G. (C) HEAVY LIFT OPERATIONS

1. General
   a. Purpose

   To depict the participation of medium and heavy lift helicopters in Operation LAMSON 719.

   b. Scope

   This subsection will address all aspects of the operation involving medium and heavy lift helicopter. It will include enumeration, analysis and discussion of the planning, coordination, conduct and control of all support rendered. Support aspects to include intelligence, fire support, maintenance, and communications will also be considered. The final section of the report will summarize support provided and the results of enemy actions.

   c. Organization for Combat

      (1) Organic Units

      The 159th Aviation Assault Support Helicopter Battalion, 101st Aviation Group, with three TO&E assault support helicopter companies and the attached 478th Aviation Heavy Helicopter Company (HHC) formed the nucleus of the medium and heavy lift forces.

      (2) Non Organic Units

      (a) The 132nd and 179th Assault Support Helicopter Companies (ASHC) from 1st Aviation Brigade assets, were placed under OPCON of the Commanding Officer, 159th Aviation Battalion.

      (b) The 463d Helicopter Marine Heavy (HMH) Squadron, USMC, was placed in support of the 159th Aviation Battalion, on a mission basis.

      (3) Operational Bases

      (a) The organic units operated out of their permanent
base camp facilities, with the three letter companies located in the vicinity of Phu Bai airfield and the 478th Aviation Company at Red Beach, Da Nang. To improve response times, two to three 478th aircraft were staged at Phu Bai airfield each night.

(b) The 132nd Assault Support Helicopter Company was based at North Phu Bai adjacent to and sharing maintenance facilities with Company B, 159th Aviation Battalion.

(c) The 179th Assault Support Helicopter Company occupied a previously abandoned CH-47 revetment area at Camp Eagle.

(d) The 463rd HMAF Squadron operated out of a permanent base camp at Marble Mountain Airbase, Da Nang.

2. **Mission**

   a. Provide medium and heavy lift capability, in support of combat assault operations, for two ARVN Divisions; one Vietnamese Marine Division; one ARVN Ranger Group; Corps artillery units; elements of the US 101st Airborne (Airmobile), 23d Infantry, and 5th Infantry (MECH) Divisions; elements of US 7th Air Force; and Da Nang Support Command.

   b. Conduct normal and emergency resupply of fire bases and base camps.

   c. Perform administrative and tactical troop movement.

   d. Accomplish recovery of disabled aircraft.

   e. Perform MEDEVAC and special missions on call.

3. **Intelligence**

   a. **Collection, Evaluation, and Dissemination**

   All intelligence from sources outside the 159th Avn Bn and its subordinate units was obtained from either the 101st Avn Group S-2 or the 101st Airborne Division (Airmobile) G-2. Raw information from agent reports, visual reconnaissance, radar, sensors, captured documents, POW's, and other sources was evaluated by either the 525th
MI Group, the 517th MI Detachment of the 1st Brigade, 5th Infantry Division (Mech), or, the 101st MI Detachment of the 101st Abn Div (Ambl). From these agencies, the intelligence followed the normal dissemination chain to the 101st Abn Div (Ambl) G-2 and the 101st Avn Cp S-2. There was, of course, an exchange of intelligence with RVN forces at division level. Intelligence was also generated by elements of the 101st Avn Gp. Intelligence mainly concerning antiaircraft fires, was obtained from air crews organic to or supporting the 159th Aviation Battalion. Some intelligence was obtained through liaison meetings and direct contact with personnel from other units.

b. Use

Intelligence was collected by the battalion S-2 section and passed on to the aviation companies, staff sections, and other interested personnel through formal briefings and informal visits. The S-2 and each subordinate unit maintained an intelligence map showing information of interest to the air crews and commanders. All pilots were briefed prior to starting a mission. Fresh intelligence was passed by radio as obtained. Air Mission Commanders received detailed briefings during the planning phases.

c. Impact on Operations

Intelligence on enemy fires was a major factor influencing selection of flight routes and altitudes. It also affected tactics employed and the timing of the operations.

d. Analysis

Although the intelligence used was rather limited in scope, in that it concerned mainly enemy antiaircraft fires, it continued to have a major influence on the mission. The intelligence obtained, and the methods used to obtain it, were adequate for an operation of this type.

4. Operations

The conduct of Operation LAMSON 719 brought into play all of the
The particular manner by which planning, coordination, command and control, fire support, communications, and maintenance were affected and conducted is outlined below. Additionally, each of the various types of missions performed by the medium and heavy lift elements.

a. **Planning**

(1) The planning for heavy and medium lift operations during LAMSON 719 was conducted at battalion level by the battalion commander, his staff, and the company commanders.

(2) Pre-D-Day planning was initiated on 28 Jan 71. General areas of consideration during planning were the organization for operations, command and control, displacement forward of a battalion operations center, maintenance requirements, and staging for the operation.

(a) A forward battalion operations center was planned to be established at Khe Sanh with the mission of planning, controlling, and coordinating the battalion's operations forward. The BOC (forward) would coordinate with the 101st Aviation Group (forward) to facilitate operations.

(b) Consideration was then given to the staging of aircraft out of Khe Sanh, and the concept was evaluated. It was projected that a company would stage out of Khe Sanh on a rotational basis, maintaining operations forward for two weeks at a time. This concept was subsequently discarded because the enemy situation made staging at Khe Sanh overly hazardous; there were no suitable areas available for parking and maintaining the aircraft; and the physical security of the aircraft and equipment would require excessive amounts of manpower. In addition, consideration was given in support of a contingency plan for moving supplies from the rear to the forward area of operations. This plan would best be supported by staging out of rear areas in the vicinity of Phu Bai. Taking all these factors into consideration, the final decision was made to stage out of the Phu Bai area.

(c) Maintenance in the forward area was of interest during planning and the suggestion for using a maintenance team at Khe Sanh was considered. It was resolved that since the aircraft
would be staging from base areas at Phu Bai, the additional support forward would not provide the best use of maintenance personnel or their equipment. Further, such a maintenance operation would be so narrow in scope that the assistance provided by such a maintenance team would be negligible.

(3) During the preparation for operations, it was determined that all command and control, coordination, and mission planning would be conducted by the BOC (forward) through use of LNO's, C&C elements, AMC's, and flight leads. It was anticipated that BOC (forward) would plan its missions as received from Group and then pass the requirements through the CP main, located to the rear, to the companies for implementation. Moreover, the control channels would originate from the BOC and then be directed through either the AMC, C&C, and/or flight lead as required to meet the mission. Coordination would be handled by commanders conferences, AMC briefings, and LNO's provided to the BOC.

(4) Analysis of Planning Revealed

(a) Long range planning would be limited at battalion level. This was due primarily to the tactical environment and the very nature of airmobile operations. In order to overcome this disadvantage, a great deal of the inherent flexibility was incorporated into each operational plan.

(b) Logistic planning on a day to day basis must be as accurate as possible when passed to the unit required to execute the tasks. Unless accurate information concerning sorties and tonnage is available in the planning stages, the commander cannot determine the number of aircraft required to perform the assigned tasks, and unnecessary delays in the completion of the tasks may result.

b. Command and Control

(1) The command and control element of the battalion headquarters was subdivided into two elements with the battalion commander in charge of the forward CP and the executive officer in charge of operations at the home station in Phu Bai. The forward CP was manned to
perform operations on a 24-hour basis with the following personnel:

(a) Battalion Commander
(b) S-3
(c) Operations Officer
(d) Duty Officer (SD from CH-47 Company)
(e) 3 Radio Telephone operators
(f) 2 Communications personnel
(g) 1 Generator operator/driver

(2) The shifts divided with the bulk of the personnel present during the operation's day (0700-1900) and the remainder on duty during the night, planning and consolidating requirements. The commander and S-3 were present and functioning in their respective areas through portions of both shifts. The command and control was effectively extended to the operational area by use of the C&C aircraft by the battalion commander and S-3.

(3) The rear CP was also manned on a 24-hour basis, using personnel from the letter companies to supplement the remaining staff. The rear CP was used to receive and compile mission aircraft requirements, and to allocate the missions to each of the assigned and attached units.

(4) **Command and Control (C&C) Aircraft**

The forward command post was furnished a UH-1H to supplement the organic OH-6A helicopters. These aircraft were used to control assault support, resupply, and extraction operations. Personnel from the forward CP conducted liaison visits to supported units, briefed air crews, and monitored flight routes to and from the landing zones and fire support bases. These aircraft were further used to reconnoiter landing zones, make weather checks, and otherwise assist the mission leaders in the successful execution and completion of their tasks.
c. **Fire Support**

(1) **Employment**

Fire support means employed in support of the heavy lift effort required a closely coordinated plan to give maximum coverage of the area.

(a) The 2d Squadron, 17th Cavalry, performed a recon role and provided recommended routes of flight into and out of landing zones. Additionally, the Cav screened selected area during the mission to discourage indirect and small arms fire. The Cav AMC and the 159th Avn Bn AMC worked in close coordination before, during, and after the mission to take advantage of the valuable information provided by the 2d Squadron, 17th Cavalry.

(b) Gunship escort was provided by both UH-1C and AH-1G aircraft. The AH-1G was preferred because of the large fuel capacity, resulting in longer station time. The gunships escorted the heavy lift aircraft into the LZ and provided coverage in the vicinity of the LZ, putting suppressive fire on active enemy locations. The gunships further developed the flight routes into the LZ by drawing enemy fire, enabling the heavy lift aircraft to avoid the active areas.

(c) AH-1G aircraft from the 4th Battalion (Aerial Artillery), 77th Artillery, delivered suppressive fire on enemy locations prior to and during missions. They were not engaged in direct escort of the aircraft; therefore, they were free to engage suspected targets in their specified area.

(d) TAC air strikes were sometimes used in conjunction with the heavy lift missions; however, a forward air controller was always on station in an area around the LZ with TAC air on call. The concept of having a FAC over suspected enemy artillery position while the resupply mission was in progress seemed to have some effect in reducing attacks by indirect fire. TAC air strikes were coordinated with Cav operations to establish approach routes to the LZ. Air strikes were employed on suspected enemy locations in the flight path. Upon completion of the air strikes, the Cav reconnoitered the area to assess...
the effectiveness of the air strikes. The use of smoke ships was another type of TAC air employment. The Air Force had smoke available on call. The smoke was used to help conceal the aircraft enroute and on approach to the LZ.

(e) Artillery fires were available from US and RVN-AF units. Preplanned artillery was fired on suspected enemy locations before and during heavy lift efforts. The 159th Avn Bn AMC closely coordinated with the supported unit to insure accurate and timely artillery fire on the desired locations. The artillery was fired into areas not being covered by the ARA or TAC air.

(2) CO, 159th Aviation Battalion Comments

The 159th Avn Bn accomplished its mission of medium and heavy lift support to LAMSON 719. The proper use of all available fire support facilitated this accomplishment. On numerous occasions aircraft were forced to abort the mission because of heavy antiaircraft and indirect fire on the LZ's. After applying artillery and TAC air, renewed attempts were made to accomplish the mission. On very few occasions, the enemy was able to prevent the aircraft from getting their cargo onto the LZ. The rare times the enemy was successful were a result either of effective long range artillery or exceptionally heavy direct fire, both small arms and antiaircraft fire, all around a fire base. When activity became this intense, even the less vulnerable UH-1H aircraft were unsuccessful in resupply attempts, such as occurred at Fire Base DELTA in the last days of the operation. An adequate number of gunships was not always available because of combat damage, maintenance problems, and combat assault requirements. The large number of fire bases demanded more than one flight of heavy lift aircraft to accomplish all missions. Additionally, to effectively use the cargo aircraft, it was desired to keep gunships on station continually. This was not possible at times and resulted in some missions being delayed while the gunships refueled. A strong recommendation for future operations of this nature would be to attach a gun company to the assault support helicopter battalion. This would facilitate command and control, briefings, and coordination, making that unit directly responsive to the needs of CH-47 and CH-54 aircraft for all types of missions.
dd. Assault Support Operations

(1) Organization for assault support operations varied, depending upon the nature of the operation, the turn-around time and the number of sorties to be moved or the time available for completion. A mission leader, normally one of the assault support company commanders, was appointed for each operation. The number of aircraft used varied from four to twelve. When the number exceeded eight, two flights were used to facilitate control. Aircraft for each operation were drawn from one or more of the assault support helicopter companies. On several occasions, heavy lift support by the CH-54 or CH-53 was used to insert heavy equipment loads such as bulldozers, backhoes and 155mm howitzers.

(2) Planning for assault support operations was performed by the battalion forward command post, and most often was short range in nature. The mission leader assembled his aircraft at a designated area, and the mission lead and aircraft commanders were briefed by personnel from the forward CP. The briefings entailed flight routes, altitudes, aircraft separation and locations of known antiaircraft weapons and enemy ground units. Detailed planning to include preplanned fires by artillery, close air support, and air cavalry and gunships, was accomplished prior to briefing the air crews.

(3) Sound tactics were an absolute necessity to insure that the battalion aircraft took a minimum of significant hits while operating in a mid-intensity conflict.

(a) Tactical considerations called for selection of flight altitudes, where possible out of range of small arms fire and beyond the effective range of most antiaircraft weapons. It was found that the aircraft took the largest number of hits when operating below 3000' above ground level.

(b) Flight routes were determined after analyzing "shot at" and "hit" reports, as well as intelligence reports of enemy locations. "Hot" areas were bypassed when consistent with the accomplishment of the mission.
(c) Approaches and departures from landing zones (LZ's) were determined after reviewing the enemy situation around the LZ. Generally, approaches were steep, spiraling descents in close proximity to the LZ. This was done to minimize flight time at low altitudes and to avoid enemy antiaircraft positions.

(d) A variety of formations was used to optimize the effectiveness of support operations while minimizing vulnerability to enemy actions. Aircraft were frequently separated in both altitude and distance to inhibit the enemy's ability to strike at multi-aircraft formations; however, it was necessary to land the maximum number of loads in the shortest period of time because of the enemy's ability to place mortar fire on the LZ's when they saw aircraft on final approach. Usually, the first two or three aircraft would be able to deliver sorties into the LZ before it came under indirect fire. This situation led to the employment of smaller flights (two to three aircraft) or by separating larger flights into two sections of two or three aircraft each with time/distance separation between the sections.

(e) Another tactic employed to reduce enemy effectiveness was to give a flight the requirement to support several fire bases. This gave the flight leader the flexibility to have his flight alternate between missions by delivering sorties to one base, then to another, and back again to a third base or the first base. This technique permitted efficient operations with a minimum of wasted blade time and tended to confuse the enemy and reduce his responsiveness.

(f) CO, 159th Aviation Battalion Analysis of Tactics

1. It was found that tight formations, straight line formations and low level operations tended to increase vulnerability of aircraft to enemy action. Tight formations have a primary advantage of enabling door gunners to provide suppressive fire; however, because of the positioning of friendly forces near forward fire bases, this advantage was negated. Because of the greater vulnerability of aircraft in tight formations, this tactic was used only when the threat of indirect fire was the primary consideration.

2. Vietnamese (ARVN) pathfinders were often not able
to brief air crews on the current tactical situation around the fire bases. As a result, escort gunships were sometimes unable to get an assessment of friendly locations and could not engage potential targets. Also, lift aircraft could not plan their approach and departures based on the most current tactical situation.

3. The ARVN pathfinders also were not briefed on the US use of colored smoke and would frequently mark an area for a load with red smoke, which, to the pilot, indicated the LZ was under attack.

4. Pickup Zones (PZ's) were located in South Vietnam and were normally adjacent to major command headquarters. Controls and organization of the PZ's was facilitated by having U.S. pathfinders and riggers in the PZ to control the air traffic and to advise in the preparation of loads. Loads were normally well organized in the PZ's to permit multiple aircraft to work in the PZ simultaneously, while working the same mission or multiple missions. Police of the PZ's was adequate to prevent damage to aircraft or injury to personnel. In isolated cases, the PZ's could have been rendered more suitable with the removal of several tall trees. Liaison officers from the assault support helicopter battalion were placed with the major allied headquarters and proved invaluable in coordinating the PZ times, loads and priorities for delivery.

5. Landing Zones (LZ's) were in South Vietnam and Laos. Sites selected were usually on high ground and were basically unimproved when the first medium and heavy lift loads arrived. The first sorties delivered normally were clearing and earth-moving equipment for improvement of the landing zone and the first loads of combat equipment sufficient to allow substantial improvement in the time lapse between the delivery of clearing equipment and the delivery of loads. In some instances, the ground units were directing loads into areas with tall trees surrounding the desired delivery point. Maneuvering in these areas at altitudes of 5000-6000 feet became critical. Variations in the weights of loads which appeared identical contributed to the difficulty of handling the loads in the landing zones. Very few
loads were rejected or damaged during delivery; however, improvement of the LZ's progressed concurrently with the insertion and in many cases had produced suitable areas by the time the last sorties were delivered.

b. Communications with the allied LZ's in South Vietnam was adequate because of the use of American advisory personnel as radio operators. Communications with LZ's in Laos was normally inadequate because of the lack of trained English speaking controllers in the LZ's. On one occasion an assault support operation involving six medium lift helicopters was aborted and delayed more than one hour because of a lack of communication between the aircraft and the ground unit. One exception was the 1st ARVN Infantry Division, which had adequately trained English speaking controllers. These personnel greatly enhanced the smoothness of the operation.

c. Fire support for assault support operations was in varying degrees and forms. The most common fire support used was in the gunship CAP of the landing zone and the escort of each medium or heavy lift helicopter into the LZ. On many occasions the preparatory fires ignited large scale grass or range fires that filled the air with smoke, dust and haze and made locating the LZ's extremely difficult. On many other occasions, a command control ship had to individually escort the medium and heavy lift aircraft through the smoke and haze to the LZ.

(4) Example of Assault Support Operations

The mission in support of the insertion on LZ LOLO was assigned to the 159th Assault Support Helicopter Battalion with the assistance of the 132d Assault Helicopter Company, OPCON to the 159th and the III MAr' Squadron HMH 463. The support requirement included 70 sorties totaling 265 tons.

a. The AMC for the troop lift was the S-3, 223d CAB; and the heavy lift was under the control of the CO, 159th Aslt Hel Bn. The planned sequence of movement included completion of the troop lift prior to the first medium and heavy lift aircraft. This would avoid the mixing of UH-1H aircraft with the medium and heavy lift aircraft.
The flight route was north of Highway 9 and the Xe Pon River, proceeding on a westerly heading until abreast of the LZ, at which time a left modified high overhead approach would be initiated ending in an upwind landing.

b. Gunship cover in the vicinity of the LZ was under the control of the troop lift AMC, giving him as much flexibility as possible with his fire support. Three sets of guns were given the role of direct support to the 159th elements under mission control of the C&C for that element. The 159th mission commander planned on using the three sets of guns by maintaining two sets on station over the LZ throughout the heavy and medium lift portion of the insertion. The remaining set of guns would be used to relieve alternately the other sets of guns on station. The relief set of guns would be on call at the rearm pad at Khe Sanh, and directly responsive to the C&C.

c. It was decided that one flight consisting of ten aircraft would be used for this operation. This flight of ten aircraft was further divided into six CH-47's and four CH-53's. The Marine element was placed under the control of the Army element which facilitated both control and coordination between these units. The use of one flight combining both the heavy and medium lift aircraft further allowed greater flexibility and mission responsiveness than had been experienced by the 159th in previous operations with the Marine aircraft.

d. Two minute separation between aircraft was considered to be the best separation time. This time was arrived at with due consideration for aircraft separation in the LZ and PZ, while still permitting maximum flight control by the C&C. Heavy emphasis was placed on maintaining proper separation by observing the posted enroute flight air speed of eighty knots and a return air speed of one hundred and ten knots.

e. The formation most logically chosen for the flight was trail, again maximizing control and coordination, while allowing maximum maneuverability and flexibility.
The tactical extraction of the fire bases by medium and heavy lift helicopters was completed using the same basic organization, planning and tactics employed during assault support and resupply operations. Medium and heavy lift helicopters were employed during the extraction phase of three of the ARVN fire bases located in Laos and two in South Vietnam. All the fire bases came under some form of ground attack and/or indirect fire at the time of the extractions or just prior to the extractions. Because of enemy contact at the extraction sites, start and completion times were adjusted to meet the tactical situation.

(2) Organization

The organization for each extraction varied based on the amount of equipment to be extracted and the enemy activity around the fire base. The number of aircraft used varied from four to six medium lift helicopters (CH-47) and one to two heavy lift helicopters (CH-54/53). One set of AH-1G or UH-1G gunships provided fire support. The aircraft were all under the command of one mission lead until the extraction was completed. A command and control aircraft was used to coordinate the overall extraction from a position over the fire base.

(3) Planning

Detailed planning was accomplished by the personnel of the battalion forward CP and passed to the mission lead on a daily basis, or mission basis. The briefing of flight crews by the S-3 personnel consisted of intelligence, flight routes, fire support (planned and available on call) and the specifics for breaking off the mission in case of heavy enemy activity. The AMC in the command and control aircraft then monitored the operation and was immediately available to coordinate changes and solve problems. The emphasis in extraction planning was on the preparation of the loads and in keeping the exposure time in the PZ to an absolute minimum.

(4) Tactics

Tactics employed were the same during the extraction phase as those employed during the assault support and resupply phase.
The aircraft were to remain overnight at their home stations and depart not later than 0700 hours on the morning of the 4th to proceed to an assembly area designated as PZ AIRBORNE (XD 8238). This assembly area was chosen for both its size and close proximity to the PZ's. A closing time of 0930 hours was established for the arrival of all the aircraft at assembly area. At the assembly area it was planned that the C&C would give the mission lead and aircraft crews any last minute mission changes and the latest enemy and friendly situation reports. A check of the aircraft would be made by the crews and the flight would be ready for the expected PZ time of 1100 hours, or could respond to an "on call" order to proceed with the insertion. The exact PZ time at this phase was only speculative, and depended on how well the troop insertion progressed. The remainder of the mission would be accomplished as rapidly as possible. With an estimated turn around time of 45 minutes, the mission would be completed in three lifts and a closing time of 1630 hours was estimated.

On the morning of 4 March 1971, all aircraft were enroute to the assembly area by 0700 hours. While enroute to the assembly area, four direct support missions were completed by aircraft assigned to the LOLO operation. All aircraft closed in the assembly area by 0930 hours and the mission was on schedule. In the assembly area, the mission lead and the crews received their up-date mission briefing from the C&C. All aircraft were ready to launch by 1030 hours.

The C&C then launched to make an aerial reconnaissance of LZ LOLO. While enroute he contacted the AMC and received an air briefing on the latest enemy situation, suggested flight route, approach direction into the LZ, flight altitudes, winds, an artillery advisory, and the current mission status.

After receiving the air brief by the AMC, it was evident that the insertion was not progressing as rapidly as planned. The delay in getting the ground elements inserted made it necessary to begin the heavy and medium lift portion of the insertion prior to the last ground unit closing in the LZ. A warning order was passed to the C&C to prepare the first lift for delivery by 1400 hours. This warning order was followed up by an order to execute the heavy and medium lift phase at 1308 hours. The first flight was launched at 1311 hours and proceeded to the LZ.
The LZ was fairly small and had evidently been prepared by an air-delivered bomb with fuse extension (Daisy Cutter) as there were many stumps and some rather large obstacles left within the perimeter of the LZ. The troop lift aircraft were making their approach from the north to the south with a short left turn and landing in the LZ from the west to the east. They were departing to the east and breaking to the left as they climbed out. It was evident that there would be problems, first in getting in and out of the LZ with all the air traffic, and once in the LZ, finding a suitable area to release the loads. In addressing the second problem, the only solution was to try to keep the loads out of the troop lift landing area and to avoid blade strikes. As for the first problem, the aircraft commanders had to adjust their approaches to integrate them with the troop lift traffic. Once in the LZ, the CH-47 with its sixty foot diameter rotor was greatly restricted by obstacles while maneuvering to position its load. The CH-53 was even more restricted.

k. The first aircraft arrived and began its descent into the LZ, which was completed successfully with no major incidents. The first loads to arrive were the 105mm and 155mm howitzers. The last aircraft on the first lift closed out on the LZ at 1400 hours. This procedure was followed until the PZ was clean at 1615 hours. The last sortie was inserted at 1645 hours, completing the mission.

l. Early in the assault phase while enroute on the first lift, a CH-47, tail #820, took two hits at three thousand feet from a 12.7mm antiaircraft weapon. One round entered the cockpit area through the aircraft commander's window, pierced the bulkhead just above and behind the aircraft commander's head and continued on piercing the #2 upper dual boost actuator and eventually lodged in the spar of the green rotor blade. The second round lodged in the aft red rotor blade spar. The aircraft lost its #2 hydraulics which forced the aircraft commander to drop his load and make an emergency descent, landing at ALUOI. The aircraft commander received minor injuries to the left side of his face and left shoulder caused by flying windshield glass. Later in the operation, the aircraft and crew were evacuated to Khe Sanh.
e. Extraction Operations

(1) General

The tactical extraction of the fire bases by medium and heavy lift helicopters was completed using the same basic organization, planning and tactics employed during assault support and resupply operations. Medium and heavy lift helicopters were employed during the extraction phase of three of the ARVN fire bases located in Laos and two in South Vietnam. All the fire bases came under some form of ground attack and/or indirect fire at the time of the extractions or just prior to the extractions. Because of enemy contact at the extraction sites, start and completion times were adjusted to meet the tactical situation.

(2) Organization

The organization for each extraction varied based on the amount of equipment to be extracted and the enemy activity around the fire base. The number of aircraft used varied from four to six medium lift helicopters (CH-47) and one to two heavy lift helicopters (CH-54/53). One set of AH-1G or UH-1C gunships provided fire support. The aircraft were all under the command of one mission lead until the extraction was completed. A command and control aircraft was used to coordinate the overall extraction from a position over the fire base.

(3) Planning

Detailed planning was accomplished by the personnel of the battalion forward CP and passed to the mission lead on a daily basis, or mission basis. The briefing of flight crews by the S-3 personnel consisted of intelligence, flight routes, fire support (planned and available on call) and the specifics for breaking off the mission in case of heavy enemy activity. The AMC in the command and control aircraft then monitored the operation and was immediately available to coordinate changes and solve problems. The emphasis in extraction planning was on the preparation of the loads and in keeping the exposure time in the PZ to an absolute minimum.
(4) **Tactics**

Tactics employed were the same during the extraction phase as those employed during the assault support and resupply phase. Departures from the PZ's in Laos were all maximum performance to minimize exposure time below 3000 feet AGL.

(5) **Pickup Zones (PZ)**

Because of the enemy situation and the location of extraction PZ's, on forward fire bases, many of the considerations for electing, organizing and operating a good PZ were abandoned. Those considerations most often disregarded were the normal clear areas around the PZ (75 X 150 meters), police of the PZ and dust control. Dust was the one problem that most often affected the time spent in the PZ during the hook up of loads. Communication with the PZ was generally inadequate from the pilots' viewpoint as a result of the language barrier; however, the preplanning and coordination employed was sufficient to insure that the loads were rigged and ready, and that hook up personnel were on the loads when the aircraft arrived.

(6) **Landing Zones (LZ)**

The LZ's for extractions were the same as the PZ's for assault support and resupply operations and required no special preparation or consideration.

(7) **Fire Support**

The fire support requirements and planning for the extraction phase were generally the same as for the assault support and resupply phase. The assets utilized were all available TAC air (preplanned and/or on call), artillery and helicopter gunships. The emphasis was placed on the preplanned use of TAC air and artillery to hit known and suspected indirect fire sources, and to generally disrupt and disorganize the enemy just prior to commencing the extraction. The on-call TAC air and artillery were used for the same purpose after the operation was interrupted by enemy direct or indirect fire. The coordination of these fires was accomplished by the AMC from the command and control aircraft overhead.
f. Routine Resupply Operations

(1) Once the fire bases were established, resupply operations were tailored to meet the individual needs consistent with the tactical situation. Two to six aircraft were placed under the control of a mission leader, usually an assault support helicopter company commander or platoon commander. The aircraft were employed as described in the tactics portions of assault support operations of this paper. Although the landing zones (LZ’s) were repeatedly placed under indirect fire, the bases were resupplied. When antiaircraft fire became intense, especially around forward fire bases near Tchepone, resupply operations had to be suspended until the enemy positions were destroyed or the threat reduced to an acceptable level.

(2) Although resupply missions were planned a day in advance, it became apparent that loads would often not be rigged until mid-day on the day the mission was to be conducted. This required that the loads be airlifted to the fire bases during the period of the day when the density altitude was the highest. Pathfinders at the pickup zones (PZ’s) controlled aircraft in high density traffic areas and assisted the logistic personnel. Since most resupply was done through a series of closely knit bases around the perimeter of Khe Sanh airfield, the high density of aircraft was a persistent problem. On sorties delivered to landing zones it was planned that loads would be dispersed throughout the site. This prevented indirect fire from destroying complete ammo dumps. This also reduced the vulnerability of the aircraft had they continually landed at one specific place on each site. As time elapsed the fire support bases and landing zones accumulated debris, which proved to be a hazard to helicopters working the area and endangering the safety of ground personnel.

g. Integration of Medium and Heavy Lift Operations With Troop Lift Operations

(1) In the majority of the moves where UH-1H and CH-47 aircraft were used together, planning was accomplished to make each element a separate and distinct part of the move. Normally, the UH-1H portion of the move was completed prior to the start of any medium and/or heavy lift. This facilitated control of lift and gunships,
minimized air traffic and airspace problems, and provided elements on the ground in time to make necessary preparations for receiving supplies and equipment.

(2) On those occasions where time was a critical factor and medium lift had to be initiated prior to the completion of the UH-1H portion, the UH-1H aircraft "gave way" to the larger and more cumbersome aircraft. Although this technique did minimize the problems associated with intermingling two such dissimilar aircraft, control was nevertheless a problem. This was primarily a result of insufficient LZ preparations compounding the difficulty in maneuvering large aircraft with bulky external loads. Time in the LZ was thus increased, and exact timing and integration became difficult. Compounding obstacles, such as trees and stumps, was the heavy dust blown about by the high winds associated with large helicopters, causing almost IFR conditions for both UH-1H and medium lift aircraft. Throughout the operation there were only several minor blade strikes and no accident damage.

h. Weather

(1) Weather was an influencing factor on 24 days or 54% of the possible flying periods. During these times, low ceilings and reduced visibility caused delays in flight schedules. On 17 Feb 71 all missions were cancelled because of weather.

(2) Low ceilings compressed the available flying area vertically and laterally, thus causing higher concentrations of aircraft in the useable airspace and, at the same time, bringing the aircraft closer to enemy gunners. Some channelization of flight routes into river valleys also resulted, but weather prevented mission accomplishment only on rare occasions.

i. Communications

(1) General

Communications for the medium and heavy lift elements supporting LAMSON 719 were provided by FM radio, AM radio-teletype and field wire nets that were established, maintained and operated by signal personnel from the 159th Aviation Battalion and the 101st
Aviation Group.

(2) **Communications Systems**

(a) **FM Radio**

The primary means of voice communications on this operation was FM radio. Three RT-524 radios were set up at a forward operations tent, providing a battalion secure net, a battalion plain net and a station in the group secure net. The secure capability was achieved by using two KY-8 secure sets. Power for this FM configuration was supplied initially by two 1.5 KW DC generator sets and four 12 volt DC batteries. Later, because of generator failure and battery problems, a 3 KW DC generator set was used in conjunction with an RA-91C rectifier. A net diagram of the FM radio system is shown at Figure IV-1. The battalion (fwd) plain net was originally designed to communicate with the rear area by means of an FM retrans site. Because of equipment shortages, this retrans site was not installed and bad atmospheric conditions nullified the possibility of communicating to the rear without it. The battalion (fwd) plain net was then used, as was the battalion (fwd) secure net, primarily for contact with aircraft in the area of operations. Aircraft VHF and UHF radios were also employed as required.

(b) **AM Radio-Teletype**

A long-range radio capability was needed because of the substantial distance separating the forward and rear areas, and because of FM's inherent "line-of-sight" restriction. For this purpose the AN/VSC-2 single-side-band radio was used with a 50 ohm antenna. The equipment was located in a small tent adjacent to the 159th operations tent. It was installed, operated and maintained entirely by personnel of the 101st Group Commo Platoon, and existed for the convenience of the 159th and other units of the 101st Aviation Group. The AN/VSC-2 provided a plain voice capability and a secure teletype means of communicating with the rear areas and with attached battalions (see Figure IV-1). This configuration was generally reliable.

(c) **Wire Communications**

WD-1 wire and field telephones were used for local land
FIGURE IV-1 (U) Radio Net Diagram for 159 Avn Bn (ASHB) (U).
IV-54
line commo between group and battalion operations tents, a line to the area switchboard, and a line between battalion operations and the commo tent (see Figure IV-2). Equipment was provided by the battalion commo section and personnel from the section were used to maintain it. Wire communications presented no problems.

(3) Personnel Requirements

In the initial phase of setting up and digging in, seven men from the 159th Avn Bn Commo Section were utilized. This process took the majority of two days, with modifications made during the next ten days. After procedures settled down to normal, two or three people were sufficient to handle the signal requirements, as well as distribute and safeguard SOI material.

(4) CO 159th Aviation Battalion Comments

There were no major problems with signal equipment during this operation. At times, power failures and surges caused minor damage to radios and secure equipment, but enough backup equipment was always on hand to restore communications promptly. Power problems occurred because the 1.5 KW generator could not supply adequate power to handle the 28 volt load requirement of the radios with secure sets. Later on, a 3 KW generator was substituted and worked well except for occasional fluctuations in the power level. Finally, a rectifier was obtained which provided constant, steady power to the sets. Overheating, especially in the AN/VSC-2 set, became a problem at times. The lack of sufficient ventilation and extremely dusty operating conditions were major causative factors.

(5) Summary

All things considered, the communications system was more than adequate for this operation. Had better sources of power been available, radio equipment problems would probably not have existed. Secure sets held up much better than expected, considering the heat and dust. Initial installation was fast and efficient. The only major improvement required is in the area of power supplies. Larger, more reliable generators are required to meet the heavy demands of an operations of this type.
FIGURE IV-2 (U) Wire Diagram for 159th Avn Bn (ASHB) (U)
j. **Maintenance**

A major maintenance effort was required to assure continued availability of the large numbers of medium and heavy lift helicopters required to support LAMSON 719. Prior planning, additional support, command emphasis and increased effort were all factors contributing to the achievement of the desired result.

1. **Direct Support Maintenance and Supply**

   Each of the organic medium and heavy lift companies (A, B, C, 478th HHC of the 159th Assault Support Helicopter Battalion [ASHB]) has a direct support maintenance capability. The three-letter companies each has a Transportation Corps (TC) Detachment with direct support capability organic to the company. The 478th Aviation Company achieved this capability through its organic maintenance platoon. The two non-organic medium helicopter companies (132d and 179th) which were OPCON to the 159th ASHB, also had a direct support capability. Repair parts supply support was provided to each of the units, except the 478th Avn Co, by either A or B Company, 5th Transportation Battalion. The 478th Aviation Company received its support in repair parts from the 142d TC Company, 58th Transportation Battalion, located at Red Beach, Da Nang.

2. **Impact of Operation LAMSON 719**

   The greatly increased flying hour program had a pronounced effect on the combined maintenance effort, since it resulted in a corresponding increase in the amount of scheduled and unscheduled maintenance performed. This sharp increase in monthly flying hours was particularly significant since it occurred immediately after the lull of the monsoon season in northern Military Region I. This had both advantages and disadvantages. It was an advantage in that the units were able to devote more concentrated effort in their maintenance operation during the period immediately preceding LAMSON 719. The major disadvantage, however, was that it was difficult to quickly adjust to a sudden, sharp increase in the flying hour program, particularly in scheduling the aircraft into Preventative Maintenance-Periodic (PMP) inspection. This problem was anticipated and a warning given to the units of the 159th ASHB to prepare for a highly concentrated flying hour program during the period February 1971 through April 1971.
This was of particular concern to the three Ch-47 companies of the 159th ASHB, since their scheduling program is of vital importance in projecting future scheduled maintenance. The scheduling program is based on a three month projected flying schedule. Using this scheduling program, time change components with required delivery dates (RDD) are requisitioned through close coordination between the quality control sections and tech supply section.

(3) Maintenance Operations

Based on limited information available, each of the letter companies and the 478th Avn Co began preparing for the expected increase in flying hours by adjusting their scheduling program accordingly. In addition, those aircraft which were within 25 hours of their required PMP were flown into the inspection while the high time aircraft were held down, this enabled the units to build a bank of aircraft hours with which to start the operation and sustain themselves without having more aircraft go into scheduled maintenance than they were capable of handling during the initial phase. As the flying hours per company began increasing at the start of the operation, the amount of scheduled maintenance also increased. During the two month period February through March 71, the three letter companies of the 159th ASHB performed 62 PMP inspections, the 132d and 175th ASHB, 28 and the 57th Aviation Company, nine. This was accomplished by using a 24 hour maintenance schedule. This put a severe strain on the manpower available in the maintenance sections of each unit, particularly since assigned strength of the TC Detachments was running at approximately 75 per cent of the companies during this period. This problem was compounded because the shortages were mainly in supervisors, 68 series MOS, and other allied shop personnel. There was a distinct shortage of experienced specialists. The following figure shows shortages against authorized strength by MOS in the 159th ASHB on 27 March 1971 which was characteristic of the manpower situation within the companies throughout the operation:

<table>
<thead>
<tr>
<th>MOS</th>
<th>AUTH</th>
<th>ASG</th>
<th>SHORT</th>
<th>JOB TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>671C</td>
<td>13</td>
<td>6</td>
<td>7</td>
<td>Avn Maint Tech</td>
</tr>
<tr>
<td>76T</td>
<td>26</td>
<td>14</td>
<td>12</td>
<td>Tech Supply Spec</td>
</tr>
<tr>
<td>67Z50</td>
<td>22</td>
<td>13</td>
<td>9</td>
<td>Maint Supervisor</td>
</tr>
</tbody>
</table>

FIGURE IV-3 (U) Maintenance Personnel Status (U)
The problems caused by these critical shortages were overcome by aggressive cross-training and on-the-job training programs in effect throughout the battalion. In addition, two civilian PMP teams were provided by the 34th General Support Group to assist the CH-47 units in accomplishing scheduled maintenance. These teams consisted of a total of sixteen personnel, and were available to the units from 7 February 1971 through the completion of LAMSON 719. They accomplished a total of twelve PMP inspections on CH-47 aircraft, and contributed 7,515 man hours to the combined maintenance effort. These teams provided needed assistance during this period, easing the problems caused by the manpower shortage in the units and providing a reservoir of valuable maintenance experience. Another area in which these teams assisted was in coping with the increase in the amount of unscheduled maintenance resulting from the conduct of LAMSON 719. The unscheduled maintenance was of two varieties. One consisted of the normal problems associated with a greatly increased flying hour program. The other consisted of the result of battle damage from enemy ground fire. Almost 1000 man-hours were required to repair skin and structural damage inflicted on the CH-47's and CH-54's. Without the availability of the civilian PMP teams, many of these repairs could not have been effected utilizing organic maintenance capabilities.
(4) CO, 159th Aviation Battalion Comments

The three primary indicators for determining the efficiency of the maintenance effort during this period were the operational ready rate (OR), and the NORM/NORS rates. At Figures IV-4, 5, and 6 are charts which graphically depict these indicators with relation to the associated flying hour program of the CH-47's and CH-54's. As the flying hour program increased abruptly in February, the NORM rates, and in the case of the CH-47's, the NORS rates, also increased. It is significant to note that the NORS rate, although increasing slightly, remained relatively constant when compared with the previous seven month period. This was due primarily to the amount of command interest and emphasis on the aviation repair parts supply system. A forward liaison element of the 34th General Support Group, operating out of Quang Tri, was in a large measure responsible for insuring that the necessary repair parts were made available to the requesting units in an absolute minimum of time. This element also maintained close liaison with the civilian PMP teams, and determined where their assistance was most urgently required. One of the primary reasons for the slight increase in the NORS rates was that some of the repair parts for which there was a sudden demand were items that had acquired little if any demand data in previous operations. Many of the parts damaged by enemy fire were rarely required under normal operating conditions. It must be emphasized at this point, that a major factor in keeping NORS/ NORM rates at an acceptable level was the prior planning done by the units of the 159th Assault Support Helicopter Battalion, and the aircraft scheduling program which they used. They were able to adequately forecast, in most cases, the repair parts which would be required based on the increased flying hour program. A major area of concern to the maintenance activities during the operation was the conditions under which the aircraft were operating in the forward areas. The dust in which the CH-47's and CH-54's were forced to operate on a continuous basis was a critical factor in increased wear on engines and rotor blades. As a result of the battalion policy of flushing each CH-47 engine with water after every flying day, the damage to engines remained negligible. The wear on CH-54 engines was also negligible because of their Engine Air Particle Separators (EAPS). Most of the damage done by the dust was to the aircraft rotor blades. The abrasive nature of the dust coupled with the extremely high winds generated by the rotor wash, resulted in abnormally rapid deterioration of the leading
A, B, C, CO., 159th ASHB (AMBL)
48 ASSIGNED CH-47's

DEPICTING COMBINED MONTHLY FLYING HOUR
PROGRAM AVG OPERATIONAL READY RATES & AVG
MONTHLY NORM/NORS RATES FOR MONTHS SHOWN
DURING 1970-1971

* DURING THIS PERIOD, THE 159th ASHB WAS
UNDERGOING SUPER "C" CONVERSION

FIGURE IV-4 (U) Monthly Flying Hours, CH-47 (U)

IV-61
* DURING THIS PERIOD 179 ASH CO & 132 ASH CO OPCON TO 159 ASHB (AMBL) 32 ASSIGNED CH47 DEPICTING COMBINED MONTHLY FLYING HOUR PROGRAM, AVG. OPERATIONAL READY RATES & AVG. MONTHLY NORMS/NORS RATES FOR MONTHS SHOWN DURING 1970-1971

**FIGURE IV-6 (U) Monthly Flying Hours, CH-47 (U)**
edge of the aircraft rotor blades. The CH-54's were most affected in this area, in that they were forced to replace seventeen main rotor blades. The impact of this problem on the availability rate, and the NORM/NORS rates was very slight since this problem was expected early in the operation and the necessary parts were prestocked or requisitioned in anticipation.

(5) Summary

Based on performance, operational ready rates, and NORS/NORM rates, the various maintenance activities which provided direct support to the medium and heavy lift helicopter companies continued to operate in an efficient manner during the course of LAMSON 719. Numerous problem areas were encountered but were solved either through prior planning and preparation or by making adjustments to alleviate them as they occurred. It is evident that despite the sharp increase in flying hours, the OR percentage remained fairly constant and in the case of the CH-54's, even increased. The NORS and NORM rates remained well within acceptable limits during the two month period of the operation. This flying hour program could have been continued indefinitely, particularly since the original planning and preparation by the respective maintenance personnel was for a time span which was expected to extend beyond the period covered in this report. One situation which continued to be a significant problem area throughout the operation was the difficulty the various maintenance activities encountered in servicing and maintaining aircraft in the forward operational area. When an aircraft encountered a maintenance problem which precluded it from returning to its home maintenance facility, the units' maintenance teams had to provide repair capabilities in the forward areas. Because of the distance between the operational area and the units' rear bases, coupled with an occasional breakdown in communications, this situation resulted in many lost hours on the part of the maintenance support. There were some instances where the information which the maintenance officers received was faulty or incomplete regarding parts needed or problems encountered with a particular aircraft. The 478th Avn Co was most affected by this situation because of the great distance between their maintenance facility (Da Nang) and the operational area. The difficulty in maintaining adequate land line communications compounded the problem for the 478th Avn Company. The advantages that were gained, however, by staging the CH-47's
from their home base in the Phu Bai area far outweighed the few problems occasioned by the maintenance difficulties encountered by the aircraft in the forward areas. The other situation which had a detrimental effect on the maintenance effort was the manpower shortage within the maintenance activities. Had the companies been up to TO&E strength, with experienced, well qualified personnel in technical and supervisory positions, the efficiency and effectiveness of the maintenance operations could have been considerable improved.

5. Results

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours flown</td>
<td>5703.6</td>
</tr>
<tr>
<td>Sorties carried</td>
<td>13045</td>
</tr>
<tr>
<td>Tons of cargo carried</td>
<td>24618.4</td>
</tr>
<tr>
<td>Passengers carried</td>
<td>9990</td>
</tr>
<tr>
<td>MEDEVACS carried</td>
<td>1110</td>
</tr>
<tr>
<td>Aircraft recovered</td>
<td></td>
</tr>
<tr>
<td>(a) From Laos</td>
<td>51</td>
</tr>
<tr>
<td>(b) From Khe Sanh area</td>
<td>208</td>
</tr>
</tbody>
</table>

FIGURE IV-7 (C). 159th Avn Bn (ASH) Support of LAMSON 719 (U).

a. Vulnerability

(1) Aircraft Damaged

During Operation LAMSON 719, a total of 49 medium and heavy lift aircraft were hit, resulting in two CH-47's shot down and destroyed, one CH-47 forced down and later destroyed by ground action, one CH-53 shot down, and one CH-53 crashed while enroute to home base. The cause of this crash was suspected combat damage. A total of 14 CH-47's and seven CH-53's sustained minor damage. Incidental damage was sustained by 15 CH-47's, five CH-53's, and one CH-54.

(2) Aircraft Destroyed

The one CH-53 shot down was hit by a mortar round and approximately 20 rounds of small-arms fire while hovering over
a load in a landing zone. One of the CH-47's shot down was hit going into a landing zone by an unknown number of small arms rounds, which knocked out the hydraulics causing it to crash and burn. The second CH-47 shot down exploded in mid-air, cause undetermined. The CH-53 listed as destroyed-sustained suspected combat damage and was enroute home when the main rotor system failed.

b. Casualties

(1) Nine men killed in action in the crash of a CH-53.

(2) Six men missing in action in a CH-47 that crashed in Laos and was not recovered.

(3) Six men wounded in action. One MEDEVAC, five with minor wounds were treated and returned to duty.
H. (C) FIRE SUPPORT

1. Coordination

a. ARVN-US Coordination

(1) I Corps Fire Support Element--XXIV Corps Fire Support Element

Fire support coordination was planned between I Corps Fire Support Element (FSE) and XXIV Corps Fire Support Element through I Corps Artillery, I Corps G-3, and the United States I Corps Artillery Advisor. Additional coordination by XXIV Corps was planned with the ARVN divisions and brigades through the 108th Artillery Group. Fire support coordination during LAMSON 719 was executed as planned.

(2) ARVN Divisions--108th Artillery Group

The majority of US fire support coordination was conducted by the 108th Artillery Group directly with the ARVN division and separate brigade headquarters. The 108th Artillery Group established a liaison team at each ARVN division and separate brigade headquarters. The Vietnamese likewise established liaison from each division and separate brigade headquarters to the 108th Artillery Group. Decentralized control of fire support assets below Corps level was the general rule throughout LAMSON 719.

b. US-US Coordination

(1) XXIV Corps--108th Artillery Group

Coordination between XXIV Corps and 108th Artillery Group was accomplished with the XXIV Corps FSE planning programs of fires such as flak suppression, and the 108th Artillery Group executing the plans.

(2) 4th Battalion (Aerial Artillery), 77th Artillery--108th Artillery Group

The 4th Battalion (Aerial Artillery), 77th Artillery (4/77 ARA), established liaison with the 108th Artillery Group when

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the 4/77 ARA assumed the mission of general support, reinforcing the fires of the 108th Artillery Group on 8 February 1971. The concept was that all ARA fire requests would be directed through the 108th Artillery Group and in turn be passed to the ARA fire direction center (FDC) through 4/77 ARA liaison officers.

(3) 101st FSE at Khe Sanh

The primary function of the 101st FSE at Khe Sanh was to collect target information from 101st Airborne Division (AMBL) aviation assets involved in LAMSON 719 (e.g., 101st Aviation Group) and to disseminate this targeting data to the 108th Artillery Group.

2. US Army Fire Support

a. Tube Artillery

(1) Mission

The 108th Artillery Group mission was general support, reinforcing the fires of 1 Corps Artillery. The 108th Artillery Group consisted of the 8th Battalion, 4th Artillery (4x8" and 8x175mm); the 2nd Battalion, 94th Artillery (4x8" and 8x175mm); and B Battery, 1st Battalion, 39th Artillery (4x175mm), which was under the operational control of the 108th Artillery Group. In addition, fires into Laos could be delivered by the 5th Battalion, 4th Artillery (18x155mm self-propelled), the direct support battalion of the 1st Brigade, 5th Infantry Division (Mechanized) on a supplemental, as requested basis.

(2) Employment

The 108th Artillery Group employed three 175mm batteries and one 8" battery along the Laos-Vietnam border vicinity TABAT, XD715385. The remaining 8" and 175mm batteries were employed in the Khe Sanh area. It was necessary on five occasions to rotate batteries between the Laos-Vietnam border and Khe Sanh area positions for tube changes and hydraulic maintenance. The fires delivered from the four batteries located along the border could be augmented from the Khe Sanh area positions. When necessary
additional batteries were moved from the Khe Sanh area to border positions.

(3) Fire Requests

Fire requests from ARVN units located in Laos for US support were processed through one of the two established channels. The first channel was from the ARVN unit in Laos to the ARVN division headquarters or separate brigade headquarters. The 108th Artillery Group liaison officer located at each Vietnamese division and separate brigade headquarters received the mission from the Vietnamese and passed it to the 108th Artillery Group FDC. The second channel for fire requests from units located in Laos was directly from the unit requesting fire to a Vietnamese liaison officer from the respective division or separate brigade, located at the 108th Artillery Group Headquarters. The Vietnamese liaison officer then passed the fire request directly to the 108th Artillery Group FDC.

US requests for fire were sent directly to the 108th Artillery Group FDC or fire unit by Air Force forward air controllers (FACS), reconnaissance elements of the 2/17 Cavalry, and aerial observers from the 108th Artillery Group over Laos.

b. Aerial Rocket Artillery

(1) Mission

The 4/77 ARA Battalion was assigned the tactical mission of general support, reinforcing the fires of the 108th Artillery Group with up to two batteries of aerial rocket artillery effective 8 February 1971. Because of maintenance requirements and battle damage, it was necessary to draw upon the assets of all three firing batteries to accomplish this mission.

(2) Requests for fire

(a) A forward fire direction center was established at Khe Sanh, and a liaison officer was sent to the 108th Artillery Group to be prepared to receive fire missions and relay them to the forward fire direction center. The requests from ARVN unit
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Headquarters for ARA fires were to be sent to an ARVN artillery liaison officer located at the 108th Artillery Group fire direction center. The mission was then to be relayed to the ARA fire direction center through the 4/77 ARA liaison officer.

(b) As the operation progressed, requests for fire support were being received at the 4/77 ARA fire direction center by radio directly from the different ARVN unit headquarters. The 4/77 ARA fire direction center accepted and responded to contact fire missions and urgent medical evacuation cover missions as first priority.

(c) Requests for fire support were also generated by the 101st Aviation Group elements and the 2/17 Cavalry through their reconnaissance efforts. Requests for fire support were answered by the 4/77 for such units requesting fire support using assumed priorities as stated above.

(3) Employment

(a) Aerial rocket artillery is normally employed with a minimum of two AH-1G aircraft, referred to as a section. The nature of the mission dictates how many sections will be used to accomplish the mission. One aircraft is designated the mission lead aircraft. The most experienced aviator is habitually the mission commander; however, all aircraft commanders are qualified to assume the position of mission commander should a problem develop with the lead aircraft.

(b) Aerial rocket artillery aircraft were used in a variety of support missions. Although the primary mission of AH-1G aircraft configured in the aerial rocket artillery role is to provide an immediate heavy volume of direct fire support, they are also capable of conducting landing zone preparation fires and to a lesser extent, of performing aerial escort, medical evacuation cover, and aerial reconnaissance. However, it should be noted that there are other AH-1G aircraft better configured for these specific missions.

(c) The two basic differences between an ARA AH-1G and a gunship AH-1G are the armament configuration and the fuel load on board the aircraft. An ARA Cobra has as its main weapon system four XM159C rocket pods. These are 19 tube 2.75" Folding Fin Aerial Rocket pods for a total of 76 rockets per aircraft. The pods are referred to as wing stores. Although the turret system will accommodate 4,000 rounds of 7.62mm machine gun ammunition and 300 rounds

IV-70
of 40mm grenade ammunition, only 1500 rounds and 150 rounds respectively are loaded aboard the ARA aircraft due to the maximized main armament (2.75" rocket) load. A fuel load allowing the aircraft approximately 1 hour and 45 minutes flight time is likewise dictated by weight limitations.

(d) Conversely a gunship Cobra will usually take on as much fuel as possible because its normal missions (i.e. escort, aerial reconnaissance) require a large amount of fuel and a corresponding loss of rocket armament. The main weapon system for the gunship Cobra is the turret system, and this system will usually be fully loaded. A gunship Cobra will carry a total of 52 rockets in its normal configuration. Based on the reduced ammunition load, an increased fuel load is possible, allowing the gunship Cobra a longer flight time. The fuel load and armament load for both the ARA Cobra and the gunship Cobra are configured in such a way as to enhance the accomplishment of the type mission for which each is best suited.

(e) The total number of hours flown by type mission is shown in Figure IV-8. A record of typical missions received by the 4/77 ARA during the month of February is shown in Figure IV-9.

<table>
<thead>
<tr>
<th>TYPE MISSION</th>
<th>FEBRUARY hours + mins</th>
<th>MARCH hours + mins</th>
</tr>
</thead>
<tbody>
<tr>
<td>LZ Preparations</td>
<td>146 + 50</td>
<td>130 + 10</td>
</tr>
<tr>
<td>Medevac/Escort/Extractions</td>
<td>51 + 20</td>
<td>147 + 30</td>
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<tr>
<td>Downed Aircraft Cover</td>
<td>11 + 00</td>
<td>24 + 00</td>
</tr>
<tr>
<td>Contact (approximate)</td>
<td>948 + 45</td>
<td>927 + 45</td>
</tr>
<tr>
<td>Other</td>
<td>46 + 00</td>
<td>66 + 00</td>
</tr>
</tbody>
</table>

NOTE: Exact data on the number of missions other than contact which developed into contact is not available.

FIGURE IV-8 (U). 4/77 ARA Hours Flown by Type Mission for LAMSON 719 (U).
12 Feb 1971, launched one section in support of friendly units in contact vicinity XD4504, expended 140 rockets resulting in 1 killed by ARA (KBARA) and 2x12.7MG destroyed.

17 Feb 1971, launched one section on a mortar position vicinity XD650410, expended 216 rockets, 500 7.62mm, 100 40mm grenades and flew 3 hours + 40 mins resulting in 4 KBARA.

18 Feb 1971, launched one section in support of resupply for a unit in heavy contact vicinity XD574250, expended 120 rockets and flew 2 hours + 20 mins resulting in 17 KBARA.

20 Feb 1971, launched one section on a contact mission vicinity XD595515, expended 253 rockets and flew 8 hours + 00 mins resulting in 50 KBARA.

21 Feb 1971, launched one section on a contact mission vicinity XD496358, expended 124 rockets, 500 7.62mm and flew 2 hours + 40 mins resulting in 44 KBARA.

24 Feb 1971, launched two sections on a contact mission vicinity XD665265, expended 414 rockets, 400 7.62mm, 300 40mm grenades and flew 12 hours + 00 mins resulting in 18 KBARA and 1x12.7MG destroyed.

25 Feb 1971, launched one section on a contact mission vicinity XD615350, expended 118 rockets, 500 7.62mm, 100 40mm grenades and flew 3 hours + 00 mins resulting in 3 KBARA, 7 bunkers destroyed and 2x82mm mortars destroyed.

27 Feb 1971, launched three aircraft as a heavy section on a contact mission vicinity LZ 30, expended 119 rockets and flew 2 hours + 60 mins resulting in 15 KBARA.

27 Feb 1971, launched one section on a contact mission vicinity XD630270, expended 124 rockets, 100 40mm grenades and flew 3 hours + 00 mins resulting in 15 KBARA and one B40 rocket destroyed.

FIGURE IV-9 (U). Examples of Typical Missions Flown (U).
28 Feb 1971, launched two sections on a contact mission vicinity XD680218, expended 346 rockets, 350 40mm grenades and flew 7 hours + 30 mins resulting in 47 KBARA, 17 AK 47s destroyed, and 2x12.7 MG destroyed.

28 Feb 1971, launched two sections on a contact mission vicinity XD683218, expended 532 rockets, 1700 7.62mm, 200 40mm grenades and flew 10 hours + 30 mins resulting in 67 KBARA, 1x12.7MG destroyed.

FIGURE IV-9 (continued) (U). Examples of Typical Missions Flown (U).
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<thead>
<tr>
<th>HOURS/SORTIES:</th>
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<table>
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<tr>
<th>EXPENDITURES:</th>
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<tbody>
<tr>
<td>2.75 FFAR Expended</td>
<td>49,367</td>
<td>40mm Grenades Expended</td>
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<tr>
<td>KBARA</td>
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<td>Structures Destroyed</td>
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<tr>
<td>30 Cal. AW Destroyed</td>
<td>89</td>
<td>Mortars Destroyed</td>
</tr>
<tr>
<td>12.7 MG Destroyed</td>
<td>37</td>
<td>Trucks Destroyed</td>
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<tr>
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<td>POL Points Destroyed</td>
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<td>Ammo Dumps Destroyed</td>
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**AVERAGE DAILY COMMITMENT:**

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<th>Average Number Aircraft</th>
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<td>Average Number Sorties</td>
<td>114</td>
</tr>
<tr>
<td>Average Number KBARA</td>
<td>26</td>
</tr>
</tbody>
</table>

* Aircraft committed on a daily basis ranged from 4 - 14.

FIGURE IV-10 (C). Contribution by 4/77 ARA in LAMSON 719 (U).
(4) Availability of Aircraft

(a) The assigned mission of the 4/77 ARA specified that the battalion would be prepared to use up to two batteries in support of LAMSON 719, therefore a total of 24 aircraft could be requested to support the operation. This was later modified to require a total of two thirds of the available mission ready assets within the battalion to be used in support of the operation. There was a continuing requirement to support the three organic brigades daily with two AH-1G aircraft each.

(b) The two factors that most significantly affected the availability of aircraft were the increased number of hours flown in support of the operation, requiring increased maintenance to keep the aircraft flyable, and the heavy volume of antiaircraft and small arms fire, requiring more maintenance time to return damaged aircraft to a flyable status.


a. Tactical Air Support

(1) Mission

The tactical air support mission was to provide responsive support to ARVN operations in Laos by using Vietnamese Air Force, United States Air Force, United States Navy, and United States Marine Corps air assets.

(2) Employment

In support of LAMSON 719 the United States Air Force controlled an average of 200 sorties of air daily through HILLSBORO, the United States Air Force airborne command and control center on station over the operational area in a C-130 aircraft. Airborne FACS were used over each ARVN Division or separate brigade area of operations. To provide responsive TAC air support, TAC air was planned to arrive on station every fifteen minutes. Requests for immediate TAC air were passed from the maneuver commander to the airborne...
FAC. The FAC would pass the request to HILLSBORO which would allocate sorties of TAC air on station or launch TAC air from strip alert. Preplanned missions were requested through standard air request nets.

(3) Responsiveness

The system used for employment of TAC air during LAMSON 719 was designed to assure responsiveness. No target was more than fifteen minutes away from a tactical airstrike, and frequently times of less than fifteen minutes were achieved. Official statistics on tactical airstrikes in support of LAMSON 719 are not available for this report. These figures are to be released through Air Force channels.

b. ARC LIGHTS

ARC LIGHT strikes were employed during LAMSON 719. Detailed information regarding ARC LIGHT employment is beyond the classification of this document and has been omitted.