LOGISTICS SUPPORT of ARMY AIRCRAFT

by
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THE LOGISTICS OFFENSIVE
Third in a Series

IN VIEW OF the vastly increased number of Army aircraft in the inventory and the new concepts of air mobility for combat forces provided by these aircraft, no greater challenge is faced in the logistics offensive than that posed for logistics support of aviation.

Major problems confronting the aviation logistician are—

- How to support large numbers of aircraft (principally helicopters) in the field in a combat environment.
- How to attain the same degree of mobility and responsiveness for aviation logistics support elements as is required of helicopter units by a combat commander.
- How to keep the cost of that responsiveness and required mobility from becoming prohibitive.

Experience with Army aviation in the Republic of Vietnam has provided some of the answers. Aviation logisticians must recognize that in order to be an effective and efficient member of the Army team, they must be part of that team. Although aircraft present unique logistics support requirements, they are not "so different" that they need a distinct and separate logistics system. In substance, while aircraft are different—principally because of safety-of-flight restrictions that impose frequent scheduled and special inspections—it is evident that aviation logistics does not require a separate logistics organization and system such as that in the Republic of Vietnam. The problem is to embody techniques that proved to be effective in Vietnam into the total Army logistics system and to eliminate dual functions.

Aviation Logistics Support Structure

In mid-1965, there were about 660 aircraft in the Republic of Vietnam. These aircraft were supported by three Transportation Corps direct support units, one general support unit, and an aviation supply point in Saigon, stocking about 8,000 line items. In 1966, when it became evident that there was going to be a major buildup in troop strength and aircraft, the United States Army, Vietnam (USARV), established the 34th General Support Group as a separate Army aviation logistics support command.

The 34th General Support Group provides backup logistics support of the entire Army aviation program in Vietnam, including all the aircraft, the organizations and people that provide logistics support, all aeronautical components, and air and ground support equipment. It is now supporting in excess of 4,000 rotary- and fixed-wing aircraft of 19 different types, with over 21 separate armament systems, and 94 navigational, surveillance, and communications systems.

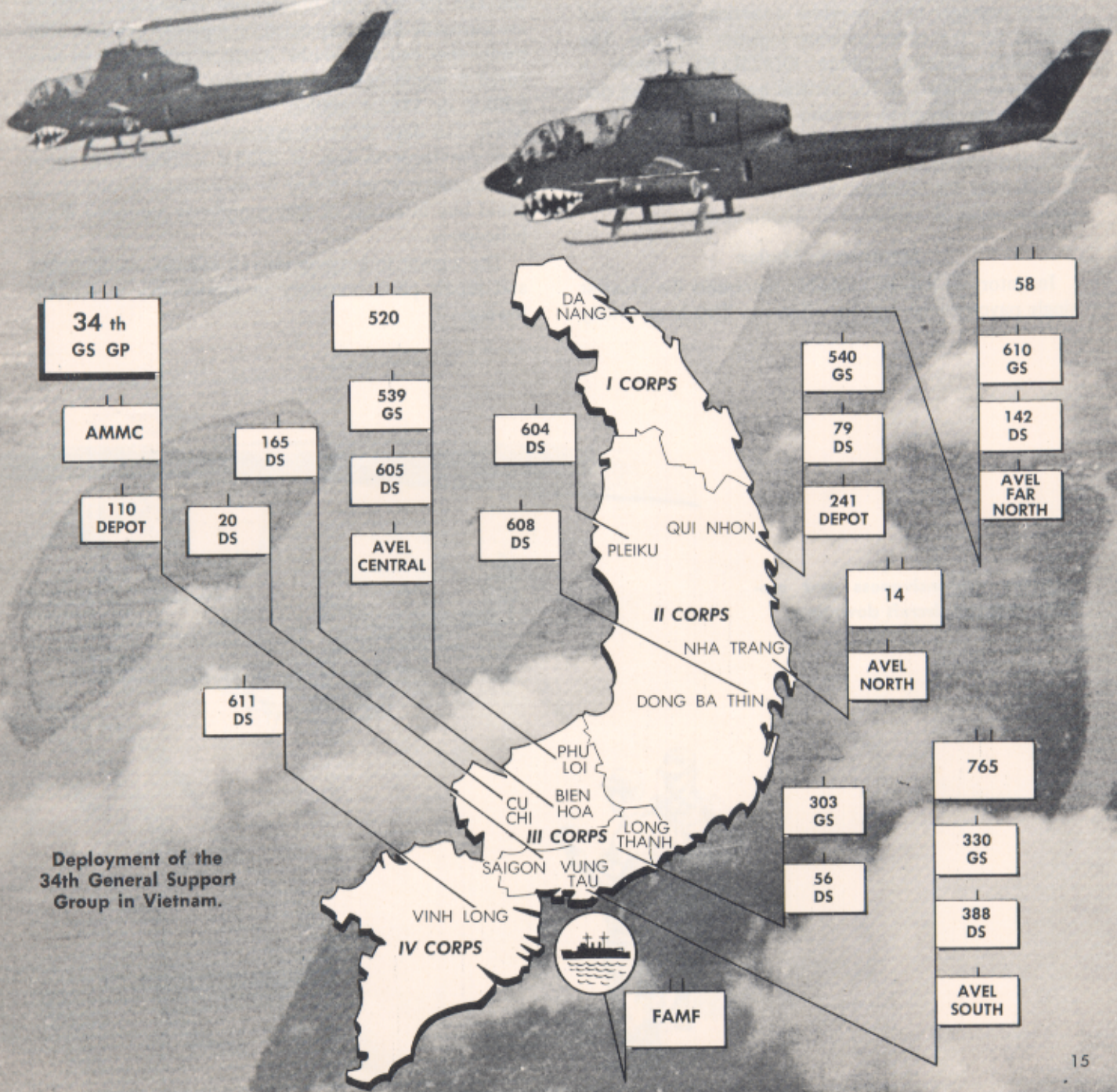
The 34th General Support Group has approximately 7,000 military and civilian personnel who accomplish the aviation logistics support mission. The group is comprised of four aircraft maintenance and supply battalions, an aviation materiel management center

(AMMC), and an aviation maintenance battalion (Seaborne)—better known as the FAMF, an acronym for floating Army maintenance facility. This battalion-sized unit—under the operational control of the 34th Group—is a USAMC organization that provides a limited depot maintenance capability to the theater. The four aircraft maintenance and supply battalions are organized to provide support on an area basis and are deployed throughout the Republic of Vietnam (see map).

The 34th General Support Group is a weapon systems-oriented general support organization with a separate command structure and with the management and control of aviation logistics separated for the most part from the other logistics responsibilities in Vietnam. This concept has been extremely effective in sustaining aircraft readiness and flying hour rates far beyond anything believed possible with current state-of-the-art helicopters.

The general support group concept has been described as an expensive way to do business. Separate command structures with separate management and control of logistics usually require additional personnel and equipment, and to some degree, they are bound to be duplicative. The Army must find a way to achieve weapons system identification and logistics responsiveness, yet remain within a standard Army logistics system. This can be achieved by using proper management and control techniques. The United States Army, Europe, is now studying the concept for application in the U.S. Army Materiel Command at Zweibrucken.

In January 1967, because of some very serious grow-



Deployment of the 34th General Support Group in Vietnam.

ing pains with aviation logistics support in the Republic of Vietnam, General Creighton W. Abrams, Jr., then Vice Chief of Staff of the Army, directed the establishment of a Special Assistant for Aviation Logistics in the Office of the Deputy Chief of Staff for Logistics (ODCSLOG), Department of the Army. The mission of this office, which had a staff of 21 people, was to monitor Army aviation logistics and to take appropriate action where needed.

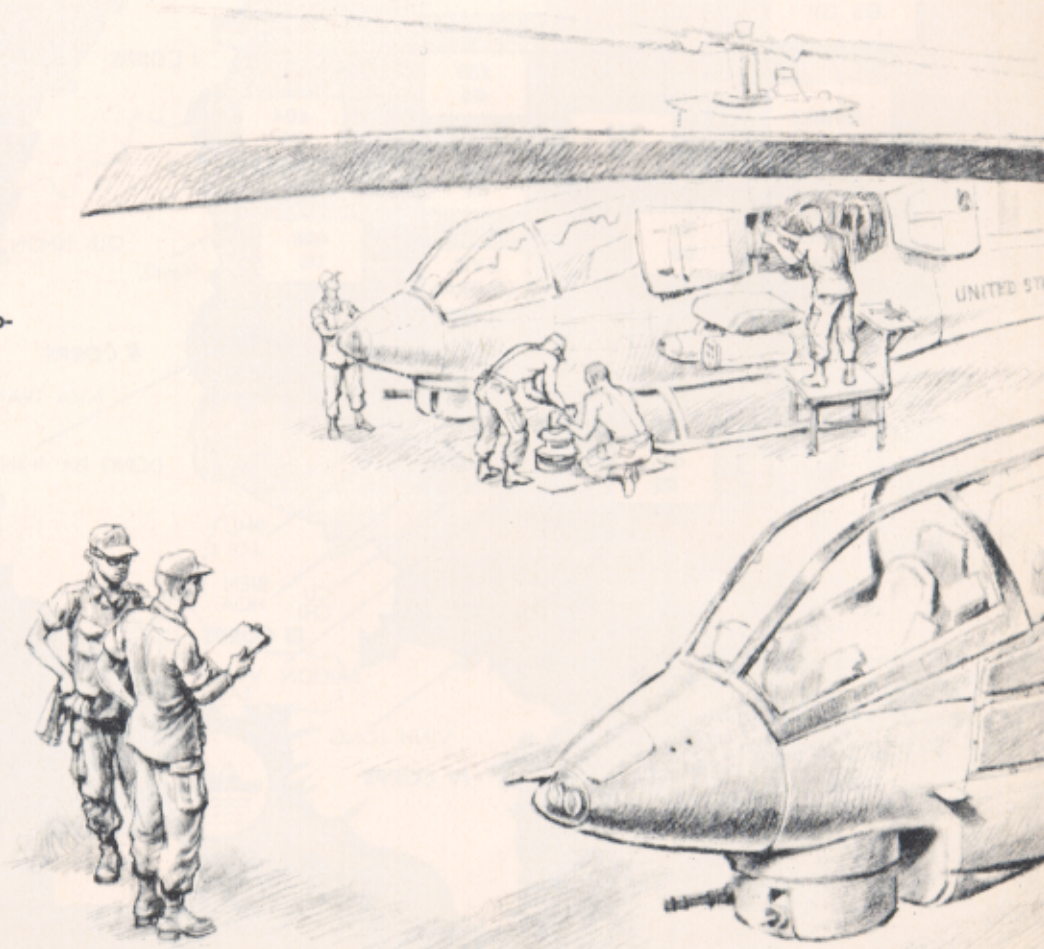
In November 1969, Lieutenant General Joseph M. Heiser, Jr., directed that a test of about 90 days duration be run to establish the feasibility of having a weapons system management office entirely responsible for aviation logistics. This office is headed by the Director of Aviation Logistics (DAL). As a weapons system manager DAL provides a vertical visibility and control for the entire aviation logistics program. The functional directors within ODCSLOG provide a horizontal balance to the vertical system, assuring that the aviation program remains in balance with other systems and commodities and is consistent with overall priorities established by the Army staff. A similar test is underway for ammunition as a commodity, with the establishment of a Director of Ammunition.

Inventory in Motion

Inventory in motion probably represents the greatest single payoff in the logistics offensive. This is especially true for Army aviation. For example, when aircraft were first deployed to Vietnam, aviation logisticians believed that it would take a pipeline time of 13 months for engine support. This consisted of 8 months for serviceable and unserviceable engines in CONUS depot stocks and overhaul and 5 months in stock, in repair, and intransit. One month of pipeline is the equivalent of 30 days worth of spare engines required to replace unserviceable engines in the fleet of aircraft being supported. Subsequently, pipeline times were reduced to 9½ months, then 8 months, and now the pipeline time for the gas turbine engine is 7 months.

Over $1.16 million worth of gas turbine engines (the T53 for the Huey Cobra, the T55 for the Chinook, and the T63 for the light observation helicopter (LOH)) are currently being expended or replaced per day. This means that had 13 months' worth of pipeline been procured it would have cost the Army 390 days X $1.16 million or $482.4 million. Seven months' pipeline is worth 210 days X $1.16 million or $243.6 million—a cost avoidance/savings of $238.8 million. This figure is impressive when related to its purchasing power. It could buy in excess of 800 completely equipped Huey helicopters.

The answer to keeping aircraft engines, components, and repair parts inventory in motion lies in the following:



Logistics responsiveness and mobility reduces aircraft downtime.

• Visibility—Knowing where assets are and their condition.

• Forecasts—Being able to anticipate accurate removal/consumption rates.

• Transportation—Being able to rapidly transport parts and components.

• Overhaul Capability—Being able to reduce time in overhaul.

• Management—Being able to direct, manage, and control individual, high-value items.

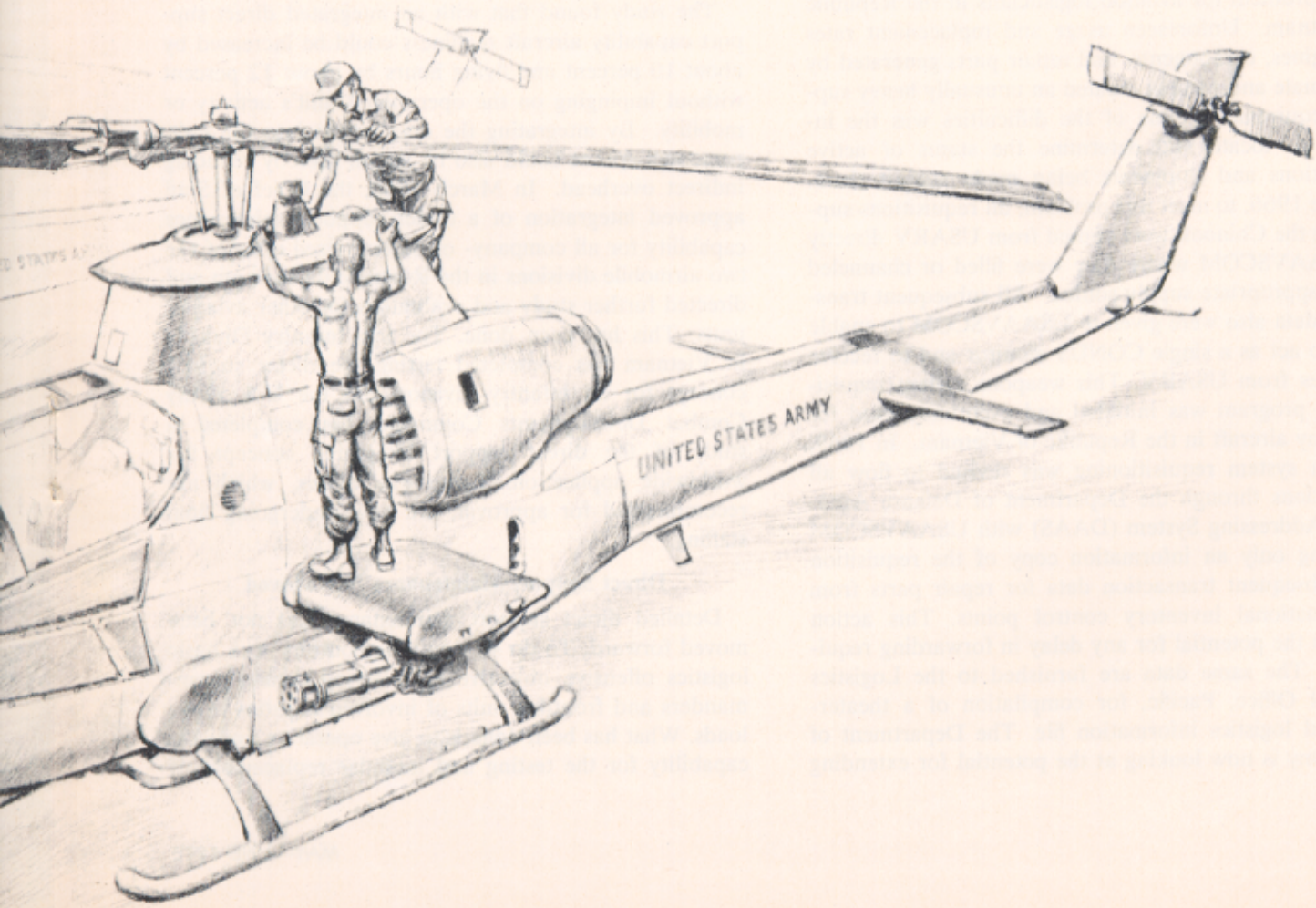
These elements are important for all high-value assets; however, they are doubly important for reparables. Reparables are shipped to a customer not one time but are returned again and again through the repair and overhaul cycle, establishing a continual flow or 360 degree pipeline.

Methods and Techniques

Some of the methods and techniques used to keep aviation inventory in motion include other logistics offensive segments, such as assets control, weapons system management, closed loop/direct exchange, and retrograde control.

Early in 1967, a reporting system was established to account for worldwide assets for the T53 and T55 gas turbine engines. The system, known as the Aircraft Component Intensive Management System (ACIMS), provides a post card report to the U.S. Army Aviation Systems Command (USAAVSCOM) for each engine by serial number giving every change in condition, location, and status of all engines, both installed and spare. The reporting system has been extended to cover 45 engine models and components in the aviation program, representing a value of $1.3 billion.

For critical and high-value items required for Vietnam, USAAVSCOM established a system known as AIMI (Aircraft Intensively Managed Items). This system, which presently includes 227 items, requires that USARV forecast monthly requirements for each item in the AIMI system for submission to USAAVSCOM each quarter. At that time USARV and USAAVSCOM "negotiate" the monthly levels. These levels are based upon forecasts of consumption and replacement and minimal safely levels to preclude running out of stock. (There are no stockage levels carried in CONUS.) The USARV then requisitions once a month the USAAVSCOM ships quantities by air to arrive incountry 15 days in advance of the month against which the items are required. Aircraft NORS (not operationally ready supply) rates in Vietnam attest to the success of the program. They have consistently declined in the past three years, reaching their lowest point in November 1969 with a 4.7-percent NORS rate for more than 4,000 aircraft. This is true despite normally accepted stockage quantities not being available.



Closed Loop/Direct Exchange

By May 1968—and partly as a result of the Communist TET offensive—the requirement for T53 engines for Huey and Cobra helicopters and T55 engines for the Chinook increased greatly. Since production and overhaul programs were behind schedule, the Army faced a major crisis. The only way to meet this problem was to reduce the pipeline further. The one increment in the pipeline that had the potential for providing an early response was the intransit time. Accordingly, a combined ground and air transportation system was established. All new or overhauled T53 and T55 engines were accumulated at the Army Aeronautical Depot Maintenance Center, Corpus Christi, Texas, for direct air shipment to the Republic of Vietnam three times a week by special air mission (SAM) aircraft. At the same time retrograde unserviceable engines were returned by the SAM aircraft. This system reduced transportation costs and provided what amounts to a closed loop/direct exchange program with USARV. This program has been so effective that since early June 1968 there have not been any major NORS problems for these engines in spite of the pipeline being reduced.

Assets Control

Support of the CH-47 Chinook helicopter posed a major problem for aviation logisticians in the Republic of Vietnam. Unforeseen usage and replacement rates for engines, components, and repair parts generated by the climate and combat created an unusually heavy support requirement. One of the difficulties was the inability to locate and determine the status of active requisitions and shipments being made against them. In June 1966, to meet this problem, all requisitions supporting the Chinook were routed from USARV directly to USAAVSCOM where they were filled or channeled to the appropriate supply source. All subsequent transaction data also were given to USAAVSCOM to enable them to act as a single CONUS monitor and to receive inquiries from USARV. This weapons system requisitioning program was initiated and eventually used for all Army aircraft in the Republic of Vietnam. In 1969, weapon system requisitioning was revised to flow all requisitions through the Department of Defense Automatic Addressing System (DAAS) with USAAVSCOM receiving only an information copy of the requisition and subsequent transaction data for repair parts from other national inventory control points. This action reduces the potential for any delay in forwarding requisitions. The same data are furnished to the Logistics Control Office, Pacific, for compilation of a theater-oriented logistics information file. The Department of the Army is now looking at the potential for extending the use of weapons system requisitioning both in USARPAC and in USAREUR.

Maintenance Support Positive and Mobile Maintenance

Mobile maintenance and maintenance support positive are two logistics offensive segments that lend themselves to a single discussion when related to Army aviation.

For some years Army aviation has been authorized special direct support maintenance detachments. The detachments are manned and equipped with the appropriate personnel skill levels, tools, equipment, and repair parts for a specific TOE unit; therefore, they are readily available for immediate attachment or assignment to an operating aviation unit under control of the unit commander.

When aviation units were deployed initially to the Republic of Vietnam, the Army found that, because of geography, it was not always practicable to provide centralized direct support maintenance from a single direct support company. Accordingly, each company-sized operating unit was given a direct support detachment.

It soon became evident that these units were achieving higher readiness rates and flying hours for their aircraft than units supported by a separate direct support company. General Harold K. Johnson, then Chief of Staff, directed that a definitive study be made to determine further applicability.

The study found that with an integrated direct support capability aircraft readiness could be increased by about 10 percent and flying hours by about 12 percent without impinging on the operational unit's activity or mobility. By integrating the detachment into the unit, personnel spaces could also be saved, thereby reducing indirect overhead. In March 1968, the Chief of Staff approved integration of a direct support maintenance capability for all company- or battery-sized units of the two airmobile divisions in the Republic of Vietnam and directed further study and evaluation for other aviation units. This has been done. The 9th Infantry Division in Vietnam has completed testing the direct support concept for an infantry division and the U.S. Army Combat Developments Command has completed a study of the direct support integrated concept for worldwide application. These evaluations, which are recommended for approval, are now undergoing final staffing.

Direct Support Maintenance Not Moved

Detailed direct support maintenance has not been moved forward. To do so would be contrary to a basic logistics offensive objective of relieving combat commanders and frontline units of involved logistics workloads. What has been done is to give operating units the capability for the testing and modular replacement of

engines, components, and accessories. Importantly, control of operations and maintenance has been integrated without the expense of additional skill levels, tools, equipment, and piece-part support in the forward area.

General Support Unsuitable in Combat Environment

Many of the general support maintenance tasks established by maintenance allocation charts are unrealistic in a combat environment. For example, detailed repair of aircraft engines and major aerodynamic components requires that four basic elements be available: trained personnel with high skill levels; expensive and complicated tools and test equipment; hard-base facilities; and a wide range of mission support repair parts, common hardware, and bits and pieces.

Experience in the Republic of Vietnam indicates that all of these elements cannot be brought into balance, especially the personnel skills and bits and pieces. The United States Army, Vietnam, has been tasked to accomplish maintenance work that properly should be done outside the combat zone. Directing the general support units to do this work has extended pipelines of high-value reparable items. In many cases these items could have been retrograded to a production line-overhaul facility in CONUS and returned to the theater quicker than the work was being completed in-country. The general support requirement was detracting from the basic job that should have been occupying logisticians in Vietnam full-time—maintaining operational readiness of assigned aircraft.

The Department of the Army is now looking at what is required of direct support and general support maintenance between operating units and CONUS depots. Since about 75 percent of the general support work has been moved back to CONUS and the test/replacement part of direct support maintenance forward, it may be desirable to realine direct support and general support separate echelons into one intermediate field maintenance echelon. Maintenance Support Positive (MS+) has the job of providing the answer.

Sea Mobility

One of the most innovative measures conceived by the Army in the Republic of Vietnam is the floating Army maintenance facility (FAMF). When increased numbers and types of aircraft were deployed to the Republic of Vietnam, it became desirable to have a limited in-country depot maintenance capability with machine tools and equipment, diagnostic and calibration instruments, and appropriate personnel skill levels far in excess of the Army maintenance structure for forces in the field.

Instead of building permanent brick and mortar structures in the Republic of Vietnam, the feasibility of having a mobile maintenance facility that could be deployed to any part of the world was explored. An aircraft carrier that could accommodate both aircraft and component maintenance was considered and rejected as too costly. In 1965, it was decided to convert the *Albemarle*, an ex-seaplane tender, into a floating army maintenance facility operated by the Military Sea Transportation Service. Renamed the *Corpus Christi Bay*, the ship was outfitted and deployed to Vietnam waters in early 1966. The FAMF has approximately 370 Army maintenance personnel and supporting technicians on board. All are highly skilled and technically qualified. In effect the *Corpus Christi Bay* provides a hard-base, offshore facility with the added capability of an ocean-going ship that can move anywhere on short notice—truly mobile maintenance. As requirements have shifted in the Republic of Vietnam, the ship has operated successfully in three different locations.

The *Corpus Christi Bay*, operating in waters off the Republic of Vietnam.

Ideally, the Army would like a floating facility that could provide one-stop service for Army helicopters and all their component parts. This potential has been considered, and a study has been completed that indicates such a ship may sometime in the future become practicable and economically feasible.

In summary, Army aviation logisticians are actively engaged in implementing segments of the logistics offensive. Improvements that could be of value Army-wide have already been made and are being considered for application in USARPAC and in USAREUR. Aviation logisticians are making every effort to assure that Army aviation with its costly and complicated equipment uses every technique practicable to further its efficiency and effectiveness. LOG

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