PART V
SUPPORTING THE TROOPS

CHAPTER 13

Marine Air Operations

1st MAW Organization and Deployment—Single Management: Relations with the Seventh Air Force Upgrading of Aviation Assets—I Corps Fixed-Wing Support—The Interdiction Campaign—Air Control Helicopter Operations—Improving Helicopter Support—Air Defense—Accomplishments and Costs

1st MAW Organization and Deployment

In January 1969, MACV had at its disposal approximately 2,000 United States fixed-wing aircraft and 3,700 helicopters, in addition to the support of Strategic Air Command B-52 bombers scattered from Guam to Thailand and naval aircraft on carriers stationed in the South China Sea. Of these aircraft, 258 fixed-wing and 270 helicopters were under the control of the 1st Marine Aircraft Wing (MAW).[1]

The fixed-wing aircraft of the 1st MAW were concentrated at two bases in I Corps Tactical Zone. At Da Nang, where the wing headquarters, support, and air control groups were located, Colonel Robert D. Slay's Marine Aircraft Group (MAG) 11 included four jet squadrons: Marine All Weather Attack Squadron (VMA[AW]) 242; Marine Fighter Attack Squadrons (VMFAs) 334 and 542; and Marine Composite Reconnaissance Squadron (VMCJ) 1. Two other fixed-wing aircraft groups operated from Chu Lai. Under Colonel Rex A. Deasy, MAG-12 consisted of Marine Attack Squadrons (VMAs) 221, 223, and 311, and VMA(AW)-533. MAG-13, commanded by Colonel Norman W. Gourley, included VMFAs -115, -314, and -323. Three of the four attack squadrons were equipped with McDonnell-Douglas A-4E Skyhawk bombers and the fourth with the older A-4C Skyhawks; the all-weather attack squadrons used Grumman A-6A Intruders. Three fighter attack squadrons flew the McDonnell Douglas F-4B Phantom II, while a fourth was equipped with the improved F-4J Phantom. The primary task of the attack and fighter squadrons was to provide close air support for ground combat units; a secondary mission was interdiction. The reconnaissance squadron flew a mixed complement of RF-4Bs, Phantom IIs modified for aerial reconnaissance and photography; EA-6A Prowlers carrying electronic warfare devices; and the electronic versions of the McDonnell-Douglas F-3D Skyknight, known as EF-10s.

Three aircraft groups controlled the wing's helicopters, divided among three airfields at the beginning of 1969. Based at Marble Mountain Air Facility was Colonel Warren L. MacQuarrie's MAG-16 with six squadrons: one light helicopter squadron, HML-167, with Bell UH-1Es; three medium squadrons, HMMs-164, -165, and -364, the first two equipped with Boeing CH-46A Sea Knights, and HMM-364 with Boeing's improved Sea Knight, the CH-46D; and one heavy squadron, HMH-463, with Sikorsky CH-53A Sea Stallions. Marine Observation Squadron (VMO) 2, in addition to Bell UH-1Es, was equipped with fixed-wing North American OV-10A Broncos. MAG-36, commanded by Colonel Bruce J. Matheson, was at Phu Bai Airfield with four helicopter squadrons: the heavy squadron, HMH-452, with CH-53As; the light, HML-367, flying UH-1Es; and two medium squadrons, HMM-265 equipped with CH-46Ds, and HMM-363, using Sikorsky UH-34D Seahorses. Flying in support of the 3d Marine Division was Colonel Walter Sienko's Provisional Marine Aircraft Group (ProvMAG) 39, created and based at Quang Tri in April 1968. Colonel Sienko's command included two medium helicopter squadrons, HMM-262, equipped with CH-46As, and HMM-161 using CH-46Ds, and VMO-6, which flew UH-1E helicopters, OV-10As, and Cessna O-1 and O-1G observation aircraft.

Not assigned to the operating squadrons, but attached to the 1st MAW, were a number of other aircraft. Headquarters and maintenance squadrons (H&MSs) employed seven aging Douglas C-117Ds on a variety of transport missions. Three of the headquarters and maintenance squadrons also operated 11 TA-4Fs, two-seat trainer versions of the A-4 Skyhawk, and three Grumman TF-9J Cougars, for reconnaissance and forward air control missions. H&MS-17 used four Grumman US-2Bs for aerial monitoring of sensors, and employed two Grumman C-1A Traders in reconnaissance flights. A detachment of Lockheed KC-130F Hercules refueler-transports from Marine Aerial Refueler/Transport Squadron (VMGR) 152, based on Okinawa, flew refueling, transport, and illumination missions from Da Nang Airbase.

Department of Defense Photo (USMC) A422115

As Commanding General, 1st Marine Aircraft Wing during the first half of the year, MajGen Charles J. Quilter devoted much effort to facilitating the wing's adjustment to single management and the support of two Marine divisions, and at times two Army divisions.

In addition to Marine aviation units, aircraft of the U.S. Air Force's 366th Tactical Fighter Wing and the 41st Wing, 1st Vietnamese Air Force Air Division also were based in I Corps, as was the organic helicopter support for the 101st Airborne and Americal Divisions.[2] These units were not under Marine control.

Three groups supported the personnel and aircraft attached to the wing. Headquartered at Da Nang was Colonel Thomas H. Nichols, Jr.'s Marine Wing Headquarters Group (MWHG) 1 which provided administrative and logistical support. Furnishing maintenance were the squadrons of Colonel Richard S. Rash's Marine Wing Support Group (MWSG) 12, also located at Da Nang. Marine Wing Control Group (MWCG) 18, under the command of Colonel Edward S. Fris, provided air control and antiaircraft support.

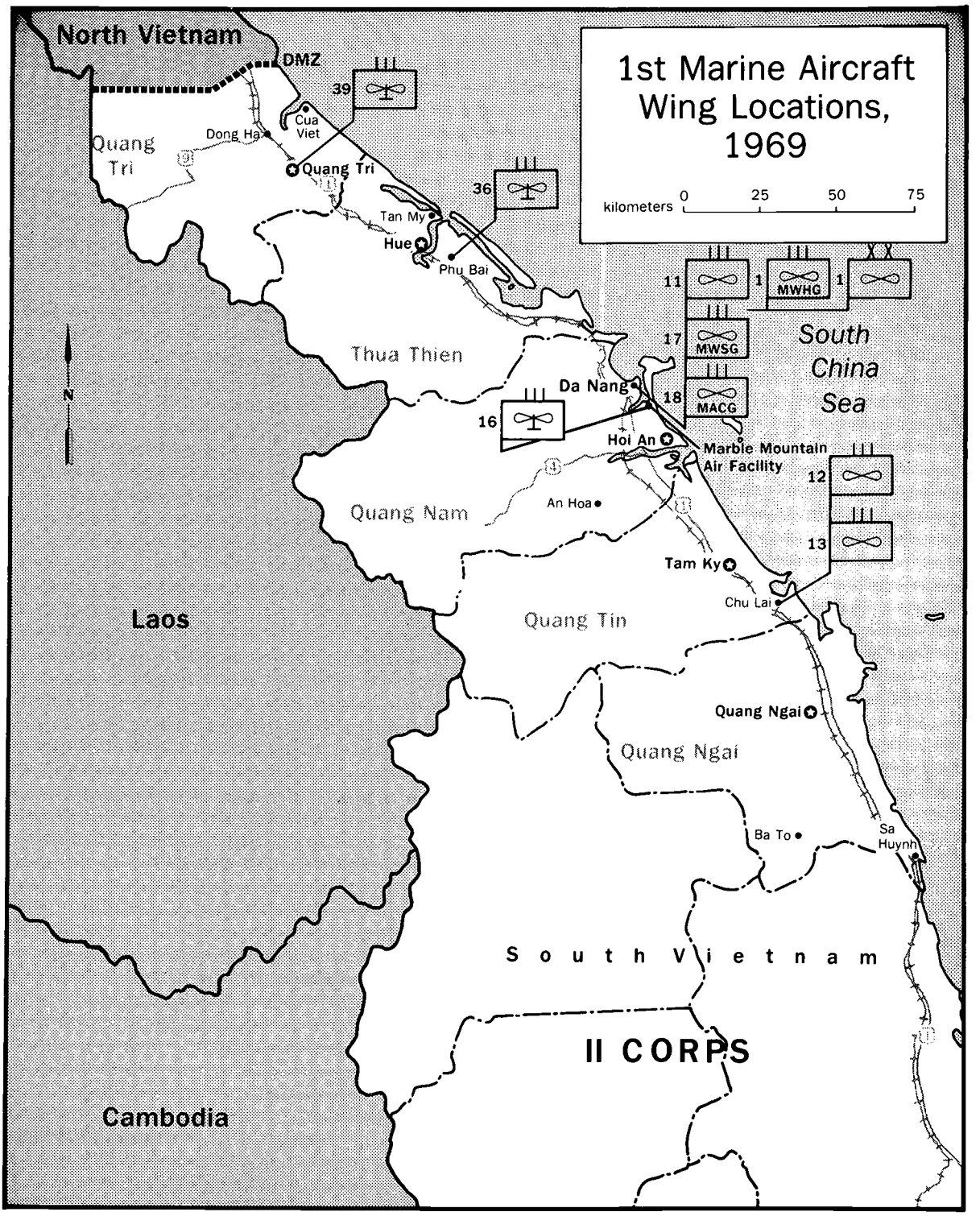
Major General Charles J. Quilter commanded the 1st MAW at the beginning of 1969. Quilter, a highly decorated veteran of World War II and Korea, took over the wing soon after MACV's imposition of single management of fixed-wing aircraft and the movement of large contingents of Army forces into I Corps. During his tenure as wing commander and III MAF deputy commander for air, Quilter devoted much of his time to facilitating the wing's adjustment to single management and to the increased demands for air support by the two United States Marine and two Army divisions, South Vietnamese units, and the Korean Marine Brigade.

Among the highlights of Quilter's tenure was the activation of an auxiliary wing headquarters in northern I Corps in an effort to improve coordination and response. Headed by Assistant Wing Commander Brigadier General Ralph H. "Smoke" Spanjer, who possessed delegated command authority over all wing aviation and base resources north of Hue, the new headquarters, which replaced the less formal liaison staff headed by Assistant Wing Commander Brigadier General Homer S. Hill, was collocated with Headquarters, 3d Marine Division at Dong Ha Combat Base. The new organization, in addition to ensuring ground commanders more responsive air support and permitting more effective use of air assets, particularly helicopters, reduced the span of control necessary to command the air units and airfields responsive to wing headquarters.

In July 1969, Major General William G. "Gay" Thrash relieved General Quilter in command of the 1st MAW. A native Georgian, Thrash served with distinction during World War II and Korea where, while serving with MAG-12, he received the Silver Star for gallantry in action before being shot down, captured, and held prisoner for two years. General Thrash, during the remaining months of 1969, labored to improve the working relationship between the wing and the two Marine divisions, which gradually had deteriorated during the first year of single management.[3] By late December, his efforts appeared to be succeeding, as Marine Major General George S. Bowman, Jr., Deputy Commanding General, III MAF, informed Major General Keith B. McCutcheon, the Deputy Chief of Staff for Air at Headquarters Marine Corps:

> Here in III MAF we have a very fine relationship between our Ground and Air . . . . Gay spends a great deal of time to make it so. He is bending every effort to use more of the Air capability in support of the Ground effort. And I mean this from a planning point of view, and not just having it available should someone call up. Every adverse comment is thoroughly examined, and in almost every case, there wasn't a problem when all the details were exposed. We still have a ways to go.[4]

In addition to strengthening the air-ground relationship, General Thrash also supervised the initial


1st Marine Aircraft Wing Locations, 1969
kilometers 0 25 50 75
North Vietnam
DMZ
39
Cua Viet
Dong Ha
Quang Tri
Quang Tri
36
Tan My
Hue
Phu Bai
11
1
MWHG
1
17
MWSG
18
MACG
South China Sea
Thua Thien
Da Nang
16
Hoi An
Marble Mountain Air Facility
12
13
Quang Nam
An Hoa
Tam Ky
Chu Lai
Laos
Quang Tin
Quang Ngai
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redeployment of 1st MAW air and support units. As a portion of the 25,000-man United States force reduction announced by President Nixon in June 1969, the four 1st MAW units selected for departure represented a cross section of Marine aviation in I Corps. Marine Air Traffic Control Unit 66 left Vietnam for Okinawa on 14 July, followed in August by Marine Fighter Attack Squadron 334, which moved to Iwakuni, Japan; Marine Medium Helicopter Squadron 165, which deployed to Futema, Okinawa; and the 1st Light Antiaircraft Missile (LAAM) Battalion, which joined its sister battalion, the 2d, at Twentynine Palms, California. Both the traffic control unit and two aircraft squadrons joined MAG-15, the air component of the 9th Marine Amphibious Brigade. As a result of the Keystone Eagle redeployment, the wing lost approximately 1,300 personnel and 29 aircraft.

The movement of Marine air units designated as part of the second troop withdrawal, Keystone Cardinal, took place in early October. Marine All Weather Attack Squadron 533 departed Chu Lai on the 5th, enroute to Marine Corps Air Station, Iwakuni, Japan for assignment to MAG-15. Later in the month, Marine Observation Squadron 6 and Marine Heavy Helicopter Squadron 462 left Vietnam for Okinawa. The transfer of wing units imposed by Keystone Eagle and Keystone Cardinal culminated during November in the creation of a wing headquarters (rear) in Japan. With the establishment of the I Marine Expeditionary Force (I MEF), for command and control of Marine combat units in the Western Pacific not committed to Vietnam, FMFPac activated the 1st Marine Aircraft Wing (Rear) on 7 November as the senior I MEF aviation component. Under 1st MAW (Rear), which was not associated in any way organizationally with the 1st MAW, Vietnam, were MAG-15, which retained operational control of fixed-wing units; MAG-36, which assumed control of all helicopter, OV-10A, and KC-130 aircraft; and selected headquarters, maintenance, and air control elements.[5]

A second consequence of the late 1969 troop redeployment was the consolidation of remaining 1st MAW aviation resources in I Corps. With the departure of the 3d Marine Division, helicopter needs north of Hai Van Pass were reduced significantly. Beginning in October, those helicopter squadrons not involved in the withdrawal began moving to Marble Mountain Air Facility in order to adequately support the 1st Division. By early December, all but three squadrons, HMM-161, HMM-262, and HML-367, which were to remain at Phu Bai, had moved south. The Army then assumed operational responsibility for the Quang Tri, Dong Ha, and Hue-Phu Bai airfields although certain wing equipment remained at Quang Tri and Marine helicopter squadrons continued to operate from the Phu Bai airfield until the end of the year.

Single Management: Relations with the Seventh Air Force

Since March 1968, in their capacity as Deputy Commander USMACV for Air Operations, the Commanding Generals, Seventh Air Force, General William W. Momyer, and his successor, General George S. Brown, exercised "fragging and operational direction" of all 1st MAW fixed-wing strike and reconnaissance aircraft.* Prior to that time, the 1st MAW assigned its own aircraft to particular missions and then reported to the Seventh Air Force the number of available fixed-wing sorties not needed to support Marine operations. The Seventh Air Force could then use the extra sorties for its own purposes. Under the new arrangement, the wing reported all preplanned, fixed-wing sorties for Air Force approval and assignment.[6] This new system, outlined in a letter from General William C. Westmoreland to the Commanding General, III MAF, on 7 March 1968, was termed "single management," and justified on the basis of providing adequate air support for the Army divisions reinforcing the Marines in I Corps during the siege of Khe Sanh and *Tet* Offensive, in addition to improving the efficiency of United States tactical airpower as a whole.

The decision to place Marine aircraft under Air Force control required a fundamental change in the Marine Corps' basic principles of combat organization. III MAF was designed and equipped as a combat entity, in conformity with the Marine air-ground principle of exploiting, under a single tactical command, the capabilities of infantry maneuver, helicopter mobility, and the immediate control and coordination of organic attack aircraft and artillery. By means of an uncomplicated and responsive system of air and ground control, the Marine infantry commander was able to weave artillery and air support quickly and effectively into his pattern of ground maneuver, in addition to coordinating naval gun fire support and the movement of supporting helicopters and reconnaissance aircraft within the battle zone.

*The daily orders assigning an aircraft to a particular mission are known as fragmentary orders, hence the slang verb "frag" as applied to air operations.

Department of Defense Photo (USMC) A372716

Sheltered within a steel-reinforced concrete revetment, a versatile McDonnell Douglas F-4B Phantom II awaits assignment to a close air support or interdiction mission.

Most Marine commanders believed that while both systems employed similar organizational terminology, there existed a fundamental difference between the two. The single management system was primarily a producer effort, while the one it supplanted was oriented toward the consumer. This consumer orientation was essential to the Marine Corps system and underlaid the complete responsiveness of Marine air to the desires of the supported ground commander.

Preplanned requests for air support under the Marine system involved only three processing steps and 18 hours from the submission of the initial request to receipt of air support. In contrast, the single management system imposed intervening layers of processing between I Corps units and the Seventh Air Force Tactical Air Control Center (TACC) in Saigon. Six steps were now required to process requests from the 1st Marine Division and seven for the 3d Marine Division. Under the Air Force system, request times varied from a minimum of 36 hours advanced notice for radar-controlled aircraft to over 50 hours for preplanned visually controlled aircraft attacks.

Requests for immediate air support under the Marine system likewise involved three processing steps: the originating battalion or regiment; the direct air support center (DASC), collocated with the division; and III MAF Tactical Air Control Center. The TACC then scrambled waiting aircraft. The single management system relied upon diverting aircraft already assigned to other missions. This often resulted not only in the requestor being deprived of support, but the questionable ability of the diverted aircraft to perform the mission properly. Where the Marine system focused on the division, the single management system focused on the corps.

Despite Westmoreland's assurances that Marine aircraft would support Marine ground units, "consistent with the tactical situation," Marines viewed single management as yet another bid by the Air Force for operational control of Marine fixed-wing aircraft, and an expanded role in the tactical support of Marine ground forces.[7] The issue resurrected bitter memories of what the Marine Corps considered inadequate and inefficient air support of Marine ground forces during the Korean War, under the single management system directed by the Fifth Air Force.

The III MAF commander, Lieutenant General Robert E. Cushman, Jr., with the full support of the Commandant, waged a relentless campaign during the remainder of 1968 to overturn Westmoreland's directive. For his part, the Commandant, General Leonard F. Chapman, Jr., took the issue to the Joint Chiefs of Staff, declaring, as he later stated, that it was unnecessary for two reasons:

> The Marine Corps did not battle roles and missions, did not use roles and missions as an argument in battling sin-

> gle management, but battled it rather on two other issues. First, that it was unnecessary. There was already a good system in effect that supported Marines and supported the Army . . . . And secondly, that it destroyed the immediate responsiveness of Marine close air support to the Marine infantry and that's a fact. Under the Marine techniques, the Marine infantry commander can state at night what he wants for tomorrow morning and get it in the way of close air support. Under single management, he had to state 72 hours ahead of time what he wanted, see, 72 hours hence. Well, at that point he didn't know. Well, of course that's the Army-Air Force system you know, the air is programed three or four days in advance in their system. They don't have any concept of immediately responsive exigency-type air support for the infantry, and it was on those two grounds that the Marine Corps battled single management.[8]

The controversy resulted in a split among the Joint Chiefs; the Army and Navy Service Chiefs supported the Marine position, while the Air Force and Chairman supported single management. The issue went to the Secretary of Defense, who turned it over to Deputy Secretary Paul Nitze for resolution. A compromise, according to General Chapman, who took the question to the President, eventually was reached:

> [General Earle] Wheeler [Chairman of the Joint Chiefs of Staff] made a special trip to Vietnam to talk it out with MACV with the end result that single management was rearranged in a fashion that permitted the Marines to get their immediately responsive close air support as they needed it, and the surplus to go to the Army—just the way it had been before, but with a different name.[9]

Although grudgingly accepting single management, Marine Corps leaders continued to insist that the system destroyed the concept of the Marine air-ground team and at the same time violated existing inter-Service agreements on the conduct of joint operations. Emotions ran high on both sides.[10] Both General Quilter and his successor, General Thrash, however, by working informally with the Seventh Air Force, attempted to modify the system and recover as much control of Marine fixed-wing aircraft as was possible. This pragmatic approach eventually succeeded and by the end of 1969, the 1st MAW had regained much of the ability to assign its strike and reconnaissance aircraft to missions in support of Marine ground operations, and exercise a degree of supervision over the sorties surrendered to the Air Force. The wing, however, was stymied in its efforts to compel the Air Force into supporting the two Army divisions in I Corps to a greater extent than it had in the past.[11]

"On a strictly working day-to-day basis," General Quilter noted, "we hardly . . . knew of single management, because we got everything we wanted. We could negotiate, and the stuff we proposed was invariably bought."[12] Others, however, continued to view the system as a failure despite the increasing amount of flexibility gained by Marine Corps prodding. Among them was Brigadier General Homer S. Hill, Assistant Wing Commander, who stated:

> There is some indication that there is beginning to be a degree of respectability and acceptability for single management. And I want to go on record right now as saying, that if this is true, it is a sad, sad day for the Marine Corps, because single management is no better than it was the first day it was implemented. It is no damn good for the Marine Corps, and for Marine aviation. And if we are getting lulled into a sense of false security, it is about time we wake up. And there is some indication from people we have talked to that say, well hell that is not bad, it is working isn't it? Well sure it is working. It is working because the Marine Corps had provoked so many changes to the original single management concept that it pretty well parallels the old Marine Corps system. We have managed to prod some flexibility out of this thing, but the disease is still there. It has got to be cured.
>
> It is not working all right. If you are following the close air support statistics every morning, . . . you will see what the hell is happening. You talk to the 3d Marine Division and you will find it is not all right, because they are nowhere near getting the amount of close air support that they requested every day, and they are not getting what they used to get. And every morning on the board you will see 50, 60, 70 Marine close air support sorties going to the Americal, or you will see 40 or 50 close air support sorties going to the 101st. So there are some people that are smelling like a rose in this business, because these Army units not only have their organic ARAs [Aerial Rocket Artillery], gunships, as well as their Huey gunships, but now they are getting the world's finest close air support, in considerable proportions. So, we don't like this thing from two standpoints. One, is that we don't have control of our organic air, and it is affecting the support to our Marine divisions, and likewise their capability to fight this war. And secondly, the Army never had it so good.[13]

Although opinions on single management still varied widely, Marines had, by the end of 1969, come to terms with the system and had modified it enough in practice to keep the air-ground team substantially intact. These arrangements, growing in part out of the tactical situation and from the conciliatory attitude of both Marine and Air Force commanders on the scene, especially that of Air Force General George S. Brown, had yet to be formalized in a MACV directive or an Inter-Service agreement for joint operations. The only official description of the system remained General Westmoreland's letter of March 1968 to General

Cushman, although MACV attempted to incorporate the basic principles of single management into a December 1968 revision of Directive 95-4, which prescribed the rules of air operations throughout Southeast Asia. MACV abandoned the attempt after III MAF, in a sharply worded response, refused to concur in the draft. Throughout 1969, Marines remained steadfast in their opposition to any attempt to formalize single management. This stance would change in 1970, as Marines, in order to protect their position in Vietnam and in future joint operations, would finally agree to the revision of MACV Directive 95-4, incorporating a description of the system as it actually existed, not as it was originally proposed.[14]

Upgrading of Aviation Assets

"Aviation is a dynamic profession," explained General McCutcheon. "The rate of obsolescence of equipment is high and new aircraft have to be placed in the inventory periodically in order to stay abreast of the requirement of modern war."[15] New aircraft had been introduced periodically into the 1st MAW's inventory since the unit arrived, and 1969 was to be no exception.

The Marines' fifth year in Vietnam witnessed the steady upgrading of the wing's aviation inventory, both fixed-wing and helicopter. In January, eight additional light attack and forward air control OV-10A Broncos, designed to replace the Cessna O-1, were ferried to Da Nang, where they were divided between Marine Observation Squadrons 2 and 6. The detachment brought the total number of OV-10As assigned to the wing to 24. The month also saw the trans-Pacific deployment to Vietnam of Marine All-Weather Attack Squadron 225, with its Grumman A-6A Intruders, a low-level, long-range attack aircraft capable of penetrating enemy radar defenses and hitting small targets in any weather. VMA(AW)-225 was assigned to MAG-11 at Da Nang, where it replaced Marine Attack Squadron 121, and its older light, single-engined, McDonnell Douglas A-4C Skyhawks, scheduled to be reassigned to the 2d MAW at Cherry Point, North Carolina. In a similar trans-Pacific deployment in February, Marine Fighter Attack Squadron 232, with 15 improved F-4J Phantom IIs, relieved VMFA-323, equipped with older

Gathered to discuss aviation requirements for the 3d Marine Division are, from left, BGen Frank E. Garretson, Commanding General, Task Force Hotel; MajGen Raymond G. Davis; and BGen Homer S. Hill, Deputy Commanding General, 1st Marine Aircraft Wing.

Courtesy of BGen Frank E. Garretson (Ret.)

model F-4Bs, bringing the number of 1st MAW F-4J aircraft to 32.*

April witnessed the continued improvement in the wing's helicopter gunship and lift capabilities. Equipped with new engines producing greater shaft-horsepower, additional Boeing CH-46Ds arrived to replace original CH-46A models, scheduled to be modified during the year. The benefits of the larger engine could be seen when payload weights were compared under combat conditions—operating at sea level, in 95 degree weather, the CH-46D was able to lift 2,720 pounds, while the older model was limited to 1,710 pounds. On 10 April, the first increment of a total inventory of 24 Bell AH-1G Cobra gunships arrived at Da Nang. The four Cobras, assigned to VMO-2 (Marble Mountain Air Facility, Da Nang), began medical evacuation and reconnaissance escort, and strike and fire suppression missions, within six days of their acceptance by the squadron.

The tandem-seat Cobra supplied to the 1st MAW in order to meet the continued need for helicopter gunships, provided several advantages over the support available from the armed UH-1E, the aircraft it was to replace.** A 45 percent faster cruise speed allowed the AH-1G to maintain pace with the CH-46 troop carriers and lead them into combat landing zones. In addition, the Cobra, possessing a 3.4-hour endurance compared to slightly less than two for the UH-1E, could remain on station longer, providing required fire suppression. An augmentation system incorporated into the aircraft's gunsights, gave the Cobra added stability as a weapons platform. The resultant increase in accuracy permitted steeper attack angles, while reducing the aircraft's exposure to ground fire at low altitudes. Armed with a 7.62mm mini-gun, a chin turret-mounted 40mm grenade launcher, four externally mounted 2.75-inch rocket pods, and able to carry 2,000 pounds of ordnance, the Cobra provided the wing with a significant increase in firepower. Monthly accessions by December equipped VMO-2 with 21 aircraft.***

In May, the wing's lift and troop transport capability again was increased with the arrival of the first CH-53D Sea Stallions, one of the largest helicopters produced by Sikorsky. Designed to augment the CH-53A, the newer model, like the CH-46D, was equipped with a more powerful shaft-turbine engine, increasing by 4,000 pounds the payload capacity of the "A" model. In addition, internal rearrangement made it possible for the CH-53D to accommodate up to 55 troops, compared with 38 in the CH-53A. Despite a number of transfers and combat losses, the wing by the end of year possessed a total of 79 CH-53D aircraft.

June witnessed the first of 10 trans-Pacific deployments, codenamed Key Quoit, by which new-production Grumman A-6A Intruders were delivered to the 1st MAW, replacing older models scheduled for progressive aircraft rework in the United States.**** The newer models, like the old, provided exceptional bomb-carrying capacity and a significant measure of versatility to the wing's in-country attack effort. The all-weather capability of the Intruder—supplied by automated navigational and attack problem-solving systems—complemented the varied radar modes for acquiring hostile targets. Using the aircraft's moving target indicator, the two-man crew could direct strikes against moving vehicles, while the aircraft's search radar could locate significant structures. In addition, the development and use of the radar beacon system allowed the Intruder to provide all-weather coverage against targets—whether radar significant or not—while under control of a ground observer.

Included in the Key Quoit deployments were a number of new-production EA-6A Prowlers, the electronic warfare version of the Intruder. Assigned to Marine Composite Reconnaissance Squadron (VMCJ) 1, the newer EA-6As were to replace older models scheduled for rework and subsequent transfer to the 2d MAW, and the McDonnell Douglas EF-10. Utilized to

*The McDonnell Douglas F-4J Phantom II, like its predecessor the F-4B, was a twin-seat, supersonic, all-weather fighter aircraft, designed primarily for interception and air superiority, but used as a close support aircraft in Vietnam. The improved F-4J, in addition to possessing more powerful engines and larger wheels, which permitted heavier ordnance loads, carried sophisticated bombing and radar fire-control systems, enabling it to strike targets with improved accuracy.

**Assignment of the AH-1G aircraft to Vietnam was an attrition replacement and not a force level increase. The introduction coincided with anticipated losses and the exhaustion of the UH-1E. Total authorized operating UH-1 and AH-1 aircraft remained at 72 for the 1st MAW.

***Initially, the 1st MAW assigned the AH-1Gs to VMO-2, but in December the wing activated HML-367, an all-Cobra squadron, in order to assure better maintenance and efficient use of the aircraft.

****The Key Quoit deployments involved the flight-ferrying of two to five aircraft at a time from Naval Air Station (NAS), Whidbey Island, Washington, to Da Nang, with intermediate stops at NAS, Barber's Point, Hawaii; Johnston Island; Wake Island; NAS, Agana, Guam; and NAS, Cubi Point, Philippines. The total ferrying effort involved 24 Intruders and 12 Prowlers.

Marine Corps Historical Collection

The first of more than 20 tandem-seat AH-1G "Cobra" gunships, scheduled to replace the slower UH-1E "Huey" gunships through attrition, is off-loaded from a C-130 transport at Da Nang in early April for assignment to Marine Observation Squadron 2.

counter hostile antiaircraft, missile control, and surveillance radar, the EF-10 had, since its arrival in 1965, served as the wing's only electronic warfare aircraft until the introduction of the Prowler. After more than 9,000 sorties, the aircraft was to be reassigned to the 3d MAW, El Toro, California.

Early in August, the last 1st Wing Sikorsky UH-34D Seahorse squadron, Marine Medium Helicopter Squadron 363, terminated combat operations in preparation for redeployment to the United States, completing the phased withdrawal of the aircraft. Initially used to put the vertical envelopment concept, perfected by Marine air and ground units during the 1950s and early 1960s, into practice, the UH-34 eventually became the workhorse of the Marine helicopter effort in I Corps until increasing numbers of CH-46 and CH-53 aircraft assumed the lead role in troop and cargo lifts. The Seahorse, however, compiled an impressive record. From its arrival with HMM-162 and -163 in March 1965 until its August standdown, the UH-34s assigned to the 1st Wing and Special Landing Forces of the Seventh Fleet flew over 917,000 sorties in support of I Corps combat operations, proving to be the most dependable aircraft in the wing's helicopter inventory. Designated to replace the outgoing Seahorses were 18 new CH-53D aircraft of Marine Heavy Helicopter Squadron (HMH) 361. Unloaded from the *New Orleans* (LPH 11) at Da Nang on 27 August, the Sea Stallion squadron joined MAG-36 at Phu Bai in support of the Army and remaining Marine forces in northern I Corps.

Despite the redeployment of helicopter and fixed-wing squadrons during the latter half of the year, the 1st Wing, by December, had completed the replacement of a majority of the aircraft it had arrived with four years before. The all-weather A-6A Intruder had replaced a substantial portion of the A-4 Skyhawks, and a majority of the F-4B Phantoms had given way to more capable F-4Js. Likewise, the EA-6A electronic warfare Prowler had replaced the Korean War vintage EF-10, and the OV-10A Bronco had superceded the Cessna O-1. In addition, the UH-34 transport helicopter was replaced by the CH-46, whose lift capability was further enhanced by the CH-53, and the AH-1G Cobra was introduced to provide a true attack helicopter capability, permitting the UH-1E to return to its

mission of observation. Of the wing's aircraft, only the KC-130 refueler-transports remained unaffected.

I Corps Fixed-Wing Support

American fixed-wing air operations in Southeast Asia, following the bombing halt, changed dramatically. No longer concerned with the struggle for air superiority and the defense of strike formations over North Vietnam, the role of airpower in interdiction and ground combat support in Laos and South Vietnam intensified.

Within the confines of I Corps Tactical Zone, the 1st MAW's fixed-wing aircraft, aided by United States Air Force, Navy, and small contingents of the Australian Air Force, performed a variety of missions in support of III MAF ground operations. While in-country interdiction of enemy troops and supplies was a continuous task, as were reconnaissance, airborne forward air control, and landing zone preparation, the wing's most significant function was that of providing close air support. Assisting troops on the ground, according to wing bombardier, First Lieutenant Earl C. Smith, was Marine aviation's basic mission: a task which he and other aircrew members found to be "the most gratifying mission" flown in Southeast Asia.[16]

Throughout the first eight months of 1969, Marine aircraft flew about 80 percent of the daily tactical air strikes and combat support missions in I Corps, assisting six divisions and two brigades. During this period, wing A-4Es, A-6As, and F-4Bs completed a monthly average of 6,480 attack and combat support sorties; the latter category included interdiction, reconnaissance, artillery and air strike control, the bulk of which fell to the wing's OV-10As. By the end of September, with the reduction of aerial support requirements created by the redeployment of the 9th Marines from northern I Corps and the resultant lower level of combat activity, the number of monthly attack and combat support missions plummeted to 4,017. Over the next three months, as the remainder of the 3d Marine Division and three fixed-wing squadrons redeployed, the monthly in-country sortie total dropped further to a December figure of 3,084—less than 41 percent of the January to August average.

While the decline of sortie requests was common to all forces throughout I Corps, there was a marked change in the distribution. Having received an average of 2,890 sorties during the first eight months of 1969, Marine units in October accumulated but 862, a majority of these going to the 1st Division. Conversely, as the 101st Airborne Division expanded its responsibility from Thua Thien Province into Quang Tri, and the Americal Division continued operations in the southern two provinces of the corps tactical zone, the two Army units accounted for 60 percent of the wing's sorties during the last four months of the year. Air support rendered Korean and South Vietnamese units followed a similar pattern to that of the Marines, dropping from 282 sorties in January to 97 in December.*

With alterations in both the intensity and distribution of the wing's attack effort, as the level of combat diminished, a change came in mission assignment. As a result of the action generated during the numerous large unit operations of early 1969, close air support missions between January and August averaged 4,630, accounting for 90 percent of the 1st MAW fixed-wing operations. The remaining months of the year witnessed an inverse commitment. As combat activity decreased and troop density thinned, the requirement for air-delivered munitions in support of ground elements dropped significantly. Although redeployment affected the wing's capabilities, sufficient fixed-wing assets remained to shift greater emphasis to deep air support. By year end, the 1st Wing directed nearly 1,200 sorties a month (48 percent of the fixed-wing effort) on enemy base areas and lines of communications throughout the I Corps hinterland.

An example of the versatility of fixed-wing aircraft in support of and coordination with ground action can be seen in the assistance given a 1st Marine Division reconnaissance team, conducting operations in the Que Son Mountains south of Da Nang in late August. Capitalizing on persistent enemy movement through the Phu Loc Valley toward Go Noi Island, the patrol organized an air-supported ambush. Selecting a site centered on a portion of the well-traveled trail flanked by a lake and opposing steep terrain, the tactics envisioned initial detection by seismic intrusion devices, followed by surprise air strikes.

Shortly after sunset on the 28th, the team, situated on Hill 425 overlooking the valley from the southeast, began monitoring the seismic recorders, while the patrol's forward air controller initiated radio contact with all aircraft involved: a flight of three A-6As orbiting well to the north, and an OV-10A, carrying an airborne controller, on station to the east. Standing

*Reported air support sorties furnished South Vietnamese units during the year were somewhat deceiving, as the units increased participation in combined operations with U.S. Forces, to whom the sorties were primarily allocated.

by to provide radar-controlled bombing guidance was an air support radar team (ASRT) at An Hoa Combat Base. Additional aircraft, on alert status, waited at the Da Nang Airbase.

Within a short time, the sensors indicated movement within the target area, whereupon the team using night observation devices confirmed over 60 enemy troops moving east, directly into the killing zone. Selecting an initial impact point ahead of the enemy column, the team's ground controller immediately relayed the target information to the An Hoa ASRT. As the enemy moved forward, the radar team, using the TPQ-10 all-weather radar, vectored the first A-6A on target. Observing the initial string of twenty-eight 500-pound bombs strike the end of the enemy column, the ground controller made adjustment, bringing the next two strikes directly on the dispersing troops.

As the A-6s departed the target area, the Bronco moved in to illuminate the zone, and then called in a flight of three F-4 Phantoms, which had launched from Da Nang when the ambush was triggered. Circling the ambush site, the airborne controller gave each of the incoming F-4s a target until all enemy movement within the valley ceased. With the departure of the Phantoms, An Hoa-based artillery took over, responding to sensor activations as the enemy attempted to retrieve the bodies of their fallen comrades. In the morning, the reconnaissance team counted 48 enemy soldiers killed.

During 1969, 1st MAW attack aircraft operated under no formal sortie limit, and "continually overflew the program," noted Brigadier General Homer S. Hill, Assistant Wing Commander. Under single management, daily attack sorties were subject to Seventh Air Force assignment, which "fragged" 1st MAW fixed-wing aircraft at a utilization rate of 100 percent (one operational flight by one aircraft per day). Combat support, emergency requests from troops in contact, and other wing-generated missions were not included. As a result, the wing's average daily utilization rate hovered around 150 percent, much to the distress of CinCPac air planners who were finding it increasingly difficult to finance excess flight hours and aircraft repairs and replacement during a period of growing economic constraints. Throughout the year efforts were made to cut the number of Air Force fragged sorties by 25 to 30 percent in order to provide a cushion for the wide variety of wing missions, but without success. The tactical situation, however, provided some relief.[17]

Results of the wing's in-country support of ground maneuver units can be viewed in a number of ways. In terms of statistics, wing aircraft accounted for 1,614 enemy troops killed and over 20,400 bunkers and enemy structures razed. Less tangible were results accruing from strike missions which enabled ground units to reduce enemy strongpoints and to secure operational objectives rapidly and effectively with minimal friendly losses. Whether trapping the enemy in fortifications or driving him into the open, air strikes softened his resistance to allied ground attacks considerably. In addition, the psychological value of air support was evident as friendly morale rose and enemy morale plunged, resulting in increased enemy defections

Originally conceived of as an observation aircraft, the OV-10A "Bronco" gradually assumed a close air support mission, at times replacing both the F-4B Phantom and A-6A Intruder.

Department of Defense Photo (USMC) A373942

directly attributable to the fear of air strikes throughout I Corps.

The Interdiction Campaign

With the termination of the United States bombing campaign in North Vietnam in November 1968, the American air interdiction effort in Southeast Asia shifted to the southern panhandle of Laos, which was divided into two strike areas, Commando Hunt and Steel Tiger. Here the system of supply roads, known as the Ho Chi Minh Trail, crossed the western border of North Vietnam through three major passes—Nape, Mu Gia, and Ban Karai—in the Annamite Mountains, and then turned south, branching off into the Communist base areas of South Vietnam and southeastern Laos. Over this road network, North Vietnamese troops, supplies, and munitions moved by foot, bicycle, pack animal, and by truck through a region of Laos rich in hidden natural limestone caves and dense jungle. Traveling mostly by night, the convoys vanished into the numerous well-camouflaged camps and storage depots protected by antiaircraft weapons at daybreak or at the first sign of danger, making interdiction difficult.

The flow of enemy troops and supplies along the road network, and the American effort to restrict it, was tied to the annual monsoon seasons. Between October and February, the northeast monsoon brought dry, clear weather west of the Annamite Mountains, while cool, foggy, rainy weather settled in along coastal North Vietnam and northern South Vietnam. The North Vietnamese customarily increased their activity in Laos by moving large amounts of supplies through the passes and down the road network during this period, requiring a corresponding increase in the American interdiction effort. With the beginning of the southwest monsoon in May, moisture-laden air from the southwest backed up against the mountains, resulting in frequent heavy rains in southern Laos. The poor weather not only posed obstacles to enemy truck traffic, turning the cratered and unimproved trails and roads that comprised the infiltration system into quagmires, but to American air operations as well.

Adapting interdiction efforts to the cyclical weather changes, MACV and the Seventh Air Force in November 1968 launched a series of air campaigns known as Commando Hunt, designed to disrupt the enemy supply lines in Laos, substantially increasing the time required to transport materiel and troops into South Vietnam. United States Air Force, Navy, and Marine tactical aircraft and Air Force B-52s struck at exposed vehicles, storage areas, and truck parks with blast and delay fuzed munitions, while seeding passes and river fords with MK36 air-delivered mines. By January 1969, the Seventh Air Force allotted 40 percent of all preplanned tactical air sorties and 60 percent of all B-52 bombing missions to the Commando Hunt campaign.

In addition to strikes into southern Laos, American aircraft flew other missions further north and, to a lesser extent, in North Vietnam. Over northern Laos, Air Force, Navy, and Marine aircraft flew armed reconnaissance missions and participated in Operation Barrel Roll, providing tactical air support to friendly Laotian forces. Over North Vietnam, American aircraft continued reconnaissance flights following the bombing halt, confirming a gradual buildup in the number of enemy fighter aircraft, surface-to-air missile (SAM) sites, airfields, and antiaircraft artillery positions.

The 1st Marine Aircraft Wing, at the beginning of 1969, provided an average of 35 sorties out of a total of 198 per day in support of the Commando Hunt area raids in Laos, and other air operations outside South Vietnam; an average that was maintained throughout the northeast monsoon season. During the southwest monsoon, beginning in late May, the daily sortie rate fell below 25, but rose again in November with the advent of the dry season. While F-4B Phantoms and A-4E Skyhawks carried the major burden of conducting daylight conventional bombing and strafing attacks at the beginning of the year, increasing reliance was placed on the night missions of the A-6A Intruder as the year progressed.

Described as "the finest all-weather bombing aircraft in the world," the Intruder, with its elaborate target acquisition radar and computer-controlled navigation and bomb-aiming systems, proved to be ideal for night and poor-weather bombing along the Ho Chi Minh Trail.[18] Carrying as many as twenty-eight 500-pound bombs, Rockeye II cluster, or delayed-fuzed MK36 mines, the wing's A-6As were guided to selected targets by Air Force forward air controllers or the sensor readout station at Nakhon Phanom, Thailand, which monitored strings of seismic and acoustic sensors airdropped along the main branches of the trail network. An A-6A assigned to the Commando Bolt, Commando Hunt, or Steel Tiger areas of Laos, would take off from Da Nang and fly to a prearranged point where it would orbit, awaiting target assignment. As trucks, known to pilots and bombardiers as "movers," activated sensors, the Nakhon Phanom station would notify the Intruder of the target location. The aircrew

Department of Defense Photo (USMC) A422876

Described as the finest all-weather bomber, a Grumman A-6A Intruder heads for targets along the Ho Chi Minh Trail, the North Vietnamese Army's main supply route.

would then feed the relayed data into the craft's computer system and head for the truck convoy or storage site, destroying it by using offset bombing techniques or the aircraft's ability to pick up a moving target. In the course of the Commando Hunt series of air operations, Intruders destroyed or damaged an average of 300 moving or stationary targets per month.[19]

Marine Intruders flying missions along the Ho Chi Minh Trail encountered a number of persistent problems, among them the Air Force's failure to understand and appreciate the capabilities of the aircraft itself. As First Lieutenant Earl C. Smith pointed out in describing an average mission over Laos:

> We went over and we had to orbit 25 minutes, waiting to get on the route. They would not allow us on the route. We had the capability . . . to pick up moving targets. An Air Force FAC [forward air controller] was trying to work a couple of [Air Force] F-4s visually at night to pick up three trucks. We waited for 25 minutes; they were unable to find their trucks; they were dropping flares. Periodically through this 25 minutes we called and asked to go on the route to see if we could pick them up. We were rejected. Finally they had to hit the tanker and we were allowed on the route. We were on the route approximately five minutes, picked up the three movers, and wiped all three of them out. And it was confirmed by their F-4s as they were pulling off target.[20]

Air Force controllers, despite their preference for visually controlled aircraft such as the Phantom and Skyhawk, grew to appreciate the capacity of the A-6 to loiter for longer periods without refueling and its capabilities during periods of darkness and poor weather.

Another major problem was heavy antiaircraft fire controlled by North Vietnamese gunners who aimed and fired either at the sound of an aircraft or the general area above a target.[21] While inaccurate, the flak was potentially dangerous and the 1st MAW, in early December, began assigning F-4B Phantoms of VMFA-542, codenamed Commando Bolt Assassins, as escorts for the patrolling A-6s. The Phantom crews received the same briefing as the crews of the A-6As with which they were paired, but flew independently to the assigned orbiting point. When the Intruders were given a target and began the bombing run, the F-4Bs followed, watching for enemy antiaircraft gun flashes. If the A-6s were fired upon, the Phantoms attacked the Communist gun position with Zuni rockets or cluster bombs, and if not, the ordnance was expended on the Intruders' target.[22] Accompanying an Intruder on a night bombing mission on the Ban Karai Pass or any one of the surrounding roads was no easy task, as Captain Laurence G. Karch pointed out:

> Our escort mission over there is the most difficult of all. The A-6 has terrain-following radar and has all the goodies to do all-weather, night interdiction missions. Well, we don't. We have got an air-to-air radar which we can do air-to-air and all-weather work, but following this dude around right on the ground and then going in for a visual attack on a gun at night . . . it's really quite challenging . . . . If you don't have radar you're really in a bind because he turns his lights out when he starts going into the pass. The only way you have of keeping up with him is have your navigational computer work and hope you can dead-reckon yourself to the target.[23]

The use of the F-4 in flak suppression proved successful as both A-6A and F-4 pilots reported a dramatic decrease in antiaircraft fire directed at the Intruders.

Acquiring targets for, and at times controlling, Marine attack aircraft in Laos were the McDonnell-Douglas TA-4Fs of Headquarters and Maintenance Squadron (H&MS) 11. The aircraft's high speed and maneuverability made this small, two-seat plane ideal for conducting low-level reconnaissance, first over North Vietnam and then of the Ho Chi Minh Trail following the bombing halt. Flying between 2,500 and 5,000 feet, altitudes well below those later permitted the slower Cessna O-1, O-2, and North American OV-10A, and at speeds over 400 knots, the TA-4F could remain on station for about 40 minutes before refueling. By constantly maneuvering up and down and from side to side, and shifting from one section of the route to another, the aircraft avoided most hostile antiaircraft fire. Even with these tactics, two aircraft from H&MS-11 were shot down in more than 1,700 sorties conducted over Laos in 1969, and a number received extensive damage to their wing fuel tanks.[24]

While Air Force OV-10As, F-4s, and F-100s monitored the overall trail network from altitudes above 7,500 feet, the TA-4F concentrated on small portions of the enemy supply system by making repeated passes. Using binoculars and hand-held cameras loaded with high resolution or infrared film, the pilot and his accompanying observer searched for individual trucks, truck parks, supply depots, rest areas, and troop concentrations. During Operation Dewey Canyon, for example, TA-4F aircrews located a number of the enemy's 122mm field guns and trucks, which were subsequently destroyed by Marine attack aircraft. Despite a number of successes, thick jungle canopy and enemy camouflage techniques continued to prevent the location and destruction of a majority of lucrative targets in the area.[25]

While interdiction of enemy lines of communications and supply was severely limited above the DMZ following the bombing halt, Marine pilots of Marine Composite Reconnaissance Squadron (VMCJ) 1 continued to conduct both intelligence gathering and electronic countermeasure (ECM) flights. The primary mission of VMCJ-1 aircrews during the year was the maintenance of an electronic screen above the DMZ to protect III MAF air operations in northern Quang Tri Province and reconnaissance sorties along Route 1 in North Vietnam from the enemy surface-to-air missile and radar-directed antiaircraft threats. Flying orbits parallel to the DMZ and southern coast of North Vietnam, squadron aircrews piloting the EA-6A (and the EF-10 before its phaseout in early October) provided continuous electronic support.

Further north, over the Gulf of Tonkin, VMCJ-1 aircraft, especially the versatile EA-6A Prowler, supported

Col Norman W. Gourley, Commanding Officer, Marine Aircraft Group 13, flying an F-4B Phantom, and Col Rex A. Deasy, Commanding Officer, Marine Aircraft Group 12, in the smaller A-4 "Skyhawk," team-up on a mission to destroy enemy supply positions.

Marine Corps Historical Collection

Navy and Air Force reconnaissance programs centering on Vinh and the Hanoi-Haiphong complex. Protection for both manned missions near Vinh and unmanned (drone) operations in northern North Vietnam was possible since the Prowler, configured with jamming devices, electronically targeted radar-controlled antiaircraft, missile, and enemy fighter threats.

Although the allies possessed total command of the air, both over North and South Vietnam during 1969, North Vietnamese MIG fighter aircraft posed a continuing threat to friendly planes operating over Laos, North Vietnam, and to the Navy's Attack Carrier Striking Force (Task Force 77) in the Gulf of Tonkin. While maintaining a continuous airborne alert over Laos (MIGCAP), an average of 110 wing sorties a month were devoted to the Seventh Fleet's barrier combat air patrol (BARCAP) operations. Forming a screen across the primary North Vietnamese air threat axis, extending southeast from Hanoi and Haiphong, the barrier patrol provided 24-hour protection for American naval shipping and aircraft in and above the Gulf of Tonkin. In addition, rotational support of the barrier afforded wing F-4 aircrews the necessary experience in order to maintain proficiency in intercept techniques. Supporting the fighters deployed over the gulf and elsewhere were Marine KC-130 refueler/transports orbiting nearby, providing a day and night refueling capability.

While these two missions placed a strain on the wing's fighter-bomber and financial resources, Major General Quilter and his deputy, Brigadier General Hill, considered them essential. Speaking of the wing's air-to-air capability, General Quilter noted:

> There was nothing like putting a hot shot NFO [naval flight officer] and a good pilot alongside Haiphong, looking into that beautiful scope and seeing MIGs flying out there . . . . It's meaningful that if we are going to ever tangle with them in an air-to-air way, and we may well, nobody knows, but you had better keep your hand and your foot in the door on this kind of capability, because things could deteriorate very rapidly.[26]

Of the same mind, General Hill declared that participation in the barrier patrol maintained not only pilot proficiency, but the wing's close relationship with the fleet, a relationship that would continue with the end of the Vietnam conflict:

> If you go so long in the air-ground role with these birds and with these crewmen that we have got here, we lose a hell of a lot of our capability, particularly true as far as the radar is concerned and the aircraft is concerned . . . . If you don't exercise these things, and you don't keep your crew members exercised you lose the capability. If the Vietnam War was over tomorrow and we had to sail off to Timbuktu or Zamboanga, we would need this air-to-air capability, and as a matter of fact, it is part of our mission.[27]

Despite the drain on resources, the 1st MAW actively maintained an around-the-clock participation in the allied interdiction, reconnaissance, and air defense campaign. American intelligence officers estimated that the wing's effort, while small, along with that of the Air Force and Navy, produced an overall reduction of approximately 30 percent, when compared to 1968, in the amount of materiel reaching enemy troops in South Vietnam during 1969.

Air Control

Requesting and controlling fixed-wing air support throughout I Corps Tactical Zone, although complex, was an ever-increasingly-efficient process. All missions, except those specifically generated by the 1st MAW for specific purposes, were controlled by the direct air support control center (DASC) at Camp Horn, Da Nang. The senior tactical air control agency for I Corps, this combined U.S. Air Force, Marine, and Vietnamese Air Force control center could divert any preplanned fixed-wing mission assigned to the tactical zone, launch aircraft held on alert, or request additional Air Force or Navy aircraft for tactical emergencies. Working in close cooperation with the Horn DASC was the 1st MAW air control system, consisting of a tactical air direction center (TADC) at the Da Nang Airbase, responsible for command and control of all wing aircraft; a tactical air operations center (TAOC) on Monkey Mountain, tasked with conducting air surveillance and antiair warfare operations; and direct air support control centers (DASC) at both 1st and 3d Marine Division Headquarters, a wing agency controlling all aircraft assigned in support of the two divisions.* Victor DASC at Phu Bai, subordinate to the Horn DASC, controlled air support assigned to XXIV Corps units, although it was often bypassed by the 3d Marine Division.[28]

Marine or Army ground units needing preplanned air support submitted requests at least 24 hours in advance to the division air officer, who ranked the requests. The consolidated division requests would then be sent to the wing where they were combined with other corps unit requests and transmitted to the MACV Tactical Air Support Element (TASE) and Seventh Air Force Tactical Air Operation Center (TAOC) in Saigon. Seventh Air Force, with MACV su-

*Both the Americal and 101st Airborne had control centers similar to the Marine DASC, as did the Air Force.

Marine Corps Historical Collection

Collocated with the headquarters element of each division was a direct air support control center where wing radio operators coordinated flights of both jet and helicopter aircraft with the needs of ground troops.

pervision, apportioned available sorties among the corps areas, almost always assigning 1st MAW aircraft to missions in I Corps. These mission assignments were transmitted to the wing in the form of daily or weekly "frag" orders on the basis of one mission per aircraft per day. To these allotted Seventh Air Force missions, the wing added special missions such as the BARCAP and landing zone preparations, which it directly controlled. The wing TADC would then inform the division DASC originally requesting the mission of the number, type, ordnance load, radio call signs, and time-on-station of the aircraft assigned. Once in division airspace, the division DASC took responsibility for establishing initial contact with the aircraft and turning it over to the forward air controller, either on the ground or airborne, who would direct the requested air strikes.

In cases of tactical emergency, the DASC, on its own authority, could divert preplanned flights already assigned to the division. If none were available, the division DASC would request the wing's TADC for additional strikes. The TADC then would scramble any available Marine aircraft or pass the request on to the Horn DASC which would scramble Air Force aircraft based at Da Nang. If additional assistance was needed, the DASC could go to Saigon. Such was the case during Operation Purple Martin in fierce fighting around Fire Support Base Argonne. Air strikes over and above those already allocated were needed to blunt a number of heavy enemy attacks and the requests made their way to Saigon which scrambled both Thailand-based Air Force and Navy carrier-based fighters in the South China Sea.[29] As the tempo of ground action slackened during the year, commanders placed increased reliance on preplanned missions and less on emergency sorties, but as Brigadier General Hill continually stressed: "when our Marines get in trouble during the day and they need more air, of course we start scrambling, . . . You have no alternative. We are not going to let our own Marine units go short of support, if we have got the capability to do it."[30]

All fixed-wing and helicopter fire support furnished Marine ground units was controlled by a ground or airborne forward air controller (FAC), or an air support radar team. Each Marine battalion had a tactical air control party which transmitted air support requests and controlled strikes; however, ground FACs were of limited value due to the mobile nature of combat operations resulting in a heavy dependence upon airborne FACs, flying OV-10As or Cessna O-1s. When not conducting visual and photographic reconnaissance, or directing artillery, these airborne controllers established contact with the ground unit, determined the type and amount of air support required, and then directed the assigned aircraft, passing on changes or additional targeting information received from the supported ground unit.

While ground and airborne air controllers were often limited by darkness or poor weather, AN/TPQ-10 radar course directing centrals, operated by the air support radar teams (ASRTs) of Marine Air Support Squadron (MASS) 3, were not. These combined radar and computer devices, located strategically throughout I Corps, could track an aircraft at distances up to 50 miles and direct it to the desired target in any weather condition. The air support radar teams normally received target assignments from the division DASC and when an aircraft was within range, the ASRT took control of the attack mission, determining the aircraft's relative position to both the target and TPQ-10, and then plotted a course to the objective, as well as bomb release time over the target.

At the beginning of 1969, MASS-3 maintained six

ASRTs deployed at Vandegrift; Quang Tri; Fire Support Base Birmingham, west of Phu Bai; Da Nang; An Hoa; and Chu Lai. Although routinely used for fixed-wing, low-visibility ordnance delivery missions, the teams also positioned helicopters for medical evacuations, reconnaissance runs, and supply drops. In February, when northeast monsoon conditions threatened the lift and logistical support of the 9th Marines during Operation Dewey Canyon, air support radar teams provided assistance. During a typical mission from Quang Tri or Dong Ha into the Da Krong Valley, the helicopter pilot, after an instrument-assisted departure and climb to a position above the cloud cover, would request flight clearance and ASRT assignment from the Vandegrift DASC. The assigned ASRT then tracked the helicopter with TPQ-10 radar, providing the pilot enroute navigational guidance. Arriving over the destination, the pilot, taking advantage of an opening in the clouds, would then proceed to the landing zone or to the release point for parachute supply drops. During the operation, team-controlled helicopters conducted 1,552 evacuation, command and control, and support missions, delivering 2,113 tons of supplies.

A less reliable, but more sophisticated all-weather electronic air strike control system was the radar beacon forward air control (RABFAC), known simply as the "Beacon," used in conjunction with the A-6A Intruder. The core of the system, introduced in 1968, was a six-pound, battery-powered transponder, carried by the ground forward air control team. Emitting a distinctive signal which was picked up by the Intruder's radar, the beacon provided the pilot with the approximate location of friendly troops. By radio, the ground FAC then provided target bearings and bombing direction in relation to the beacon's position. With this information, the Intruder's on-board attack-navigation computer system guided the aircraft to the objective where the aircrew employed off-set bombing techniques to destroy the target.

While A-6A Intruders flew numerous beacon sorties per day for both Marine and Army units, use of the system during 1969 was limited. Ground controllers, especially those unfamilar with the aircraft, had difficulty in accurately determining target bearings, not only forcing the strikes to be adjusted like artillery fire, also but causing a number of accidents. As a result, distance restrictions eventually were placed on the use of the system when supporting troops in close combat.[31] Equipment failure proved to be the most annoying problem. Poor radio performance, attributed to battery wear or discharge, prevented the ground unit from contacting the supporting aircraft, or the Intruder's elaborate electronic systems oftentimes fell victim to the Southeast Asian environment. "When it worked," noted Lieutenant Colonel George C. Fox, commanding officer of the 2d Battalion, 9th Marines, the RABFAC "was beautiful. We used it inside 300 meters, contrary to division SOP, to repel the attack on Fire Support Base Whisman on 29 May during Operation Cameron Falls. It and 'firecracker' artillery ammunition were instrumental that night."[32] Despite the problems, the A-6A accounted for nearly 20 percent of the wing's in-country attack sorties and over 45 percent of the high-explosive ordnance expended.

Helicopter Operations

Despite the steady decline in combat operations over the year, there was little reduction in the demands placed on MAG-36, ProvMAG-39, and following the first redeployment, on MAG-16 for helicopter support. As Deputy Wing Commander, General Hill observed:

> Viewing the nature of this war, the terrain, and the enemy, . . . we never have enough helicopters to satisfy the needs and requirements of the two divisions, and they are honest requirements. And so we have been attempting to do the best we can and satisfy as many of these needs as we can, and we have been doing it by overflying the program. This can only do one or two things; it can get you in trouble real fast, or sooner or later, it can drive you off the deep end. As [Major] General [Paul J.] Fontana said when he was out there, "you are eating your young."[33]

The year began with the wing's fleet of helicopters flying 47,346 sorties a month, carrying 83,630 troops and passengers, and lifting 11,550 tons of cargo. Monthly sortie rates soared to over 52,000 in April, May, and June due to the heavy commitment of ground troops to enemy base areas in both Quang Tri and Quang Nam Provinces, but fell back to 46,303 in July. Over 90 percent of these sorties were consistently flown in support of Marine units, with the remainder divided among the Korean Marines, ARVN, and United States Army Special Forces.

Although each of the wing's helicopter pilots and aircraft types operated under maximum number of monthly flight hours prescribed by the Navy Department, the 1st MAW constantly overflew both. The standards, ranging from 31.5 hours for the CH-53 to 66.6 for the UH-1E, and 80 to 100 hours for pilots, were used by the Navy as a basis for the purchase of fuel, spare parts, and the training and allocation of pilots. By mid-1969, wing helicopters routinely were

flying at a rate of 150 percent of their authorized utilization, and during periods of heavy commitment, approached 200 percent. While these high usage rates created a shortage of spare parts, maintenance problems, and an excessive incidence of pilot fatigue, they were considered necessary. Speaking of the heavy use of the CH-53, General Hill remarked:

> [Ground units] have been encouraged, and rightly so, to move into these inland base areas that have become sanctuaries over in the mountainous areas. As they do this, as we build these fire bases, and move over in there, it becomes necessary, of course, to support them with heavy artillery, ammunition; and you can't do this very well with a [CH]-46, you need a heavy lift helicopter. So we have ourselves on the horns of a dilemma here now. We are attempting to root the enemy out of these base areas next to the border of Laos and we need the heavy lift helicopters to support it, and at the same time, we are going to have to reduce flying time of these 53s.[34]

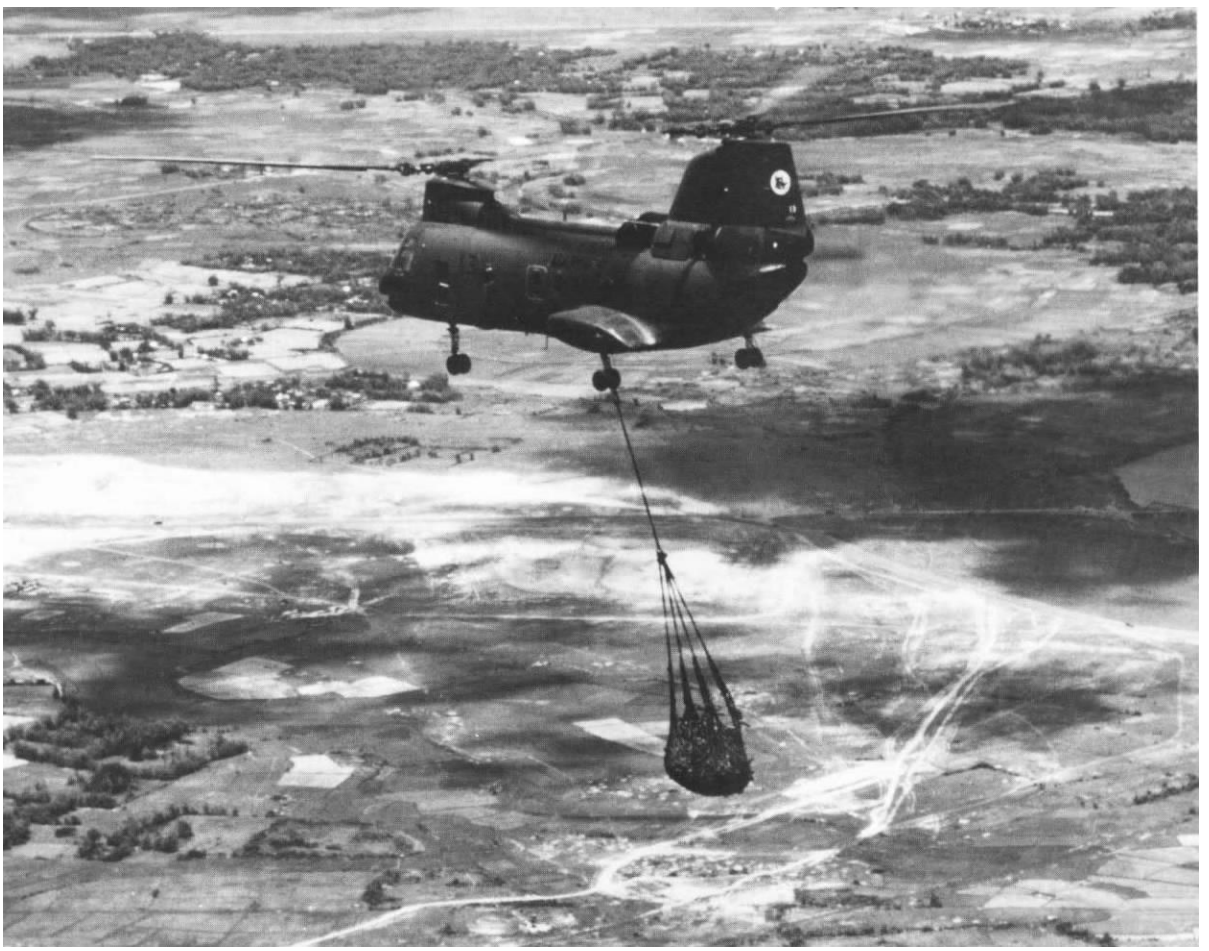
The vexatious cycle of high usage rates and resultant supply and repair problems continued throughout the remainder of the year despite attempts at flight hour reduction.

As a consequence of Keystone Eagle redeployments and the coming of the monsoon season, the monthly sortie rate began a steady and continuous decline in July. From a summer high of 46,303, the number of monthly helicopter sorties fell to 30,957 in October, and to 28,292 by December. During this same period flight hours were cut by over 40 percent, from 13,289 in July to 8,965 by the end of the year.

The mission and tactics of the wing's helicopter fleet changed little. After four years of constant combat, missions and tactics had been refined and by the beginning of 1969 were set. The "workhorse" of the fleet was the CH-46 Sea Knight, which had gradually

Providing the bulk of troop lifts, medical evacuations, and routine supply missions, the CH-46 "Sea Knight" was the workhorse of the 1st Marine Aircraft Wing's helicopter fleet.

Department of Defense Photo (USMC) A372127



replaced the UH-34. Flying over 60 percent of the wing's monthly helicopter sorties, the medium transport performed the bulk of both assault and routine trooplifts, resupply missions, medical evacuations, search and rescue, and the insertion and extraction of reconnaissance teams. Support by this versatile, tandem-rotor aircraft increased during the year as "D" model aircraft replaced the original CH-46A versions, which by June were assigned primarily to special landing force squadrons.

Like the CH-46, older model CH-53A heavy-lift helicopters were augmented and replaced during 1969 by the more powerful CH-53D. The first of these new model helicopters arrived in May, and by December, 20 were assigned to HMH-361, joining an equal number of "A" model aircraft in HMH-463.* The Sikorsky Sea Stallions, to the frustration of the aircrews, were restricted to nonassault trooplifts and supply missions, and to the recovery of downed aircraft. Because it was an expensive and difficult-to-maintain aircraft, Marine commanders hesitated to expose the CH-53 to hostile fire. The aircraft, however, provided the wing with much needed lift capability, as it endeavored to support Marine ground units operating far from their established bases.

The UH-1E, or as it was more commonly termed, "Huey," was an aircraft in continual demand. Assigned initially to four squadrons, VMO-3 (redesignated HML-367), HML-167, and VMO-2 and -6, the unarmed Huey's (known as "slicks") performed a variety of tasks. Slicks allotted to III MAF Headquarters, the 1st MAW, the 1st and 3d Marine Divisions, Force Logistics Command, and the Korean Marine Brigade, not only carried out administrative and command and control missions, but transported an endless stream of visitors, from allied service commanders, to U.S. Congressmen and government officials, to traveling performers. These "VIP" missions were a continual drain on the helicopters' availability, consuming as much as 25 percent of the aircrafts' flight hours.

Hueys also flew reconnaissance missions. While 1st MAW fixed-wing aircraft could provide ground commanders with detailed surface intelligence, such as terrain conditions and camouflaged enemy areas, they often lacked the capability to detect the presence of enemy formations concealed by heavy jungle canopy. To provide such intelligence, a number of wing UH-1E helicopters were equipped with the XM-3 "People Sniffer" Airborne Personnel Detector (APD). As the pilot flew at tree top level, the 65-pound device monitored the air rising from beneath the jungle canopy, detecting human ammonia effluence, or the combustion products associated with human activity, such as fires and vehicle exhaust. Normally employed along trail networks, ridgelines, and stream beds, the APD was able to scan 100 square kilometers an hour, picking up evidence of enemy troop concentrations, as it did preceding Operation Dewey Canyon around an area which would later be developed into Fire Support Base Cunningham.

Although the primary mission of the Huey was observation, an armed version of the aircraft was used most often as an escort. Until the introduction of the AH-1G Cobra, Huey gunships carried the burden of escorting transport and resupply helicopters into hostile areas, and of supporting troops in contact. But the Huey's role as a gunship was considered a limiting factor in overall helicopter operations, as General Hill observed:

> As the war seems to go on, we get more and more dependent on gunships, Huey gunships. The Marine Corps' position has come about 180 degrees since 1964, when we had no gunships and we subscribed to the theory . . . that we could escort all of our helicopters with the U-4 [UH-34A] or the fixed-wing aircraft. The greatest limiting factor in helicopter operations, right now—and this is substantiated by both division commanders—the greatest limiting factor is the availability of gunships. Their tempo of operations . . . to a large degree is based upon the availability of helicopters, and the operational helicopters are largely based upon the availability of gunships.[35]

The AH-1G Cobra gunship, like its predecessor, played an ever-increasing role in Marine helicopter operations following its introduction in April 1969. Initially assigned to VMO-2 and -6, but later placed in HML-367 due to replacements and to ensure better maintenance support, the Cobra's primary task, like the Huey, was to escort transport, medical evacuation, and resupply helicopters. On flights into hostile landing zones, the lead gunship located and scouted the zones, and directed the transport helicopters into the LZs. If opposition was encountered, Cobras, circling above, immediately attacked enemy positions with minigun, grenade, and rocket fire. The AH-1G also was used to break up enemy attacks on Marine positions, firing within 15 to 30 yards of friendly forces. From their arrival, wing Cobras maintained a grueling flight schedule, compiling 21,310 sorties during six months of air combat operations.

During 1969, Marine helicopters flew a total of

*HMH-361 joined MAG-16 in August, eventually replacing HMH-462, which departed Vietnam in November with MAG-36.

Marine Corps Historical Collection

Marine Medium Helicopter Squadron 362 crewmen salute after folding the blades of a UH-34D, retiring the aircraft after seven years of service in Vietnam. With the arrival of CH-53 Sea Stallions, HMM-362 was recommissioned as a heavy helicopter squadron.

547,965 sorties, raising the total support provided forces in I Corps since March 1965 to over 2,300,000. The wing's transport effort accounted for the movement of 895,000 passengers and 115,000 tons of cargo by December. These lift totals represented a substantial improvement, as the average payload per cargo flight exceeded 2,200 pounds, a 23 percent increase over the 1968 figure. This increase benefited both ground and helicopter units, allowing ground elements, now unencumbered by numerous resupply requests, greater mobility, and permitting helicopter squadrons more economical use of time and aircraft by cutting the number of sorties and reducing exposure time to enemy fire.

Improving Helicopter Support

As Marine ground forces moved into enemy base areas with greater frequency following the 1968 *Tet* Offensive and thus became more and more dependent upon the helicopter for support, incidents of mutual recrimination between aviation and ground Marines arose during this period of maximum effort and high stress.[36] The frustration reached a climax early in 1969, when the wing, operating with an inadequate number of helicopters, endeavored to support not only two reinforced and widely scattered Marine divisions, but Korean and South Vietnamese units as well. As Major General Carl A. Youngdale, III MAF Deputy Commanding General, observed:

> You would be surprised at the frustrations that exist today in the Marine Corps in our air-ground team. Let me give you some examples of what we got. Here are air quotes: emergency Medevacs: "we get up, we get out, we finally get down, all of a sudden the patient comes running from the bush and jumps in the airplane"; "we get word we got a clear zone, we come in and get our tail shot off"; "we have a patient to move, we try two or three times to get in, but they won't move him 50 yards in order to get a clear zone to move him out on"; "they are using us to haul water right up to their front line units." Dirty fire bases: one pilot was telling about coming into a fire base and all of a sudden this poncho sails up in the air just even with his rotor heads and came moving right over into his head. Said he just closed his eyes and figured he had it. Fortunately a down draft caught it and pushed it on down and didn't wrap in his rotor heads and he didn't crash. "Nobody is in charge at the fire base; some PFC is telling me how to bring this million dollar airplane in"; "troops are not ready when they say they have to go at a certain time." Now here are some ground quotes: "planes don't arrive on time or in the numbers they say they are going to send"; "they quit in the middle of the day and don't come back"; "they are too cautious in bad weather"; "pilots differ in the load they will carry"; "Army will fly when Marines won't"; "no control over what they will or will not do."[37]

These notions eventually moved from Vietnam throughout the Marine Corps, raising doubts about the Marine system of helicopter command and control, and at times threatening the cohesion of the air-ground team as a whole.

In April, Lieutenant General Nickerson convened

a board of six officers headed by Major General Youngdale, and directed it to "examine the utilization, command and control of Marine Corps helicopter assets in III MAF."* During several weeks of inquiry, the board interviewed 64 witnesses, headed by the commanding generals, 1st Marine Division, 3d Marine Division, and 1st Marine Aircraft Wing. Each III MAF unit provided a cross-section of experienced officers from the regimental and group commander down to the company commander and individual pilot. In addition to officers, the board heard from a number of enlisted personnel, one of whom was a reconnaissance patrol leader with a record of 54 patrols.[38]

After careful consideration, the board reaffirmed the basic Marine Corps concepts of the air-ground organization and helicopter command and control, declaring that most of the air-ground difficulties in Vietnam stemmed from the shortage of aircraft and from the fact that one wing was doing the work normally given to two. The board nevertheless found a number of deficiencies. Primary among them was a lack of understanding on the part of both air and ground commanders of the capabilities and limitations of the other, a deficiency which the board noted could be remedied by improved training at all levels, and by again requiring the assignment of naval aviators to the Amphibious Warfare School at Marine Corps Base, Quantico. While rejecting the Army's system of permanently attaching helicopters to ground units, the board recommended strengthening the wing's DASC at each division, in order to facilitate the rapid exchange of flight information between the division and the wing, and to permit the more timely response of helicopters to tactical emergencies. To improve support of the 3d Marine Division specifically, the board recommended the establishment of a 1st MAW auxiliary headquarters to be located with the division at Dong Ha.[39]

Among the first recommendations implemented by Lieutenant General Nickerson was the creation of the wing auxiliary headquarters and the assignment of Brigadier General Ralph H. Spanjer as its commanding officer. Both produced immediate and beneficial results.[40] Among the other recommendations instituted were two exchange programs. The first was an exchange of staff officers. "We started sending," noted General Youngdale, "infantry company commanders to aviation units and we started sending [aviation] captains to ground units, not as air liaison officers, but simply as extra staff officers in the staff itself, battalion, or regiment or whatever it might be."[41]

Although the rapport between aviator and infantryman was slow to be reestablished, the program did go a long way in increasing the understanding of the other's tasks and problems. To further enhance understanding, the wing and divisions began short orientation visits. Lieutenants from the division periodically spent a single or several days with the CH-46 squadrons of ProvMAG-39 or MAG-16, participating with pilots and aircrew in the daily routine of mission briefings and lift or supply sorties. Aviators, both fixed-wing and helicopter, in turn visited infantry regiments and battalions, touring positions, attending operational briefings, and viewing weapons demonstrations.

Other recommendations, while approved, took more time to implement. In the interval, the withdrawal of the 3d Marine Division during the second half of 1969 resulted in the pairing of a single division with the wing, and a more favorable ratio of air support to ground troops. Taking full advantage of this new sufficiency of helicopters, Major General Thrash began experimenting with the delegation of the task of assigning helicopter missions by increasing the authority of the wing DASC, and making increased use of helicopter "packages." While not new, helicopter packages were now placed under the direct operational control of infantry regiments. Among the first of these quick-reaction packages was that established by the 1st Marines, codenamed "Kingfisher."** With the success of these patrols, additional innovative helicopter packages were created in 1970.

With the initial steps taken in 1969 to correct a number of deficiencies in helicopter support, the 1st Wing moved to provide greater flexibility and innovative assistance to ground operations. In this process, both ground and air commanders grew to understand and appreciate the capabilities and limitations of the other within the war zone. Changes also occurred outside of Vietnam, among them the greater integration of aviation and ground members within Headquarters Marine Corps and Fleet Marine Force staffs. In addition, the military education of Marine Corps aviators, especially of junior officers, was given greater emphasis as was cross training and duty assignment,

*In addition to Major General Youngdale, the board included Brigadier General Frank E. Garretson, Brigadier General Homer S. Hill, Brigadier General Samuel Jaskilka, Lieutenant Colonel William D. Bassett, Jr., and Lieutenant Colonel Albert N. Allen, recorder.

**For a detailed description of "Kingfisher" patrols see Chapter 11.

all of which aimed at promoting understanding among the members of the air-ground team.[42]

Air Defense

Although Marine, Air Force, and Navy aircraft possessed total command of the air in Southeast Asia during 1969, the American command still found it necessary to maintain defensive arrangements in the event of North Vietnamese air strikes on vulnerable allied targets. In I Corps, while fighter aircraft and antiaircraft weapons could be alerted, major responsibility for ground antiair defense centered on the 1st Marine Light Antiaircraft Missile (LAAM) Battalion, armed with Hawk ground-to-air missiles.

Deployed to Vietnam in February 1965, followed by its sister 2d Battalion, which was withdrawn in October 1968, the 1st LAAM Battalion established its base of operations at Da Nang. Composed of three firing batteries and a fire assault unit, possessing 118 missiles, although authorized 252, the battalion came under administrative control of Marine Air Control Group 18, while operational control was vested in the Air Force's control and reporting center (CRC), codenamed "Panama," located east of Da Nang on Monkey Mountain.

Commanded at the beginning of 1969 by Lieutenant Colonel John W. Drury, relieved in July by Major Edward L. House, Jr., the battalion's batteries were strategically positioned around Da Nang. Located within the Da Nang Airbase itself was Headquarters Battery, while Battery A was atop the Hai Van Pass, Battery B at Monkey Mountain, and Battery C on Hill 327, west of the airfield. The battalion's fire assault unit "E" was deployed on Hill 55, south of Da Nang. Throughout the first six months of 1969, until withdrawn in mid-July, the battalion conducted numerous antiair exercises and practice raids using available Marine fixed-wing aircraft as targets to test the proficiency of the battalion's control and communications system. In January, the battalion engaged 1,375 targets during 75 exercises with a successful engagement rate of 99.8 percent. During the remaining months of its stay in Vietnam, as the number of exercises fell, so did the battalion's success rate. On 19 July, the battalion ceased operations and began preparation for redeployment to Marine Corps Base, Twentynine Palms, California, where in September the battalion was reduced to cadre strength and its firing batteries deactivated.

Accomplishments and Costs

Despite the initial phase of unit redeployments, the 1st Marine Aircraft Wing continued to provide a vari-

Two Marines of the 1st Light Anti-Aircraft Missile (LAAM) Battalion check out the battery of Hawk ground-to-air missiles located on Monkey Mountain, east of Da Nang Airbase.

Department of Defense Photo (USMC) A422857

ety of air support, responding fully to the diverse combat conditions experienced in I Corps Tactical Zone. Marine fixed-wing aircraft furnished attack and reconnaissance assistance, contributing to the continued success of Marine and other United States, South Vietnamese, and Korean ground forces. Likewise, wing helicopters provided the necessary ingredient, and at times the sole means, for the increase in tactical mobility. The wing's versatility was also reflected in the successful out-of-country interdiction campaign, and the electronic warfare, reconnaissance, and air defense assistance furnished Navy and Air Force operations.

While 1969 witnessed the continued modernization and increased flexibility of the 1st Wing's aviation assets, the year also saw the first sustained drop in aircraft losses. As the tempo of ground and air combat operations decreased so did the number of aircraft lost to hostile fire. By year's end, the 1st Wing had lost a total of 44 helicopters and 34 fixed-wing aircraft. In human terms, 92 wing officers and crew members had been killed, 514 wounded, and 20 were listed as missing in action.

CHAPTER 14

Artillery and Surveillance

Artillery Operations—Surveillance and Reconnaissance Activities

Artillery Operations

As 1969 began, all Marine artillery units within I Corps Tactical Zone were either under the control of the 11th Marines, the artillery regiment of the 1st Marine Division, or the 12th Marines, the artillery regiment of the 3d Marine Division.

The 11th Marines, commanded by Colonel Harry E. Dickinson consisted of four organic battalions and the attached 1st Field Artillery Group (1st 155mm Gun Battery, Self-Propelled [SP], later redesignated 1st 175mm Gun Battery); 1st Battalion, 13th Marines; Battery K, 4th Battalion, 13th Marines; 3d 8-inch Howitzer Battery (SP); Battery G, 29th Artillery (USA); Battery B, 8th Battalion, 4th Artillery (USA); and the 1st Armored Amphibian Company. Attached specifically for Operation Taylor Common, which was to conclude on 17 February, were elements of the 1st Battalion, 12th Marines in direct support of the 3d Marines.

Colonel Peter J. Mulroney's 12th Marines was composed of its three organic battalions and the attached 1st 8-inch Howitzer Battery (SP), under the operational control of XXIV Corps and assigned to the Army's 108th Field Artillery Group; 1st Searchlight Battery; 5th Battalion, 4th Artillery (USA); and the 3d Provisional 155mm Howitzer Battery.* Also operating within Quang Tri Province, but not under the direct control of the 12th Marines, was the 5th 155mm Gun Battery (SP).** Headquartered at Dong Ha Combat Base, with its 155mm guns at Vandegrift and a reinforcing platoon of 8-inch self-propelled howitzers at Elliott Combat Base, the battery operated under the control of the 108th Field Artillery Group.

The two artillery regiments' 105mm howitzer batteries were deployed offensively in direct support of Marine infantry units. The 1st Battalion, 11th Marines, with its command post on Hill 55 and batteries at fire support bases scattered about the flatlands south of Da Nang, supported the 1st Marines. From positions at An Hoa Combat Base, Liberty Bridge, and mountainous fire bases to the west, the 2d Battalion, 11th Marines and three batteries of the 1st Battalion, 12th Marines supported the 5th and 3d Marines, while the 3d Battalion, deployed at bases centered on Dai Loc and Da Nang, fired missions for the 7th Marines. The 4th Battalion, 11th Marines, headquartered on Hill 34 and batteries at the Northern Artillery Cantonment, west of Red Beach, Hill 55, and Hill 65, fired in general support of the 1st Marine Division. The 1st Battalion, 13th Marines, which administratively controlled Battery K, 4th Battalion, 13th Marines, fired missions from the Northern Cantonment and the Hai Van Pass in support of the 26th Marines.*** Of the general support artillery units, most were temporarily under the control of the 1st Field Artillery Group at An Hoa Combat Base in support of forces engaged in Operation Taylor Common.****

To the north, Colonel Mulroney's 12th Marines supported infantry units of the 3d Marine Division; 1st Brigade, 5th Infantry Division (Mechanized), and to a lesser extent the 101st Airborne Division (Airmobile); the Navy's Task Force Clearwater; and elements of the 1st ARVN Division. The 2d Battalion, 12th Marines, headquartered at Vandegrift, fired missions for the 9th Marines, while the 3d Battalion, with batteries at Fire Support Bases Neville, Russell, Fuller, and Elliott, supported the 4th Marines. The 4th Battalion, with its command post at Dong Ha and batteries stretching in an arc from Cua Viet west to Elliott Combat Base, fired in general support of the division, as did units of the

*In general support, the 108th Field Artillery Group included the 8th Battalion, 4th Artillery (SP); 1st Battalion, 40th Artillery (SP); Battery C, 6th Battalion, 33d Artillery; 2d Battalion, 94th Artillery (SP); and, Marine 1st 8-inch Howitzer and 5th 155mm Gun Batteries.

**With the arrival of 175mm guns in March and April, the battery was redesignated the 5th 175mm Gun Battery (SP). The 1st 155mm Gun Battery likewise was redesignated following the retubing of its guns during the same period.

***Throughout most of the year, two batteries of the 1st Battalion, 13th Marines were in direct support of Special Landing Forces Alpha and Bravo.

****Following Operation Taylor Common, units attached to the 1st Field Artillery Group were released and the group reduced to cadre strength. On 14 July, administrative control of the group was passed from 11th Marines to Regimental Landing Team 9 and the unit departed Vietnam for Okinawa and eventual transfer to Twenty-nine Palms, California.

108th Field Artillery Group. Although under the control of the 12th Marines, the Army's 5th Battalion, 4th Artillery directly supported the 1st Brigade, 5th Infantry Division from positions at Fire Support Bases Sharon, Hai Lang, and Nancy. Attached to each of the direct support battalions of the regiment was a provisional, four-howitzer, 155mm battery, which Colonel Mulroney noted, "we could not get along without."[1]

Combined, the 11th and 12th Marines possessed a total of 242 howitzers, guns, and mortars at the beginning of the year. Three firing batteries in each direct support battalion were armed with the M101 A1 105mm towed howitzer, which had a maximum range of 11,000 meters and could be transported by CH-46 helicopters to distant fire support bases throughout the corps tactical zone; the fourth firing battery had six 107mm (commonly termed 4.2-inch) mortars with a range of 5,600 meters. The 4th battalion of each artillery regiment was equipped with M109A self-propelled 155mm howitzers, capable of striking targets at ranges up to 14,600 meters. Twenty-four helicopter-transportable, towed 155mm howitzers remained in both regiments' inventories in order to reinforce fires of the smaller caliber howitzers. Allocated among the direct support battalions, these heavy weapons normally were attached to either the 105mm or mortar battaries. The 155mm gun batteries initially were equipped with the M53 self-propelled 155mm gun, maximum range of 14,600 meters, but later replaced by the M107 175mm self-propelled gun, with a maximum range of 32,700 meters. Using the same tracked, motorized carriage as the 175mm gun, the fourteen M110 8-inch howitzers attached to the Force Artillery batteries were capable of hitting targets at a range of 16,800 meters.*[2]

Beginning in midyear, Keystone Eagle and then Keystone Cardinal spawned the redeployment of the 12th Marines and relocation of a number of artillery units. The 2d Battalion, 12th Marines left Vietnam with the 9th Marines, the infantry regiment it supported, in August, followed in October and November by the 1st, 3d, and 4th Battalions, which accompanied the remaining elements of the 3d Marine Division. With the departure of the 12th Marines, control of the 1st 8-inch Howitzer Battery passed to the 11th Marines, and the battery relocated to Quang Nam Province and its gun platoons to An Hoa Combat Base, Landing Zone Baldy, and Landing Zone Ross. Of Marine artillery units in Quang Tri Province, only the 5th 175mm Gun Battery and the 1st Platoon, 5th 8-inch Howitzer Battery remained. Under the operational control of the 108th Artillery Group and the administrative control of the 11th Marines, the batteries continued to fire long-range missions in support of elements of the 101st Airborne Division, 1st Brigade, 5th Infantry Division (Mechanized), and the 1st ARVN Division.

Within the expanded area of operations controlled by the 1st Marine Division, the 3d Battalion, 11th Marines moved to Landing Zone Baldy and then westward to fire support bases dotting the Que Son Mountains and Valley, as the 7th Marines assumed responsibility for that portion of southern Quang Nam Province vacated by the Americal Division in August. On the northern extreme of the division's area of operations, two batteries of the 1st Battalion, 13th Marines, which had supported the 1st and 2d Battalions, 26th Marines serving with the Seventh Fleet's Special Landing Force, moved ashore in October.** Initially located at the division's Northern Artillery Cantonment, northwest of Da Nang, the batteries later moved to Fire Support Base Los Banos, a former Army fire base overlooking the Hai Van Pass, as the division assumed control of the area from the 101st Airborne Division. By December, the 11th Marines and attached general support batteries controlled 152 artillery pieces.

The basic mission assigned to both the 11th Marines and 12th Marines was to "provide fires in support of offensive operations within and beyond the TAOR's, AO, and RZ [Reconnaissance Zone]" for Marine, other American, South Vietnamese, and South Korean forces. In support of the mission, the artillery's primary task was to respond to calls for fire from engaged units, and to prepare landing zones and fire support bases for occupation, which often consumed a minimum of 1,000 rounds of artillery, in addition to air delivered ordnance. Among the collateral functions were base

*In addition to the standard artillery weapons, the two regiments possessed a number of "howtars," a weapon which combined the tube of a 4.2-inch mortar and the carriage of the 75mm pack howitzer. Although a high trajectory, helicopter-transportable weapon which could "deliver a round with more punch than a 105mm howitzer," the howtar was phased out during 1969 due to its inflexibility. See "Howtar is Phased Out," *Marine Corps Gazette*, vol. 53 (Oct69), p. 1.

**Although the 11th Marines had had operational control of 1st Battalion, 13th Marines and Battery K, 4th Battalion, 13th Marines since November 1968, administrative control of the units was passed from the 9th Marine Amphibious Brigade to the regiment on 20 October with the redesignation of Regimental Landing Team 26.

Marine Corps Historical Collection

Artillerymen of 3d Battalion, 11th Marines on Hill 63 prepare to fire a 105mm howitzer, the most common piece of artillery used in Vietnam, in support of the 7th Marines.

defense and countermortar, rocket, and artillery missions. As part of this function, the 11th Marines controlled the Northern Sector Defense Command (NSDC), which consisted of various headquarters and support units, artillery and infantry, organized as an outer defensive shield for the Da Nang Vital Area.

In accomplishing the defensive mission, both regiments expended large amounts of ammunition on actual or suspected enemy rocket, artillery, and mortar sites, suspected Communist base camps, infiltration routes, assembly areas, sensor-activations, and in efforts to neutralize concentrations of surprise firing devices.[3] These essentially unobserved fires, or harassing and interdiction fires as they were commonly termed, were carried out in response to either specific intelligence from informants, radar, strings of anti-infilration devices, radio intercepts, or according to specific fire plans to thwart periodic enemy concentrations, and accounted for approximately 85 percent of the total amount of artillery rounds fired by both regiments at the beginning of the year.* As the tempo of ground combat operations slowly declined, the proportion of artillery fire devoted to unobserved missions increased, and by December these fires consumed over 95 percent of artillery ammunition fired by the 11th Marines.

Much of the unobserved fire was planned with information from the 1st and 3d Marine Divisions' Fire Support Information Systems (FSIS). Inaugurated in 1968, the system was located within the target information section of each division's fire support coordination center. Gathering input on enemy troop sightings, movement, cache sites, and rocket launching positions from a wide variety of sources, the section coded

*To prevent enemy infiltration of the Demilitarized Zone, the 12th Marines and the Army's 108th Artillery Group maintained a number of ground and counterbattery radar sites south of the zone at Alpha-4, Charlie-2, and Gio Linh.

and stored the information on computer tape, and on request provided artillery commanders with reports, plotting recurrent patterns of enemy movement in a given area. Using these reports, the artillery regiments placed unobserved fire on the most heavily traveled enemy infiltration routes and concentrations of cache sites in order to block movement and preempt an enemy attack.

Sensor activations also provided a number of lucrative targets. The 3d Marine Division, for example, monitored approximately 125 seismic and accoustical sensor strings, emplaced by reconnaissance teams and helicopters throughout the division's area of responsibility. Strings were assigned to certain batteries and upon activation the battery would fire a concentration a short distance from the end of the string. Excellent results were achieved, according to Colonel Wallace W. Crompton, who relieved Colonel Mulroney as commanding officer of the 12th Marines: "I recall the OIC [Officer in Charge] of the sensor unit telling me that one string which had been very active suddenly ceased. A team went out to see what had happened to the devices. They were surprised to see a sign on the trail warning not to use that trail as it 'led to death.' A new trail by-passed it, so the team moved the devices to that trail."[4] The 1st Division used anti-infiltration devices more for gathering intelligence, than for delivering an immediate, preemptive response.

Despite the steady rise in unobserved fires, both regiments continued to conduct a large volume of direct support and observed fire support missions. As Marine infantry units found themselves operating in mountainous, jungle terrain, far from established cantonments and lines of communications, in areas accessible only by helicopter, a method of direct fire support was needed. Developed during late 1968 from Army techniques by the 3d Marine Division under Major General Raymond G. Davis, the mobile fire support base concept envisioned the rapid construction of temporary artillery positions in remote areas, defended by a minimum of infantry. Under a series of protective, overlapping artillery fans, infantry units could then rapidly search the designated terrain, always being assured of immediate artillery support.[5]

By 1969, this technique for landing reconnaissance and security elements, engineers, construction equipment, guns, crews, ammunition, and infantry on a remote peak in the midst of an enemy base area was perfected and used to such an extent that existent or abandoned fire support bases dotted the high ground

Department of Defense Photo (USMC) A371877

With each round weighing close to 150 pounds, loading a 175mm gun required two Marines. The gun was the largest weapon in the Marine artillery arsenal.

throughout the corps tactical zone and batteries could be emplaced and firing within hours of the initial insertion. This welding of artillery and infantry into teams allowed for much more flexibility on the battlefield, as General Davis was later to observe:

> It was soon discovered that the NVA could not cope with this kind of highly mobile warfare when artillery batteries were positioned on razorbacks and high pinnacles throughout an area, eight kilometers apart so as to provide mutually supporting fire plus 3,000 meter overshoot to hit mortars beyond the base, with infantry battalions operating under the artillery fan. In brief, an infantry battalion with its direct support artillery battery formed a team . . . . In addition, the companies themselves operate independently as far as mutual support is concerned. As long as they're within the 8,000 meter fan of the artillery, there is no requirement for the rifle companies to operate together; they can be several kilometers apart.[6]

The normal application of this flexible team approach was to assign each infantry company a two to three kilometer-square area within which an artillery fire support base would be established, where helicopters could resupply and lift out casualties, and from which patrols could thoroughly search the area. Once

cleared, the company would then be lifted by helicopter to another area within the artillery fan. Using this method, detailed searches were made, revealing, as General Davis noted, "major trail networks and cache areas that the NVA had been using for the better part of ten years," and accounting for the success of such operations as Dewey Canyon in Quang Tri, and Taylor Common and Oklahoma Hills in Quang Nam Province.[7]

During Operation Taylor Common, conducted by Task Force Yankee from 7 December 1968 to 8 March 1969, for example, artillery batteries of the 11th and 12th Marines occupied 13 fire support bases in enemy Base Area 112, Go Noi Island, and the Arizona. Several batteries occupied as many as four different temporary bases during the course of the operation when almost all artillery displacement and resupply were accomplished by helicopter. Throughout the remainder of the year, the 11th Marines fired from an additional 52 positions, and by year's end artillery units of the regiment occupied 17 bases stretching from Alpha-2 near the DMZ, to FSB Ryder in the Que Son Mountains.[8]

In addition to direct support and combat missions, observed artillery fire was used to supplement, and to a limited extent, replace the search and blocking activities of infantry patrols. All of these observed fires were directed to a degree by the traditional eyes of the artillery, the forward observer teams assigned to each infantry company. Often blinded by double and triple canopied jungle, elephant grass, mountainous terrain, climatic conditions, and distance between units, the artillery was forced to use additional means to supplement the eyes of the forward observers. Among these was the establishment of permanent observation posts in towers and on commanding terrain.

Although observation posts had been in use by the 11th and 12th Marines for some time, it was Colonel Don D. Ezell who, shortly after taking command of the 11th Marines in September 1969, instituted greater reliance on the technique, as he stated:

Typical of the numerous 11th Marines' mountaintop artillery positions was Fire Support Base Cutlass, constructed to support the 3d Marines' search of enemy Base Area 112.

Marine Corps Historical Collection

> It appeared to me that when we first went in, the [Viet Cong] infrastructure and the organized units were lying together in the coastal plains, and that the Marines, through offensive operations, had disengaged the organized units from the infrastructure, knocking them back into the west and to the hills where they formed base camps. Now the infrastructure had to remain . . . to control the population. But they also had a great deal of dealings with the organized units in their mission; they reconned for them, they stored caches for them, they got food and medicine . . . . And it would appear if there was a disengagement that there must be . . . a lot of travel back and forth across the battlefield by both the infrastructure and the organized units to perform their missions. My artillery was not in position to control this. My F[orward] O[bservers] were with the rifle companies, and they were certainly forward, but they weren't observers in six feet of elephant grass.[9]

Taking "100 people out of my hide," as Colonel Ezell noted, he initiated a regimental observation post system in an effort "to destroy the enemy as far away as possible, to diminish his capabilities across the battlefield to perform his mission."[10]

In addition to forward observers with each infantry company and electronic sensors, Marine artillery battalions relied on observation towers such as this one at Landing Zone Ross to provide accurate fire.
Marine Corps Historical Collection

These observation posts, each manned by a team of artillerymen and protected by infantry or reconnaissance elements, commanded the main infiltration routes into the populated lowlands surrounding Da Nang. The post atop Hill 190 covered Elephant Valley, north of Da Nang, while Hill 270, to the west, commanded routes leading from Happy Valley, Mortar Valley, Sherwood Forest, and Charlie Ridge. Covering the Thuong Duc corridor and the northwestern portion of the Arizona Territory were Hills 250 and 65. Farther south, Hill 425 in the Que Son Mountains watched Phu Loc Valley and the An Hoa basin, while artillerymen atop Hill 119 observed Go Noi Island and Dodge City. A post on FSB Ryder covered Antenna Valley and the northern section of the Que Son Valley to the south. Artillery observers at each of these positions searched the countryside for enemy movement and called fire missions on promising targets.[11]

In mid-October, the regiment's ability to control the battlefield with observation and fire was further enhanced by the introduction of the Integrated Observation Device (IOD).* This 400-pound instrument, valued at $225,000, consisted of a high-powered Kollmorgan ships' binoculars, combined with an infrared night observation device and a laser range finder. Using the IOD, a trained observer could locate targets up to a maximum range of 30 kilometers in daylight and, employing the infrared observation device, 4,000 meters at night. Once the observer identified a target and determined its distance and direction from the observation post, firing batteries could fire for effect without the usual preliminary adjustment rounds and achieve accuracy of five meters in range and one mil in azimuth.[12] The IOD, with its ability to achieve first round hits, was, as Colonel Ezell observed, "just what we needed." "We were losing targets because during the adjustment phase while we were trying to bracket them they were jumping in

*The Integrated Observation Device was a product of the Marine Corps' Special Procedures for Expediting Equipment Development (SPEED) program, administered by HQMC and coordinated by the Marine Corps Development and Educational Command (MCDEC). Initiated in late 1968, the program was designed to identify the operational hardware requirements of Marine forces in Vietnam, followed by quick procurement and delivery to the field. Production and delivery of the IOD, a combination of three existing devices, spanned approximately six months. Of the initial 10 devices constructed, four went to the Army and six to the 11th Marines. For details of other items developed and procured under the SPEED program see FMFPac, MarOpsV, Jan-Feb71, pp. 37-39.

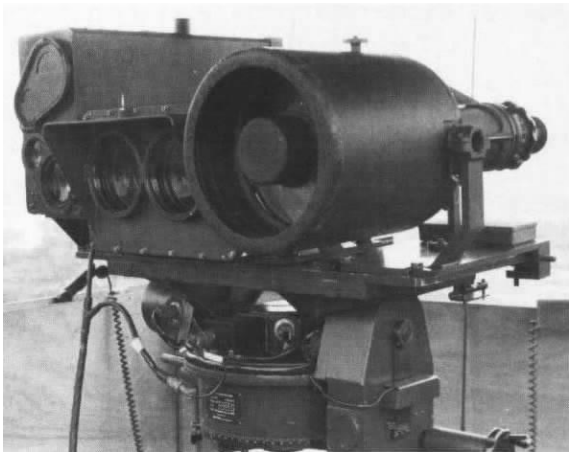
holes." It proved to be the "missing ingredient as far as good fire support was concerned."[13]

Initially two teams, consisting of an officer and five enlisted men, were selected from the 11th Marines' pool of forward observers, trained in the use and maintenance of the device by intelligence personnel of the division, and then assigned to observation posts commanding the Arizona and Que Son Mountains. Eventually expanded to six by December, the IOD-equipped teams were positioned at observation posts on Hills 270, 250, 65, 119, 425, and FSB Ryder. Scanning the same countryside constantly, the trained observers in the course of time became so proficient in anticipating enemy evasive action that they could call in artillery fire so as to "lead" a moving enemy formation.

With the initial deployment of two teams in late October, IOD-equipped observation posts reported achieving considerable success. During the first 10 days of operation, the teams were credited with 72 kills, amounting to 28 percent of the total number of NVA and VC casualties reported by the 1st Marine Division for the same period. With the placement of four additional devices in November, enemy casualties mounted. On 10 November, the IOD team on Ryder observed nine enemy troops carrying packs and rifles in the Que Son Valley; Battery H, 3d Battalion, 11th Marines responded and killed all nine. Four days later, Battery E, 2d Battalion claimed 11 enemy killed of 16 sighted by the IOD team on Hill 65. In November, sightings by the six teams resulted in the deaths of 463 troops, 72 percent of the enemy casualties credited to the artillery and 42 percent of all enemy casualties reported by the division. December results were equally impressive, but as Colonel Ezell was later to report, confirmed enemy casualties probably did not accurately reflect the actual number of enemy killed:

> Colonel [Gildo S.] Codispoti, who had the 7th Marines, had a valley called Antenna Valley which he used to keep one entire infantry battalion operating in. We were able to release that battalion for other operations . . . with one FO team with an IOD [on FSB Ryder]. In the first month they were there they had 300 confirmed kills. The infantry went back . . . and found hundreds of skulls, bones and they told us the place was stinking down there. It was interesting to find out that we were probably killing more than we thought.[14]

Another vital link in the control and surveillance of the battlefield was the artillery aerial observer. Supported by Marine and Army light observation helicopters (LOH-6A), UH-1E gunships, Cessna O1-G "Bird Dog" and OV-10A aircraft, aerial observers attached to the 11th and 12th Marines flew numerous low-level



Department of Defense Photo (USMC) A372433

The Integrated Observation System was one of many new devices created during the war that enhanced Marine artillery's ability to control the battlefield.

reconnaissance and artillery registration missions in support of ground operations throughout the year. During Operation Dewey Canyon, for example, it was an airborne artillery observer attached to the 12th Marines who spotted the enemy's long-range 122mm field guns and directed their destruction. Similarly, aerial observers of the 11th Marines, supported by light observation helicopters from the Americal Division's Company A, 123d Aviation Battalion and gunships from the 282d Aviation Battalion, made three daily flights over the Da Nang rocket belt, searching for potential launch sites. On numerous occasions sites were located and destroyed before rockets could be launched at Da Nang or surrounding military installations. "The deterrent effect of aerial observers," noted Colonel Mulroney, "has been apparent in all types of counterfire. The enemy does not fire when a AO is in the vicinity. Enemy artillery, rocket, and mortar attacks have all been obviously timed during gaps in AO coverage. Continued thorough coverage by aerial observers is an important part of the defensive program against enemy fire of all types."[15]

No less important was illumination provided Marines of the 1st Division by Battery G, 29th Artillery and to the 3d Marine Division by the 1st Searchlight Battery. Often transported to the remotest fire support bases, battery searchlights were used to illuminate suspected enemy infiltration routes and rocket sites, as well as camp and fire support base perimeters and bridges, to place small arms and artillery fire on enemy positions.[16]

For each of the varied tasks assigned Marine artillerymen, target clearance, both air and ground, continued

to be a complicated and often frustrating process. Except for specified or "free" fire zones, where artillery and other supporting arms could be used without restriction, a call for artillery fire had to be cleared at the province and district levels and through the division, regiment, and appropriate South Korean commands before the mission could be executed. Using well-established procedures, division fire support coordination centers (FSCCs) synchronized all artillery, air, and naval gunfire support within the division TAOR, as did each regiment and infantry battalion. The regiments and battalions were primarily responsible for maintaining contact with allied military and civil headquarters within their respective areas of operation and for obtaining the proper fire clearances from each. The division fire support coordination centers, in close coordination with the 1st Wing DASC, operated the Sav-a-plane system to prevent aircraft from flying into the artillery's line of fire. The safety system, however, became a point of contention between air and artillery as the commanding officer of the 12th Marines, Colonel Peter J. Mulroney, pointed out:

> There is too much of a tendency to go to automatic check firing. The decision for check firing must be made by the regimental commander concerned, it can't be made by an AO, . . . it can't be made by the DASC, it can't be made by some pilot. We can have artillery and air at the same time . . . . The pilot must have, which they don't have now, faith in the artillery. The principle that XXIV Corps works on is that with troops in contact and taking casualties, artillery fire should not be held up while they take more casualties on the slim chance that an aircraft will be hit. None were hit in the 13 months that I served in the 3d Marine Division.[17]

A number of changes instituted during 1969 further simplified the clearance procedures and reduced delays in initiating fire missions. Among them were preclearing of areas void of allied patrol activities, instituting a permanent restrictive fire plan during daylight hours, codenamed "California," across division TAORs while still permitting fire support to be employed, and demanding careful fire planning and preclearance of likely target areas for planned reconnaissance team operations. These changes reduced clearance delays to a minimum, while maintaining appropriate safety requirements.

Throughout most of 1969, the volume of Marine artillery rose steadily. In January, the 11th and 12th Marines fired 329,500 rounds during 35,916 missions. By June, the amount of fire had risen to 358,816 rounds for 34,860 missions. The volume of fire remained about that level throughout August, but fell precipitously in September with the redeployment of the 12th Marines. By December, the 11th Marines, in an expanded TAOR, fired 163,574 rounds during 14,421 missions.

Augmenting the fires of the artillery regiments were tanks of the 1st and 3d Tank Battalions, and the long-range guns of ships of the Seventh Fleet. The primary mission of the Marine tank battalion was combat support during amphibious assault and subsequent operations ashore. In Vietnam, Marine tanks were employed in direct support of the infantry. The usual assignment was one tank company per regiment, with further assignment of tank platoons to battalions as required. The Marine command, however, often assigned tank companies to the direct or general support of separate task forces.

The M48A3 tanks of the 1st Battalion, under Lieutenant Colonel Maurice C. Ashley, Jr., and 3d Battalion, commanded by Lieutenant Colonel Joseph Sleger, Jr., attached to the 1st and 3d Division respectively, performed a variety of missions, the most important being direct support of infantry in the assault, perimeter defense, road, bridge, and strongpoint security, and convoy escort. They also supplemented artillery fires, providing unobserved missions when needed. In addition, when in support of infantry operations, they undertook the destruction of enemy fortifications by direct fire. As an added task, the 1st Tank Battalion coordinated and controlled all activities within the Southern Sector Defense Command, aimed at delaying or denying enemy penetration of the Da Nang Vital Area.

As elsewhere in Vietnam, the greatest concern of Marine tankers were mines or RPG ambushes. In addition to box mines, which were difficult to detect and thus detonated by the vehicle, the enemy employed command-detonated artillery rounds and aircraft ordnance. All were successful according to Lieutenant Colonel Sleger, who reported that between January and May 1969, the "3d Tank Battalion incurred a total of 38 mining incidents to organic tracked vehicles. Of the 50 M48A3 tanks on hand, 30 had been mined one time, 9 had been mined twice, and one had been mined three times."[18]

Reinforcing the two tank battalions were elements of the deactivated 1st and 3d Anti-Tank Battalions. Equipped with the Ontos, a lightly armored tracked vehicle mounting six 106mm recoilless rifles, four .50-caliber and one .30-caliber machine guns, the primary mission of the battalions was the destruction of enemy armor. But in Vietnam, as a result of the

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Marine ground commanders, in addition to artillery and air support, relied on naval gunfire provided by ships of the Seventh Fleet, such as the battleship New Jersey *(BB 62).*

lack of such a threat, the vehicle initially was employed in support of infantry operations and convoy escort, and then only in perimeter defense due to the vehicles' vulnerability to mines.

Led by the battleship *New Jersey* (BB 62), until recalled in March, and then individual cruisers and destroyers, ships of the Seventh Fleet continued to provide accurate and timely fires in support of ground operations. Whether firing in support of engaged units, softening targets for advancing infantry, suppressing active enemy firing positions, or interdicting enemy lines of communication, the combat record of the ships was impressive. Hundreds of enemy fortifications, storage facilities, and firing batteries were destroyed, roads cut, and numerous previously occupied positions seized without opposition and friendly casualties. In addition, the availability of naval gunfire support allowed III MAF on several occasions to redistribute artillery assets in order to support mobile operations in the western reaches of the I Corps Tactical Zone.

The *New Jersey*'s contribution was noteworthy. Firing in support of III MAF Marines, her battery of nine 16-inch guns enabled her to attack targets at a range of 24 miles with a shell weighing 2,750 pounds. The weight of metal, range, and penetration of the 16-inch round far exceeded that of the heaviest Marine artillery weapon—the 175mm gun. In addition, the battleship's secondary battery of 20 5-inch guns provided a fire support capability roughly equal to that of four destroyers. During her six month tour in Vietnam, the *New Jersey* fired over 3,000 16-inch rounds and nearly 11,000 5-inch rounds, the bulk in support of the 3d Marine Division.

Surveillance and Reconnaissance Activities

The key to all successful military operations lay in timely, accurate information about the enemy. In Vietnam, the guerrilla nature of the struggle made timely intelligence even more essential, and at the same time more difficult to collect and evaluate. By 1969, the Marines' intelligence effort had evolved from an initial reliance on conventional techniques into a multifaceted, highly sophisticated intelligence gathering system that combined traditional air and ground reconnaissance methods with a number of new technological advances.

The majority of intelligence obtained by III MAF and its subordinate units was derived from air and ground reconnaissance. Marine Observation Squadrons 2 and 6 served as the airborne eyes of the 1st and 3d Marine Divisions. Each month the squadrons' UH-1E helicopters, OV-10As, and Cessna O-1 and O-1G light aircraft flew hundreds of observation missions. In addition, wing helicopters provided a platform for the Airborne Personnel Detector, Detector Concealed Personnel, and the Side Looking Airborne Radar. The mixed complement of RF-4Bs, Phantom IIs, EA-6A Prowlers, and F-3D Skyknights attached to Marine Composite Reconnaissance Squadron 1 also flew numerous conventional and infrared photographic survey missions. When the 1st MAW was unable to fulfill requests for photographic missions, the Seventh Air Force and Army aviation companies provided sup-

port. Rapid, expert interpretation and dissemination of aerial photographs was accomplished by III MAF's G-2 Photo Imagery Interpretation Center (PIIC), which included an automatic data processing system and a direct teletype link between III MAF and XXIV Corps. In addition, photo interpretation teams were assigned to tactical units to assist in the planning and execution of combat operations.[19]

Although small-unit infantry patrols continually provided information, the division's organic reconnaissance battalions generated the bulk of ground intelligence. III MAF reconnaissance forces consisted of two reconnaissance battalions and two force reconnaissance companies in January 1969. The 1st Reconnaissance Battalion supported 1st Marine Division operations, while the 3d Reconnaisance Battalion supported the 3d Marine Division. Attached to each battalion was a force reconnaissance company. The original doctrinal purpose of force reconnaissance companies was to operate in an amphibious operation under the landing force commander (III MAF), providing preassault reconnaissance and long-range reconnaissance after landing. In Vietnam, the force reconnaissance companies were originally used for deep reconnaissance under III MAF control. But by 1969, the 3d Force Reconnaissance Company had become totally absorbed by the 3d Reconnaissance Battalion during its support of operations undertaken by Task Force Hotel. Although attached to the 1st Reconnaissance Battalion, the 1st Force Reconnaissance Company remained a separate entity.

Realizing the need for reconnaissance information beyond that provided division commanders by their respective reconnaissance battalions, Lieutenant General Herman Nickerson, Jr., shortly after assuming command of III MAF in March, directed that the force reconnaissance companies be returned to the control of III MAF. 1st Force Reconnaissance Company became the first, beginning deep patrol operations for the MAF in June, followed by the reconstituted 3d Force Reconnaissance Company in October.

Although deep reconnaissance missions were conducted by units of the Army's Special Operations Group within I Corps, the information provided did not meet the specific tactical needs of III MAF. As a result of III MAF's desire for more coordination as well as coverage of areas not targeted by other operations, III MAF reassumed control of the 1st and 3d Force Reconnaissance Companies, which then were placed under the direction of the newly created Surveillance and Reconnaissance Center (SRC), established in October. Under the SRC, the following missions were assigned to the force reconnaissance companies: perform deep reconnaissance to determine location and current usage of enemy base camps, storage sites, and lines of communication; fix and identify enemy units tentatively located by sensor devices and agent reports; provide specific targeting and bomb damage assessment for B-52 Arc Light strikes; execute POW recovery missions and wiretap operations; and emplace sensors across enemy trails and in other critical areas.[20]

Based at An Hoa Combat Base initially and then at Da Nang, Major Roger E. Simmons' 1st Force Reconnaissance Company concentrated its efforts during the first half of the year in support of Task Force Yankee and 1st Marine Division operations. Conducting missions in areas surrounding Charlie Ridge and enemy Base Area 112 to the west, patrols, usually inserted and extracted by helicopter, attempted to locate enemy troops, base camps, and storage areas. In addition they spotted targets for artillery fire, assessed bomb damage, and occasionally engaged enemy forces. During January, for example, the company ran 116 patrols, sighting 1,339 enemy troops and killing 88, while sustaining 7 killed and 37 wounded. The company also directed 88 artillery fire missions and 25 air strikes. Following its transfer to III MAF, the company shifted operations to the far reaches of Quang Nam and Quang Tin Provinces, and as a result the number of patrols gradually declined, totaling only five during December.

The 3d Force Reconnaissance Company, based with and essentially absorbed by the 3d Reconnaissance Battalion at Quang Tri, supported 3d Marine Division operations, conducting 20 patrols and observing or engaging 62 enemy troops while suffering one Marine wounded during January. With the redeployment of the battalion and the division in October, the company was brought up to authorized strength, control passed to III MAF, and the company relocated to Phu Bai Combat Base. During the remaining two months of the year, 3d Force Reconnaissance Marines concentrated on patrolling the Demilitarized Zone and the newly created western reconnaissance zones of Quang Tri and Thua Thien Provinces, focusing on the A Shau Valley and surrounding terrain.

At the beginning of 1969, Lieutenant Colonel Larry P. Charon's 1st Reconnaissance Battalion was overstrength, possessing five lettered companies, and the 1st Force Reconnaissance Company, instead of the nor-

mal four.* In support of Task Force Yankee and the 1st Marine Division, the battalion performed a variety of missions: furnishing teams to support regimental search operations; securing fire support bases and artillery observation posts; and training scuba divers to check bridges within the division TAOR for demolitions and searching waterways for obstructions and weapons caches. However, the principal function of the reconnaissance battalion was to patrol the western fringes of the TAOR. Operating in six-man teams, each composed of an officer or NCO patrol leader, a radioman, three riflemen, and a Navy corpsman, battalion Marines normally spent half their time in the field and the remainder preparing for the next operation or participating in refresher training.

Reconnaissance patrolling, by 1969, had become somewhat standardized. Each team member packed food, water, ammunition, and equipment to sustain him for up to six days in the field. The radioman carried the AN/PRC-25 and extra batteries, while the corpsman took charge of the medical supplies. After several hours of rehearsals and briefings, helicopters lifted the team to its assigned operating area. Upon insertion, a radio check was made with the aircraft, radio relay, and company command post, and then the team departed the landing zone, following a prearranged route. Carefully noting and then reporting details of terrain and enemy activity, or calling in artillery and air strikes, the patrol attempted in most cases to avoid contact. At the end of its assigned mission, or when discovered or attacked, helicopters extracted the team. On return, each member of the team was debriefed and all reports of the patrol were reviewed and then distributed to the appropriate regiment or battalion.

Patrolling during the year by 1st Reconnaissance Battalion Marines resulted in a steady stream of sightings and engagements. During April, for example, the battalion conducted 177 patrols, sighting 2,746 enemy troops, and directing 88 artillery fire missions and 31 air strikes. During the month, battalion Marines killed 177 at a cost of 7 dead and 39 wounded.

Like the 1st Reconnaissance Battalion, the 3d Reconnaissance Battalion, under the command of Lieutenant Colonel Aydlette H. Perry, Jr., was also overstrength as 1969 began.** Instead of the usual four lettered companies, five were present plus the attached 3d Force Reconnaissance Company under Major Robert W. Holm. Supporting Task Force Hotel and the 3d Marine Division, battalion Marines performed the same missions as those assigned to the 1st Battalion. Concentrating their efforts in the DMZ, in western Quang Tri, and in the piedmont west of Quang Tri City and Dong Ha, meant that "every indication of enemy activity," General Davis recalled, was "explored by the insertion of reconnaissance teams."[21]

Generally, two types of patrol missions were conducted by reconnaissance Marines within the 3d Marine Division TAOR. As General Davis explained:

> Under the artillery fan as established at the time, we would use Sting Ray techniques with 8 to 10 men in a team, seeking the enemy, seeking opportunities to deliver fire upon

A patrol from Company B, 3d Reconnaissance Battalion moves along a trail south of the Demilitarized Zone in the continuing search for evidence of North Vietnamese infiltration into Quang Tri Province.
Department of Defense Photo (USMC) A192449

*Lieutenant Colonel Charon was succeeded in February by Lieutenant Colonel Richard D. Mickelson, who was in turn replaced in October by Lieutenant Colonel John J. Grace.

**Lieutenant Colonel Perry was replaced in May by Lieutenant Colonel Richard R. Burritt.

Department of Defense Photo (USMC) A192444

Concealing himself in a grove of bamboo, a reconnaissance Marine surveys the terrain and then directs artillery and air strikes on enemy troops and base camps.

> them. Well-out, smaller teams—four or five men—going on the basis of secrecy: only to observe, stay out of sight. If the enemy is encountered, they attempt to escape. These are not normally reinforced unless we are able to insert artillery at the time. Under the artillery fan, normally they would be reinforced if the enemy presented an adequate target. On contact the team hangs in and fights it out or if it's a small contact and they start to take casualties, we might extract them. However, if it's a large contact and under the artillery fan and the opportunity presents itself, they are reinforced in order to attempt to destroy the enemy force in its entirety.[22]

Using Stingray and deep reconnaissance techniques, 3d Reconnaissance Battalion in May, for example, conducted 194 patrols during which 68 contacts with enemy troops were made, resulting in 80 enemy killed and the loss of 4 Marines killed and 31 wounded.* During this same period, battalion Marines directed 60 artillery missions, 35 air strikes, and conducted 14 scuba missions.

*For details of the Stingray concept of operations, see MajGen Raymond G. Davis and 1stLt J. L. Jones, Jr., "Employing the Recon Patrol," *Marine Corps Gazette*, May69, pp. 41-45.

Although the primary purpose of reconnaissance patrols was to gather information, direct artillery and air strikes, and not to fight, teams often found themselves involved in intense combat. Firefights erupted from ambushes, chance meetings with small enemy units, or from efforts to take prisoners. One such encounter took place in March in the southwestern corner of Quang Nam Province.

On the 23d, a team from 1st Force Reconnaissance Company, identified by its radio call sign "Report Card," consisting of two officers, seven enlisted Marines, and a corpsman, was inserted by helicopter, shortly after noon, near the Song Thu Bon, southwest of Antenna Valley. The following morning, the team moved up to a trail where they were to set an ambush in an effort to snatch a prisoner. Once in position it became apparent that the trail was one of the enemy's main routes for moving supplies from western base camps, through Antenna Valley, into the An Hoa basin. During the first half hour in position, a group of approximately 32 enemy troops passed two to three meters in front of the team's ambush. Waiting for an enemy officer or NCO, the team let most pass. The last, dressed in full utilities, a pith helmet, boots, and "strutting along holding his rifle at port arms," appeared to be a good target and was ambushed. As the Marines dragged the enemy soldier into their ambush, they heard movement down the trail, both north and south of their position. Pulling back five meters into deep elephant grass, the team engaged two enemy soldiers, killing both. Then six more appeared to the front. While taking these under fire, and endeavoring to move down to a streambed, the patrol was hit from all sides by approximately 80 to 100 troops.

For 30 minutes, the team fended off probes by the large enemy force until two Huey gunships arrived; the only time the Marines used small arms was when an enemy soldier was actually sighted, otherwise they employed their grenades and the M79 launcher. The fighting continued for another two-and-one-half hours while the gunships were on station and then suddenly stopped. Searching the area around their position before being extracted, the patrol counted 10 enemy killed by Huey machine gun fire. "I learned," the team leader, First Lieutenant Wayne E. Rollings, later reported, "that with a small unit, if you keep good security, 360, that you can hold off a very large force that outnumbers you considerably, and suffer very few casualties. We had no casualties."[23] Although the patrol did not get its prisoner, who had been killed

by an enemy grenade during the fight, they did leave behind 22 NVA dead.

Two-and-one-half weeks later, Lieutenant Rollings and seven men were again on patrol. "The name of our reconnaissance patrol was 'Lunchmeat,' and with 150 North Vietnamese soldiers surrounding us, that's just how I felt, like a piece of lunchmeat in a sandwich." The mission assigned Rollings' patrol was to reconnoiter a trail and ridgeline, four kilometers southwest of An Hoa.

Near noon on 10 April, Rollings and his team were inserted into the area and began checking the ridgelines for enemy activity. Shortly after dusk the following day, they spotted 35 to 40 lights moving in a northeasterly direction, approximately 800 meters from their position. Before the team could move, they heard movement to their front and rear. "We hurriedly set up a defensive perimeter in some dense undergrowth on the side of the trail," noted Rollings, "and called in Spooky [Air Force C-47 aircraft equipped with mini-guns]."

With the enemy moving ever closer, Rollings called an artillery mission on a base camp spotted earlier in the day with the hope of forcing the NVA to call off the search and then radioed for Spooky to make a pass. As Lieutenant Rollings continued:

> His first burst landed about 400 yards from us and I began to direct him in. He warned me to tell him when he was hitting within 50 to 75 yards of our position and that he would then start working out toward the enemy from there. But the enemy would still be between us and his fire so I waited until the outer fringe of his fire, which had a 25 yard radius, was within five yards and then told him to start working away from us. I didn't tell him how close his fire was to us, because I knew he wouldn't have gotten that close if he couldn't mark our position.[24]

Patrol members counted more than 30 instances where they heard screams and groans as artillery and mini-guns scored hits. In one instance, related Rollings, "we saw 10 NVA get within 40 yards of our position before 'arty' caught them with a barrage that finished them all off."

At first light the patrol got word to move out, but within 100 meters of its position, it encountered 20 NVA troops. Spooky again called for, the Air Force's C-47 began working in from the rear while the team hit the enemy from the front. "We had them sandwiched between us, but after about a half-hour, the NVA . . . took off." The patrol continued to search the area, but without success, and was extracted on the 13th with one minor casualty.[25]

Other teams were not so lucky. On 4 June, a patrol from Company D, 3d Reconnaissance Battalion, fought the battalion's most severe action of the year and lost. The team, identified as "Flight Time," consisted of six Marines. Helicopters inserted the patrol, which carried two strobe lights for illumination, at 0930 on the 2d near Hill 471, overlooking Khe Sanh and Lang Vei, in western Quang Tri Province. The team's arrival went unopposed and the Marines moved northward from the landing zone toward the high ground, finding evidence of recent enemy occupation in the area. The following day, after setting up its harbor site for the evening, the team observed five enemy troops in brown utilities and helmets, but did not take the troops under fire.

At 0250 the next morning, the team began receiving small arms fire and grenades from an unknown size enemy force. Reporting one killed and five wounded, the team leader requested an emergency extraction and all available "on call" air. When the aerial observer arrived on station 10 minutes later, he saw that the enemy was within 10 meters of, and surrounding, the team's position. He immediately requested that a reaction force be inserted to assist the team. At 0315, the observer expended his ordnance, heard a secondary explosion, and then lost all communications with the team.

The 12-man reaction force arrived in the area at 0620 and reported sighting three, and possibly five, members of the team in terrain which looked as though it had been "hit by a flame thrower." On the ground, the force found the bodies of five members of the team in an enemy trench and the sixth approximately 10 meters down the hill. An on-sight investigation indicated that the enemy had come up the northeast side of the hill, firing grenades, small arms, and throwing satchel charges and bangalore torpedoes. The reaction force leader surmised that the burn marks on the ground and bodies, and the way in which the equipment was scattered, indicated that the team must have been involved in hand-to-hand fighting before being overrun.[26]

Enemy troops were not the only hazard faced by reconnaissance Marines when patrolling deep in mountainous terrain. In May, a seven-man team, again from the 3d Reconnaissance Battalion, codenamed "Centipede," while patrolling the steep, triple-canopied hills surrounding the Ba Long Valley, observed numerous tiger tracks. On two occasions during the four-day patrol, a tiger came within 10 meters of

Marine Corps Historical Collection

Cpl Sandy R. Reid of the 3d Reconnaissance Battalion applies additional camouflage paint to his face and neck in order to blend in with the jungle and thereby avoid detection.

the team's position and had to be driven off with CS grenades.[27] Among other nonhostile hazards were lightning, friendly fire, the rugged terrain itself, and equipment failure. Although reconnaissance Marines did suffer a number of noncombat casualties, losses in most cases were a direct result of clashes with enemy troops.

With four years of experience behind them, reconnaissance Marines had, by 1969, developed tested techniques and equipment in order to supply the division they supported with accurate and timely intelligence. To assure prompt artillery support when needed and at the same time prevent accidental shelling, special reconnaissance zones were established for each deployed team in which only the patrol could call fire missions. The 11th and 12th Marines designated a battery or platoon of howitzers to support each team and assigned a liaison officer at the reconnaissance battalion's command post to assist in fire planning and coordination. To ensure the rapid extraction of a team

under fire or in a tenuous situation, the 1st Marine Aircraft Wing designated helicopters as part of a quick-reaction package, that at times included division infantry forces to assist.

When not on patrol, reconnaissance Marines continually trained for their exacting task. In addition to the initial indoctrination program for newly arrived personnel, which included instruction in the use of the AN/PRC-25 radio, map reading, first aid, rappelling from helicopters, observer procedures, and intelligence reporting techniques, the battalions conducted periodic refresher courses with special emphasis on weapons training, scuba diving, physical conditioning, and the use of new equipment such as extraction ladders. Selected personnel also were sent to the Army's Recondo School at Nha Trang for more specialized training.

With the redeployment of the 3d Marine Division, Marine reconnaissance strength was halved. What had been the reconnaissance zone of the 3d Battalion was passed to reconnaissance elements of the 101st Airborne and 1st ARVN Divisions. The 3d Force Reconnaissance Company, now a separate entity under III MAF, moved to Phu Bai and was given the task of patrolling the A Shau Valley. The 1st Force Reconnaissance Company and 1st Reconnaissance Battalion continued to concentrate on Quang Nam Province, although by December, fewer patrols were assigned to deep missions in the western reaches of the province.

While direct air observation and ground reconnaissance provided the bulk of intelligence, the artillery's system of observation and target acquisition also produced information. Scattered throughout the divisions' areas of responsibility were numerous observation towers which not only directed artillery fire, but permitted general surveillance of enemy movement. Supplementing the artillery's intelligence gathering capability were Integrated Observation Devices and the computerized Fire Support Information System.*

Captured enemy documents and prisoners yielded additional information. To extract the intelligence, the divisions relied heavily upon specially trained Marines attached to interrogation-translation teams, interpreter teams, and counterintelligence teams. Working within the division G-2 sections, the interrogation and interpreter teams, as their names implied, interviewed NVA and VC prisoners and suspected civilian detainees, and reviewed all captured documents for information on enemy unit strength; designations; attack and withdrawal routes; staging, rally, and base areas; mines and surprise firing devices locations; and enemy combat effectivenss and morale. In September 1969, a typical month, teams attached to the 1st Marine Division interrogated 1,397 detainees, 18 of whom were classified prisoners of war, 45 as civilian defendants, 13 as returnees, and 1,321 as innocent civilians. During the same month, the teams screened 3,107 documents for translation.[28]

Counterintelligence teams, in addition to performing normal security and counter-espionage tasks at every Marine cantonment where South Vietnamese civilians were employed, accompanied Marine units to the field in search of their primary target, the Viet Cong Infrastructure. Working closely with ARVN intelligence agencies, National Police, National Police Field Forces, Provisional Reconnaissance Units, and Revolutionary Development Cadre in numerous cordon operations, they checked the identities of civilian detainees against lists of known infrastructure members and carried out immediate exploitative operations.[29]

The Marines also employed numerous South Vietnamese interpreters and informants, tasked with ferreting out the local infrastructure. Many in the intelligence community, however, thought Marines should not be involved in such activity because, as the 1st Division's G-2, Colonel Anthony J. Skotnicki, pointed out, "we didn't have the skill or language ability," and that others among the near dozen agencies involved in such activity were better qualified.[30]

Marines in the field also relied heavily on Kit Carson Scouts, due to their proven loyalty and knowledge of the people and terrain. In addition, some Marine units, especially those operating in the heavily populated lowlands, worked closely with South Vietnamese Armed Propaganda Teams. Although primarily involved in psychological warfare, the teams, through informal contacts with villagers, did collect information concerning local guerrilla and infrastructure activity, which was passed on to the appropriate Marine unit.

Under the Voluntary Informant Program (VIP), Marines enlisted the assistance of South Vietnamese civilians in the intelligence gathering effort. Administered by the division's G-2 staff, battalions were provided funds with which information could be purchased. A majority of the funds, however, went to rewarding Vietnamese who brought in or pointed out munitions, such as grenades, dud artillery rounds, and aircraft ordnance, which could be used by the enemy

*For additional detail on artillery targeting and operations, see pp. 245-249.

Marine Corps Historical Collection

Under the Voluntary Informant Program, South Vietnamese civilians turned in dud ammunition, mortar rounds in this instance, that might otherwise be used to make boobytraps.

in constructing surprise firing devices. During May 1969, for example, 1st Marine Division units spent a total of 1,502,454 piasters (approximately 1,200 dollars) in 764 separate payments for the return of ordnance, while making two payments for "casual information."[31]

As an adjunct to the VIP program, the 3d Marine Division Psychological Operations Office established its own program, dubbed "Circuit Rider." Composed of a psyops officer and an explosive ordnance disposal team, Circuit Rider traveled Route 1 weekly purchasing ordnance local children had found. The program, continually advertised by audio-visual trucks, leaflet drops, and aerial broadcasts, was considered highly successful. The area of greatest activity during the year, proved to be along Route 1, between Dong Ha and Gio Linh, where it was thought children had found and ransacked a number of enemy caches.

Marines also relied on information generated by signal intercepts. During the year, Lieutenant Colonel Patrick J. Fennell, Jr.'s 1st Radio Battalion provided III MAF with this capability. Headquartered at Camp Horn, with its Headquarters and Service Company at nearby Camp Hoa Long and Operations Company at Dong Ha, the battalion's six task-organized platoons, deployed at fire support bases and observation posts throughout Quang Tri and Quang Nam Provinces, provided immediate tactical support for both regimental and division operations. Using both ground installations and airborne platforms supplied by the Army and Air Force, Marine radiomen listened to enemy verbal and message communications in an effort to determine the location of transmitter sites. As a result of these efforts, the battalion passed on an average of 4,000 fixes each month to tactical commanders who in turn used artillery, air, or ground operations to destroy them. In addition to monitoring enemy communications, the battalion also monitored friendly transmissions to ensure against security violations or compromises. During March, for example, the battalion reported 194 violations in 118,920 messages monitored.[32]

Electronic sensors provided yet another source of intelligence information. Products of the aborted Demilitarized Zone barrier project initiated by Secretary of Defense Robert S. McNamara and abandoned

in October 1968, sensors, by 1969, were being employed tactically throughout South Vietnam under a new program, Duffle Bag.* These "24-hour silent sentinels" not only contributed to economies in force, but provided early warning of attacks on base camps and cities, and contributed to the reduction of rocket attacks. "It appears," noted a MACV message, "that . . . sensor technology may be one of the more important developments to come out of the Vietnam war. At the present time, the only limitations on successful sensor-supported operations are the availability of sensors, and the degree of imagination, initiative, ingenuity, and resourcefulness of tactical commanders."[33]

The Marines first used sensors during the siege of Khe Sanh in early 1968. At that time, Air Force Igloo White aircraft—dedicated EC-121s in orbit over Laos—provided readouts from out-of-country sensors. The sensor information was relayed to Nakhon Phanom where it was assessed and targets passed to Khe Sanh and Dong Ha. Towards the end of the siege, some local readout and assessment capability was given the Khe Sanh Marines. As a result of the experience at Khe Sanh, coupled with the onset of the rainy season in the Laotian Panhandle, sensors became available for limited test and evaluation in support of ground combat operations. Upon completion of the evaluations, codenamed Duck Blind, in August 1968, it became apparent that sensors, originally designed to impede or substantially reduce infiltration from North to South Vietnam, could make significant contributions in surveillance and target acquisition operations in South Vietnam.

A majority of the sensors employed by III MAF were of the radio-type, which transmitted information electronically directly to monitoring stations. These small, camouflaged, battery-powered devices could be dropped from aircraft or implanted by hand. Once in position, the sensors reacted to minute physical changes in the surrounding environment. Seismic sensors, known as Seismic Intrusion Devices (SIDs), responded to ground vibrations, such as human footsteps. Magnetic sensors, or Magnetic Intrusion Devices (MAGIDs), detected moving metallic objects, and infrared sensors (PIRIDs) reacted to heat emanating from bodies, vehicle engines, and campfires. Accoustic sensors picked up audible sounds. Once activated, the sensors sent a signal to a receiver from which the operator could determine the location and probable nature of the object. Accoustic sensors transmitted the sounds they detected directly to the monitoring stations.

Sensors were generally planted in groups, or "strings" as they were more commonly termed, along enemy infiltration routes from the mountains into the lowlands. A typical string, designed to detect movement, consisted of several seismic and a few magnetic and accoustical sensors. Once activated, the monitoring station operator could request an artillery fire mission, alert a nearby ground unit, or simply record the time and direction of movement for later analysis. Seismic, magnetic, and infrared line sensors also were employed around fixed installations such as fire support or combat bases. The Da Nang Barrier contained 106 such sensors and plans called for the future implantation of an additional 775. By mid-1969, each division had over 100 sensors, maintained and monitored by the divisions' G-2 staffs.

Whether obtained by sensors, air and ground reconnaissance, or from a paid agent, intelligence information had to be quickly evaluated, correlated, and transmitted to units in the field to be of any value. In order to facilitate this process, III MAF established the Surveillance and Reconnaissance Center at Da Nang in late 1969, under Assistant Chief of Staff, G-2, Colonel John S. Canton. The center, according to Colonel Canton, was to "physically and functionally integrate and coordinate all intelligence collection means in ICTZ, thus reducing the time lapse between the initial collection of intelligence information and the dissemination of processed intelligence to tactical commanders." In addition to directing deep surveillance missions of the force reconnaissance companies, the SRC "monitored all intelligence collection in ICTZ. This ensured round-the-clock, timely and reliable communication of perishable intelligence data to using units, thus producing a quantum increase in the immediate utilization of intelligence assets."[34]

"In this war, like no other war in the past generation" noted Colonel Anthony J. Skotnicki, "we never worked under a lack of information. We actually acquired so much intelligence information we couldn't handle it." Despite advances in processing and organization, there remained "a considerable amount of difficulty in manually recording it and manually extracting it in order to put it together into useful intelligence."[35]

*The use of sensors within South Vietnam, nicknamed Duffle Bag, was one of four continuing sensor programs carried out by MACV in Southeast Asia. The remaining three were: Igloo White, which involved the out-of-country use of sensors; Duel Blade II, the sensor supported anti-infiltration system in and along the DMZ; and, Tight Jaw, the combined US/GVN border surveillance operation.

CHAPTER 15

Supplying III MAF

Force Logistic Command—Naval Support Activity, Da Nang—Engineer Support Motor Transport—Medical Support—Communications—Logistics of Keystone Eagle and Keystone Cardinal

Force Logistic Command

For supply, maintenance, and service support, III MAF relied on Force Logistic Command (FLC). At the beginning of 1969, Brigadier General James A. Feeley, Jr. commanded the logistical arm supporting Marine operations in Vietnam. A Massachusetts native, combat veteran of World War II and Korea, and trained as an aviator, General Feeley assumed command of the FLC in October 1968.*

Composed of 430 Marine and 22 Navy officers and 9,164 Marine and 150 Navy enlisted men, Force Logistic Command was headquartered at Camp Jay A. Books, part of the expansive Red Beach support complex, northwest of Da Nang. Under the operational control of III MAF and command and administrative control of FMFPac, FLC was organized around the Headquarters and Service, Supply, and Maintenance Battalions of the 1st Force Service Regiment and included 1st Service Battalion/Force Logistic Support Group Bravo (FLSG-Bravo), 3d Service Battalion/Force Logistic Support Group Alpha (FLSG-Alpha), 1st and 3d Military Police Battalions, 5th Communication Battalion, and 7th Motor Transport Battalion.

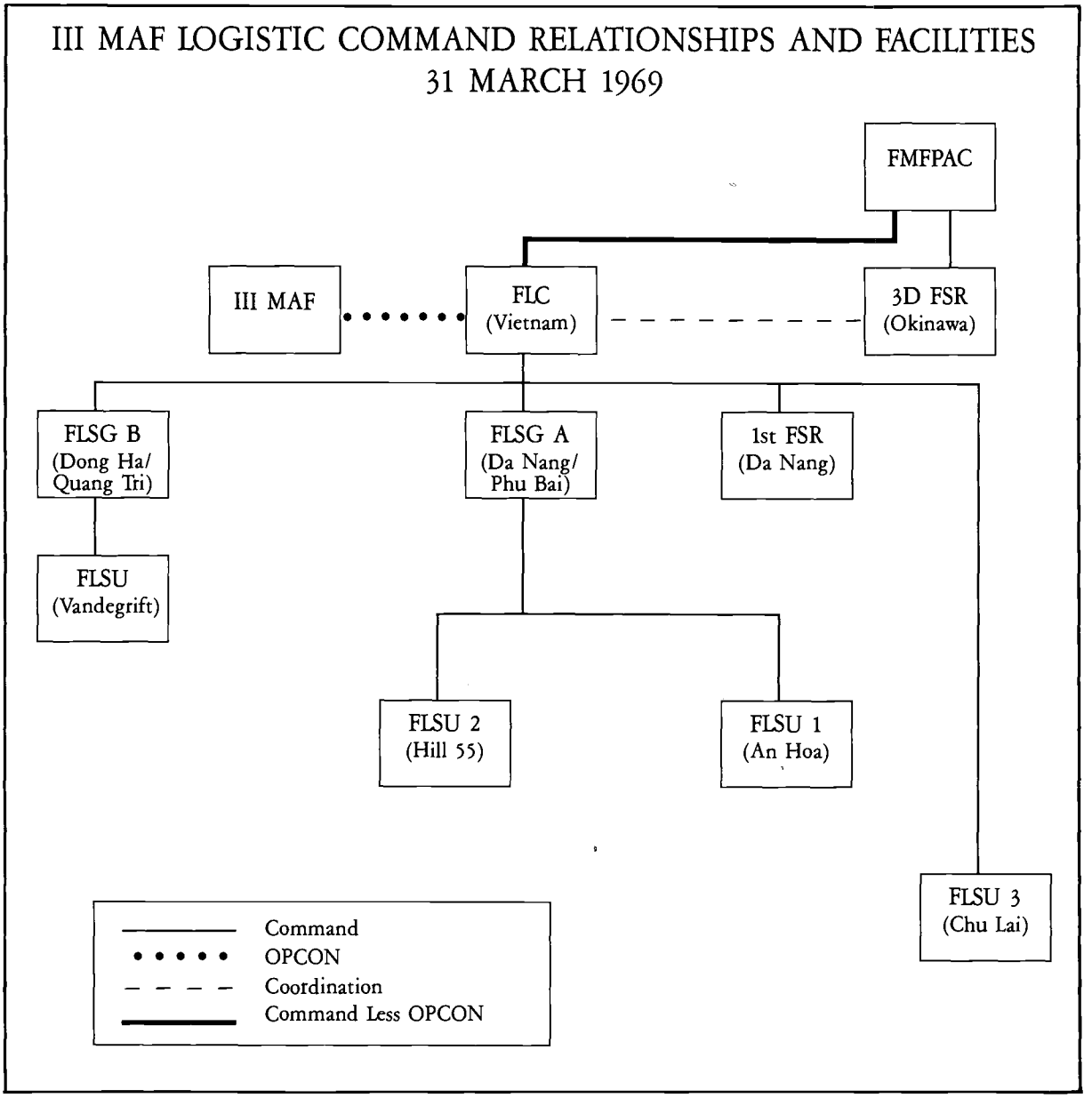
The three battalions of the Force Service Regiment performed a majority of the logistical functions of Force Logistic Command. Headquarters and Service Battalion provided administrative, communication, and motor transport assistance for elements of the FLC and units of III MAF. In addition to operating graves registration and maintaining internal and perimeter security for Camp Books, it also managed the III MAF Transient Facility, through which passed all incoming and outgoing personnel, and the R&R Processing Center. The Supply Battalion received, stored, distributed, and accounted for all supplies, while operating ammunition supply points (ASPs), baking most of III MAF's breadstuffs, and providing personnel for the logistical support subunit at Chu Lai. Maintenance Battalion repaired all types of Marine ordnance and equipment, with the exception of aviation items or equipment requiring extensive overhaul. The battalion transferred these items either to 3d Force Service Regiment facilities on Okinawa or Japan, or to maintenance depots in the United States.

Force Logistic Support Group Alpha, initially headquartered at Phu Bai but moved to Camp Books on 5 January, directly supported the 1st Marine Division. Composed of the Headquarters and Service, Maintenance, Supply, and Truck Companies of the 3d Service Battalion, the FSLG maintained logistic support units (LSUs) at Hill 55, An Hoa, and Phu Bai, which served the 1st, 5th, and 7th Marines. Each LSU drew rations, fuel, and ammunition from the FLC for issue to its supported regiment, repaired equipment and ordnance, and operated a laundry. On 15 July, FLSG-Alpha assumed control over the logistic support subunit at Chu Lai, which provided rations, ammunition, and maintenance support for Marine Aircraft Groups 12 and 13, 9th Engineer Battalion, and the 1st Combined Action Group.

During November 1969, Force Logistic Support Group Bravo, which in like manner had supported the 3d Marine Division, assumed the support of the 1st Marine Division and portions of the 1st Marine Aircraft Wing. On the 7th, FLSG-Bravo adopted FLSG-Alpha's mission and initiated standdown procedures at Quang Tri, Vandegrift, and Dong Ha Combat Bases prior to moving to Camp Books. At the same time, FLSG-Alpha's organizational colors moved to Okinawa with the remaining elements of the 3d Marine Division. FLSG-Bravo continued to provide support for the 1st Marine Division through the operation of three logistic support units located at Hill 55, An Hoa Combat Base, and LZ Baldy (established in August), and the subunit at Chu Lai (FLSG-Bravo Sub-Unit 1).[1]

Under the amphibious concept, each division and the wing possessed its own logistical support capability. But as the war intensified, the accretion of troops and equipment necessitated a change. A viable, semipermanent logistic support organization, Force Logistic

*Brigadier General Mauro J. Padalino replaced General Feeley in November 1969. As a colonel in 1965, he headed FLC's predecessor, the Force Logistic Support Group.



Command, was thus created from the previously fragmented logistic command and control structures. As a result, the divisions gave up their organic service battalions and thus maintained no separate supply or accounting facilities. Many Marines continued to view this loss as detrimental to the divisions' capabilities to perform their missions. Among them was Colonel Frank R. DeNormandie, G-4, 3d Marine Division, who noted that with the creation of FLC and subordinate groups, division control over logistical support moved from direct management to one of cooperation and coordination. "As a result, supply support rapidly changed from unit distribution to supply point distribution. In addition, changes in priority for either unit supply or equipment repair had to be effected at the highest level." The division commander now not only had no readily available source of supply, but no established third echelon maintenance and supply or materiel storage capability. "We make a division that is supposed to be self-sufficient," noted Colonel DeNormandie, "that is capable of taking care of itself, that is capable of supporting itself far removed from any other headquarters and yet we take away from that division commander the thing that makes

him tick, and the thing that makes any military organization really tick and really able to fight is its logistics support capability."[2]

Despite the lack of direct division control and the imposition of additional management levels, the logistics of support, on the whole, remained rather simple. Individual battalions of the 1st Marines, for example, radioed their supply requests to their representatives on Hill 55 each day prior to 1500. Battalion support personnel then drew supplies from FLC, either directly or through a logistic support unit and staged the loads for next-day delivery. Trucks or helicopters then transported passengers and supplies to the battalion and on the return trip, removed retrograde equipment and troops.[3]

As helicopter resupply became more prominent, each division became more dependent upon the activities of its shore party battalions. Originally established to facilitate the movement of men and equipment across the beach, the battalions expanded their mission to include support of heliborne assaults. Organic to each division, these battalions deployed a company with each infantry regiment. Shore party support teams located with each LSU assembled and prepared supplies for helicopter pickup, while control teams with the rifle companies marked the landing zones, briefed the incoming helicopter crews, and supervised unloading.

Supply and maintenance support for the 1st Marine Aircraft Wing was more complex since the wing drew upon both Navy and Marine sources. Force Logistic Command provided non-aviation supplies and ammunition, while a variety of Navy agencies supplied replacement aircraft, spare parts, vehicles, and maintenance support. Commander, Naval Air Force, Pacific Fleet, a subordinate of CinCPacFlt, was responsible for aviation logistic support of the wing. As a result, the wing requisitioned its Navy material from the Naval Supply Depot at Yokosuka, Japan, which also contracted for and oversaw major repair and

BGen James A. Feeley, Jr., right, Commanding General, Force Logistic Command, guides LtGen Herman Nickerson through the command's data processing center at Camp Books.

Department of Defense Photo (USMC) A193236

rebuilding of Marine aircraft. Within the wing, each aircraft group stored and issued supplies and performed routine maintenance and limited repair of aircraft. Augmenting the groups' organic battle damage repair capabilities were civilian teams from naval aircraft repair facilities. Marine Wing Support Group 17 provided Marine Corps supply, postal, post exchange, and disbursing services for all wing elements, while maintaining group equipment, aircraft launch, and recovery systems, and overseeing the shipment of aircraft into and out of Vietnam.

The logistic supply and repair system supporting Marine units within I Corps ran smoothly during 1969. It responded quickly and effectively to III MAF's highly mobile, wide-ranging offensive maneuvers with the establishment of expedient positions in rugged, mountainous terrain in order to sustain extended combat operations. Temporary shortages of ordnance, spare parts, radio batteries, wet weather gear, and malaria and salt tablets did occur, but these shortages were quickly remedied by borrowing from the Army or by emergency shipments from Marine supply facilities on Okinawa or in the United States. Despite these occasional shortages, Marine units experienced few supply system problems. As Major General Wilbur F. Simlik, former commanding officer of the 3d Marines and later III MAF G-4, noted: "never have troops been supported in such abundance as in the Vietnamese war. The chow, the ammunition, the supplies, the transportation, were there when we needed it, in abundance; as a matter of fact, probably too much."[4]

As a direct result of abundance of support, the problem of supply discipline arose. It varied from the solitary Marine who abandoned his gas mask along a trail because it was too bulky or heavy to carry and was issued a replacement in preparation for an inspection, to the battalion commander who requested a dozen sets of utilities be issued per man when only three were authorized. "As a practical matter," noted 1st Marine Division Supply Officer and later division Assistant Chief of Staff, G-4, Colonel John L. Schwartz, supply discipline "is non-existent. It does not make any difference whether it is ammunition, fuel, chow, or what it is. There is gross extravagance . . . . There seems to be in the minds of many many commanders three questions: How much stuff have I got? How soon can I use it? and Where can I get some more?"[5] Although numerous attempts were made, the problem continued to defy solution.

On 27 April 1969, the III MAF logistic support system was tested severely when a grass fire brought about the destruction of Ammunition Supply Point (ASP)-1, three kilometers southwest of the Da Nang Airbase. The fire first ignited unserviceable ammunition slated for disposal, and the resultant explosions spread in chain reaction to the two main ground and air ammunition storage areas and a nearby fuel storage area. Colonel William D. Bassett, Jr., FLSG-Alpha's commanding officer, described the effects:

> On that Sunday afternoon, the Helicopter Utilization Review Board was in session at III MAF Headquarters. The smoke and fire could be seen across Da Nang at a distance that I would guess to be 10 to 12 kilometers. There were two significant explosions which were far greater than the rest. Both produced fire balls similar to small nuclear explosions, complete with shock waves which could be seen moving out in a circular pattern through the smoke and haze. The first of these two exceptional blasts hit III MAF Headquarters at approximately 1430. The meeting was in a converted single story warehouse with a solid wall toward ASP-1. The seaward side of the building had two large warehouse-type doors which closed together and had steel drop-bar closures into the concrete floor. The reverse, counter pressure actually pushed the doors in, breaking the concrete around the holes that the bars were in . . . . The second similar blast took place around 2200 and was not as strong as the first, but the shock wave did hit III MAF Headquarters.[6]

Major destruction occurred in the ammunition supply point, the fuel storage area, and a nearby Air Force bomb dump, while extensive damage caused by the blast and flying debris was done to FLC facilities between the ASP and the airfield. Continuous secondary explosions forced the temporary closing of the Da Nang Airbase to all but emergency traffic; normal airfield operations were resumed within 18 hours. Casualties were limited to one American and one Vietnamese killed and 65 wounded, while 1,500 Vietnamese were left homeless when the nearby village of Hoa Phat was destroyed by the fire and explosions.

Approximately 38,000 short tons of ground and air munitions, valued in excess of 75 million dollars, were destroyed; an amount equal to 40 percent of the total Marine munitions on hand at FLC facilities throughout I Corps.[7] Nevertheless, the destruction of the supply point caused no interruption in ordnance support for continuing combat operations. As the commanding officer of the 11th Marines, Colonel Samuel A. Hannah, noted:

> When the ammo dump started going, we put a little restriction on our shooting to slow it down a little bit and keep it down because we weren't sure exactly the extent of it. But within a day or so, this cleared up and we got a general feeling about what the ammo supply was and we were able to go

Department of Defense Photo (USMC) A422546

The large mushroom cloud produced by exploding ordnance stored at Force Logistic Command Ammunition Supply Point 1 was visible for several miles. While close to half of III MAF's ammunition was destroyed, Marines experienced no interruption in support.

> back to what might be called a normal rate of fire . . . . From a shooting standpoint, no great problems with it. There may have been one or two cases where we ran a little short of a certain type of fuze, but it was of no great consequence to the actual support.[8]

Immediate action was taken on the 28th when FLC shifted munitions storage operations to nearby ASP-2 and ordered replenishment stocks from storage areas in the Western Pacific and the United States. Although ground stocks for four months remained below the 45-day level authorized, and the ASP was idle for six while repairs were made, there was no degradation in ordnance support for continuing III MAF operations.[9]

Naval Support Activity, Da Nang

The United States military logistic system in I Corps was composed of three elements, of which Force Logistic Command was one component. For most standard supply items and for a wide variety of support services, III MAF depended upon Naval Support Activity (NSA), Da Nang, headquartered at the "White Elephant" within the city until 15 August, and then at the China Beach Public Works Compound ("Wooden Elephant") in East Da Nang.

Commanded by Rear Admiral Emmett P. Bonner, who was replaced in December by Rear Admiral Robert E. Adamson, Jr., Naval Support Activity, Da Nang consisted of close to 11,000 United States Navy officers and enlisted men and a civilian work force of over 6,700 South Vietnamese. An equal number of Americans, Vietnamese, and other Asians worked for the activity's private contractors. Established in late July 1965 to support the initial elements of III MAF, NSA Da Nang was under the immediate operational control of Commander, United States Naval Forces, Vietnam, while overall command was exercised by Commander in Chief, Pacific Fleet through Commander, Service Force, Pacific Fleet.[10]

The Naval Support Activity operated the port of Da Nang as well as transshipment points at Cua Viet/Dong Ha and Hue/Tan My in northern I Corps and Sa Huynh and Chu Lai in the southern provinces. With a fleet of over 350 ships and other small craft, vast warehouses, storage lots, and tank farms, NSA

handled, stored, and issued all incoming and outgoing military cargo. NSA's public works department provided electricity, water, and ice to American cantonments, while its civilian contractors maintained over 700 miles of roads and the attending construction equipment. In addition, the activity managed Navy and Marine real estate holdings and operated the 720-bed naval hospital at Da Nang.[11]

Army units operating within I Corps Tactical Zone received logistical support from the U.S. Army Support Command, Da Nang, an organization which performed functions similar to those of Force Logistic Command. Under the operational control of the Commander, 1st Logistical Command, the Da Nang Support Command, by 1969, had grown to a strength of about 7,500 supply and transportation troops. The command included a field depot at Da Nang and two general support groups, the 26th, located at Phu Bai, and the 80th at Da Nang, which supported Army units in northern and southern I Corps.[12]

At its peak in 1969, the Navy by way of the Naval Support Activity, Da Nang, provided 98 percent of the commonly used supplies, construction materials, and service support for the 190,000 troops in I Corps. Marines and Army troops, through the Force Logistic Command and U.S. Army Support Command, distributed supplies drawn from the NSA to their own units, and procured, stored, and issued their own ammunition and those other supplies unique to the particular service. In addition to supporting the 1st and 3d Marine Divisions and 1st Marine Aircraft Wing, FLC supported the 2d ROKMC Brigade, while Army Support Command maintained petroleum pipelines used by all Services, as well as providing mortuary assistance and property disposal. With the redeployment of the 3d Marine Division and the relocation of FLSG-Bravo to Da Nang in November, the Army Support Command assumed the function of furnishing supplies and services for the remaining Marine elements in northern I Corps.[13]

With the implementation of plans for the withdrawal of Marine units from I Corps, the Army would assume a greater role in supporting the remaining forces. As redeployment planning began, Vice Admiral Elmo R. Zumwalt, Commander of U.S. Naval Forces, Vietnam, proposed that the Army, which already furnished support for all United States forces outside of I Corps, assume the missions of Naval Support Activity, Da Nang. With a proviso that the Navy would end its support only in conjunction with the redeployment of Marine units, Zumwalt secured approval for his proposal from the Chief of Naval Operations and the Commander in Chief, Pacific Fleet. Also endorsing his plan, General Abrams, in late May 1969, ordered U.S. Army, Republic of Vietnam to make a study of the cost and manpower requirements of an Army logistics takeover in I Corps.[14]

Marine Corps Historical Collection

A Force Logistic Command forklift unloads artillery ammunition from a Navy LST. The Naval Support Activity, Da Nang, provided Marines most standard supply items and a wide variety of support services.

When informed of these preliminary steps in early June, Lieutenant General Nickerson, III MAF commander, protested the move. Expressing complete satisfaction with Navy support, he urged that the present logistical structure in I Corps not be dismantled at a time when major redeployments and realignment of allied forces were to take place and the threat of enemy action remained high.[15] General Marine reaction to the possible loss of Navy support was one of apprehension. As Major General Simlik later recalled:

"We had great misgivings of losing Navy support. Naval Support Activity, Da Nang (NSA) had done such a marvelous job for a number of years and had given us such magnificent support. All of a sudden

with NSA leaving we had a sinking feeling—almost one of despair."[16]

The Navy-Marine Corps team had worked well and few were willing to see the formal and informal relationship dissolved. According to General Simlik:

> It wasn't as simple as writing a contract for janitorial services . . . . NSA had been supporting the Marines in Vietnam for 5 years or so. Both NSA and the Marines knew the major areas of support. But there were so many areas that were covered by the Marine gunnery sergeant-Navy chief routine. For example, . . . a gunnery sergeant may have gotten a chief to take care of certain functions—to render certain support, small that it may be—by seeing that he got a couple bottles of booze or a case of beer at the right time. It was an informal, unwritten agreement of course, passed on from gunnery sergeant to gunnery sergeant, and chief to chief. Undoubtedly, there were a number of such agreements—difficult to discover, impossible to reduce to written form for a formal contract. And we were apprehensive, a psychotic apprehensiveness, that the Army would not respond if the written contract didn't include it.[17]

The greatest area of concern was the possible loss of the naval hospital. As Lieutenant General Leo J. Dulacki, then a brigadier general and III MAF G-3, later commented:

> When the redeployment plans were first drawn up, it was envisioned that substantial Marine forces would be redeployed out of country in the very first phases. Consistent with those plans, the Navy developed a plan for the early redeployment of the Naval Support Activity (Da Nang) concurrent with the redeployment of the Marines. However, the original plan was modified, as a result of which, the Marines forces would be redeployed on a slower and more extended time schedule. Nevertheless, the Navy determined that it would continue with its original plans regardless of any changes in the timing of the Marine redeployment. Suddenly we were faced with the prospect of some 40,000 Marines continuing operations in ICTZ but without naval support which had been such an integral part of the overall campaign in ICTZ. Of particular concern was the closure of the Naval Hospital (Da Nang) since it was prudent to assume that the enemy might attempt to exploit reduction of forces in ICTZ by launching increased offensive operations; if the latter eventually occurred, the availability of the hospital was essential. Formal representations were made to Admiral Zumwalt, Commander of Naval Forces, Vietnam, and Admiral Adamson, the Commander Naval Support Activity (Da Nang) to no avail; the Navy intended to proceed with its original redeployment plans. The situation was also discussed with General Abrams, COMUSMACV; General Abrams, as he stated, "preferred not to get involved in a 'Navy-Marine Corps controversy' "; he then gave his personal assurances that, if the enemy embarked on large-scale offensive operations, at the outset, a hospital ship would be made available off the coast of ICTZ, and if necessary, a MASH would be moved into ICTZ to render medical support to the Marines.

"It was my understanding," General Dulacki continued, "that CG, FMFPac made a similar representation to CINCPacFlt in Hawaii for the continuation of hospital support in Da Nang, but also to no avail."[18]

Despite Marine protests, planning for the Army takeover of the activity's support functions continued. In September 1969, MACV established a joint Army-Navy planning group, at Admiral Zumwalt's suggestion, to work out the practical details of the gradual transfer to the Army as the Marines pulled out. The group, chaired by the Army and located at Da Nang, included representatives of MACV, USARV, NavForV, III MAF, 1st Logistical Command, NSA Da Nang, Army Support Command Da Nang, and Force Logistic Command. Divided into fuctional subcommittees, MACV tasked the group with determining requirements for personnel and equipment, costs, and defining problems and proposing solutions.

With Marine redeployments and joint studies underway, General Abrams, in mid-November, instructed the Army and Navy to develop a support turnover schedule for formal presentation to MACV by 1 January 1970. Noting that particular functions not directly required for the support of III MAF could be transferred earlier, Abrams directed that the final assumption of common support by the Army would follow the complete removal of Marine combat units.

Discussions dragged on past the 1 January MACV deadline with Zumwalt pressing for early Army takeover of ports and activities not needed by Marines in northern I Corps, and indicating that once the Army assumed the common support mission, NSA Da Nang would be replaced by a smaller naval support facility, whose primary concern would be small-craft maintenance and assisting the South Vietnamese Navy. At the same time, III MAF stressed the need for the slow and deliberate transfer of functions to the Army, while reemphasizing that Navy support continue until all Marine combat forces were withdrawn from Vietnam. USARV sought the loan or outright transfer of Navy facilities and equipment to supplement Army logistical resources in I Corps, while all the Service components sought to minimize the cost of supporting the remaining forces.

On 21 January, General Abrams set 1 July 1970 as the date for final turnover of common service support to the Army. The changeover would take place even if Marine combat units remained. Preliminary turnovers of equipment and minor facilities in northern I Corps began in November 1969, following the

redeployment of the 3d Marine Division, but not until February 1970 did the first of a series of major transfers occur. On the 15th, Naval Support Activity, Da Nang disbanded its detachments at Sa Huynh and Cua Viet and transferred the port facilities to the U.S. Army Support Command. Additional transfers were made during March, April, and May, and on 30 June 1970 NSA Da Nang was disestablished. The following day U.S. Naval Support Facility, Da Nang came into being.[19]

Engineer Support

At the beginning of 1969, five Marine combat engineer battalions were deployed in I Corps. The 1st Engineer Battalion, organic engineer element of the 1st Marine Division, reinforced by a platoon of Company A, 3d Engineer Battalion, and a platoon of Company A, 5th Engineer Battalion, performed light construction throughout the division's area of responsibility, maintained water points, swept roads of mines, and conducted the division's Demolitions, Land Mine Warfare, and Viet Cong Boobytrap School. The 3d Engineer Battalion, organic to the 3d Marine Division, performed similar functions in Quang Tri Province. Assisting the 3d Engineer Battalion was the 11th Engineer Battalion, reinforced by the 3d Bridge Company. Of III MAF's two force engineer battalions, the 7th, with attached 1st Bridge Company, worked almost exclusively for the 1st Marine Division, performing heavy construction in the Da Nang area, maintaining and improving roads, and conducting sweeps in search of enemy mines. The 9th Engineer Battalion, with its command post and three companies at Chu Lai and part of the fourth at Tam Ky, concentrated its main effort on maintaining and upgrading Route 1 between Chu Lai and the Song Cau Lau. The battalion also provided secondary road maintenance and other tactical support to the Americal Division. The battalions, in addition to normal combat tasks, carried out an extensive civic action program, that included repair of local school and government buildings, irrigation canals, and plowing acres of rice paddies.

In addition to the five Marine engineer units, naval construction forces (Seabees) of the 3d Naval Construction Brigade and the four-battalion U.S. Army 45th Engineer Group operated in I Corps at the beginning of 1969.[20] The Seabees rotated battalions in and out of I Corps throughout the year and had 10 battalions at the beginning of 1969, 12 at midyear, and 5 at the end of the year. Like the 1st and 3d Marine Divisions, the Americal and 101st Airborne Divisions, and the 1st Brigade, 5th Infantry Division, had organic engineers. The Air Force relied on a heavy repair squadron, located at the Da Nang Airbase.[21]

With Marine, Army, Navy, and the public works division of NSA Da Nang involved in large and varied construction projects, the lines of responsibility among the engineer elements, specifically between Marine direct and general support battalions and the Seabees, became "blurred," noted Colonel Nicholas A. Canzona, G-4 of the 1st Marine Division. "I never saw so many engineers in all my life working in a given area," Canzona continued, "and I must admit that I don't think I've ever seen so much attendant confusion as to who is supposed to do what and why and who is in charge of this and that. And this can get somewhat exasperating at times."[22]

Redeployments during the last months of 1969 reduced the III MAF engineer force by two Marine battalions: the 3d Marine Division's 3d Engineer Battalion and the 11th Engineer Battalion, a force unit. Among the principal contributions of the battalions in northern I Corps was development and perfection of the fire support base concept. With the increased dependence on mobile operations to exert maximum pressure on enemy formations, there occurred a requirement to provide close artillery support for combat units deployed beyond the range of guns at existing support bases. The solution was to establish small fortified positions on defensible terrain, large enough to accommodate the required artillery and service units supporting the maneuver elements. The construction of these sites proved to be a major engineering task, requiring first a detailed reconnaissance and then the formation of a task-organized engineer unit. Engineer equipment and troop requirements varied according to the nature of the terrain and the amount of clearing necessary following the supporting arms preparations.

The general sequence of engineer buildup on the selected fire support base site began with a small reconnaissance team accompanying the security force and helicopter support team. The contingent grew quickly as engineers began initial work with hand and power tools, and demolitions, to carve out a landing zone capable of receiving heavy equipment, such as tractors and backhoes, for the construction of gun pits, ammunition storage facilities, a helicopter pad, a fire direction center, and other defensive positions.

The primary piece of engineer equipment used in the construction of a fire support base was the Case

450 bulldozer, a helicopter-transportable tractor procured specifically for this task. Delivered to the site in two lifts, the tractor proved invaluable in reducing both manual labor and the time required to complete the base. In addition, the tractor was used to rapidly unearth enemy supply caches.

A substantial portion of the efforts of all five Marine engineer battalions, and Army and Navy engineers as well, was expended in upgrading major lines of communication throughout I Corps. Their effort was part of the general MACV bridge and LOC restoration program which sought to create a passable road network throughout South Vietnam, both to facilitate tactical maneuver and promote economic development. The tactical advantages were evident. Not only could troops be moved more quickly, but the construction of wide, modern paved roads forced the enemy to place his mines on the shoulders or on unimproved roads. This practically eliminated mining incidents on primary roads, reducing the daily minesweeping burden of III MAF engineer units and freeing them for other tasks. Road improvements undertaken during the year cut travel time between Da Nang and Hue from six hours to two, and between Da Nang and Dong Ha to four and one-half hours. An ancillary effect was to decrease vehicle maintenance requirements. Concentrating on Routes 1, 4, and 9, Marine, Navy, and Army engineer forces had completed the upgrading of over 370 kilometers and were at work on the remaining 100 kilometers by year's end. In addition, they continued the task of bridge construction and repair, which, during a typical month, involved work on 15 spans.

Among the major engineering accomplishments during the year was the opening of the new Liberty Bridge by naval construction forces to traffic on 30 March, thereby restoring a permanent overland route into the An Hoa basin. Replacing the original 2,000-foot bridge washed away by monsoon floods in late 1967, the new 825-foot, timber-pile-supported, concrete-decked bridge not only cut travel time between Da Nang and An Hoa by half, but increased the capacity of allied forces in support of tactical and pacification operations and assisted local Vietnamese in the economic development of the industrial area. In July, Marine engineers reopened the Song Tra Bong bridge on Route 1, following its partial destruction by enemy sappers, which again provided a vital link between Chu Lai and the southern extremes of the corps tactical zone. During the same month, elements of the 1st Engineer Battalion completed the upgrading of a portion of Route 4, permitting increased access to western Quang Nam Province.

In addition to road construction and maintenance, all Marine engineer battalions regularly swept assigned segments of highway for enemy mines. Sweep teams not only employed electric mine detectors, but also purchased large quantities of ordnance from Viet-

Once cleared of trees and vegetation, a mountaintop becomes a fire support base as members of the 1st Engineer Battalion take preliminary steps to create artillery positions.

Department of Defense Photo (USMC) A371975

Marine Corps Historical Collection

Marines of the 9th Engineer Battalion apply a fresh layer of asphalt to Route 1 as a part of the continuing country-wide effort to upgrade South Vietnam's primary road network.

namese civilians under the Voluntary Informant Program. During May 1969, for example, teams from the 1st Engineer Battalion swept over 1,800 kilometers of road, detecting and destroying 91 mines and booby-traps. In the month they also purchased 2,717 ordnance items, ranging from small arms ammunition to 105mm artillery rounds.[23]

While construction efforts were directed, in the main, toward upgrading and maintaining lines of communication, engineers still faced endless requirements for cantonment and fire base construction, maintenance, and rehabilitation. Except for the six-month reconstruction project required to return ASP-1 and other nearby damaged facilities to full operation following the 27 April fire, Marine, Navy, and Army combat engineers each month built or improved bunkers, SEA huts, showers, watch towers, and mount-out boxes; provided potable water and electricity; and laid barbed wire entanglements around base perimeters. For the 1st Medical Battalion, they constructed a 200-bed hospital, dental clinic, and support facilities. For FLC, engineers completed a new maintenance complex, consisting of 25 Butler buildings with attendant support hardware. And for the 1st MAW, they constructed over 100 steel and concrete "Wonder Arch" shelters at Da Nang, Chu Lai, and Marble Mountain air facilities. Introduced during 1969 to provide maximum possible protection of aircraft from high-trajectory weapons, such as rockets and mortars, and to reduce the danger of a fire spreading from one aircraft to others, each 48-by-70 foot shelter was constructed of bolted steel sections covered with 12 inches of high-strength concrete.[24]

Engineers also constructed facilities where the Marine infantrymen could get away from the stress of combat, among them "Stack Arms," the 1st Marine Division's in-country rest center located in the 3d Amphibian Tractor Battalion cantonment just south of the Marble Mountain Air Facility. While "this program did not win the war," as Lieutenant General Ormond R. Simpson, then commanding general of the division, later noted, "it was damn important to the 'man with the rifle.' " Infantry companies were brought to the center by helicopter. During their 48-hour stay, Marines could, as General Simpson noted, take "all the showers they wanted, were supplied with health and

comfort items free, got new clothing and 782 gear, if needed, swam in the sea, had beer and soft drinks, wrote letters, called home . . . got haircuts, watched movies, slept, ate the best hot food we could beg, borrow, or steal, literally, and had absolutely NO DUTY!"[25]

With the withdrawal of the 3rd Marine Division from Vietnam, Marine engineers from the 3d and 11th Battalions ceased all construction projects and began demolition of a number of installations they earlier had built. Before redeploying on 29 November, elements of the 11th Engineer Battalion completed the destruction of Vandegrift and Elliott Combat Bases and assisted the 3d Engineer Battalion in policing up Cua Viet and Dong Ha Combat Bases, prior to their transfer to ARVN and other allied units remaining in Quang Tri Province.[26]

During the year, the enemy relied, as he had done throughout the earlier years of the war, on networks of caves, tunnels, and fortifications. To destroy these fighting positions, as well as remove foliage used as concealment, Marine engineers engaged in "land-clearing" operations—the systematic destruction of selected portions of the countryside. In addition to employing organic engineer elements, III MAF organized a number of provisional land-clearing units, consisting of men and equipment from Marine force engineer battalions and the Army's 45th Engineer Group, for specific purposes.

General land-clearing operations followed an established pattern. Vietnamese provincial authorities would designate the target area, and the military unit operating within the area would furnish a company-size security force for the engineer effort. Land-clearing bulldozers would then begin scraping the assigned area section by section, clearing trees and brush and simultaneously demolishing enemy trenchlines, bunkers, and tunnels, and detonating boobytraps. Ordnance not destroyed by the initial engineering effort, as well as impenetrable tunnels and bunkers, would be demolished separately.

During 1969, III MAF land-clearing efforts concentrated on two areas—Leatherneck Square in Quang Tri Province and Go Noi Island, southeast of Da Nang. Leatherneck Square, a 450,000 square meter corridor between Gio Linh and Con Thien, bounded by Route 9 on the south, was covered by scrub growth, criss-crossed by hedgerows, and dotted by numerous enemy harbor and fighting positions. By midyear, Marines of the 11th Engineer Battalion had reduced the area to a dusty, hot piece of ground that would eventually be reclaimed by farming. To the south, in Quang Nam Province, portions of Dodge City and all of Go Noi Island, a long-time enemy stronghold, also were denuded. During 1st Marine Division Operation Pipestone Canyon, elements of the 1st, 7th, and 9th Engineer Battalions, in conjunction with Army land-clearing forces, leveled more than 8,000 acres, destroying an extensive enemy command post, 97 tunnels, 2,193 bunkers, 325 fighting holes, and 3,246 meters of trenchline.[27] As Lieutenant General Simpson noted: "We knew it was a staging point. We did clear it; there wasn't anything left." The engineers "went in there with . . . plows and actually plowed the whole damned thing up; every square foot of it."[28]

Despite restraints in manpower and materials, Marine combat engineers, working in conjunction with their Army and Navy teammates, continued to provide combat and combat service support to maneuver elements deployed throughout I Corps. Their accomplishments were many and varied, ranging from water supply to the time-consuming and hazardous task of mine sweeping. Throughout it all, Marine combat engineers found the time to assist a Vietnamese village in building a new school or repairing an antiquated water system.

Motor Transport

III MAF possessed six motor transport units at the

A 3d Engineer Battalion sweep team checks a road for mines ahead of an advancing tank. Daily road sweeps consumed a portion of the Marine engineering effort.
Department of Defense Photo (USMC) A192390

Marine Corps Historical Collection

The men of 2d Battalion, 5th Marines line up for the daily barbecue at the 1st Marine Division's in-country rest center, "Stack Arms," at China Beach south of Da Nang.

beginning of 1969. The 1st Motor Transport Battalion, reinforced in October by Company A, 5th Motor Transport Battalion, 5th Marine Division, was under the operational control of the 1st Marine Division, as was the 11th Motor Transport Battalion, a force unit. Supporting the 3d Marine Division was the 3d Motor Transport Battalion, reinforced until 23 March by a platoon of Company A, 5th Motor Transport Battalion, and the 9th Motor Transport Battalion. Force Logistic Command had operational control of the large truck company of Headquarters and Service Battalion, 1st Force Service Regiment, and the 7th Motor Transport Battalion, which supported FLSG-Bravo at Quang Tri. Both of these units supported Force Logistic Command, as well as other III MAF elements.

The motor transport battalions organic to each division consisted of a Headquarters and Service Company and three truck companies. Each truck company was equipped with thirty 2.5-ton trucks. The force transport units, 7th, 9th, and 11th, whose mission was to reinforce other elements of the MAF, each consisted of a H&S Company, three truck companies, and transportation company. The transportation company was authorized 30 tractors and 47 trailers of various sizes, while each truck company had thirty-one 5-ton trucks. The Truck Company, Force Logistic Command possessed a variety of specialized vehicles as well as a large fleet of 2.5- and 5-ton trucks.

Throughout 1969, III MAF still relied heavily on trucks to move cargo and personnel despite the ever-increasing use of helicopters. Major combat bases and the two logistic support units received most of their supplies by "Rough Rider" truck convoys. During 1969, Marine transport battalions covered 6,801,188 miles, carrying 2,416,802 passengers and 970,092 tons of freight.

Although improved roads permitted trucks to reach most major Marine positions in both western Quang Tri and Quang Nam Provinces, Marine truckers still had to contend with ambushes and mines. "On several occasions," noted Lieutenant Colonel Laurier J. Tremblay, 9th Motor Transport Battalion's commanding officer, "these convoys had to fight their way through well-established ambushes and as a result sustained many casualties in troops and equipment. During the early months of 1969, Route 9 was considered a

'Gauntlet' that our convoys were required to run through almost daily in order to provide urgently needed supplies and munitions to our combat troops operating out of Vandegrift Combat Base." Although a number of protective modifications were made to trucks, the simplest being the lining of floor boards with filled sandbags, casualties continued to mount.[29]

The year witnessed the introduction of two new vehicles into III MAF's motor transport inventory, the M116E1 marginal terrain vehicle and the M733, its armored counterpart. Designed to replace the M76 Otter of World War II vintage, the M116E1 was placed into service in April by the 11th Motor Transport Battalion to support the 1st Marine Division in the low and often inundated areas south of Da Nang. Virtually unaffected by weather, this versatile vehicle had the effect of reducing reliance on helicopter support. The armored version of the vehicle was placed into service in August as a convoy escort.[30]

The 3d and 9th Motor Transport Battalions were among the last units to redeploy with the 3d Marine Division. Needed to move the redeploying combat units and their equipment to coastal ports for embarkation, both units left Vietnam in late November. The 7th Motor Transport Battalion remained behind to assist in the relocation of Marine personnel and equipment from northern I Corps to the Da Nang area, to which it moved on 2 December.

Medical Support

Medical service support available to III MAF at the beginning of 1969, included the 1st Medical Battalion, reinforced in October by Company A, 5th Medical Battalion, which maintained the 240-bed 1st Marine Division Hospital. A similar size hospital was maintained by the 3d Medical Battalion for the 3d Marine Division. In addition the 1st Hospital Company, a force unit, operated a 100-bed treatment facility at Da Nang. Approximately 250 Navy medical officers and 2,700 hospital corpsmen were attached to the divisions, wing, FLC, and other combat support units throughout I Corps. Two Navy hospital ships, the *Sanctuary* (AH 17) and the *Repose* (AH 16), each with a capacity of 560 beds, which could be increased to 750 during an emergency, were stationed off I Corps to treat the more seriously ill and wounded. At Da Nang, the 720-bed Naval Support Activity Hospital provided most services available at a general hospital in the United States. Also available were the facilities of the

A 7th Motor Transport Battalion "Rough Rider" convoy, originating at Quang Tri, pauses at Phu Bai south of Hue before proceeding over Hai Van Pass and into Da Nang.

Department of Defense Photo (USMC) A800437

Department of Defense Photo (USMC) A800568

A wounded Marine is hoisted on board a hovering Marine CH-46 helicopter. Rapid evacuation and the use of innovative techniques saved valuable time, increasing the survival rate among the seriously wounded.

95th U.S. Army Evacuation Hospital near Da Nang.

Although the medical evacuation chain and policy remained unchanged throughout 1969, improvements to shorten the time between injury and treatment continued. Hot pads specifically tailored to the dedicated two-transport, two-gunship helicopter medical evacuation package were established. This not only had the effect of reducing scramble time, but also promoted "dialogue among crews of the package, before, between, and after missions which is an important factor in teamwork." In addition, specific ultra-high-frequency (UHF) channels were dedicated solely for medical evacuation communications. During the year a joint medical regulating center was established by placing a Navy and Marine regulating section with its Army counterpart at the 95th Evacuation Hospital. After helicopters picked up casualties, the flight corpsman, or a member of the helicopter crew in the absence of the corpsman, would contact the regulating center on the dedicated radio frequency and report the number of patients and the type and severity of the wounds. A center regulator would then check the status board indicating the facilities, specialties, and space available at each hospital, and direct the helicopter to the appropriate destination for treatment.[31] Specially designed litters and forest penetrators were also introduced to aid in helicopter rescue operations in jungle terrain or in combat areas too dangerous for a helicopter to land.

"The swift and orderly chain of evacuation is a many faceted thing," noted Colonel Eugene R. Brady, former commander of HMM-364, "many procedures have been adopted to shorten and strengthen the chain. The dedicated four plane package, the hot pad, the dedicated frequency . . . are but a few links in the chain. There are many other links, some small, some large. Non-essential links have been discarded." Although the process may have been evolutionary, "the dedication, motivation, and courage of those involved in tactical air medical evacuation will," Colonel Brady continued, "never change."[32]

Admissions to hospitals serving III MAF declined over the year, reflecting not only redeployments but also the slackening of combat. Of the 22,003 patients treated during 1969, 26 percent were admitted for wounds received as a direct result of combat. Illnesses, such as fevers of undetermined origin or malaria, like the year before, accounted for the majority of admissions (61 percent), while the remaining 13 percent were as a result of nonbattle injuries. Of the Marines admitted to III MAF medical facilities, 11,355 were evacuated to out-of-country installations through the Air Force's 22d Casualty Staging Facility at Da Nang for specialized treatment.

Like other support organizations, III MAF medical support facilities experienced a reduction during the latter half of 1969 as a result of redeployments. The 3d Medical Battalion, which supported the 3d Division, left Vietnam on 24 November. However, those Marine units remaining in Quang Tri Province were not without medical support. Casualties were either

transported to Company B, 75th Support Battalion, 1st Brigade, 5th Infantry Division, or to Army or Marine facilities further south.

Communications

The corps-wide communications system which allowed Commanding General, III MAF to administer, coordinate, and direct the various commands under his control was installed, maintained, and operated by the 5th and 7th Communication Battalions.* In addition to the common functions associated with communications, installation of telephone poles, cable construction and splicing, maintenance of switching apparatus, and manning of radio relay sites, members of the battalions staffed the various Marine communications operations centers located throughout I Corps.

Centered at Da Nang, the corps-wide communications system provided III MAF with various capabilities: teletype and data, radio, and telephone operations. The III MAF teletype and data capability rested mainly with the administrative communications center at Camp Horn, although similar operations existed at the divisions, wing, and Force Logistics Command, and on down to the regimental and in some instances, battalion level. The center, staffed by officers and men of the Communications Company, 5th Communication Battalion, processed and distributed over 2,500 messages generated daily by dedicated point-to-point teletype circuits to all major subordinate units. In addition, the center maintained other dedicated circuits which provided entry into four world-wide teletype systems; to FMFPac in Hawaii, to the Navy's Naval Command Operational network in the Philippines, to CinCPac's Joint Pacific Teletype Network, and to the AUTODIN telephone network via teletype.

Instead of maintaining control over subordinate elements by voice radio communications, III MAF relied on the various teletype networks. The circuits to major units were all secure point-to-point utilizing encryption devices. In addition, the center maintained secure circuit links with the Korean Brigade at Hoi An, Army Special Forces operating in I Corps, ARVN I Corps Headquarters, and a special radio teletype net which connected major subordinate commands as well as the special landing forces and Navy ships providing gunfire support. Lastly, teletype circuits were maintained to MACV and the Air Force's Task Force Alpha in Thailand.

Marine Corps Historical Collection

PFC Richard J. Wellnitz, left, of the 7th Communications Battalion, checks out the telephone line after ICpl Kenneth D. Ellis completes a wire patch.

While secure communications by radio was kept to a minimum, it was maintained as a backup to the teletype systems. III MAF did possess an unsecure command radio net with the Da Nang harbor patrol, the Navy Hospital, and hospital ships in the vicinity, but this like other unsecure radio nets was used sparingly.

The initial telephone system within I Corps Tactical Zone was tactically oriented, but as III MAF grew, larger and more complex fixed equipment was added. The final result was a combination of the tactical system, utilizing automatic dial telephone switching equipment at the division and force level, and the Defense Communication System operating fixed dial central offices. In the spring of 1969, the Air Force, under the direction of the Defense Communications Agency, inaugurated the Da Nang tandem switching center which provided intra-corps switching between all five dial central offices, stretching from Phu Bai to Chu Lai, as well as providing access to other corps tactical zones and Thailand. The system terminated in the AUTOVON switching center in Saigon, providing all users with direct dial capability throughout the world.

*On 15 April 1969, the 5th and 7th Communication Battalions were combined under the command of Lieutenant Colonel Charles L. Brady. Both battalions maintained their separate identities, but were controlled by one commanding officer and his staff.

Logistics of Keystone Eagle and Keystone Cardinal

The redeployment of men and equipment of the 3d Marine Division posed one of the most complex logistic problems facing III MAF during the latter half of 1969. Units scheduled to be redeployed did not simply cease operations, pack up, and leave Vietnam; instead, with each withdrawal, the selected units would disengage from continuing operations. Once extricated, the departing units would exchange, if required, most of their personnel and equipment with other organizations still in combat before embarking for destinations in the Pacific or the United States. The movement was not all in one direction, for normal rotation of personnel and replacement of equipment had to continue. This flow had to be stringently regulated so as to leave III MAF at the prescribed personnel strength and Force Logistic Command with manageable materiel levels at the completion of each redeployment cycle.

In consultation with MACV, the White House and Department of Defense determined the number of troops to be withdrawn and timetable for each redeployment. MACV then apportioned the troops to be removed among the Services and requested from each component commander a list of specific units to be redeployed. CinCPac and the Joint Chiefs of Staff in turn reviewed and approved the list, determining the destination of each redeployed unit. Based on the transportation requirements provided by the separate Services, CinCPac would then prepare a schedule and timetable for the sea and air movements of men and equipment.[33]

Coordinating redeployment planning and execution for Marine Corps units was FMFPac, headquartered at Camp Smith, Hawaii. Under the command of Lieutenant General Henry W. Buse, Jr., a Naval Academy graduate and recipient of the Silver Star in World War II, FMFPac, in conjunction with III MAF, proposed specific Marine units to be redeployed. Following general guidelines established by Headquarters Marine Corps, FMFPac coordinated the movement of men and equipment from South Vietnam to other Marine Corps bases in the Pacific and the continental United States. "FMFPac was the prime coordinator," according to Major General Wilbur F. Simlik, then III MAF G-4. "FMFPac arranged the shipping—which was the controlling factor, of course. FMFPac told us which regiment, which element would be retrograded when and where."[34]

On redeployment matters, the relationship between FMFPac and III MAF was, as General Simlik later remarked, "constant and close, and personal." Buse or members of his staff made frequent visits to Da Nang to observe, consult, and to provide guidance. At the same time, a constant and friendly dialogue was maintained with CinCPac, Admiral John S. McCain, Jr., and his staff. For its part, III MAF regularly sent representatives to FMFPac and CinCPac planning and movement conferences, in addition to coordinating with MACV, the other Services, and the South Vietnamese on such matters as area responsibility, base transfers, and equipment turnovers.[35]

Redeployment plans were drafted in terms of units to be withdrawn and the total number of troops to be deducted from the authorized strength of each Service within Vietnam. For the Marine Corps, FMFPac and III MAF determined which unit, and further, which individual Marine would be removed in order to bring III MAF down to the required strength. In deciding who should redeploy and who should remain, tour equity would overshadow all other considerations. Those Marines with the fewest months remaining in their current 12-month tour would normally be selected for redeployment.

As with all other combat and support units in Vietnam, Marine units were made up of personnel with varied end-of-tour dates, and thus no unit could simply be withdrawn with its complete complement of existing personnel. Instead, for each unit selected for redeployment to Okinawa or continental United States, a process nicknamed "mixmaster" was instituted. Mixmaster involved the transfer of noneligible Marines to units remaining in Vietnam and the filling of the redeploying unit's ranks with eligible men from other Marine commands. In Keystones Eagle and Cardinal, the only major unit to undergo extensive "mixmastering" was the 3d Marines. Those Marines of RLT-3 who had served a minimum of seven months were considered eligible for return to Camp Pendleton with the unit or to normal and accelerated rotation drafts, while the remainder were transferred to other units in Vietnam, Okinawa, and Japan. Units remaining in Vietnam in turn provided a number of Marines to fill the void. Commands bound for Okinawa and Japan underwent less "mixmastering," and these units embarked with a majority of existing personnel, including those otherwise ineligible, in order to maintain the unit's integrity and combat readiness.

In implementing this complex reshuffling of manpower, each redeployment was broken down into the

number of Marines of each rank, grade, and skill to be removed either by transfer to a withdrawing organization or by normal rotation. FMFPac, which held broad transfer and reassignment authority, issued strength reduction requirements and assisted, where necessary, in their implementation. Through its G-1 section, each major III MAF subordinate command then selected those Marines eligible for redeployment, arranged for the transfers, and prepared and issued the necessary orders. FMFPac, in addition, periodically adjusted the flow of replacements to III MAF to assure compliance with stated manpower ceilings, and directed special transfers of III MAF personnel to units on Okinawa or in Japan, not only to reduce numbers in Vietnam, but to rebuild other Western Pacific commands gutted during the war.

Redeploying units involved in Keystones Eagle and Cardinal began embarkation planning and preparation one to two months before their scheduled date of departure. While still conducting combat operations, equipment was inventoried and those supplies not immediately needed were disposed of or packed for shipment. Two to three weeks before embarkation, the units normally stood down and moved to secure cantonments, in the case of units of the 3d Marine Division, to Dong Ha Combat Base. There, battalions "mixmastered" their personnel, turned in supplies and excess equipment, and completed packing in preparation for shipment.

In the redeployments carried out during 1969, units leaving Vietnam carried with them their standard allowances of supplies and equipment. They, however, were to divest themselves of all rations, ammunition, fuel, and excess Southeast Asia equipment, and in the case of those units deploying to Okinawa and Japan, jungle fatigues.[36] The fatigues were one of the items that were not to be taken out of country. However, "the distribution of regular utilities had started," reported Colonel Raymond C. Damm, "but supplies were not sufficient to outfit the troops going to Japan and Okinawa. We requested authority to retain one set of jungle utilities for the movement . . . . FMFPac approved the request with the proviso that we gather them up as soon as we could issue regular utilities on Okinawa. The troops, much to the satisfaction of the troop leaders, embarked in jungle utilities."[37]

Excess equipment and supplies were turned over to Marine organizations still committed to combat or used to replenish the mount-out and mount-out augmentation (MO/MOA) stocks of the displacing forces.* Force Logistic Command acted as the conduit for redistributing these excess supplies, ensuring that those units departing Vietnam were fully prepared for expeditionary service.

All equipment and supplies accompanying units being redeployed to the United States had to meet the strict standards of cleanliness established by the United States Department of Agriculture and the Public Health Service to prevent the introduction of Asian insects and contagious diseases into the United States. Meeting these standards proved a problem, as General Simlik later noted:

> One of our most aggravating problems was that all of the gear, all of the equipment, all of the vehicles that we retrograded to the United States had to pass an agricultural inspection. So consequently they had to be spotless, absolutely spotless. And there were inspectors that were at the docks and aboard ships . . . . With vehicles that had been in combat only a few days before, this was a very difficult task to accomplish. We [therefore had to] set up all sorts of washing and scrub down stations by the docks.[38]

Packing boxes had to be constructed of termite-free wood, and all containers, vehicle bodies, and shipborne aircraft had to be sealed and treated with insecticides and rodent poisons before being loaded.

Of the total number of Marines redeploying during 1969, more than 50 percent left Vietnam by ship. The remainder departed on commercial aircraft chartered by the Military Airlift Command. In contrast, over 90 percent of all Marine equipment and cargo went by sea. Most of this cargo, as well as those surface-transported Marines, traveled by amphibious vessels provided by CinCPacFlt. During each redeployment, one of the two Seventh Fleet Special Landing Forces stood down temporarily to permit the vessels of its amphibious ready group to join the sealift. During Keystones Eagle and Cardinal, FLC squeezed 604,884 square feet of vehicle and 3,952,911 cubic feet of freight onto eastbound amphibious shipping. This

*Marine Corps units, as forces required to be constantly ready to be committed, maintain stocks of reserve supplies in order to support themselves during their initial period of deployment should supplies not be readily available. These stocks are divided into two 30-day blocks, the mount-out and mount-out augmentation. The mount-out block is held by the unit itself and moves with it when the unit is deployed. The augmentation block is carried by the division or regiment service support unit and is intended to supplement the primary block of supplies. Following initial Marine deployments to Vietnam in 1965, mount-out blocks were consumed and by early 1969 had to be rebuilt.

reliance on Navy ships instead of contracted vessels of the Military Sealift Transportation System (MSTS) saved the Marine Corps approximately $5,000,000 in commercial freight costs during the last half of 1969.

As the Marines left with their equipment and supplies, III MAF disposed of the vacated bases and camps. Although it possessed authority to demolish fire bases and combat positions, all major installations were first offered to the other United States Services and then to the South Vietnamese. If rejected then they were demolished. Real estate transfers, especially to South Vietnamese forces, was a complex, and often involved task. The secrecy of redeployment planning prevented III MAF and other commands from initiating discussions of base turnover with the South Vietnamese until late in each withdrawal cycle. Poorly organized and equipped to manage their own facilities, the Vietnamese made decisions slowly, and as General Simlik noted, demanded much paperwork:

> III MAF and XXIV Corps, of course, did their best to influence how the ARVN would deploy and utilize the fire bases which we occupied. But the Vietnamese were independent. There were certain fire bases which they wanted and others which they didn't, and they made up their mind with deliberate speed . . . . The fire bases and the camps which the ARVN and other units were to occupy had to be left in spotless condition—A-1; all the electrical wiring had to be exactly right, all the heads had to be functioning, all this sort of thing. And there was a formal agreement, a real estate agreement, which was to be signed by both parties and forwarded down to MACV affirming that all was in order. This almost required the services of a professional real estate negotiator. Each fire base posed its own problems, and negotiations were constant.[39]

The transfer of real estate, while at times frustrating, proved to be less of a problem than cleaning up the battlefield, as Lieutenant General William K. Jones, then Commanding General, 3d Marine Division, later noted:

> These [fire support bases] were built with huge 12 by 12 timbers. It was necessary, of course, that we completely dismantle them so that they could not be used by the enemy. This was a major problem—a major engineer problem. The ARVN were very interested in acquiring this material and I was given authority to give it to them. So they would come

The electronic equipment of the 1st Light Anti-Aircraft Missile Battalion heads out of Da Nang Harbor by ship bound for Marine Corps Base, Twentynine Palms, California.

Marine Corps Historical Collection

up and haul this bulk of material back to their camps. But, even so, why was this the big problem, was that we had to close up and police up an area that had been used by Marines for many, many years.

Everything had to be removed or buried:

We had to remove all mines. We didn't have to remove the barbed wire, but we had to take out all the mines or give the minefield maps to the ARVN if they wanted them left in; and there weren't very many that they wanted left in, actually. So, we had to clear all that. And then, just the debris, just the cans and boxes, . . . accumulated trash we had to bury . . . . We left it absolutely clean—everything. Everything was buried and there was no trash whatsoever.[40]

The logistical effort in moving a reinforced division, in addition to an appropriate share of supporting air units, from the war zone to Okinawa, Japan, and United States bases was accomplished successfully despite the problems which arose. The mistakes and the actions taken during the Keystones Eagle and Cardinal redeployments served as useful guidelines for units involved in the increasing number of redeployments the following year.