh the aircraft would orbit, delaying entry into the Laotian corridor until synchronized with 2 minutes time over target at the drop zone. Airdrops would occur at 15 minute intervals. The airdrop corridor was 4,000 to 10,000 feet from Khe Sanh to a point 10 nautical miles from the drop zone where it extended to ground level.

Dropping cargo from an altitude of 600 to 800 feet, at an airspeed of 130 knots, with flaps down and the rear doors open would present a lucrative target for 37mm and .50 caliber antiaircraft weapons. So a different tactic was planned. The C-130s would come in low at tree top level, climb to 600 to 800 feet, drop the load, and then go in low again. The aircraft would then return to Khe Sanh, fly the 077 degree Khe Sanh/Quang Tri leg and return along the coast to Da Nang.
Air drop zones were also established to ensure accurate delivery of the cargo. Drop zones measuring 550 x 200 meters were to be cleared along the 283 degree heading of the corridor. The impact point would be clearly marked with timing panels and colored smoke to indicate drop/no drop and wind direction.

The airdrop was not used in Lam Son 719. When the scheme of maneuver became one based upon fixed fire support bases, resupply in Laos was accomplished by helicopters.

Phase IV - Withdrawal

The final segment of Lam Son 719--withdrawal of forces and equipment--began 28 March and ended 8 April 1971. Return cargo included excess ammunition, rations, the Air Force GCA unit, two Air Force TACAN units, the TALCE, aerial port mobility team and combat team equipment, and salvageable aluminum matting. RVNAF forces and USAF personnel were airlifted to military bases in the Saigon area.

The largest withdrawal mission was accomplished during 1 - 6 April and required 57 sorties and the airlift of 4,600 ARVN combat troops and equipment totaling 959 tons. (See Table 6 for summary of withdrawal airlift.)
TABLE 6
WITHDRAWAL AIRLIFT FOR LAM SON 719
28 March-8 April 1971

<table>
<thead>
<tr>
<th>Location</th>
<th>Cargo (Tons)</th>
<th>Passengers (Number)</th>
<th>Total (Tons)</th>
<th>Sorties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khe Sanh</td>
<td>978</td>
<td>174</td>
<td>998</td>
<td>82</td>
</tr>
<tr>
<td>Phu Bai</td>
<td>102</td>
<td>8,155</td>
<td>1,321</td>
<td>91</td>
</tr>
<tr>
<td>Quang Tri</td>
<td>91</td>
<td>1,330</td>
<td>250</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td>1,171</td>
<td>9,659</td>
<td>2,569</td>
<td>195</td>
</tr>
</tbody>
</table>

SOURCE: Command Briefing, 834th Air Division, undated, pages 1-15

The withdrawal was complicated by the simultaneous airlift of elements of the 1st Air Cavalry Division (Airmobile) U.S. Army from Military Region III to Military Region I, to support another operation. Also, ARVN forces had to be moved into Military Region II to counter increased enemy activity in the vicinity of Pleiku and Dak To.

Impact

The total impact of Lam Son 719 on the enemy was indeterminate. Airpower played a significant role in Lam Son 719 by providing air strikes, air mobility, resupply, and withdrawal capability. Undoubtedly, many more thousands of troops would have been required in such an operation and more lives lost without the efficacy of air forces. And certainly the logistics capability of the U.S. Army would have met a severe test had...
SECRET

Khe Sanh not been reopened to aircraft on 15 February.∗ (See Table 7 for total airlift provided.)

TABLE 7

TACTICAL AIRLIFT FOR LAM SON 719
26 January-8 April 1971

<table>
<thead>
<tr>
<th>Date</th>
<th>Mission</th>
<th>Cargo (Tons)</th>
<th>Passengers (Number)</th>
<th>Total Tons</th>
<th>Sorties</th>
</tr>
</thead>
<tbody>
<tr>
<td>26 January</td>
<td>Deploy</td>
<td>3,295</td>
<td>12,041</td>
<td>4,609</td>
<td>604</td>
</tr>
<tr>
<td>6 February</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 February</td>
<td>Resupply</td>
<td>21,220</td>
<td>13,717</td>
<td>22,509</td>
<td>2,047</td>
</tr>
<tr>
<td>27 March</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 March</td>
<td>Redeploy</td>
<td>1,171</td>
<td>9,659</td>
<td>2,569</td>
<td>195</td>
</tr>
<tr>
<td>8 April</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>25,869</td>
<td>35,417</td>
<td>29,687</td>
<td>2,846</td>
</tr>
</tbody>
</table>


Lessons Learned

Joint operations required thorough and comprehensive planning to be effective. Whenever such operations involved large scale airlift, it was important that airlift personnel be included in the initial planning. This would enable Air Force personnel to use the predeployment phase to plan and arrange for essential airlift support and assist Army planners in understanding the capabilities and limitations of airlift.

Factors to be considered in the initial planning phase included artillery free corridors, airfield survey, communications, navigational
aids, mobility teams, support and maintenance facilities, field equipment, combat control teams, TALCEs, recurring airlift requirements, housing, and mess facilities.

Operations involving a large volume of Air Force airlift and Army helicopter traffic required the use of Air Force air traffic controllers and Air Force navigational aids and approach facilities. Army GCA equipment was not designed to provide for multiple IFR approaches and departures. Further, Army air traffic controllers had neither the training nor experience to control the large volume of traffic.

It was desirable to operate from a single base. This permitted consolidation of maintenance resources, supply and support facilities, and controlled launch of airlift aircraft. This, in turn, resulted in a more even flow of traffic into forward bases. Moreover, operations were simplified and more economical.

Close coordination between airlift personnel and the Army logistics staff was essential. Changing tactical situations on the battlefield changed the logistic requirements. Often this necessitated a change of priorities or method of delivery to ensure timely and safe delivery of personnel and supplies.

An airlift task force including assigned aircraft, aircrews, and support personnel and equipment was essential to an effective and efficient large scale airlift. A task force working directly with Army
combat units tended to be more responsive because they gained a greater knowledge and understanding of daily operations. Aircrews who flew regularly became familiar with the procedures and requirements. This tended to expedite the flow of air traffic.

Summary

Lam Son 719 was an incursion into Laos by RVNAF forces to interdict a major route structure near Tchepone and destroy enemy supplies. Tactical air forces struck the enemy in support of the ground operation. The U.S. Army XXIV Corps provided helicopter and supporting fires but its ground forces remained within the South Vietnamese border. Tactical airlift carried the forces to the deployment area, resupplied them during the battle, and returned them to their original bases when the campaign ended.

The campaign was launched in such a covert manner that initial airlift planning was insufficient. This contributed to the delay in reopening of the airfield at Khe Sanh and to air traffic control problems.

Airlift control elements and planners overcame these difficulties and each phase of the airlift was executed successfully. Aircraft flew 2,856 sorties, carrying 29,687 tons (including passenger and cargo).

A number of lessons concerning future airlift were learned from Lam Son 719. Airlift planners considered it essential that they be included in the initial planning of operations involving large scale airlift in
order to ensure essential support. Army air traffic control equipment and personnel were inadequate to control a large volume of air traffic. Close coordination between airlift personnel and the Army logistics staff was essential due to changing battle conditions. An airlift task force was also necessary to ensure effective and efficient airlift for large operations such as Lam Son 719.
SECRET

CHAPTER V
TACTICAL AIRLIFT OF THE VNAF

Introduction

This chapter examines the growing capability of the VNAF airlift. Described are the type and number of aircraft, training status of personnel, airlift highlights, and aerial port training.

Aircraft

In January 1969 the VNAF airlift force consisted of one squadron of sixteen C-119s and one squadron of sixteen C-47s. All were based at Tan Son Nhut AB. By September 1971, 32 C-123s had been transferred from the 834th AD to the VNAF, with 16 more scheduled by 31 December 1971. C-7s were to be transferred as VNAF crews became qualified. One VNAF squadron was to activate 1 Mar 72 with 24 C-7s (16 UE + 8 NQA). The second VNAF squadron was to activate 1 May 72 with 24 C-7s (16 UE + 8 NQA). A third squadron was to activate 1 Jul 72 with 16 UE aircraft.

The addition of jet-assisted C-123Ks permitted airlift operations into many short and previously inaccessible airstrips. This capability would be enhanced further with the transfer of C-7s. The overall result would be effective VNAF support to ARVN staging areas and fire support bases.
By mid-1972 the VNAF airlift force would increase from two types of aircraft to four, from 32 aircraft to 128. Average airlift capability would increase from 170 tons per day in mid-1971 to 485 tons per day by mid-1972.

Training

In January 1970 the 834th AD (315 Tactical Airlift Wing) began training selected VNAF aircrew members and maintenance personnel for C-123 aircraft. By the end of 1971, 112 C-123 pilots were expected to complete the training. (See Table B.) C-47 first pilots were transitioned into C-123 aircraft. Aircraft commanders for C-7s were to come from C-47 and C-119 resources. All VNAF pilots and co-pilots were graduates of pilot training courses in the United States. Many of the navigators were graduates of the VNAF undergraduate navigation course established at Tan Son Nhut in 1970.

TABLE B
VNAF TRAINING SCHEDULE FOR TACTICAL AIRLIFT AIRCRAFT

<table>
<thead>
<tr>
<th>Aircraft</th>
<th>PIlots</th>
<th>Navigators</th>
<th>Flight Vectors</th>
<th>Loadmaster</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>112</td>
<td>8</td>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>Terminal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personnel and Crew Chiefs</td>
<td>141</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

End of our report, by Major General Neering

6A
SECRET

The North American Aviation (NAA) Aircraft Division of the United States Air Force (USAF) identified the

requirement for aircraft commanders. Of the USAF staff and

aircraft commanders required, on more than 1/5 would be available for

use in the Vietnam War. It was believed that the assumption that every first

aircraft commander would be able to perform the role of an aircraft commander in

command would provide only 1/5 percent of the required

number of aircraft commanders.

As a result, a special pre-flight training was required for the

aircraft commander. The pre-flight training was designed to

prepare the pilot for the Vietnam War. In addition, maintenance training was

provided to pilots in order to be able to perform the role of an aircraft commander.

The training for pilots and maintenance personnel was similar to the

training received by other USAF personnel.

Aircraft commanders were also advised

on a regular basis to become

more proficient in their role, as well as in other roles. This was

due to the dynamic nature of the Vietnam War.

Additional Highlights

The USAF experience gained in the Vietnam War contributed to the development of

new tactics and techniques. The lessons learned during the Vietnam War were

applied to future conflicts, including the Persian Gulf War and the

Iraqi intervention. The experience gained during the Vietnam War was

considered valuable in the development of new
% Cargo Carried by VRNF

Figure 11  Airlift Support of RVNAF (Transport)
% Passengers/Paratroops Carried by VNAF

Source:  VNAF Status Review, Directorate of Comptroller, Management Analysis
Advisory Group, November 1971
the airlift required by the RVNAF. This capability was to triple by July 1972. Although a continued pilot shortage was forecast, a demonstrated surge capability was evidence that the VNAF could generally provide transport aircrews when necessary.

The most serious constraint was a lack of facilities at Tan Son Nhut. AFAT-5 personnel believed that facilities such as buildings and ramp space were not adequate to provide an overlap of USAF and VNAF airlift capability. This meant that the VNAF capability would increase only as USAF airlift was phased out. Certainly the percentage of VNAF airlift of RVNAF requirements increased as the USAF airlift percentage declined in the last half of 1971.

**Aerial Port**

Informal training of the Military Air Transportation Terminal (MATT) personnel of the VNAF began in 1965 but a formal program did not begin until 1969. Formal training included documentation procedures, passenger and cargo handling, 463L and MHE operation, load planning, records keeping, and safety. Personnel were trained to operate basic 463L equipment, including the 10K standard and adverse terrain forklifts. However, they were not trained on 463L K-loaders since the K-loaders were not required for C-47, C-119, and C-123 aircraft.

Integrated aerial port training was accomplished only at VNAF request. Training which resulted in an upgrading of skill level of the Vietnamese trainee required specific approval by HQ VNAF because of manpower restrictions. An average of 50 VNAF personnel participated in integrated
training each month from 1969 through 1971. Approximately 90 were upgraded in 1970 and 100 in 1971.

In 1970 the 2d Aerial Port Group began making arrangements to transfer operating locations to the VNAF. To enhance turnover a special mobile training team provided concentrated MAT training during a 60 day period prior to transfer. By the end of 1971 the VNAF had assumed control of 15 aerial port operation locations.

Summary

In January 1969 the VNAF airlift force consisted of 16 C-119s and 16 C-47s. By the end of 1971 48 C-123s had been added. USAF C-7s were to total 48 by 1 May 1972 and were to be transferred as VNAF crews became qualified.

Training of aircrews and maintenance personnel was conducted in-country and was progressing satisfactorily. However, a shortage of aircraft commanders was forecast to continue for the immediate future.

The percentage of RVNAF airlift supported by the VNAF increased from 1969 through 1971 and by October 1971 reached a high of 80 percent. The VNAF force was achieving self-sufficiency.

Progress had also been made with integrated training of aerial port personnel. By the end of 1971 the VNAF controlled 15 aerial port operating locations.
CHAPTER VI
CONCLUSIONS

The Trend of Airlift

Tactical airlift played a vital role in the war during the 1969 to 1971 period. Nevertheless, all airlift mission activity declined, except for training of VNAF airlift forces. Despite its declining role a number of important factors concerning tactical airlift operations were recorded.

Planning

The planning phase of operations involving large scale airlift should include airlift personnel. This would enable airlift personnel to advise the army and tactical air forces of the limitations and capabilities of airlift. It would also permit adequate preparation at primary forward area operating locations. Involvement in the initial planning of Lam Son 719 by airlift personnel might have prevented the 11 day delay in opening of the Khe Sanh air strip—a delay which occurred when ground forces needed supplies desperately.

Army air traffic control equipment and personnel could not control satisfactorily a large volume of air traffic. Thus, Air Force equipment and controllers should be utilized in operations of the magnitude of Lam Son 719.
It was essential that airlift personnel coordinate closely with the army logistics staff because changing battle conditions often changed the type of supplies needed and the time and method of delivery. An airlift task force employing mission commanders, CCTs, TALOs, ALCEs, mobility teams, and TALCEs was essential to effective and efficient airlift of a large scale.

Organization and Control

USAF tactical airlift in Southeast Asia began with a series of temporary measures to satisfy short term airlift requirements. As the war continued beyond original expectations and airlift requirements increased, a larger and more permanent organization was needed.

The organization which evolved was encumbered by a dual structure of command and control. C-130s, aircrews, and maintenance personnel were assigned TDY from offshore wings throughout the war. This structure violated accepted management principles of unity of command and unity of direction. Authority, responsibility, and loyalties sometimes became confused. Nevertheless, the airlift mission was accomplished. This was attributed primarily to the airlift personnel involved: they were motivated and competent.

The actual control of airlift was a mix of both centralized and decentralized. C-130s and C-123s were utilized in CSAS, which was compatible with the USAF concept of centralized control, and C-7s were
dedicated to specific army units, which was compatible with the Army concept of decentralized control. This dichotomy of control gave the armed forces the best aspects of centralized and decentralized control.

Retention of personnel, procedures, and equipment which have proved useful in the past should provide the nucleus of a viable tactical airlift capability in the future. Certain organizational elements resulted in a control structure that yielded continuous customer liaison, turn-around capability, and real-time aircraft control. Consequently, there was optimum utilization of the airlift force. These organizational elements should be preserved for future employment: ALCC, ALMS, ALCEs, TALOs, CCTs, and TALCEs.

These elements could form the nucleus of a tactical airlift support group. They would be the means by which the airlift commander managed his forces in a contingency area. This unit should include essential vehicles, communications, other equipment, and support personnel to establish an airlift system. Certainly aerial port personnel, equipment, and facilities would be included since they form an integral part of an airlift system.

In a peace time environment the tactical airlift group could engage both in civil assistance and in training exercises involving large scale joint maneuvers. The size of the unit would depend upon future needs for global tactical airlift. A study should be conducted to determine these needs. Such a study should identify the number and type aircraft and personnel, and other equipment and facilities to be included in the force.
Airlift Management System (ALMS)

ALMS was an attempt to integrate all the critical decision variables relevant to management of airlift forces. The system was not successful in its first operational test and served primarily to disseminate the manual frag. Nevertheless the ALMS concept had merit and warranted further development.

Aerial Delivery Systems

The container delivery system, 1528 LAPES, and GRADS were effective air drop methods. Testing of GRADS should continue in order to improve the procedure and increase its flexibility.

Airfields

Airfields were the greatest limiting factors to tactical airlift. Construction criteria and responsibilities of the Air Force and Army should be clearly defined. Engineering capability to build, maintain, and survey airfields should be acquired by the tactical airlift organization, by assignment of USAF civil engineers or USA engineers to the tactical airlift staff.

The Aerial Port

Aerial port activities played a critical role in tactical airlift, particularly in a large scale operation. It was neither aircraft nor aircrews that limited operations, but the saturation of aerial port facilities. The use of mobility and combat control teams assisted the aerial port in coping with this problem. Materials handling equipment
was a critical factor in the operation. The Air Force should develop a forklift with the rugged and reliable features of the 10K adverse terrain forklift but smaller and lighter in weight for ease of deployment. Future aircraft and supporting vehicles should be compatible with the 463L system. Alternatively, a pallet system should be devised which is adaptable to tactical aircraft expected to remain in the inventory.

Assessment
The USAF began tactical airlift in Vietnam to support the French against the Viet Minh. In the years that followed airlift support increased. By 1962 airlift forces were stationed in-country on TDY and in 1966 a permanent airlift organization was established to improve airlift effectiveness. Operational procedures were refined and the largest tactical airlift force in USAF history also became the most effective. Small units operated in areas 5 to 10 times larger than in previous conflicts. Rapid repositioning of forces rather than the retention of large reserves characterized the commitment of ground forces. Virtually every type of ground tactical unit had been moved into combat and supported logistically by air.

Airlift supplied ground forces which operated in a land where climatic conditions and topography restricted conventional ground mobility, and provided them the greatest mobility in the history of warfare. The tactical airlift force not only performed its role, it also assisted the VNAF in attaining a self-sufficient airlift capability.
UNCLASSIFIED

APPENDIX I

THE TRANSPORTATION REQUEST SYSTEM
THE TRANSPORTATION REQUEST SYSTEM

General

The user in the field requested routine and special transportation of supplies through Movement Control Centers (MCCs) located with each field force command. If highway transportation was inappropriate the request was forwarded to the district Transportation Management Agency (TMA), the regional TMA, and finally the MACV TMA. Any of the agencies in the channel could disapprove the request. Emergency requests were submitted directly to the MACV Command Center. The TMA was the focal point for all users of military railway, inland waterway, coastal shipping, troop carrier, and cargo airlift transportation. TMA considered all transportation modes in order to satisfy transportation requirements. If airlift was selected as the mode TMA notified the 834th ALCC of the transportation requirement. ALCC prepared the frag order directing the airlift wing to schedule an aircraft to the onload point. After loading, the aircraft transported the cargo to its destination.

Cargo moved according to three basic categories: emergency, special, and routine.

Emergency Priority

Aeromedical Evacuation (AME) Urgent. Immediate response to save life; effectively the highest priority recognized in SEA.

Tactical Emergency (TE): The highest cargo and/or troop priority. Reserved for tactical movement into combat and reinforcement of units engaged with the enemy. Response time: Aircraft had to be at onload point within two hours after ALCC received notification by TMA.

Emergency Resupply (ER): Movement of primary materials to forces in combat. Response time: two hours.

Combat Essential (CE): Movement relating to forces positioned for immediate combat; also movement in relief of national disaster. Response time: eight hours.

AME Priority. Response time: 24 hours.
UNCLASSIFIED

Special Priority

Other Special Mission Airlift Requests (SMARs): In addition to emergency categories, SMARs included:

(a) cargo not qualifying as combat essential but requiring more expeditious shipment than routine priority.

(b) special cargo (outsized, overweight, special-handling required, or incompatible loads)

(c) cargo and/or personnel involved in special operations (such as Lam Son 719) and unit moves. Response time: to ensure delivery by required delivery date.

Routine Priority

Routine Operational Requirements:

(a) AME Routine. Routine AME missions were scheduled daily and therefore delivered to proper facilities within approximately 24 hours. However required response time was 72 hours.

(b) Priority 1: Movement requiring expeditious shipment but not in direct support of combat. Response time: four days.

(c) Priority 2: Movement of auxiliary items or personnel to prevent impairment of operations. Response time: eight days.

(d) Priority 3: Movement of administrative personnel and equipment. Response time: 20 days.

(e) Priority 4: Routine resupply and training. Response time: 30 days.

APPENDIX II

THE ARLIFT MANAGEMENT SYSTEM (ALMS)
THE AIRLIFT MANAGEMENT SYSTEM (ALMS)

Hardware

The ALMS computer configuration consisted of an IBM 360/50 located at 7th AF and two remote IBM 1130/2250s located at the 834th Air Division. The 1130s were connected to the 360 with secured data link lines. The computer system was linked to selected units in the field by AUTODIN.* Other field units were connected (by manual interface) to the computer system by the AN/UYA-7. The ALMS system and the FRAG-PREP** system configurations were similar. This made possible the preemption of one software environment by another in case of contingencies or unexpected equipment malfunctions.

The 1130 systems, duplicates of each other, were the primary input/output (I/O) devices. The 1130 computers were originally intended for the I/O, the display, and the temporary storage of data. With the installation of stand alone programs the 1130 computing capability was used, but not to full capacity.

Associated with the 1130 computers were IBM 2250/4 Graphic Display Devices, medium speed punched card reader/punch and line printer, disk storage devices, and a synchronous communications adapter which provided the link for communication with the 360. The 360 was equipped with two card readers, card punches, and line printers. External storage consisted of disks and magnetic tapes. The 360 used communications data adapters to process information being transferred to and from the remote 1130s and the AUTODIN system.

Software

The ALMS software included government-furnished software (GFS) and contractor supplied programs in support of the 360/50 and 1130 computers. GFS included compilers and operating systems for the 360/50 and 1130 computers, AIME (a communications system for the 360/50, and the 1130/2250 Graphic Subroutine Package. CDC supplied software for the ALMS application

*Automatic digital Network
**The Seek Data II function that scheduled tactical air strike and reconnaissance missions.
subsystem which contained software to extend the capabilities of the GFS to meet the particular requirements of ALMS.

Systems Programs

Programming languages used in ALMS were the assembly language, Assembler F, and the procedural oriented language COBOL F. The 1130 system was the 1130 Disk Monitor System. The 360 system was the 360 Operating System (OS) using multiprogramming with a variable number of tasks (OS/MVT) option. The OS/MVT controlled input, information processing, and output of the ALMS computers. 360 OS included supervisory routines, input/output routines, assemblers and compilers, and service programs and utilities. The input/output routines used Indexed Sequential Access Methods (ISAM) to control the format and access of data stored in the peripheral storage devices.

Automation Programs

The application programs supplied by CDC comprised the heart of ALMS. These programs performed data base maintenance, schedule preparation, frag order preparation, and mission following functions.

Communications

ALMS used three communications media within its system: 1) computer-to-computer secure data link, 2) AUTODIN, and 3) AN/UYA-7. Telephones were also used.

Data Link

Each of the 1130s was connected to the 360/50 at 7AF via secured data link circuits (1.5 miles of cable). The circuits, synchronous, half duplex, were modulated at both ends to insure integrity of transmitted data. XG-13 encryption devices were used at both locations to allow transmission of classified information. The circuits were interfaced to the 360 using IBM 2701-1 Data Adapters.

Automatic Digital Network (AUTODIN)

ALMS was interfaced with the Defense Communication System AUTODIN through the 2701 ASCII AUTODIN adapter and was capable of transmitting
and receiving messages via automatic switching centers from all units having access to an AUTODTN terminal. The AUTODIN interface in a Multi-programming Environment (AIME) program processed messages between the ALMS computer and the switching centers and converted EBCDIC to ASCII codes and vice versa. Messages were transmitted to AUTODTN by AIME from three possible sources: ALMS programs, a 360/50 connected card reader, and the AIME RETRANS program. The RETRANS program recovered messages from an off-line history tape and passed the messages to AIME for retransmission. The recovered messages could be transmitted to selected addresses or all addresses in the original message.

AUTODIN terminals were collocated with ALCEs, selected port facilities, and specified flying units. These terminals were assigned to the airlift command control agency; however, some were used by other agencies.

The requirement for security sometimes reduced efficiency. Even though the terminals were collocated only communications personnel with the proper security clearances could operate the secure AUTODIN terminal. Control agency personnel did not have access to the terminal. When the terminal and the agency were in adjoining rooms the procedure was satisfactory. However, in other cases the terminal and the agency were located in separate rooms, floors, or buildings. The time required to process messages through the terminal increased as the distance between the terminal and the agency increased. This time became critical in the mission following task.

AN/UYA-7

The UVA-7 was a semi-compact digital/voice communications terminal which used high frequencies (HF) to transmit and receive data. The data could be in either fixed or open format or normal voice depending upon the user's needs. The equipment could interface with communications security (COMSEC) equipment to provide secure communications. The UYA-7 equipment was obtained from the SEEK LIFT and SEEK CARGO programs. Originally, the SEEK LIFT and SEEK CARGO programs were to provide the capability for independent, mobile, secure communications for the tactical theater. After ALMS became an approved system, it was determined that the UYA-7 should be an integral part of the system.

One method of interface was to manually transcribe the incoming data onto punch cards and then transmit the cards via AUTODIN. Another method was direct electronic UYA-7/computer interface without manual intervention. A third method (adopted) was to electronically interface the receiving master station with a special card punch/reader. Automatically produced
punched cards were taken to the AUTODIN terminal for transmission to the computers. The best method would have been direct computer interface.

No documentation was available to show why this approach was discarded. The third method was troublesome because the UYA-7 card punch was mechanically unreliable. This was caused by poor engineering, lack of parts, lack of maintenance documentation, and a lack of understanding by maintenance personnel.

The mobility of the UYA-7 provided a tactical communications system for operational control of tactical forces in a rapidly changing environment. It offered secure digital communications between control agencies and forward operating locations where the means of communications were unreliable, insecure, or nonexistent. The four configurations used for SEA airlift were 1) permanent master station, 2) transportable ALCE (TALCE), 3) suitcase, and 4) jeep version. The three permanent master stations were located at the ALCC and the ALCEs at Cam Ranh Bay and Da Nang. These three points served as the interface with the AUTODIN system. The TALCEs, suitcase, and jeeps reported to the master station at the head of their respective UYA-7 net. The TALCEs were transportable by air and equipped with the UYA-7 HF equipment and VHF and UHF radios. The suitcases were semi-portable, self-contained versions. The jeep version was installed in the AN/MRC-108 communications jeep. The master stations and the TALCEs had two HF channels; the suitcases and jeeps had one channel. The master stations also had ancillary equipment, a paper tape punch/reader, a card punch, a card reader, and a wide page printer. The paper tape capability was never used. The card reader was never used operationally. As noted before, the card punch was faulty and could not be used. The wide page printer was used extensively. The COMSEC modems were never used in SEA. They were being transported to the theater at the time the system was terminating. One major problem was foreseen, however. Because of the classified nature of the COMSEC modems, it would have been extremely difficult for UYA-7 operating personnel at forward operating locations to perform their normal tasks in addition to preventing compromise of crypto equipment. The UYA-7 could be used for receiving information from the computer (for example, a frag) or to transmit information to the computer (for example, flight following data).


2. (S) Ibid.

3. (S) Ibid.


5. (S) Airlift, 1967.

6. (S) Ibid.


8. (S) Ibid.


10. (S) Ibid.


12. (S) Ibid.

13. (S) Ibid.

14. (S) Ibid. and HQ PACAF (DOLOX) critique, dated 8 March 1972.


17. (S) VNAF 5th Air Force Equipment Utilization. The VNAF were to receive 48 C-123s by 31 December 1971 and 48 C-7s by 1 May 1972.
18. (U) This discussion represents the views of the author.

19. (U) Ibid.

20. (U) HQ PACAF ltr, 1 March 1971, subject: "Evaluations of Airlift Management System". (Distributed to: HQ USAF/XOO/PRC/PRP, USAFE, TAC, MAC, and ESD.)

The Herring report, while unclassified, is caveated Air Force Eyes Only.

21. (S) Report Tactical Airlift Performance and Accomplishments Southeast Asia, RCS: 7AF-U9 (TAPA-SEA), Published monthly by Automated Systems Division, Directorate of Operations, Headquarters 834th AD, APO San Francisco 96307. (TAPA)

22. (U) Interview, topic: Tactical Airlift. With Major Jimmy D. Pickens, Scheduling Officer, 834th AD, by Major Ronald D. Merrell, 1 Oct 1971. (Pickens Interview)

23. (U) Herring Report. Material in this section is based on this reference unless indicated otherwise.

24. (U) Ibid.

25. (U) Pickens Interview.

26. (S) CHECO Report Commando Vault, Headquarters PACAF, 12 October 1970. The material in this section is based on this reference unless indicated otherwise. (Commando Vault)

27. (U) Herring Report.

28. (U) Ibid.

29. (S) CHECO Report Airborne Support of Psychological Operations in SEA, pending publication at Headquarters PACAF, December 1971. The material in this section is based on this reference unless indicated otherwise.


34. (U) Herring Report. The remainder of the material in this section is based on this reference.


The Herring report, while unclassified, is caveated Air Force Eyes Only.

37. (U) Ibid.

38. (U) Herring Report.

39. (U) Ibid.

40. (U) Ibid.

41. (U) Ibid.

42. (U) Ibid.

43. (U) Ibid.

44. (U) Interview, Brigadier General John H. Herring, Jr., Commander, 934 AD, by Lieutenant Colonel Jack L. Humphries, June 1970.


46. (S) Ibid. The material in this section is based on this reference.

47. (S) Ibid.

49. (S) Command Briefing, 834th Air Division (AD), undated, pages 1 - 15. (Command Briefing.) Note: Material in the following sections is based on this reference unless indicated otherwise.

50. (S) Interview, topic: Operation Lam Son 719, with Colonel Carleton E. Schutt, Deputy Director Operations, 834th AD, by Colonel John F. Loye, Jr., and Major Gilbert K. St. Clair, March 1971. (Interview, Schutt)

51. (S) Ibid.


53. (S) Lam Son 719.

54. (S) Interview, Schutt.

55. (S) Ibid.

56. (S) Lam Son 719.

The Herring report, while unclassified, is caveated Air Force Eyes Only.

57. (S) Ibid.

58. (S) Ibid.

59. (S) Ibid.

60. (S) Letter Vice Commander 834th Air Division, subject: Project CHECO Report "Lam Son 719, 30 Jan 71 - 24 Mar 71," 11 May 1971. (Letter, Vice Commander 834th AD)

61. (S) Ibid.

62. (S) Lam Son 719.

63. (S) Ibid.

64. (U) Herring Report.

65. (U) This conclusion is drawn by the author.

66. (S) Letter, Vice Commander 834th AD. The materiel in this section is based on this reference.
67. (S) CHECO Report Improvement and Modernization of the VNAF, Headquarters PACAF, 8 October 1971.

68. (U) Herring Report.

69. (U) Ibid.

70. (U) Ibid.

71. (U) Ibid.

The Herring report, while unclassified, is caveated for Air Force Eyes Only.
### GLOSSARY

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAF</td>
<td>Army Air Field</td>
</tr>
<tr>
<td>AB</td>
<td>Air Base</td>
</tr>
<tr>
<td>AD</td>
<td>Air Division</td>
</tr>
<tr>
<td>ADF</td>
<td>Automatic Direction Finding</td>
</tr>
<tr>
<td>AF</td>
<td>Air Force</td>
</tr>
<tr>
<td>AFAT-5</td>
<td>Air Force Advisory Team 5</td>
</tr>
<tr>
<td>AIME</td>
<td>A Communications System for the 360/50</td>
</tr>
<tr>
<td>ALCC</td>
<td>Airlift Control Center</td>
</tr>
<tr>
<td>ALCE</td>
<td>Airlift Control Element</td>
</tr>
<tr>
<td>ALMS</td>
<td>Airlift Management System</td>
</tr>
<tr>
<td>ALO</td>
<td>Air Liaison Officer</td>
</tr>
<tr>
<td>AME</td>
<td>Aero Medical Evacuation</td>
</tr>
<tr>
<td>APGp</td>
<td>Aerial Port Group</td>
</tr>
<tr>
<td>AFSq</td>
<td>Aerial Port Squadron</td>
</tr>
<tr>
<td>ARVN</td>
<td>Army of Vietnam</td>
</tr>
<tr>
<td>AT</td>
<td>Adverse Terrain</td>
</tr>
<tr>
<td>AUTODIN</td>
<td>Automatic digital network - a DOD communications network for transmitting digital data</td>
</tr>
<tr>
<td>CAMRON</td>
<td>Consolidated Aircraft Maintenance Squadron</td>
</tr>
<tr>
<td>CCT</td>
<td>Combat Control Team</td>
</tr>
<tr>
<td>CDC</td>
<td>Control Data Corporation</td>
</tr>
<tr>
<td>CDS</td>
<td>Container Delivery System</td>
</tr>
<tr>
<td>CE</td>
<td>Combat Essential</td>
</tr>
<tr>
<td>CEA</td>
<td>Circular Error</td>
</tr>
<tr>
<td>CHFECO</td>
<td>Contemporary Historical Examination of Current Operations</td>
</tr>
<tr>
<td>CINCPAC</td>
<td>Commander-in-Chief, Pacific Command</td>
</tr>
<tr>
<td>COBOL</td>
<td>A computer program language</td>
</tr>
<tr>
<td>COMSEC</td>
<td>Communications Security</td>
</tr>
<tr>
<td>CONEX</td>
<td>Container Express</td>
</tr>
<tr>
<td>CRIMP</td>
<td>Consolidated RVNAF Improvement and Modernization Plan</td>
</tr>
<tr>
<td>CSAS</td>
<td>Common Service Airlift System</td>
</tr>
<tr>
<td>DASC</td>
<td>Direct Air Support Center</td>
</tr>
<tr>
<td>DET</td>
<td>Detachment</td>
</tr>
<tr>
<td>ER</td>
<td>Emergency Resupply</td>
</tr>
<tr>
<td>FUL</td>
<td>forward Operating Location</td>
</tr>
<tr>
<td>FORTRAN</td>
<td>A computer program language</td>
</tr>
<tr>
<td>FRAG PREP</td>
<td>The SEEK DATA II function that scheduled tactical air strike and reconnaissance missions</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>LCA</td>
<td>Ground Control Approach</td>
</tr>
<tr>
<td>GFS</td>
<td>Government Furnished Software</td>
</tr>
<tr>
<td>GRADS</td>
<td>Ground Radar Aerial Delivery System</td>
</tr>
<tr>
<td>Half Pallet</td>
<td>Used for loading C-7 aircraft (half the size of 463L pallet)</td>
</tr>
<tr>
<td>HF</td>
<td>High Frequency</td>
</tr>
<tr>
<td>HLZ</td>
<td>Helicopter Landing Zone</td>
</tr>
<tr>
<td>IBM</td>
<td>International Business Machines Corporation</td>
</tr>
<tr>
<td>IFR</td>
<td>Instrument Flight Rules</td>
</tr>
<tr>
<td>I/O</td>
<td>Input/Output</td>
</tr>
<tr>
<td>ISAM</td>
<td>Indexed Sequential Access Methods</td>
</tr>
<tr>
<td>JCS</td>
<td>Joint Chiefs of Staff</td>
</tr>
<tr>
<td>Km</td>
<td>Kilometers</td>
</tr>
<tr>
<td>LAPES</td>
<td>Low Altitude Parachute Extraction System</td>
</tr>
<tr>
<td>MAC</td>
<td>Military Airlift Command</td>
</tr>
<tr>
<td>MACV</td>
<td>Military Assistance Command, (South) Vietnam</td>
</tr>
<tr>
<td>MCC</td>
<td>Movement Control Center - An extension of TMA</td>
</tr>
<tr>
<td>MED EVAC</td>
<td>Medical Evacuation</td>
</tr>
<tr>
<td>MHE</td>
<td>Materiel Handling Equipment</td>
</tr>
<tr>
<td>MILSTAMP</td>
<td>Military Standard Transportation and Movement Procedures</td>
</tr>
<tr>
<td>MT</td>
<td>Mobility Team</td>
</tr>
<tr>
<td>NVA</td>
<td>North Vietnamese</td>
</tr>
<tr>
<td>OL</td>
<td>Operating Location</td>
</tr>
<tr>
<td>ORANGE</td>
<td>A chemical used to destroy broad leaf vegetation</td>
</tr>
<tr>
<td>PAC</td>
<td>Pacific Area Command</td>
</tr>
<tr>
<td>PACAF</td>
<td>Pacific Air Force</td>
</tr>
<tr>
<td>POL</td>
<td>Petroleum, Oil, and Lubricants</td>
</tr>
<tr>
<td>PSYOPS</td>
<td>Psychological Operations</td>
</tr>
<tr>
<td>RAAF</td>
<td>Royal Australian Air Force</td>
</tr>
<tr>
<td>ROD</td>
<td>Required Delivery Date</td>
</tr>
<tr>
<td>RVN</td>
<td>Republic of Vietnam</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>SD II</td>
<td>SEEK DATA II</td>
</tr>
<tr>
<td>SEA</td>
<td>Southeast Asia</td>
</tr>
<tr>
<td>SMAR</td>
<td>Special Mission Airlift Request</td>
</tr>
<tr>
<td>SOS</td>
<td>Special Operations Squadron</td>
</tr>
<tr>
<td>Speed Pallet</td>
<td>See Half Pallet</td>
</tr>
<tr>
<td>STOL</td>
<td>Short Take off and Landing performance</td>
</tr>
<tr>
<td>SVN</td>
<td>South Vietnam</td>
</tr>
<tr>
<td>TALO</td>
<td>Tactical Airlift Liaison Officer</td>
</tr>
<tr>
<td>TAPA</td>
<td>Tactical Airlift Performance and Accomplishments</td>
</tr>
<tr>
<td>TAS</td>
<td>Tactical Airlift Squadron</td>
</tr>
<tr>
<td>TAW</td>
<td>Tactical Airlift Wing</td>
</tr>
<tr>
<td>TDY</td>
<td>Temporary Duty</td>
</tr>
<tr>
<td>TE</td>
<td>Tactical Emergency</td>
</tr>
<tr>
<td>Tet</td>
<td>The Lunar New Year holiday observed in Vietnam and other Asian countries early in the Julian year</td>
</tr>
<tr>
<td>TMA</td>
<td>Transportation Management Agency</td>
</tr>
<tr>
<td>US</td>
<td>United States</td>
</tr>
<tr>
<td>USA</td>
<td>United States Army</td>
</tr>
<tr>
<td>USAF</td>
<td>United States Air Force</td>
</tr>
<tr>
<td>UHF</td>
<td>Ultra High Frequency</td>
</tr>
<tr>
<td>VHF</td>
<td>Very High Frequency</td>
</tr>
<tr>
<td>VNAF</td>
<td>(South) Vietnamese Air Force</td>
</tr>
</tbody>
</table>