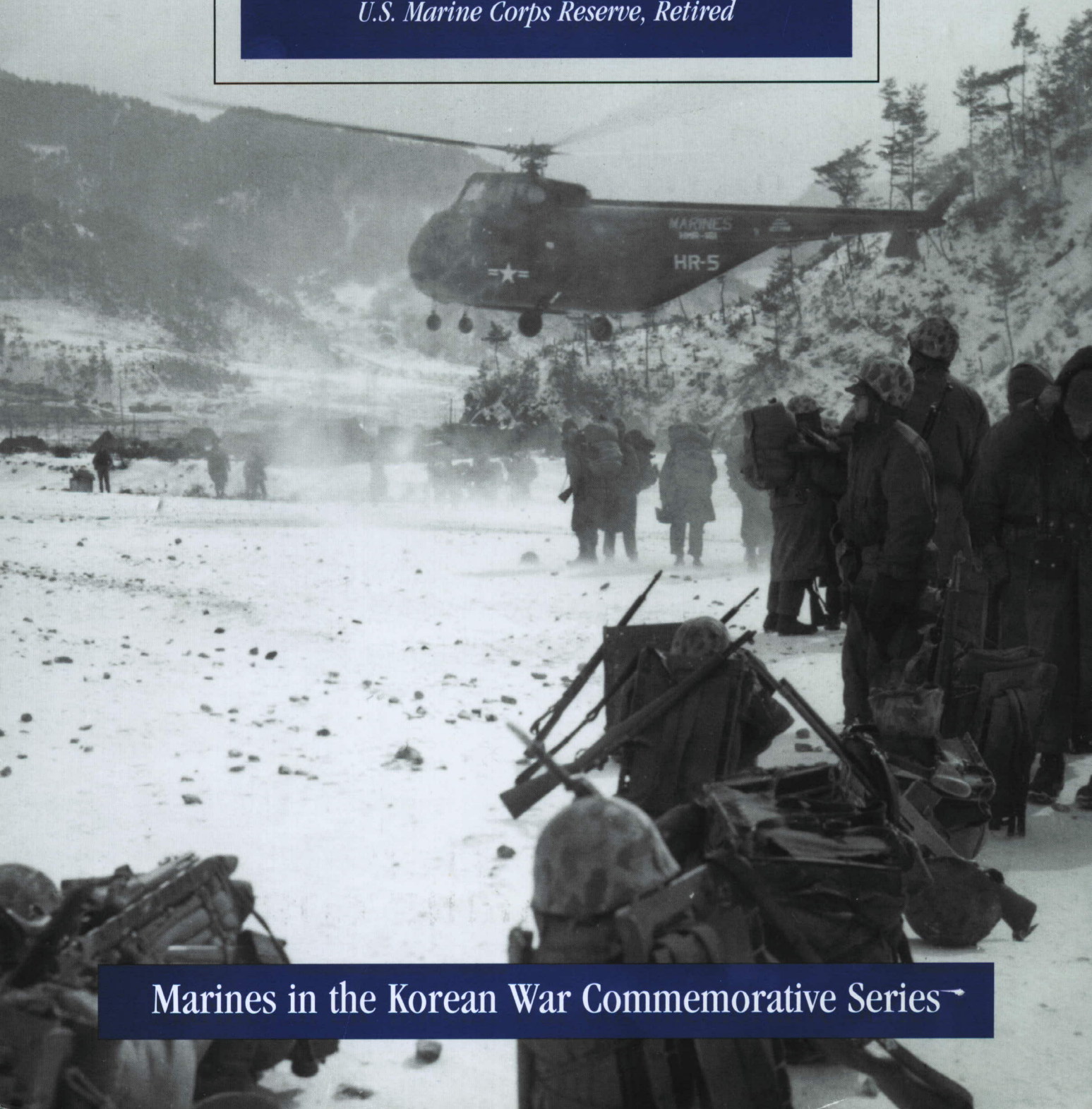


WHIRLYBIRDS

U.S. Marine Helicopters in Korea

*by Lieutenant Colonel Ronald J. Brown
U.S. Marine Corps Reserve, Retired*



Marines in the Korean War Commemorative Series



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On Sunday, 25 June 1950, Communist North Korea unexpectedly invaded its southern neighbor, the American-backed Republic of Korea (ROK). The poorly equipped ROK Army was no match for the well prepared North Korean People's Army (NKPA) whose armored spearheads quickly thrust across the 38th Parallel. The stunned world helplessly looked on as the out-numbered and out-gunned South Koreans were quickly routed. With the fall of the capital city of Seoul imminent, President Harry S. Truman ordered General of the Army Douglas MacArthur, Commander in Chief, Far East, in Tokyo, to immediately pull all American nationals in South Korea out of harm's way. During the course of the resultant non-combatant evacuation operations an unmanned American transport plane was destroyed on the ground and a flight of U.S. Air Force aircraft were buzzed by a North Korean Air Force plane over the Yellow Sea without any shots being fired. On 27 July, an American combat air patrol

ON THE COVER: *A Sikorsky HRS-1 transport helicopter from HMR-161 sets down behind 1st Marine Division lines to pick up waiting Marines.*

Department of Defense Photo (USMC) A159970

AT LEFT: *Girded for battle, Marines ride a tense 18 miles by helicopter before the first "airphibious" landing in history successfully deposited them on a Korean hilltop.* Department of Defense Photo (USMC) A156716

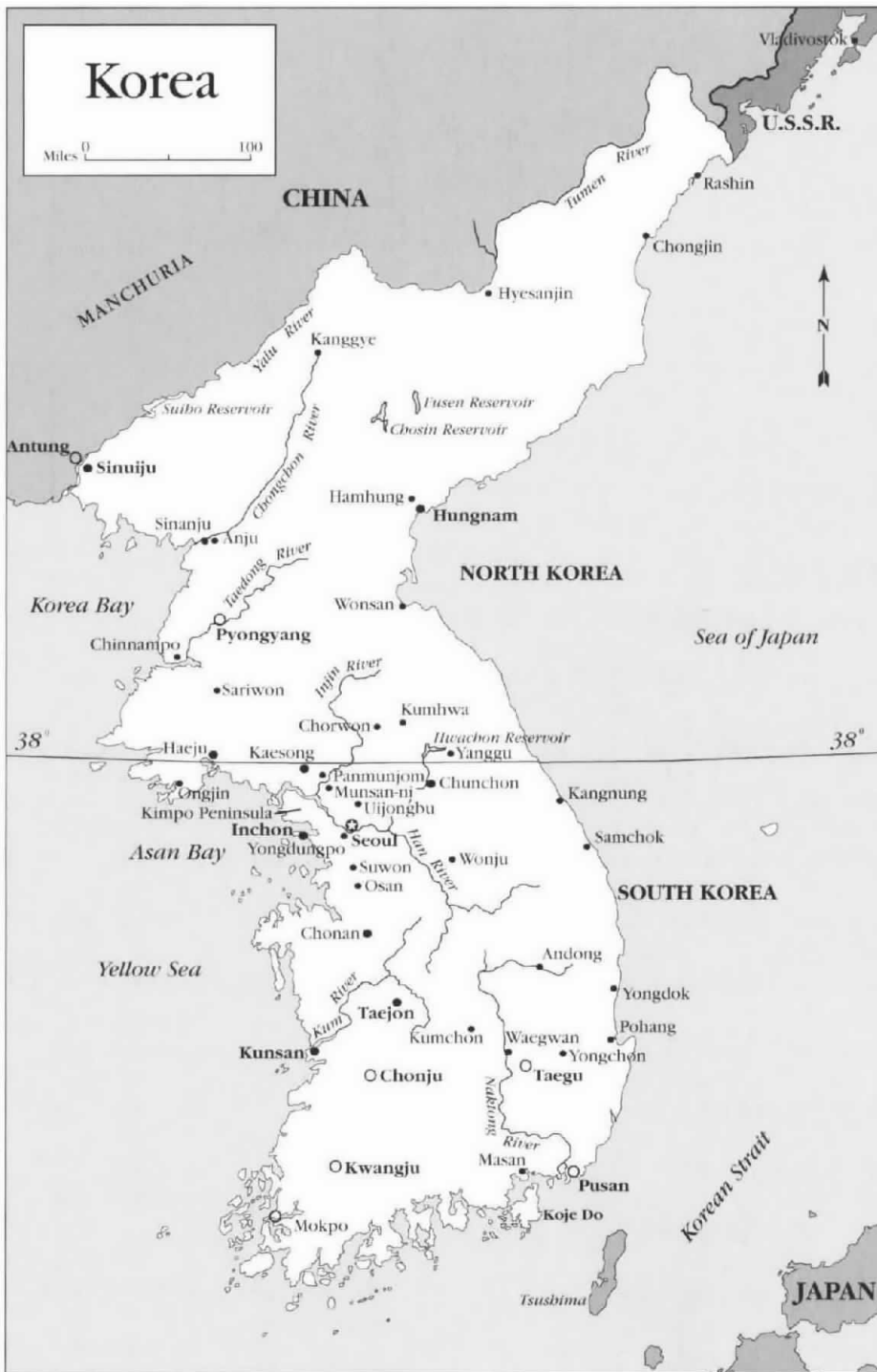
protecting Kimpo Airfield near the South Korean capital actively engaged menacing North Korean planes and promptly downed three of the five Soviet-built Yak fighters. Soon thereafter American military forces operating under the auspices of the United Nations Command (UNC) were committed to thwart a Communist takeover of South Korea. Thus, only four years and nine months after V-J Day marked the end of World War II, the United States was once again involved in a shooting war in Asia.

The United Nations issued a worldwide call to arms to halt Communist aggression in Korea, and America's armed forces began to mobilize. Marines were quick to respond. Within three weeks a hastily formed provisional Marine brigade departed California and headed for the embattled Far East. Among the aviation units on board the U.S. Navy task force steaming west was a helicopter detachment, the first rotary-wing aviation unit specifically formed for combat operations in the history of the Marine Corps. Although few realized it at the time, this small band of dedicated men and their primitive flying machines were about to radically change the face of military aviation. Arguably, the actions of these helicopter pilots in Korea made U.S. Marines the progenitors of vertical envelopment operations, as we know them today.

Helicopters in the Marine Corps

There is great irony in the fact

that the Marine Corps was the last American military Service to receive helicopters, but was the first to formulate, test, and implement a doctrine for the use of rotary-wing aircraft as an integral element in air-ground combat operations. The concept of manned rotary-wing flight can be traced back to Leonardo da Vinci's Renaissance-era sketches, but more than four centuries passed before vertical takeoffs and landings by heavier-than-air craft became a reality. The Marines tested a rotary-wing aircraft in Nicaragua during the Banana Wars, but that experiment revealed the Pitcarin OP-1 autogiro was not ready for military use. Autogiros used rotary wings to remain aloft, but they did not use spinning blades to get airborne or to power the aircraft so autogiros were airplanes not helicopters. Some aviation enthusiasts, however, assert that the flight data accumulated and rotor technology developed for autogiros marked the beginning Marine Corps helicopter development. It was not until 1939 that the first practical American helicopter, aircraft designer Igor I. Sikorsky's VS-300, finally moved off the drawing board and into the air. The U.S. Army, Navy, and Coast Guard each acquired helicopters during World War II. The bulk of them were used for pilot training, but a few American-built helicopters participated in special combat operations in Burma and the Pacific. These early machines conducted noncombatant air-sea res-



ative).” This 52-page tome was the 31st school publication on amphibious operations, so it took the short title “*Phib-31.*” Concurrently, the Marine Corps formed a developmental helicopter squadron to test the practicality of *Phib-31*’s emerging theories. This formative unit, Colonel Edward C. Dyer’s Marine Helicopter Squadron 1 (HMX-1), stood up in December 1947 and was collocated with Marine Corps Schools. The new squadron’s primary missions were to develop techniques and tactics in conjunction with the ship-to-shore movement of assault troops in amphibious operations, and evaluate a small helicopter as replacement for fixed-wing observation airplanes. Among the officers assigned to HMX-1 was the Marine Corps’ first officially sanctioned helicopter pilot, Major Armond H. DeLalio, who learned to fly helicopters in 1944 and had overseen the training of the first Marine helicopter pilots as the operations officer of Navy Helicopter Development Squadron VX-3 at Lakehurst Naval Air Station, New Jersey.

In February 1948, the Marine Corps took delivery of its first helicopters when a pair of Sikorsky HO3S-1s arrived at Quantico. These four-seat aircraft featured a narrow “greenhouse” cabin, an overhead three-blade rotor system, and a long-tail housing that mounted a small vertical anti-torque rotor. This basic outline bore such an uncanny resemblance to the Anisoptera subspecies of flying insects that the British dubbed their newly purchased Sikorsky helicopters “dragonflies.” There was no Service or manufacturer’s authorized nickname for the HO3S-1, but the most common unofficial American appellations of the day were “whirlybirds,” “flying windmills,”

cue, medical evacuation, and humanitarian missions during the war as well.

In 1946, the Marine Corps formed a special board headed by Major General Lemuel C. Shepherd, Jr., to study the impact of nuclear weapons on amphibious operations. In accordance with the recommendations made by the Shepherd Board in early 1947,

Marine Corps Schools at Quantico, Virginia, began to formulate a new doctrine, eventually termed “vertical assault,” which relied upon rotary-wing aircraft as an alternative to ship-to-shore movement by surface craft. The following year, Marine Corps Schools issued a mimeographed pamphlet entitled, “Amphibious Operations—Employment of Helicopters (Tent-

Pitcarin OP-1 Autogiro

The first rotary-winged aircraft used by naval aviation was not a helicopter. It was an autogiro, an airplane propelled by a normal front-mounted aircraft engine but kept aloft by rotating overhead wings, a phenomenon known as "autorotation." Although rather ungainly looking due their stubby upturned wings, large tails, and drooping rotors, autogiros took well to the air. Their ability to "land on a dime" made them favorites at air shows and an aggressive publicity campaign touted them as "flying autos, the transportation of the future." Autogiros, however, turned out to be neither a military nor a commercial success.

The aircraft itself was an odd compilation of a normal front-mounted aircraft engine used to generate thrust and three overhead free-spinning blades attached to a center-mounted tripod to provide lift. The fuselage included a pair of stubby wings that supported the landing gear and had a semi-standard elongated tail assembly. Typical of the day, it had an open cockpit.

Although a rotary-winged aircraft, the OP-1 was not a helicopter. The engine was used to start the rotors moving but was then disengaged and connected to the propeller to deliver thrust. A speed of about 30 miles per hour was needed to generate lift and maintained for controlled flight. The OP-1 could not hover, it required conventional engine power to take off and move forward in the air; the plane could, however, make a vertical landing. This unique feature made the OP-1 attractive to the military.

The specific autogiro model first tested by the Marine Corps was the OP-1 built by Harold F. Pitcarin, who would later found Eastern Airways. His company was a licensed subsidiary of a Spanish firm. All American autogiros were based upon designs formulated by Spanish nobleman Juan de la Cierva. His first successful flight was made near Madrid in 1923. More than 500 autogiros flew worldwide during the next decade. Although his air-

planes never lived up to his high expectations, de la Cierva did develop rotor technology and recorded aerodynamic data later applied by helicopter designers Igor Sikorsky and Frank Piasecki.

The Navy purchased three Pitcarin autogiros for extensive field-testing and evaluation in 1931. The only carrier tests were conducted on 23 September of that year, but the OP-1's performance was virtually identical to that of carrier-borne biplanes then in use. The Marines took one OP-1 to Nicaragua to test it under combat conditions. Again, its performance was disappointing. The pilots of VJ-6M noted it lacked both payload and range. The only practical use they found was evaluation of potential landing areas. This was not enough reason to incorporate the OP-1 into the Marine inventory. Overall, the OP-1 was described as "an exasperating contraption," not fit for military use. Further trials of a wingless autogiro in 1935 revealed no improvement, so director of aviation Major Roy S. Geiger recommended against adoption of that aircraft type.

In the barnstorming days between the World Wars, autogiros proved to be the ultimate novelty attraction. Aviator Charles A. Lindbergh often put on demonstrations, aviatrix Amelia Earhart set an altitude record in one, and Secretary of the Navy Charles Francis Adams flew in an autogiro to join President Herbert C. Hoover at an isolated fishing camp in Virginia. The Royal Air Force actually used autogiros for convoy escort and observation during World War II, and the Soviet Union developed its own autogiro.

Although the OP-1 never became a mainstream Marine aircraft and was not a true helicopter, some aviation enthusiasts assert that the technology and data developed by de la Cierva was crucial for rotary-winged flight. They, therefore, make the case that the OP-1 should be considered the progenitor of today's helicopters.

Department of Defense Photo (USMC) 528139



and “pinwheels.” The HO3S-1 had a cruising speed of less than 100 miles per hour, a range of about 80 miles, could lift about 1,000 pounds, and mounted simple instrumentation that limited the HO3S to clear weather and daylight operations. This very restrict-

ed flight envelope was acceptable because these first machines were to be used primarily for training and testing. They were, however, sometimes called upon for practical missions as well. In fact, the first operational use of a Marine helicopter occurred when a Quantico-

based HO3S led a salvage party to an amphibious jeep mired in a nearby swamp.

The first Marine helicopter operational deployment occurred in May 1948 when five HMX-1 “pinwheels” flying off the escort carrier *Palau* (CVE 122) conducted 35

The Visionaries

The wake of the World War II, with its ominous specter of nuclear weapons, forced the Marine Corps to rethink existing amphibious doctrine. The conclusion was that previous methods of ship-to-shore movement were no longer sufficient to ensure a successful landing so alternative methods had to be developed. Several options looked promising, but the only one that stood the test of time and combat was vertical envelopment—the use of helicopters to move troops and supplies.

In 1946, Commandant Alexander A. Vandegrift—at the urging of Lieutenant General Roy S. Geiger, the “Gray Eagle” of Marine aviation who had just witnessed post-war nuclear tests—formed a special board culled from Marine Corps headquarters to study existing tactics and equipment then make recommendations for restructuring the Fleet Marine Force. Assistant Commandant Lemuel C. Shepherd, Jr., a graduate of Virginia Military Institute, who was arguably the Marines’ most innovative division commander in the Pacific, headed the board. Shepherd was an excellent choice because he was both a traditionalist and a visionary who would later become Commandant. Other members of the board included Major General Field Harris, the director of Marine aviation, and Brigadier General Oliver P. Smith, the head of plans and operations division. All three men would be reunited in Korea in 1950 where they would put into practice the revolutionary doctrines they set in motion; Shepherd as the commanding general of Fleet Marine Force, Pacific, Harris as commanding general of the 1st Marine Aircraft Wing, and Smith as commanding general of the 1st Marine Division. Two colonels assigned to the board secretariat were particularly influential, Edward C. Dyer and Merrill B. Twining. Dyer, a Naval Academy graduate and decorated combat pilot, was master of all things aeronautical while Merrill Twining, a highly regarded staff officer, handled operational theory. Neither a formal member of the board nor its secretariat but keeping close tabs on what transpired was Brigadier General Gerald C. Thomas, Vandegrift’s trusted chief of staff. Dyer eventually commanded the first Marine helicopter squadron and Thomas replaced Smith as 1st Marine Division commander in Korea.

Doctrinal development for vertical assault was done at

Marine Corps Schools located at Quantico, Virginia. First, a board headed by Lieutenant Colonel Robert E. Hogaboom laid out what was needed in a document titled “Military Requirements for Ship-to-Shore Movement of Troops and Cargo.” Even though no suitable aircraft were yet available, the thinkers at Quantico came up with new doctrine published as *Amphibious Training Manual 31*, “Amphibious Operations—Employment of Helicopters (Tentative).” One of the drivers of this project was Lieutenant Colonel Victor H. Krulak, a tough former paratrooper who had been wounded in the Pacific but was also known for his high intellect and an unsurpassed ability to get things done. He was a prolific writer and a demanding taskmaster who kept his finger on the pulse of several vital projects including helicopter development.

Despite the nearly unlimited future potential of helicopters for assault and support of landing forces, there was ingrained resistance to such a revolutionary concept. Most young pilots wanted to fly sleek jets and dogfight enemy aces, not manhandle temperamental aircraft to deliver troops and supplies; experienced fliers were comfortable with aircraft they already knew well and were reluctant to give up their trusted planes; and critics claimed helicopters were too slow and vulnerable. Twining took the lead in addressing these problems when he pointed out the Marine Corps had far more pilots than planes and noted that the wishes of the individual were always subservient to the needs of the Marine Corps. He also asserted that the speed and vulnerability of helicopters should not be properly compared to fixed-wing aircraft but to surface landing craft (helicopters were both faster and more agile than boats or amphibious tractors).

All early helicopter advocates were highly motivated and dedicated men. Their achievements and foresight kept the Marine Corps’ reputation for innovation alive despite severe budgetary constraints and concurrent inter-Service unification battles. In fact, many of the men also played key roles in the “Chowder Society,” whose behind-the-scenes work successfully protected Marine Corps interests during the bitter “unification battles” after the World War II.



National Archives Photo (USMC) 127-N-A130996
BGen Edward C. Dyer, here receiving the Legion of Merit for meritorious service as the 1st Marine Aircraft Wing's G-3 during the Inchon-Seoul campaign, was one of the most influential men involved in the adoption of the helicopter by the Marine Corps. A naval aviator, he helped to bring the concept to reality by formulating doctrine and then commanding HMX-1 at Quantico, Virginia.

flights to land 66 men and several hundred pounds of communications equipment at Camp Lejeune, North Carolina's Onslow Beach during amphibious command post exercise Packard II. As the year progressed, HMX-1's aircraft complement increased by six when the Marine Corps took delivery of two new types of helicopters, one Bell HTL-2 and five Piasecki HRP-1s. The Bell HTL, often called the "eggbeater," was a side-by-side two-seat trainer that could fly at about 85 miles per hour. It had two distinctive features, a rounded Plexiglas "fishbowl" cockpit canopy and a single overhead two-bladed rotor. This model had four landing wheels and a fabric-covered tail assembly, although later versions of the HTL mounted skids and left the tail structure bare. The larger Piasecki HRP-1 was a 10-place troop transport whose tandem-mounted rotors could push it along at about 100 miles per hour.

The aircraft's unique bent fuselage (overlapping propeller radii meant the tail rotor had to be mounted higher than the forward rotor) gave it the nickname "Flying Banana." Unfortunately, it was a temperamental machine considered too fragile to be assigned to combat squadrons. The HRP-1 was instead relegated to use as a test bed and demonstration aircraft until a more capable transport helicopter could be procured.

During the next two years HMX-1 conducted numerous experiments, tests, exercises, demonstrations, and public appearances. Helicopters soon became crowd pleasers at air shows and were invariably the center of attention for dignitaries visiting Quantico. As a result of numerous tactical tests and performance evaluations, Colonel Dyer recommended that light helicopters should be added to Marine observation squadrons. Headquarters agreed, and it was

One of five Sikorsky HO3S-1s from HMX-1 prepares to land on the Palau (CVE 122) during Operation Packard II in May 1948. This was the first test to determine the value of the heli-

copter in the movement of assault troops in an amphibious operation.

Department of Defense Photo (USMC)





Department of Defense Photo (USMC) A55366

Piasecki HRP-1 "Flying Bananas" in action during a Basic School pre-graduation field problem at Quantico, Virginia. The HRP was the first Marine Corps transport helicopter, but technical constraints limited it to demonstration and training use and no HRP's saw action in Korea.

decided that an even mix of helicopters and airplanes should be adopted as soon as enough helicopters and trained personnel were available. Unfortunately, teething problems grounded each of the helicopter types at one time or another, and it was apparent more reliable aircraft with much greater lift capacity would be necessary to make vertical assault a true option in the future. Marine helicopter detachments participated in exercises Packard III (1949) and Packard IV (1950). This time period also featured many milestones. Among them were the first overseas deployment of a Marine helicopter pilot when Captain Wallace D. Blatt flew an HO3S-1 borrowed from the U.S. Navy during the

American withdrawal from China in February 1949; the first unit deployment in support of a fleet exercise occurred in February 1950; and the largest single helicopter formation to that time took place when six HRP's, six HO3Ss, and one HTL flew by Quantico's reviewing stand in June 1950. By that time, Lieutenant Colonel John F. Carey, a Navy Cross holder who a dozen years later would lead the first Marine aviation unit sent to Vietnam, commanded HMX-1. The squadron mustered 23 officers and 89 enlisted men; its equipment list showed nine HRP's, six HO3Ss, and three HTLs. Since its inception the Marine helicopter program had garnered many laurels, but several vital items

remained on the agenda—notably the creation of helicopter squadrons for service with the Fleet Marine Force and the procurement of a combat-ready transport helicopter. This was the status of the Marine Corps helicopter program when the North Korean unexpectedly burst across the 38th Parallel.

Called to Action

The commitment of American combat troops to Korea on 30 June set off alarm bells throughout the Marine Corps. Although the official "word" had yet to be passed, within a few hours of the North Korean invasion most Marines surmised it would not be long before they would be on their way to war.

Marine Helicopter Squadron 1

Marine Helicopter Squadron 1 (HMX-1) is unique in the Marine Corps because it has several distinct missions and at least three different chains-of-command providing guidance and tasking.

HMX-1 was the first Marine rotary-wing squadron. It "stood up" at Marine Corps Airfield Quantico in Virginia on 1 December 1947 and has been located there ever since. Its activation was the first operational move that started a revolution in Marine aviation and tactical doctrine.

One interesting insight into the Marines' most unique aircraft squadron is the frequent misunderstanding of its official designation. Although HMX-1 was initially tasked to develop techniques and tactics in connection with the movement of assault troops by helicopter and to evaluate a small helicopter as an observation aircraft, the "X" does not designate "experimental" as is often inferred. The "Nighthawks" of HMX-1 do perform some developmental tasks, but their primary missions are to provide helicopter transportation for the President of the United States and to support Marine Corps Schools.

The squadron, initially manned by seven officers and three enlisted men, quickly grew and mustered 18 pilots and 81 enlisted men when the first helicopters, Sikorsky HO3S-1s, arrived. These first primitive machines carried only the pilot and up to three lightly armed troops, but they formed the basis for testing helicopter doctrine described in Marine Corps Schools operational manual *Phib-31*. Eventually, HMX-1 received a mix of early model helicopters with the addition of Piasecki HRP transports and Bell HTL trainers to test doctrine before the Korean War.

On 8 May 1948, HMX-1 pilots flew from Quantico to Norfolk, Virginia, to board the escort carrier *Palau* (CVE 122). The fly-on operation was described by HMX-1 commanding officer Colonel Edward C. Dyer as a "complete shambles [with] sailors running all over the place in mortal danger of walking into tail rotors, and the Marines were totally disorganized as well. It was complete bedlam, there was no organization and no real system [in place]." By the next day, however, the Navy and Marine Corps were using the same basic ship-board flight operations procedures practiced today—circular lines delineated danger areas as well as personnel staging areas and

approach lanes. Five days later, the HO3S-1s delivered 66 men and several tons of equipment to Camp Lejeune, North Carolina's Onslow Beach during command post exercise Packard II.

The following year a similar exercise employed eight HRPs, three HO3Ss, and a single HTL. During Exercise Packard III, the HRP "Flying Banana" troop transports were carrier borne, the HTL was loaded on an LST for command and control, and the HO3Ss stayed ashore as rescue aircraft. The HRPs brought 230 troops and 14,000 pounds of cargo ashore even though choppy seas swamped several landing craft and seriously disrupted operational maneuvers. Many consider this superb performance to be the key factor in the acceptance of the helicopter as a viable ship-to-shore method, thus paving the way for the integration of rotary-wing aircraft into Marine aviation.

In 1957, HMX-1 acquired an unexpected mission—transporting the President of the United States. Helicopters were only considered for emergency situations until President Dwight D. Eisenhower used an HMX-1 Sikorsky HUS Sea Horse helicopter for transportation from his summer home on Narragansett Bay. After that, Marine helicopters were routinely used to move the President from the White House lawn to Andrews Air Force Base, the home of presidential plane "Air Force One." That transport mission became a permanent tasking in 1976 and continues to this day.

Currently mustering more than 700 personnel, HMX-1 is the largest Marine Corps helicopter squadron. It is divided into two sections. The "White" side flies two unique helicopters—both specially configured Sikorsky executive transports, the VH-3D Sea King and the VH-60N Seahawk. The "Green" side provides basic helicopter indoctrination training for ground troops, tests new concepts and equipment, and assists the Marine air weapons and tactics squadron. Unlike any other Marine squadron, HMX-1 answers to three distinct chains-of-command: the Marine Corps deputy chief of staff for air at Headquarters Marine Corps; the White House military office; and the operational test and evaluation force commander at Norfolk. Marine Helicopter Squadron 1 was not only the first such Marine unit, it also currently holds a unique place in naval aviation.

General MacArthur's formal request for a Marine regimental combat team and supporting aviation finally filtered through official channels on 2 July, and five days later the 1st Provisional Marine Brigade was activated. Brigadier General Edward A. Craig's 6,534-

man unit included the 5th Marines as its ground combat element and the 1st Marine Aircraft Wing (Forward Echelon) as its aviation combat element.

Brigadier General Thomas J. Cushman, a veteran aviator who had commanded an aircraft wing

in the Pacific during World War II, was "dual-hatted" as both the brigade deputy commander and the commander of the aviation component. The 1st Brigade's 1,358-man aviation element was built around Marine Aircraft Group 33 (MAG-33), which included three

squadrons of propeller-driven Vought F4U Corsairs, two day fighter squadrons (VMF-214 and -323) and one night fighter squadron (VMF[N]-513). The remaining aviation units included headquarters, ground support, and air control personnel in addition to an observation squadron.

The observation squadron assigned to the 1st Marine Brigade was Marine Observation Squadron 6 (VMO-6) commanded by Major Vincent J. Gottschalk. Its mission was to conduct "tactical air recon-

naissance, artillery spotting, and other flight operations within the capabilities of assigned aircraft in support of ground units." This last statement became a well-exercised elastic clause under the innovative guidance of Major Gottschalk, an engineering graduate of the University of Michigan who saw several years sea duty in the Pacific before earning his wings. In action, Gottschalk saw to it that practically any flying task in support of ground units, no matter how difficult or outrageous it initially

seemed, fell within the capabilities of VMO-6 aircraft. He took command of VMO-6 on 3 July and was ordered to be ready for overseas deployment only four days later.

Marine observation squadrons had been serving as indispensable components of Marine air-ground combat teams since the Banana Wars. Marine Observation Squadron 6 (then called VO-6M) was specifically formed for expeditionary duty in Nicaragua in 1928, but it was administratively transferred back to Quantico for duty as a training unit about six months later. Marine observation squadrons went by the wayside in 1933 and did not re-emerge until operations moved to the Western Pacific during World War II. There, flying small, nimble, high-wing, two-seat, single-engined Piper OE "Grasshoppers" and similar Stinson OY-1 "Sentinels" (often called Grasshoppers as well), VMOs provided aerial reconnaissance and artillery-naval gunfire spotting as well as performing assorted utility duties while attached to various Marine divisions. Marine Observation Squadron 6 was reactivated in 1943, saw combat action on Okinawa in 1945, and participated in the post-war occupation of North China. Upon its return to the United States in 1947, the squadron flew in support of the 1st Marine Division located at Camp Pendleton, California. The aircraft of VMO-6 did occasional artillery spotting and sometimes supported ground maneuvers or performed administrative duties, but the main mission at Camp Pendleton was a practical one—spraying aerial insecticide. In early June 1950, VMO-6 was assigned to the 1st Marine Aircraft Wing stationed at nearby Marine Corps Air Station El Toro.

With the arrival of the first warning orders, both Camp Pendleton

Capt Victor A. Armstrong, at the controls of a Sikorsky HO3S-1 helicopter, was the officer-in-charge of the VMO-6 helicopter section, the first Marine helicopter unit formed for combat duty. Holder of the Distinguished Flying Cross for actions in the Pacific during World War II, he would attain the rank of major general and serve as the deputy chief of staff for air.

Department of Defense Photo (USMC) A130162





Department of Defense Photo (USMC) A1280

A Sikorsky HO3S-1 helicopter transports a passenger from one ship to another while the convoy carrying the VMO-6 helicopter section is enroute to Korea. Marine "Whirlybirds" flying off the carrier Badoeng Strait (CVE 116) were routinely used to deliver messages and personnel between ships.

and Marine Corps Air Station El Toro became scenes of bedlam as people raced around to gather materials and units speedily absorbed new personnel. "Moth-balled" weapons and equipment were hurriedly broken out of storage and readied for use. Trains and planes brought in personnel culled from posts and stations across the United States at all hours of the day and night. Arrivals were welcomed on board and sent to their new units as soon as the handshakes finished. Space was at a premium, as was time. Round-the-clock work schedules were instituted, and the unofficial order of the day became "sleep on the boat!"

Major Gottschalk was originally told to form a four-plane, four-officer, and 10-enlisted man detachment to accompany the 1st Brigade to Korea. Although this detachment was far smaller than a war-strength squadron, just finding enough airplanes was not an easy task. Gottschalk decided to take eight well-worn OYs to ensure that four of them would be flyable—the rest would become "hangar queens" until replacement parts or new aircraft were in the supply pipeline. While the search for planes and equipment got under way, Gottschalk's orders were modified on 7 July. The entire squadron would now be going and, in accord with earlier

recommendations, the squadron aircraft mix would also include helicopters.

Eight officers and 30 enlisted men were pulled out of HMX-1 at Quantico, Virginia, with orders to move to the West Coast immediately. Captain (later Major General) Victor A. Armstrong was the officer-in-charge of the helicopter detachment. The other pilots included Captains George B. Farish and Eugene J. Pope, and First Lieutenants Arthur R. Bancroft, Lloyd J. Engelhardt, Robert A. Longstaff, Max N. Nebergall, and Gustave F. Lueddeke, Jr. The detachment's claim to historical fame was that this was the first permanent assignment of a Marine helicopter unit to the Fleet Marine Force. Contrary to some assertions, this detachment was neither the first Marine combat helicopter squadron nor was it the first U.S. helicopter detachment to see combat service—a helicopter element (later designated Flight F) from the U.S. Air Force 3d Air Rescue Squadron and carrier-based U.S. Navy helicopters assigned to Utility Helicopter Squadron 1 (HU-1) were already in action in Korea by the time VMO-6 arrived.

Armstrong's detachment made its way from Quantico to El Toro, California, leaving on 8 July and reporting for duty on the 10th. Upon arrival, helicopter detachment personnel were integrated into VMO-6, and Captain Armstrong was named that squadron's executive officer. Because only the personnel of the helicopter detachment transferred from HMX-1, aircraft had to be found. Six HO3S-1 helicopters were obtained from U.S. Navy sources (two each from Inyokern and Point Mugu, California, and two more from the overhaul and maintenance facility at San Diego). Only two days after reporting in, the helicopter detach-



Department of Defense Photo (USMC) A131099

Sikorsky HO3S-1

The Sikorsky HO3S-1 was the first helicopter assigned to the U.S. Marine Corps. The HO3S was the naval variant of Sikorsky's model S-51 commercial helicopter. Despite its observation designation, the HO3S was actually a utility aircraft used for a variety of roles. Among the 46 conceptual uses initially listed by Marine Corps Schools were the ones most used in Korea: search and rescue; aerial reconnaissance; medical evacuation; and liaison. The U.S. Air Force flew the same aircraft as a search and rescue helicopter designated H-5F.

The HO3S was the lineal descendent of earlier Sikorsky designs, the initial HNS trainer and the first designated military observation helicopter (alternately known as the HO2S in naval service and the R-5A to the Army). The HO3S featured a more powerful engine that gave it added lift and an increased payload. During the immediate pre-war period, the HO3S proved to be an outstanding rescue craft that often utilized its winch to pull downed pilots out of the water. Likewise, the HO3S was an excellent observation platform for artillery spotting.

In Korea, its primary uses were as a liaison aircraft and as an aerial ambulance. A first-rate liaison aircraft with good range, the HO3S had a dependable engine, and was rugged enough that it required relatively little maintenance when compared to other rotary-wing aircraft of the day.

Even though the HO3S performed yeoman service at

the Pusan Perimeter, it had significant shortfalls as a combat aircraft. The tricycle landing gear and its high center of gravity made the HO3S unstable on all but flat solid terrain; the aircraft could not accommodate interior stretcher loads; its lack of back-lit instrumentation precluded extended night and bad weather operations; and the high engine location made aircraft maintenance difficult. Another major drawback was that it required a great deal of strength and endurance to handle such a heavy aircraft for an extended period without servo-controls. In addition, the single main rotor and long tail assembly combined with a centrally located engine mount often required field expedient ballast adjustments to maintain in-flight stability, so it was not unusual for pilots to keep several sand bags or a seabag filled with rocks in the cabin.

Aircraft Data

Manufacturer: Sikorsky Division of United Aircraft Corporation

Power Plant: Pratt and Whitney R-985 AN-7 Wasp Jr., 9 cylinder, 450 horsepower, radial engine

Dimensions: Length, 57' 1/2"; height, 12' 11"; rotor, 48' composite construction blade

Performance: Cruising speed, 85 mph; range, 260 miles

Lift: Pilot plus two passengers or about 500 pounds of cargo (excluding fuel)

ment moved to San Diego to board ship.

The crowded escort carrier *Badoeng Strait* (CVE 116) carrying 60 Corsairs, 8 OY Sentinels, and 6 Marine helicopters along with their aircrews sailed for the Far East on 14 July. Enroute helicopters were used for inter-ship supply delivery, mail runs, and personnel transfers. The 1st Marine Brigade was originally slated for a temporary lay-over in Japan where cargo could be sorted out then combat loaded and some rudimentary amphibious training would be conducted before the Marines entered the combat zone. That was the plan until the situation in Korea became so grave that the 5th Marines was ordered to go directly to the beleaguered South Korean port city of Pusan. The aviation element was still slated to land in Japan, however, so the ships carrying the aviation component split off and headed for the Japanese port city of Kobe.

As the ships of Navy Task Group 53.7 plowed through the Pacific, Brigadier General Craig and his operations officer Lieutenant Colonel Joseph L. Stewart flew to Korea to attend a series of command conferences. On 30 July, they learned that upon landing the Marines would be attached to a U.S. Army task force assigned to shore up the crumbling southwest flank of the United Nations defense lines. Colonel Stewart called the aviation advance party command post in Japan to warn that combat action was imminent and requested that VMO-6 and Marine Tactical Air Control Squadron 2 (MTACS-2) be sent on to Korea as quickly as possible. This emergency phone call confirmed that the situation in Korea was desperate. Accordingly, when the *Badeong Strait* made landfall on the evening of 31 July

1950, Major Gottschalk received word to begin operations at first light the next morning.

Marine Observation Squadron 6's airplanes and helicopters went ashore on 1 August. The next day the Marine air elements scattered to the four winds. The day fighter squadrons boarded a pair of escort carriers and then sailed for the combat zone; the night fighter squadron joined an Air Force all-weather squadron at Itazuke Air Base on Kyushu; VMO-6 ground crews and their equipment "trans-shipped" to a tank landing ship (LST) for transportation to Korea; and headquarters personnel moved to Itami Air Base near Osaka on the island of Honshu.

Helicopters Enter Combat

From Kobe, the helicopters of VMO-6 proceeded to Itami where two helicopters were assigned to MAG-33 headquarters. They would be held in Japan to provide liaison services between the widely scattered aviation units and, at the same time, be available as emergency replacements if needed. The other four HO3S-1s proceeded to Korea. They made their way from Itami to Iwakuni Air Base where they stayed overnight. After a detailed situation brief and a hasty final maintenance inspection at Ashiya Air Base on northern Kyushu on the morning of 2 August, the helicopters made the hop across the Tsushima Straits. They landed at an airfield near Pusan, the logistics keystone of the United Nations defensive perimeter.

The outlook in Korea was not good when they arrived. The hard-pressed United Nations Command was struggling to hold onto a 60-by-90-mile area of southeast Korea known as the Pusan Perimeter. The North Korean drive south was

slowing, but the outcome of the battle for the Korean peninsula was far from certain when the 1st Provisional Marine Brigade was welcomed on board by Eighth Army commander Lieutenant General Walton H. Walker, USA.

At the Pusan Perimeter, the Marine brigade acquitted itself well and showcased the combat effectiveness of the Marine air-ground team. The Marines were used as a "fire brigade" moving from place to place to stamp out enemy threats. They spearheaded the first U.N. offensive in Korea, and then twice threw back NKPA penetrations of the U.N. defensive lines. Marine air hit the enemy when Corsairs swept out of the sky on the same day that the ground element was coming ashore at Pusan harbor. The brigade then consolidated at a temporary assembly area near Changwon before mounting the first sustained United Nations offensive of the war. The initial ground action occurred in the vicinity of Chindong-ni from 6 to 9 August. From there the Marines pressed south to Kosong before turning north to the Changchon Pass after wiping out an enemy motorized regiment during the Kosong "Turkey Shoot." On 13 August, as they neared Sachon, the Marines were abruptly ordered back to Masan to prepare to seal off an enemy penetration across the Naktong River. Hard fighting at Red Slash Hill and carefully coordinated supporting arms fires threw the North Koreans back. While recuperating at an area dubbed the Masan "Bean Patch," the Marines had to return to the Naktong bulge to repulse the enemy one more time. Finally, on 5 September, the Marines pulled out of the line and returned to Pusan so they could mount out to lead MacArthur's amphibious turn-

ing movement at Inchon. Throughout the campaign, the hard-working HO3S-1s of VMO-6 performed a wide variety of tasks and were so indispensable that Marine and Army commanders were soon demanding more helicopters.

Upon its arrival at Pusan on 2 August, the VMO-6's forward echelon was temporarily billeted in a South Korean schoolhouse located about 10 miles west of the port until the squadron support element caught up and a more permanent, and less crowded, site could be occupied. The rear party, which sailed from Kobe on board a Japanese-manned landing ship, actually arrived at Pusan on 4 August but could not move out for two more days due to the lack of transportation. Squadron supplies and equipment were laboriously loaded (there was no cargo handling machinery at hand) onto the dock then reloaded onto a train

for shipment west to Chinhae on 6 August. Chinhae was a South Korean naval base, as well as the future home of the Korean Marine Corps, located only a short hop across the bay from Masan. The site of a former Japanese ammunition depot with an airstrip, it was selected because it was close to the action, had a 2,600-foot grass and concrete runway (already being used by a combined US-ROK Air Force training squadron), and included a pair of completed hangars with a third under construction. There were enough Quonset huts to house the men, provide adequate office space, and warehouse supplies. This facility would be VMO-6's home field and base of operations until the 1st Provisional Marine Brigade was dissolved in early September.

In Korea, VMO-6 would be under the operational control of the brigade but under the administrative control of the wing. This

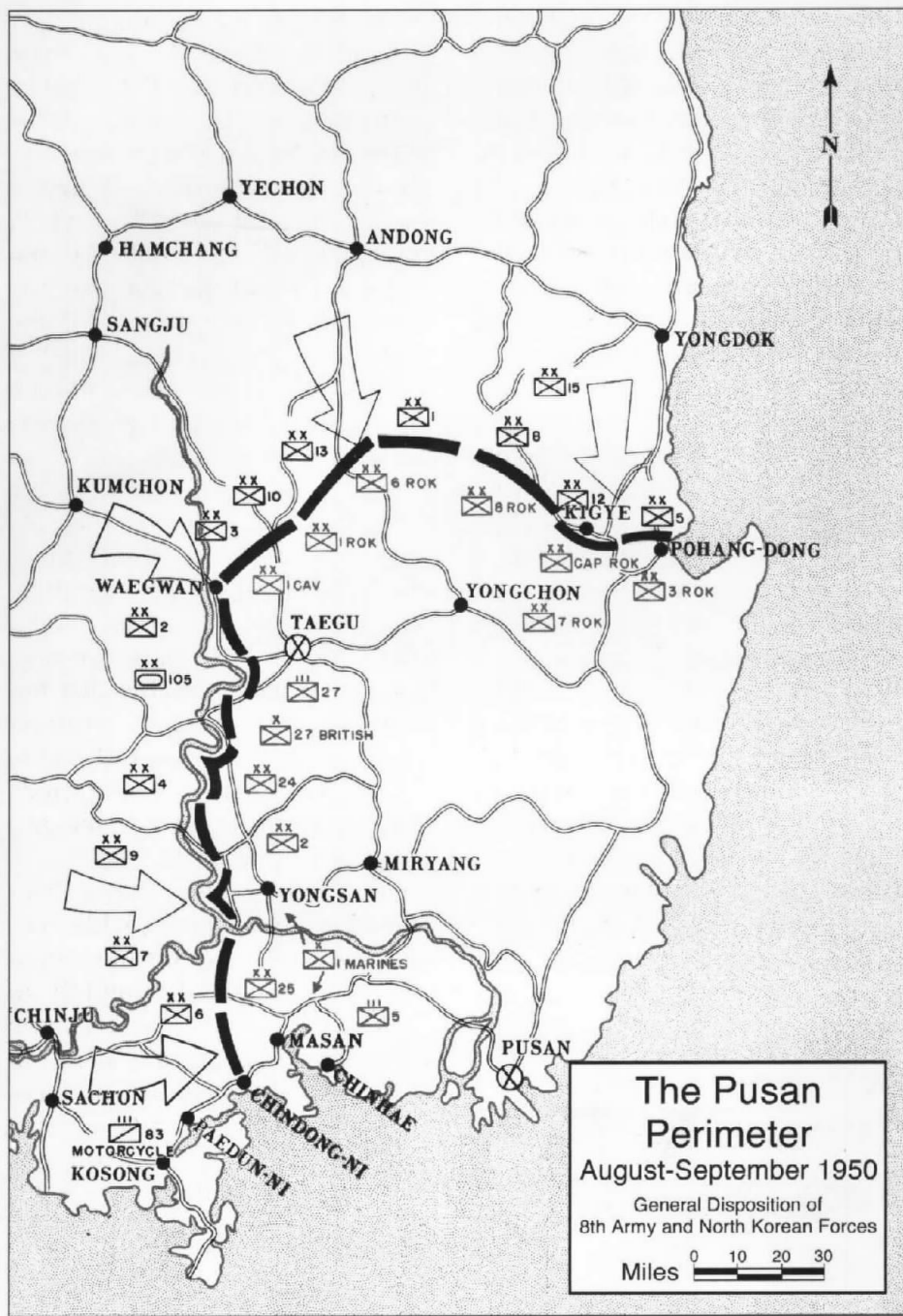
meant that the brigade, and later the division, commander through his air section would assign daily missions while the aircraft wing would provide supplies and personnel administration. Unfortunately, the helicopters, which belonged partially to both, but not fully to the ground or aviation commanders, seemed to be neither fish nor fowl. To use Major Gottschalk's words to describe this awkward command and control system: "Observation squadrons were the stepchildren of Marine aviation." This theoretical dichotomy, however, in no way diminished the practical use of helicopters. They soon proved their worth in combat and, in fact, became so indispensable that virtually every ground commander recommended additional helicopters be made immediately available by the time the Marines departed the Pusan Perimeter.

The hard-working Marine helicopters were used for a wide variety of missions that taxed them to the limit during the month of August 1950. The most common uses were for command and control, aerial reconnaissance, medical evacuation, and combat search and rescue; however, they also spotted artillery fire, dispensed emergency supplies, lifted individuals to remote outposts, and provided high-speed communications wire laying services as well. An operational pattern soon emerged. Each morning the two duty helicopter pilots would fly to General Craig's command post where they would report to Major James N. Cupp, the brigade's air officer, for tasking. At about noon, these two helicopters would be relieved on station by the other two. This aircraft rotation ensured adequate pilot rest and gave ground crews time for daily maintenance work. In addition, an ad

The commanding officer of VMO-6 holds a pre-mission pilot brief during the early stages of the Korean War. From left to right are Capt George B. Farish, 1stLt Eugene P. Millette, Capt Victor A. Armstrong, 1stLt Lloyd J. Engelhardt, Maj Vincent J. Gottschalk, Capt Alfred F. McCaleb, Jr., 2dLt Edgar F. Gaudette, Jr., 1stLt Gustave F. Lueddeke, Jr., and enlisted pilot TSgt Robert A. Hill.

Department of Defense Photo (USMC) A1991





The Pusan Perimeter
 August-September 1950
 General Disposition of
 8th Army and North Korean Forces
 Miles 0 10 20 30

going on a reconnaissance, whether they had any rank on board, whether they were carrying the commanding general out to one of the units, or whether they were going out on an evacuation mission. . . . Since we had communications facilities and the air officer [did not] we could. . . keep [him] abreast of the situation.

Korea was a difficult arena of operations due to its rugged terrain, weather extremes, and poorly developed infrastructure as aerial observer Second Lieutenant Patrick G. Sivert recalled: "It was hot and dusty, the road network was very poor, and the country very mountainous. There was no apparent pattern of any sort to the mountains. . . no particular ranges or draws, compartments, or corridors." The Marines were first greeted by sweltering heat and choking dust, but within a few months bitter cold and heavy snow brought south by the so-called "Siberian Express" would create vastly different operational challenges. The already difficult topography was exacerbated by the lack of modern hard surface roads as well as poor overland communications links. River valleys provided the only flat space suitable for roadways, but they were susceptible to flash flooding. The lack of reliable telephone communications was also a problem because the short-ranged infantry radios of the day did not function well when out of the line-of-sight. The cumulative result of these disparate problems made Korea an operational nightmare. Luckily, helicopters provided the ideal technological fix. They were unrestrained by the terrain, could act as radio relays or lay wire at high-speed, and easily flew over

hoc control system evolved whereby the helicopter pilots would check in and out with the MTACS-2 air control section on their way to and from assigned missions. As air traffic control squadron commander Major Elton Mueller explained:

We maintained the same positive radio contact with the helicopters that we did with all the other aircraft operat-

ing with us. The division air officer, however, controlled the helicopters. When they went out on a mission, they would fly by our operating site, give us a call—a radio check—on our reporting-in-and-out net. . . . In this manner [we] knew when [they] went out on a mission [and] they would tell us what type of mission they were going on, i.e. whether they were



Department of Defense Photo (USMC) A130163
On 3 August 1950, 1stLt Gustave F. Lueddeke, Jr., flew the first command liaison mission in Korea. In addition to ferrying commanders around, he also logged numerous medical evacuations and flew rescue missions behind enemy lines.

traffic jams or roadless wilderness.

According to Major Gottschalk, the use of HO3S helicopters at Pusan for command liaison work had the greatest tactical value.

A Korean rice paddy serves as a makeshift landing pad for a Marine HO3S-1 helicopter. The air panels laid out in the foreground mark the landing area and indicate wind direction.

General Craig faced many unusual command circumstances due to the emergency situation in Korea. Hurried planning, reliance upon oral orders, incomplete intelligence, poor communications, and inadequate maps all plagued the brigade staff. Craig turned to the helicopter to help solve his problems. While stationed on Guam in 1949, he became acquainted with helicopters when he borrowed a carrier-based Navy HO3S-1 to make command visits and observe field training, and Craig immediately put this experience to use in Korea. On the morning of 3 August 1950, he and his operations officer, Colonel Stewart, climbed into First Lieutenant Gustave Lueddeke's waiting HO3S, beginning the first Marine helicopter flight in an active combat zone. Craig and Stewart were airborne almost all of that day. The initial leg took them from Pusan 30 miles west to the brigade staging area at Changwon. Along the way, Lueddeke set down amid some Korean huts to allow Craig to con-

fer with a battalion commander leading the convoy to its new assembly area. After a few minutes on the ground, Craig continued his journey to the actual site selected to become his forward command post. Next, he flew back to Masan to meet with the Eighth Army commander and the commanding general of the U.S. Army task force slated to carry out the first United Nations offensive in Korea. On the way home, Craig stopped three times to inform small unit troop leaders about the upcoming operation. Although this trip seems routine by modern standards, that was certainly not true in 1950. Marine Corps historian Lynn Montross noted the uniqueness of this feat and its impact on the future: "Only a helicopter could have made this itinerary possible in a period of a few hours. A fixed-wing plane could not have landed in such unlikely spots, and a jeep could not have covered the same route before nightfall over narrow, twisting roads choked with Army and Marine vehicles." He further

Department of Defense Photo (USMC) A131089





National Archives Photo (USMC) 127-N-A1385

The leaders of the 1st Provisional Marine Brigade, BGen Edward A. Craig, left, and his deputy, BGen Thomas J. Cushman, right, wait in the shade of a Sikorsky HO3S-1. The commanding officer of VMO-6 felt that command visits were missions of the most tactical value during the fighting at the Pusan Perimeter.

opined: "A general and his staff could now make direct . . . contact with operations at the front as had never been possible before [and this] enabled a commander to keep in personal touch with his forward units since the helicopter could land virtually anywhere without asking favors of the terrain."

General Craig also said: "Time was always pressing. Fortunately . . . helicopters . . . were always available for observation, communications, and control. . . . Without them I do not believe we would have had the success we did."

In addition to command and control, a second valuable tactical use for helicopters was visual reconnaissance. A major problem during the attack toward Sachon was a scarcity of tactical maps, compounded by the fact that the

only maps readily available were inaccurate ones created by Japanese cartographers sometime before World War II. Villages were misnamed and misplaced, many roads were either not shown or were incorrectly plotted, there were no contour lines to accurately depict terrain features, and the complex grid system was too confusing to be of much value. Although no one at Quantico had predicted that helicopters might have to replace maps for navigation, this is exactly what happened in Korea. Small unit commanders often used helicopters to reconnoiter their routes of advance or to locate good ground for defensive positions. On the march helicopters shadowed ground movements and provided over-the-horizon flank security. In addition, HO3Ss were used to direct artillery fire, a task made difficult for

ground observers due to the poor maps and hilly terrain that frequently masked targets.

Another ground support duty, one that had received much play at Quantico, was aerial wire laying. A helicopter flying nap-of-the-earth could put down communications wire at the rate of about a mile per minute, far faster than a ground party could do it. The heavy and cumbersome spools presented no problem for a helicopter, whereas ground-based wire layers were severely limited as to how much wire they could carry and which terrain they could cross. An additional bonus was that by flying over tree lines or narrow defiles, helicopters could keep the wire overhead where it was not subject to destruction by tank treads or artillery bursts. Today, wire laying seems like a small thing but, in the days before needed two-way radio

reliability, land line communications was vital for command and control.

Two missions of marginal tactical value had a significant impact upon morale, aerial medical evacuations and airborne search and rescue. Helicopter evacuations, reported Major Gottschalk: "exert a very positive effect on ground troops since they know their chances of survival are tremendously increased. . . . A unit cut off by land [could still] have its wounded evacuated [and] it helped units by relieving them of the necessity of caring for them [thus] freeing more men for fighting. The use of helicopters for rescue of downed pilots [was] also impor-

tant in bolstering [air crew] morale."

On 4 August, Marine helicopters performed their first aerial medical evacuation when a Marine wounded by an accidental weapon discharge was flown from Changwon to the naval hospital train at Masan. The next day helicopters were called out to deliver water and rations to an infantry platoon sent to a nearby hilltop to check out reports of an enemy observation party located there. "Whirlybirds" were used because they could deliver the cargo in a matter of minutes where it would have taken a carrying party hours to bring up in the rugged terrain and intense heat. Five Marines suffering

severe heat exhaustion and in need of advanced medical attention were taken out by helicopter.

On 8 August, the squadron conducted a night helicopter evacuation—another first. This was a daring feat because the HO3S did not have proper instrumentation for night operations. Disregarding these limitations, Captain Armstrong flew off into the fading light to pick up a critically wounded man and the regimental surgeon of the 5th Marines. The nearly blind helicopter was guided back by the light of flares and came to earth amid the glow of headlights. This dramatic flight was the first of more than 1,000 night evacuations conducted in Korea.

The first of many Marine helicopter medical evacuations occurred when VMO-6 helicopters lifted several severe heat casualties to safety. "Whirlybirds" were often used because

ground transportation could not traverse the rugged terrain and stretcher-bearer evacuation would take too long.

Department of Defense Photo (USMC) A2855





National Archives Photo (USN) 80-G-420545

The Sikorsky HO3S-1 was a civilian model helicopter acquired for use as an observation aircraft. Unfortunately, the aircraft was poorly configured for medical evacuations, which often required Marines and Navy Corpsmen to lift patients into the aircraft from odd angles.

As helicopter pilot Captain Norman G. Ewers later recalled:

Normally, helicopter evacuation missions [were] performed on orders from the division air officer who relay[ed] the requests from the medical officers of the battalions or regiments. Helicopters [were] used to evacuate only those who [were] critically wounded and require[d] immediate hospital treatment. The helicopter [made] it possible not only to get the man to the hospital much more quickly, but it [provided] a much easier ride than travel by roads over rough terrain [and] this smoother ride . . . prevent[ed] hemorrhages.

Medical evacuations were flown without regard for difficult circumstances. The pilots took off in all

kinds of weather, without the benefit of proper instrumentation or homing devices, and often disregarded enemy fire in the landing zones. A tribute to the helicopter pilots of VMO-6 was rendered by a ground officer: "The flying of evacuation helicopters from jury rigged and inadequate landing sites was nothing short of miraculous. . . . The pilots of the observation squadron received far less credit than they deserved. They used to fly at night [into] frontline landing strips where I had trouble walking." Frontline medical officers likewise credited the flying skills and bravery of the medical evacuation pilots for saving many lives. The mortality rate in Korea fell to a new low of only two percent, less than half the rate of World War II and far below the nearly 50 percent rate prior to the American Civil War, due in large part to the rapid evacuation of

seriously wounded and the immediate availability of helicopter-provided whole blood at forward medical stations.

Unfortunately, the HO3S-1 was a civilian model aircraft adopted for use as a military machine; it was not designed to be a flying ambulance and, thus, poorly configured to be used as such. Marine ground crews in Korea quickly modified the HO3Ss to carry stretcher cases. The starboard observation window was removed and straps secured the stretcher in flight, but still a wounded man's legs protruded from the cabin. This was a minor annoyance that summer, but during cold-weather operations several cases of frostbitten feet and lower legs caused by the severe airborne wind chill were recorded. In addition, the wounded man most often had to be loaded into the helicopter from a position above the heads of the stretcher-bearers, a ponderous and awkward process. Inside the cabin, the pilot had to make quick ballast adjustments to ensure proper trim on the way home. Another problem was the HO3S-1's high profile and unstable tricycle landing gear; at least one HO3S tipped over while idling on rough ground. Although all agreed that the HO3S was invaluable in emergencies, there was room for mechanical improvement. This was handled in two ways. First, requests for immediate deployment of an off-the-shelf medical evacuation helicopter, the Bell HTL trainer, were sent up the chain-of-command. Second, Sikorsky Aircraft made design modifications to its newest observation helicopter, the developmental model S-52, which reached the fleet as the HO5S.

One mission of mercy for which the HO3S was perfectly suited was the rescue of downed pilots.

Helicopters were virtually the only means by which a downed pilot could be snatched from behind enemy lines and returned safely home within hours. The HO3S's side-mounted winch was an ideal tool for pulling an unfortunate aviator from the chilly waters off the Korean coast. The pilot or his crewman located the downed man and then the helicopter hovered overhead while the stricken man was lifted to safety. Lieutenant Lueddeke made the first of these rescues on 10 August while conducting a ground reconnaissance with the brigade commander on board. Second Lieutenant Doyle H. Cole's Corsair was struck by ground fire during a strafing run. Cole was unable to make it back to the *Badoeng Strait*, so his plane plunged into the water. Luckily, he was able get out and inflate his life raft before the plane sank. Lueddeke's helicopter quickly rushed toward the sinking plane to affect an airborne rescue.

Marines refuel a VMO-6 helicopter in a rice paddy during the fighting in the Pusan Perimeter. When a helicopter could not make it back to base, 55-gallon drums of fuel and a supply of oil had to be trucked out to the makeshift landing pad.

Marine Corps Historical Center Photo Collection



General Craig winched the soaked pilot up into the helicopter as Lueddeke hovered over the wreckage. Once safely inside the grinning pilot slapped his benefactor on the back with the words "Thanks, Mac" before he noticed the general's rank insignia and was able to render proper honors. The unperturbed senior officer simply replied: "Glad to be of service, Lieutenant."

Not every rescue had such a happy ending. Later that same day Lieutenant Lueddeke was sent to rescue another VMF-323 pilot. This time the downed flyer was Captain Vivian M. Moses whose plane had been hit by antiaircraft fire in enemy territory. Lueddeke skillfully negotiated a low-level approach behind enemy lines to pick up the stranded pilot and returned him to Chinhai for an overnight stay. The next morning, Moses returned to his ship where he promptly volunteered to fly another combat mission. Ironically, he

was shot down once again before the helicopter that delivered him returned to action. His plane crashed into a rice paddy and flipped over when it struck the dike. Captain Moses was knocked unconscious as he fell from the plane and drowned before helicopter pilot Captain Eugene J. Pope could save his life. Sadly, Vivian Moses became the first Marine pilot to die in combat in Korea.

On 7 August, the first Marine helicopter came under fire when the commanding general's HO3S-1 was caught in an enemy artillery barrage. Luckily, the plane emerged undamaged after dropping General Craig off. The first combat damage to a Marine helicopter occurred a week later when an HO3S-1 lost its windshield while evading enemy antiaircraft fire. No "whirlybirds" were lost to enemy fire during the 580 missions flown by the helicopter section of VMO-6 during the fighting at Pusan.

On 12 August, the Marine advance toward Sachon was abruptly halted due to a breakthrough that penetrated the U.N. lines near Miryang on the Nakdong River. The situation was so critical that a battalion of the 5th Marines was immediately ordered north to counterattack. Once again, the helicopter proved invaluable as a liaison vehicle. The battalion commander and the brigade operations officer mounted First Lieutenant Robert Longstaff's HO3S-1 to rendezvous with a U.S. Army representative. They flew to the appointed place but could not locate their man. Luckily, they were able to orbit the area until they found a reconnaissance unit, which was able to contact their division headquarters. The Marines were told that instead of joining the Army unit as planned they should instead "look the situation

Early Naval Helicopters

The first U.S. Navy experience with rotary-wing aircraft was not a good one. The Pitcarin OP-1 autogiro, an airplane not a true helicopter, had been tested and found wanting during the era between the World Wars. It was not until Igor Sikorsky introduced his VS-316 model helicopter on 13 January 1942 that vertical takeoff and landing aircraft became feasible. Sikorsky had earlier flown the first practical American helicopter, the VS-300, but that machine was only a test bed. The follow-on VS-316, designated the XR-4 by the U.S. Army, had a two-seat side-by-side enclosed cabin. A 200 horsepower Warner R-550-3 engine that ran a single overhead main rotor and a smaller anti-torque rotor on the tail powered the aircraft. The XR-4 prototype could hit a top speed of around 85 miles per hour, cruised at about 70 miles per hour, and had a range of about 130. In July 1942, the Navy tested its first one; an R-4 transferred from the Army and then promptly redesignated HNS-1 by the Bureau of Aeronautics. Two more were requisitioned from Army stocks in March 1943. The new helicopter was a success, and 22 more were procured for use as trainers beginning on 16 October 1943. The HNS-1 served as the primary naval aviation helicopter trainer until the Bell HTL-series replaced it.

Several other early helicopters (the Platt LePage R-1 and the Kellet R-2 and R-3) produced by other manufacturers were considered but not selected. All was not lost, however, because a bright young Kellet engineer, Frank Piasecki, would later develop tandem-rotor helicopters that would become a mainstay of naval aviation. The Bell Aircraft Company was too busy turning out jets to enter the initial helicopter competition, but that corporation's mathematician and engineer Arthur M. Young would soon revolutionize light helicopter design.

Sikorsky Aircraft produced 133 HNS helicopters; the Navy accepted 23, the Army kept 58, and the British Royal Air Force got 52. The first shipboard helicopter trials were conducted by America's first certified military heli-

copter pilot, Army Captain Hollingworth "Frank" Gregory. He put his HNS through its paces by repeatedly landing and taking off from the tanker *Bunker Hill* operating in Long Island Sound on 7 May 1943. Coast Guard Lieutenant Commander Frank A. Erickson flew the initial naval service helicopter mercy mission when he delivered two cases of blood plasma to a hospital at Sandy Hook on the New Jersey shore. Doctors credited Erickson's timely arrival with saving several lives. Other rescue missions aiding both civilian and military personnel in the New York area soon followed. The U.S. Army and the Office of Strategic Services both used helicopters for special combat missions in Asia during World War II.

The Navy was satisfied enough with the HNS to order an additional 150 helicopters from Sikorsky, 100 HOS-1s (designated R-6A by the USAAF) and 50 HO2S-1s (Army designation R-5A) before the end of the war. The HOS-1 was more compact, more powerful, and more maneuverable than its HNS predecessor. It mounted a single overhead main rotor, and was powered by a 240 hp Franklin O-405-9 engine. Three XHOS-1s were requested for testing from Army R-6A stocks in late 1942 and were accepted by the U.S. Coast Guard, which was by then running Navy helicopter training at New York's Floyd Bennett Field in March 1944. After the war a second batch of 36 HOS-1s were assigned to the Navy helicopter development squadron (VX-3) after passing acceptance tests. The Navy also took two HO2S-1 (Army R-5A) test models in December 1945, but opted to place an order for slightly modified S-51 commercial models (designated HO3S-1) which became the standard Navy, Marine, and Coast Guard light utility helicopters in 1947.

When the Coast Guard returned to the Treasury Department from the Navy Department on 28 December 1945, the U.S. Navy took over helicopter training and development. Marine helicopter pilots learned their trade with VX-3 before moving on to HMX-1 at Quantico, Virginia, prior to the Korean War.

over and do what [they] thought proper [to] ensure the safety of the 159th Field Artillery." The Marines had neither detailed maps of the area nor locating coordinates, so they took to the air to conduct a visual reconnaissance and, hopefully, find the lost Army artillerymen. This was done, and the Marines returned to meet the rescue convoy on the road. After giving an estimate of the situation and further instructions, the two Marines

returned to the Army position to prepare for the rescue column's arrival. Concurrently, a helicopter piloted by Lieutenant Lueddeke carrying the artillery regimental commander and his operations officer located several survivors of an overrun artillery battery. They dropped a note of encouragement then led a relief party to the spot. During this excursion, Lueddeke's HO3S-1 came under small arms fire and had to "buck and jerk" its

way out of the area using maneuvers not found in the pilot's manual. Only helicopters could have provided such assistance. Ground transportation would have been unable to find the misplaced units in a timely manner, while a light observation plane could not have moved back and forth between the supported and supporting units with such speed and efficiency. The helicopters of VMO-6 saved the day.



National Archives Photo (USMC) 127-N-A1990

Air-sea rescue was an important mission flown by VMO-6 with the first such rescue made in August. Here, Capt Eugene J. Pope, at the controls of his HO3S-1 helicopter, is con-

gratulated by his still-wet fellow VMO-6 observation pilot Capt Alfred F. McCaleb, Jr.

Two HO3S-1 helicopters, two pilots, and five mechanics assigned to headquarters squadron in Japan were released from that duty and joined VMO-6 at Chinhai on 15 August, just in time for one of the biggest battles for the Pusan Perimeter. The 5th Marines had been pulled back from Sachon, hurriedly replenished, and then marched north to seal off the NKPA penetration near Miryang. Helicopters were used for visual reconnaissance of the battle area, conducted liaison visits, scouted the routes of advance, screened the flanks, spotted artillery fires,

brought in supplies, and evacuated casualties as the Marines were twice called on to throw the North Koreans back across the Naktong River. During that time the helicopter pilots began to perfect evasive maneuvers that allowed them to dodge enemy ground fire. It also became obvious that the frail looking helicopters were tougher than previously thought. Several were hit by enemy small arms fire but kept on flying, and others survived some very hard landings in rough country. As General Lemuel Shepherd later noted about the toughness of helicopters: "I saw

[them] come in with a dozen bullet holes [but] unless they are hit in a vital part, they continue to fly." Still, the helicopters carried no armor or weapons so they were used in supporting roles except for emergency evacuations or deep search and rescue missions. The best tactic for those risky missions was to get in and out as quickly as possible while flying nap-of-the-earth using terrain to mask ingress and egress routes.

The Marine defense of the Pusan Perimeter ended with the arrival of other elements of the 1st Marine Division and the remainder

Airfield Designations

United Nations Command airfields in Korea used letter-number designators: the letter “K” indicated a major air base; the letter “X” indicated an auxiliary landing strip; and the letter “A” indicated that the airfield adjoined a U.S. Army base or headquarters. During the Korean War, Marine helicopter squadrons operated from the following locations:

Marine Observation Squadron 6	Sonjong-ni (unnamed)
Chinhae (K-10)	Sohung-ni (X-77)
Kimpo (K-14)	Sinchon (X-83)
Wonsan (K-25)	Tonggo-ri (A-9)
Yonpo (K-27)	Marine Transport Squadron 161
Masan (unnamed)	Pusan (K-1)
Pohang (K-3)	Kangnung (K-18)
Wonju (K-38)	Chodo-ri (X-83)
Hongchon (K-47)	Yongpo-ni (A-17)
Kwandae-ri (unnamed)	Taejong-ni (A-33)

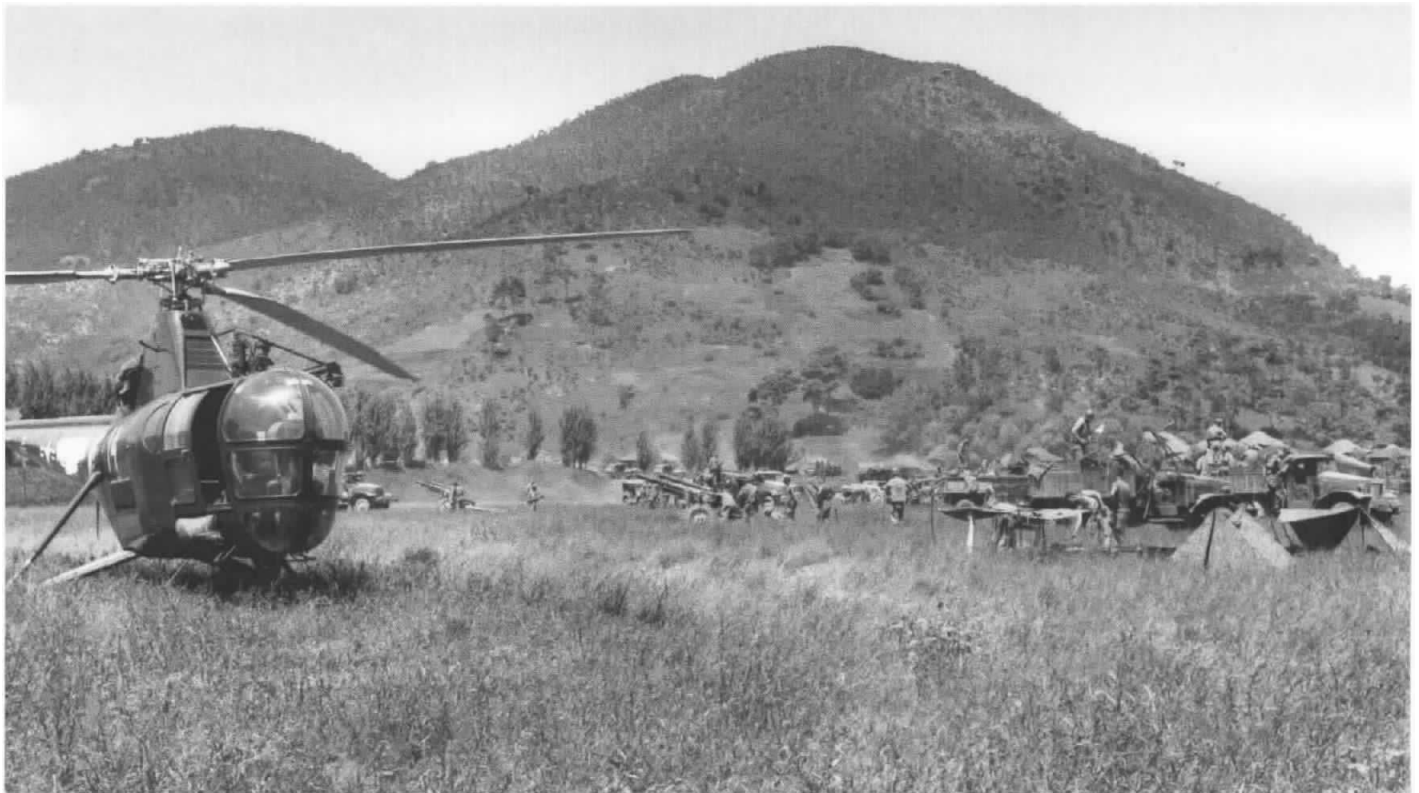
of Major General Field Harris’ 1st Marine Aircraft Wing from California in preparation for the landing at Inchon. By late August, the helicopter detachment had logged 580 sorties and 348 flight hours, conducted 35 medical evacuations, and flew 85 aerial recon-

naissance missions. Throughout that time helicopter availability was 100 percent. In his final report Major Gottschalk attributed this remarkable accomplishment to two factors: the excellent facilities at Chinhae and the ground support crew’s professionalism, skill,

A VMO-6 helicopter lands near the artillery positions of the 1st Battalion, 11th Marines, along the Naktong River. The

HO3S was designated as an “observation” platform but was actually used as a light utility aircraft in Korea.

Department of Defense Photo (USMC) A2204



and willingness to put in long hours. This was no small achievement because helicopters required a great deal more effort; more spare parts, more man-hours, and more sophisticated tools and work spaces than did the OY Sentinels. On the other hand, Gottschalk also noted that larger transport helicopters could have provided much needed services such as troop lifts, resupply, and command liaison, which were beyond the capabilities of the HO3S-1.

General Craig, the first Marine commander to use a helicopter as a command and control aircraft later wrote:

Helicopters are a godsend. . . . The mountainous terrain of Korea presents a difficult problem for security. . . . [Transport] helicopters would be ideal to [quickly] post patrols and outguards on high, dominating terrain which would [normally]



National Archives Photo (USMC) 127-N-A130052

MajGen Field Harris, left, commanding general of the 1st Marine Aircraft Wing, MajGen Oliver P. Smith, commanding the 1st Marine Division, and BGen Thomas J. Cushman, assistant wing commander, meet in Tokyo, Japan, a week before the landing at Inchon.

take hours to climb. . . . [More helicopters] would . . . insure the earlier defeat of the enemy. They should be made available for use at the earliest possible date.

He also noted other Service interest in rotary-wing aircraft by stating: "The Army is enthusiastic over our ideas of employment of this type of aircraft and is going ahead with the idea of employing them on a large scale." Like Major

Gottschalk, Craig also recommended that a transport helicopter squadron be formed and sent to Korea as quickly as possible. The Director of Marine Corps Aviation, Brigadier General Clayton C. Jerome, made the case for additional helicopters in a memorandum to the Deputy Chief of Naval Operations (Air):

There are no superlatives adequate to describe the general reaction to the heli-

copter. Almost any individual questioned could offer some personal story to emphasize the valuable part played by [the] HO3S planes. . . . There is no doubt the enthusiasm voiced . . . is entirely warranted. . . . No effort should be spared to get helicopters—larger than the HO3S if possible—to the theater at once, and on a priority higher than any other weapon. [We need] helicopters, more helicopters, and more helicopters.

The Inchon-Seoul Campaign

On 9 September, VMO-6 was placed under the operational control of the 1st Marine Division, commanded by Major General Oliver P. "O. P." Smith, and under the administrative control of the 1st Marine Aircraft Wing. The Marines' next mission was destined to become a military classic—the amphibious assault at Inchon, a battle that dramatically reversed the course of the Korean conflict. U.S. Army X Corps, spearheaded by the 1st Marine Division, launched a difficult daylong amphibious landing then rapidly moved inland to secure the supply depot at Ascom City and Kimpo Airfield. The campaign culminated with the retaking of the South Korean capital of Seoul. This seizure cut the enemy's main supply routes and left the NKPA forces in the south isolated. By the time the lead elements of X Corps in the north and Eighth Army coming up from the Pusan Perimeter linked up the NKPA was in full flight. That once awesome fighting force had been completely routed and was headed for the dubious safety of North Korea.

To prepare for the Inchon landing, Major Gottschalk divided his squadron into forward and rear

echelons. The forward echelon, 10 officers, 48 enlisted men, and 8 helicopters, loaded on board Japanese-manned LST Q079 at Chinhae. During the voyage, the Marines and Japanese crew shared mess facilities. Luckily, detachment commander Captain Victor Armstrong spoke fluent Japanese—he had resided in Japan for 15 years before the outbreak of World War II. Four officers and 43 enlisted men remained behind to safeguard squadron property at Chinhae.

Once ashore the Marine helicopter detachment picked up right where it left off, but on a much larger scale. The main missions remained command and liaison, aerial evacuation of seriously wounded, combat search and rescue of downed fliers, and visual reconnaissance. Although the number of HO3S helicopters had doubled since August, the demands for their time continued to increase.

Major General Smith, the 1st Marine Division commander and a former member of the Shepherd Board in 1946, quickly became a helicopter advocate. "The helicopter was of inestimable value to the division commander and his staff in keeping personal contact with subordinate units in a minimum of transit time," he asserted. Generals Smith and Craig, now assistant division commander, depended upon helicopters to visit the front on a daily basis and unit commanders scouted proposed routes of advance, although emergency medical evacuations were given priority over liaison and reconnaissance. With as few as only four helicopters operational, however, command and liaison visits were often interrupted when the commander's helicopter was diverted for emergency missions. When critically wounded men

needed a ride the generals and colonels either used alternative transportation or waited until their "chopper" returned. The list of dignitaries using helicopter transport during September 1950 included Fleet Marine Force, Pacific, commander Lieutenant General Lemuel Shepherd, Commandant Clifton B. Cates, and X Corps commander, U.S. Army Major General Edward M. Almond. At Inchon, just as at Pusan, the most often heard complaint about helicopters was that there were not enough of them.

"Whirlybird" pilots in Korea were famous for their daring feats while rescuing downed flyers and evacuating seriously wounded men; among the very best were 1stLts Robert A. Longstaff and Gustave F. Lueddeke, Jr. of VMO-6. Tragically, the Marine Corps lost two of its most promising pioneer helicopter pilots when Longstaff was killed in action at the Chosin Reservoir and Lueddeke succumbed to poliomyelitis not long after returning from Korea.

National Archives Photo (USMC) 127-N-A130403



airfield in Korea, virtually intact. The first U.S. aircraft to land there was Captain Armstrong's HO3S, which arrived at mid-morning on 18 September as Marines searched for the remnants of the previous night's NKPA counterattack force. Armstrong carried two early proponents of Marine helicopter operations, Lieutenant General Shepherd and his operations officer Colonel Victor H. Krulak.

On 19 September, the 1st Marine Division moved its command post from Inchon to Oeosori. The next day VMO-6 moved to nearby Kimpo, which thereafter served as the squadron's base of operations until the subsequent move north. The final phase of the Inchon turning movement—the recapture of Seoul—was about to begin, and helicopters proved to be particularly valuable when terrain obstacles separated elements of the division during the drive to retake the capital. The general operational pattern was for one helicopter to be earmarked for each regimental commander in addition to one each for the division commander and his assistant commander. The regimental helicopters were primarily used for reconnaissance and medical evacuations, the division commander's for liaison, and the assistant division commander's for reconnaissance; any unassigned helicopters underwent maintenance while standing by for emergency evacuations or combat search and rescue.

The major obstacle on the way to Seoul was the Han River. Brigadier General Craig used his helicopter to locate a suitable crossing area, scout key terrain, and survey the road approaches to the South Korean capital. Although few enemy soldiers actually showed themselves, Captain Armstrong, Craig's pilot, had to dodge scattered small arms fire along the



Department of Defense Photo (USMC) A130249

Capt Victor A. Armstrong, right, proudly displays the cake sent from the carrier Philippine Sea (CV 47) as Maj Vincent J. Gottschalk, VMO-6's commanding officer, looks on. Capt Armstrong made a daring behind-the-lines rescue of a Navy pilot shot down near Seoul and the cake was sent ashore as a mark of appreciation.

way. As a result of his aerial reconnaissance, Craig recommended that the 5th Marines move across the Han at an abandoned ferry site near Haengju and then seize the high ground overlooking Seoul.

Just as before, combat search and rescue was an important additional duty for the helicopters of VMO-6. On 21 September 1950, the squadron received word that a pilot had gone down behind enemy lines and was jammed inside his cockpit. Anticipating a

difficult extraction, First Lieutenant Arthur R. Bancroft loaded his plane captain on board then took off to make the rescue. The area was "hot," so friendly planes maintained a rescue combat air patrol to strafe any enemy who showed their heads. Bancroft set his HO3S down and remained at the controls while the helicopter idled with its rotor blades slowly turning. The crew chief could not free the encased pilot alone, so Bancroft had to leave the aircraft to assist.

Who was the First Marine Helicopter Pilot?

There is some dispute about who the first Marine Corps helicopter pilot actually was. According to Marine lore that honor goes to fighter ace and famed test pilot Marion E. Carl, but the official records of the naval service identify Major Armond H. DeLalio as Marine helicopter pilot number one, and Marion Carl himself proclaimed that Desmond E. Canavan was probably the first Marine to fly a helicopter.

According to the Marine Corps' official history, *Marines and Helicopters, 1962-1973*, "Major General Marion E. Carl is generally credited with being the first Marine to learn how to fly a helicopter in July 1945 [but it was not until some years later that he was officially designated [as such].]" In his autobiography, *Pushing The Envelope* (Annapolis, MD: Naval Institute Press, 1994), Carl relates that he learned how to fly a Sikorsky HNS (R-4) while a test pilot stationed at the Naval Air Test Center, Patuxent River, Maryland. He was given about three hours of instruction before he soloed. In that same memoir, however, he states that fellow Marine Desmond Canavan was flying helicopters in late 1944. Carl's claim that he was helicopter pilot number one rests upon the fact that he was the first Marine to log the 40 hours required for certification even though he never applied for such certification. Neither Carl nor Canavan appear on the naval service helicopter pilot certification list prior to June 1950.

Marine Corps Historian Lynn Montross, the recognized authority on early Marine helicopter operations, lists Navy Cross holder Armond DeLalio as having flown U.S. Navy helicopters at New York's Floyd Bennett Field then under the auspices of the U.S. Coast Guard in 1944. He is officially recognized as the first Marine certified as a helicopter pilot, achieving that honor on 8 August 1946. DeLalio was the operations officer for Navy helicopter squadron VX-3 at that time. He was killed during a test flight in 1952 when a rocket-assisted takeoff pod malfunctioned causing his HRS helicopter to catch fire and then crash.

The Navy register of early helicopter pilots lists 250 qualifiers prior to the onset of the Korean War in June 1950; 33 are Marines, including three enlisted naval aviation pilots (the famous "Flying Sergeants" of the Marine Corps).

While who should be recognized as the true "Gray Eagle" of Marine helicopter aviation remains murky, there is little doubt about the specific incident that started the Marine Corps helicopter program. That event occurred at Quantico, Virginia, in 1946 and was described by helicopter pioneer Edward C. Dyer:

One day Marion Carl, a test pilot at Patuxent, flew a helicopter to Marine Corps Schools to demonstrate it to the students. . . . He hoisted [Lieutenant Colonel Victor H.] Brute Krulak . . . about 15 feet [off



Marine Corps Historical Center Photo Collection
LtCol Armond H. DeLalio, recipient of the Navy Cross for heroism as a pilot with Marine Scout-Bomber Squadron 241 during the battle of Midway and a Marine Corps helicopter pioneer, was honored in 1965 when an elementary school at Camp Lejeune, North Carolina, was dedicated in his name.

the ground] and pulled him into the cockpit. [Lieutenant Colonel Merrill B.] Twining and I were standing by the window and watching and I said 'Bill, let's . . . quit fooling around.' He said 'OK! . . . He wrote the theory . . . principles . . . background . . . reasoning . . . and I wrote [an implementation] program.'

Marion Carl recalled that he specifically selected Lieutenant Colonel Krulak because his small stature and lightweight could be accommodated by the limited room and lift capability of his HOS-1 helicopter. Krulak thereafter became a helicopter devotee.

While the two Marines busily freed the trapped pilot, the helicopter's collective friction device worked loose and the plane tipped on its side where the beating rotors destroyed the aircraft. Luckily, Lieutenant Robert Longstaff was able to pick up the grounded trio although his overloaded HO3S staggered under the excessive weight until it reached friendly lines. Bancroft then promptly mounted another helicopter to rescue a second Navy flier before the day ended.

Two days later, Captain Armstrong recorded the longest search and rescue operation yet by a VMO-6 helicopter when he flew nearly 100 miles behind enemy lines to rescue a downed Navy pilot. On the return flight, he ran out fuel over friendly territory, temporarily put down, refueled, and then landed at Kimpo after dark using a flashlight to illuminate his control panel. The rescued pilot turned out to be a squadron commander from the carrier *Philippine Sea* (CV 47). The next day, VMO-6 received a large layer cake, compliments of the U.S. Navy as a reward for Armstrong's fine work. Conversely, Lieutenant Longstaff flew the shortest rescue mission of the war picking up a pair of Marines from a Grumman F7F Tigercat that crashed after taking off from Kimpo. That mission on the 25th took less than six minutes. The pilot was Lieutenant Colonel Max J. Volcansek, Jr., of Marine Night Fighter Squadron 542, one of three squadron commanders to go down that day.

A more dramatic rescue also occurred on 25 September. A Navy helicopter "on loan" to the Marines suffered battle damage during a deep rescue mission and was forced to put down near the Han River. Word that an American air-

crew was down in enemy territory did not reach the division air officer until about 2100—after sunset. Captain Armstrong took off despite the fact that the HO3S had neither proper instrumentation nor landing lights for limited visibility flying. Armstrong needed both arms and both feet to control the helicopter, so he held a flashlight between his knees to illuminate the unlit instrument panel. He spotted the downed aircraft in the glow of light cast from the burning city of Seoul and set down on a nearby sandbar. The crew, a Navy pilot and a Marine enlisted man, swam to Armstrong's waiting helicopter for a safe ride home. He once again had to rely upon makeshift lights upon arrival at the landing zone.

Thus far in Korea, VMO-6 had lost helicopters to operational incidents but had suffered no fatalities. Tragically, this string of luck came to an end on 29 September. A VMO-6 Sentinel was shot down about five miles north of Seoul. Reports indicated the aerial observer was killed in the crash, but the pilot was able get out. First Lieutenants Lloyd Engelhardt and Arthur Bancroft, both of who previously had logged deep search and rescue missions, were at the division command post when the call for help came in. Both immediately volunteered to go, but Major James Cupp, the division air officer, ordered them to wait until more detailed information became available. A few minutes later they learned that the OY went down beyond the Marine frontlines near Uijongbu, an unsecured area teeming with enemy and known to be infested with antiaircraft guns. Bancroft, who won a coin flip to decide who would make the rescue, took the lead with Engelhardt trailing by about a half mile. They found the crash site,

but as Bancroft's helicopter began to settle it was hit by enemy fire and disintegrated in a fireball. Engelhardt called for fighter planes to survey the area. They reported Bancroft had been killed, and there was no sign of the downed pilot. First Lieutenant Arthur R. Bancroft thus became the first Marine helicopter pilot to die in action.

Helicopters became crucial for command liaison. The rugged terrain, a major river, and wide dispersal of fighting units made control difficult. Helicopter mobility made it possible for commanders to scout approach routes, identify key terrain, attend conferences in the rear, and then quickly thereafter meet subordinate commanders face-to-face. On 28 September, Major General Smith coordinated the defense of Seoul as he visited each of his three regimental command posts: the 1st Marines at Seoul's Duk Soo Palace; the 5th Marines at the Seoul Women's University; and the recently arrived 7th Marines on the city's western outskirts. The 1st and 5th Marines were to defend in place while the 7th attacked toward Uijongbu. On 3 October, Armstrong flew Commandant Cates on an aerial survey of the Incheon-Seoul area and a frontline inspection tour highlighted by observation of an attack by the 7th Marines on the 4th. This was the final ground combat action of the campaign, although Marine helicopters continued to fly deep rescue and medical evacuation missions from Kimpo throughout the rest of October. Lieutenant Engelhardt rescued a Marine pilot near Chunchon on 3 October and then plucked an Air Force pilot up at Sibyon-ni on the 5th.

When the Incheon-Seoul campaign was officially declared over at noon on 7 October 1950, VMO-6

U.S. Naval Aviation Designations

During the Korean conflict, the Navy Bureau of Aeronautics used designation systems that conveyed a lot of information about its squadrons and aircraft in a concise manner.

Squadron Designations:

The Bureau recognized three aircraft squadron types: lighter than air (Z); heavier than air (V); and helicopter (H). In addition, Marine aircraft squadrons were identified by the insertion of the letter "M" between the aircraft type and the squadron function. In general, a three letter prefix followed by up to three numbers was used to identify individual Marine aircraft squadrons. The first letter (a "V" or "H") identified the primary aircraft type used by the squadron, the second letter ("M") identified it as a Marine aviation unit, and the third ("O" indicating observation and "R" for transportation) identified the squadron's primary mission; the numbers in the suffix sometimes identified the squadron's unit affiliation and always noted its precedence order.

Thus, VMO-6 was the sixth heavier-than-air Marine observation squadron formed. The single digit indicated that the squadron was not specifically affiliated with a particular aircraft wing (observation squadrons were attached to ground units). On the other hand, HMR-161 was the first Marine helicopter transport squadron assigned to the 1st Marine Aircraft Wing (the first "1" indicating initial assignment to the wing, numbers above "6" were used for non-fixed wing aircraft, and the last "1" signifying it was the first squadron formed).

Aircraft Designations

Individual aircraft designations used a similar identification system. The Bureau of Aeronautics gave each naval aircraft a mixed letter and number designation.

Except for experimental or prototype helicopters, the first letter was an "H" indicating rotary-wing status; the second letter indicated its primary purpose ("O" for observation, "R" for transport, or "T" for trainer); a number (except in the case of the first model) indicated the manufacturer's sequence for producing that specific aircraft type; the next letter identified the manufacturer ("L" for Bell, "P" for Piasecki, or "S" for Sikorsky); and the number following a dash indicated a sequential modification of that aircraft model.

Thus, the HO3S-1 was Sikorsky Aircraft's third model observation helicopter with one modification; the HRP was Piasecki's first transport helicopter; the HTL-4 was the fourth modification to Bell Aircraft's original trainer helicopter; the HO5S was Sikorsky's fifth observation model; and the HRS-1 was Sikorsky's first transport helicopter.

The Bureau's system was a good one that remained in use for four decades, but there were a few problems. First, aircraft were often used for roles other than those assigned. For example, the HO3S-1 was actually a utility aircraft that during field service performed many tasks other than observation, a task that actually became a seldom-used secondary mission in Korea. Second, the proliferation of missions and manufacturers as time passed led to confusing duplication of letters ("T" was variously used to indicate torpedo, trainer, and transport aircraft). Third, lack of inter-Service consistency produced confusion (the Navy HO3S-1 was an H-5F to the Air Force and Army). The naval aircraft designation system was replaced by a joint aircraft designation system in 1962, but the Bureau's squadron designation system remains in effect.

helicopters had flown 643 missions, evacuated 139 seriously wounded men, and rescued 12 airmen from behind enemy lines or out of the water.

The success of VMO-6's fledgling helicopter detachment had wide-ranging effects that spread well beyond the theater of operations and impacted more than just the Marine Corps. In the United States, military dogmatists and civilian pundits complained long and loud about lack of inter-Service unity in Korea. However, in the words of Major General John P. Condon, an expert in joint operations and an experienced air

group commander in Korea: "The farther from Washington, the less inter-Service differences came into play." This dictate was borne out by Marine helicopter operations in late October. On the 21st, Captain Gene W. Morrison made a series of flights to evacuate eight seriously wounded Army paratroopers from Sukchon to Pyongyang in his HO3S. Three days later, Captain Wallace D. Blatt, who had provided helicopter coverage for the withdrawal of U.S. forces from China, and First Lieutenant Charles C. Ward flew deep into enemy territory to rescue a pair of Air Force pilots down near Koto-ri, more

than 100 miles inland from their temporary base at Wonsan Harbor. These were only a few of many times Marine helicopters rescued or aided other American servicemen in Korea. Although both the U.S. Navy and Air Force were flying helicopters in Korea, the Marine success with rotary-wing operations at Pusan and Inchon prodded the Air Force to attach helicopter units specifically earmarked for medical evacuation to Army field hospitals. Likewise, a clamor for organic transport and observation helicopters arose from U.S. Army commanders. The utility and practicality of helicopters in

combat zones had been firmly established by the Marines of VMO-6 in less than three months.

The Chosin Reservoir

General MacArthur's successful turning movement at Inchon drastically changed the course of the Korean War. Thereafter, the NKPA was a broken machine with its scattered remnants headed for the protection of North Korea's hinterlands or a safe haven inside China. MacArthur, sensing a chance to end the conflict by trapping the remaining North Korean forces, sent his United Nations Command speeding north beyond the 38th Parallel in a race for the Yalu River despite warnings not to do so.

MacArthur split his forces to hasten the pursuit. He ordered the Eighth Army forward in the west and opted to use X Corps, including the 1st Marine Division, for an amphibious landing at Wonsan in northeast Korea. Once again, VMO-6 split into forward and rear elements. The advance party (4 officers and 70 enlisted men known as the "surface" echelon) embarked on board LST 1123 and then sailed for Wonsan on 13 October. Most pilots, all VMO-6 aircraft, and a skeleton ground-support crew remained at Kimpo. Fifth Air Force specifically tasked the Marine helicopters with supporting a U.S. Army parachute drop near Pyongyang, but the Marines also would conduct combat search and rescue as needed. This "flight" echelon was composed of 17 officers and 19 enlisted men with Captain Armstrong as officer-in-charge. The stay-behind element was to continue operations from Kimpo until ramp space at Wonsan became available. Included in the helicopter flight echelon were several newly arrived pilots and replacement air-

craft ferried in from the United States on board the aircraft carrier *Leyte* (CV 32). The new aircraft were welcome additions that made nine Marine HO3S helicopters available.

United Nations ground forces pressed forward against only token resistance. A South Korean division occupied Wonsan in early October, but the amphibious task force carrying VMO-6 had to mark time sailing up and down the east coast until the harbor could be cleared of mines. Consequently, members of VMO-6's stay-behind echelon actually set down in North Korea before the advance party. On 23 October, Captain Blatt and Lieutenant Ward flew north from Kimpo to Wonsan. The airfield served as the squadron's

Capt Wallace D. Blatt, a helicopter pilot assigned to VMO-6 in Korea, had been a Marine multi-engine transport pilot at Guam and Okinawa during World War II. He learned to fly helicopters immediately after the war and was the first Marine helicopter pilot deployed overseas when he flew a borrowed Navy HO3S-1 during the occupation of North China.

National Archives Photo (USMC) A130580



home base from then until VMO-6 moved to Yonpo on 3 November. The embarked surface echelon finally got ashore on the 25th, and the flight echelon completed its movement to Wonsan three days later.

Immediately after landing, the 1st Marine Division began operations. One regiment occupied Wonsan and manned two battalion-sized outposts (Majon-ni to the west and Kojo to the south) while two regiments proceeded about 50 miles north to the port of Hungnam and the railway junction at Hamhung before moving out toward the Chosin Reservoir some 78 miles farther inland. Although intelligence estimates indicated there would be little resistance and X Corps commander, Major General Edward M. Almond, wanted a rapid inland movement, the enemy had other ideas. A night attack at Kojo caught the Americans by surprise and cut the main supply route while unexpectedly strong NKPA forces encircled the Majon-ni outpost. With no overland routes open, helicopters became the only reliable link with both outposts.

The 1st Marine Division was alerted that the Kojo garrison was under attack in the early morning hours of 28 October. Emergency requests for medical assistance, specifically aerial evacuation helicopters and a hospital receiving ship in addition to ground reinforcements, were quickly acted upon. Six HO3S helicopters were dispatched. As Captain Gene Morrison later recalled, the situation was desperate enough that he never shut his engine down after arriving at Wonsan on his ferry flight from Kimpo. Instead, he received a hurried cockpit brief and was on his way to Kojo without ever leaving the aircraft. Captains Blatt and Morrison, and



The hospital ship Repose (AH 17) at anchor in Incheon Harbor. Note the helicopter landing pad mounted on the ship's stern; this configuration became standard on all hospital ships during the course of the Korean War.

Department of Defense Photo (USMC) A134641

Lieutenants Engelhardt, Lueddeke, and Ward, collectively flew 17 seriously wounded men from Kojo to the hospital ship *Repose* (AH 17) at Wonsan Harbor. Captain George B. Farish provided airborne search and rescue. During a search on 29 October, he spotted the word "HELP" spelled out in straw about a mile northeast of Tongchon. As Farish trolled the area, a lone figure emerged from cover and then began waving. Farish shouted: "Hey Mac, looking for a ride?" He then plucked up the first of several lost Marines he brought in that day. During several of the rescues Farish left his helicopter to assist badly wounded men to the idling aircraft. Unfortunately, his daring attempt to rescue a Navy pilot under fire late in the day came to naught when it was discovered the man was already dead.

Helicopters played an important role at Majon-ni, a vital road junction located in a Y-shaped valley about 25 miles west of Wonsan.

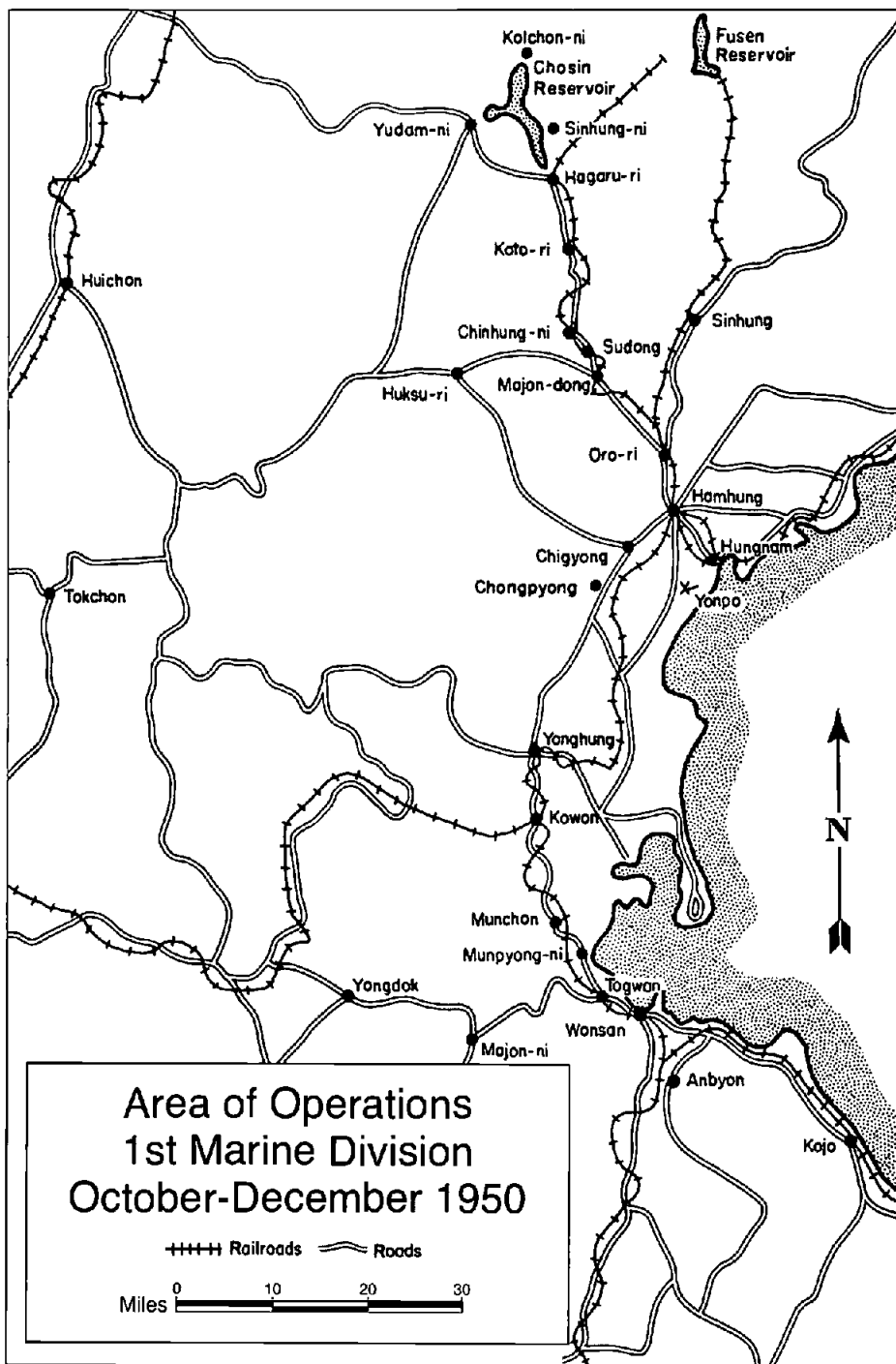
Capt Gene W. Morrison, a helicopter pilot with VMO-6, was one of the first Marine "Whirlybirds" to arrive in northern Korea from Kimpo Airfield to support the Chosin Reservoir campaign. At Yonpo Airfield, he was immediately diverted to help evacuate serious wounded Marines from Kojo to the hospital ship Repose (AH 17) in Wonsan Harbor.

National Archives Photo (USMC) 127-N-A130604



The village was occupied without resistance on 28 October, but within a week the garrison was completely surrounded and the vulnerable main supply route became known as "Ambush Alley." Radio communications between Majon-ni and Wonsan was uncertain because intervening high ground and intermittent atmospheric interference allowed an open window of only a few hours each day, so the only reliable communications links were messages carried in and out by helicopter or OY pilots. For the most part, the Majon-ni strong point was supplied by airdrop and casualty evacuation was by helicopter from 2 November until the siege lifted.

The Chosin Reservoir campaign tested the endurance of the "whirlybirds" and the skill of their pilots and the fortitude of their ground crews like no other period before Chinese anti-aircraft fire began to light up the clouded skies of northeast Korea. The via-



bility of extended helicopter operations at high altitude and in difficult weather conditions was at that time still conjectural. It was believed that helicopters might not be able to operate safely at any point beyond Chinhung-ni at the mouth of the Funcilin Pass, about two-thirds of the way to the Chosin Reservoir, due to the thin air at that altitude. The effect of prolonged cold weather on helicopter

operations was also a source of concern. This issue came to the fore when Captain Eugene Pope had to return his HO3S after only four minutes aloft because the collective and cyclic controls were too stiff to adequately control flight. Ground crews subsequently switched to light weight lubricants and tried to either hangar or cover all aircraft when not in use. These measures compensated for, but

did not completely alleviate, cold weather-induced problems. Reduced lift in low temperatures at high altitude and flight in windy conditions made flying in the mountainous terrain hazardous, but there was no choice when emergencies occurred. It also became apparent that ground-effect hovers would not be possible in the foreseeable future. An additional problem was the ungainly configuration of the HO3S-1, which required stretcher cases to extend outside the cabin. Sub-freezing temperatures and extreme airborne wind chill factors put already wounded men at risk for frostbite while enroute to safety. Thus, the already limited flight envelope of the HO3S-1 was further restricted by terrain and weather.

On 2 November, the 1st Marine Division began its ascent toward the reservoir following a helicopter reconnaissance of the Sudong Valley. No enemy troops were located from the sky, but ground units were soon mixing it up with the first Chinese Communist units yet encountered. General Smith ignored the advice of the X Corps commander to speed it up and instead moved his division steadily ahead along a single-lane road, keeping all units tied in and establishing strong points along the way. His foresight and prudence likely saved the 1st Marine Division from annihilation when the Chinese sprang their trap a few weeks later.

Helicopters scouted hill-masked flanks, reconnoitered the roadway, laid communications wire, provided radio relays, and brought in crucial small items in addition to their by-then normal jobs of command liaison and medical evacuation. Despite increasingly poor weather, First Lieutenant Ward flew 115 miles from Yonpo to Songjin to rescue an Air Force air-



Department of Defense Photo (USMC) A4912

Aerial evacuation of wounded and severely frostbitten Marines and soldiers from Hagaru-ri saved numerous lives. From late November to mid-December, Maj Vincent J. Gottschalk's squadron conducted a total of 191 helicopter evacuations out of a total of 1,544 flights.

borne forward air controller whose plane had gone down near the Chosin Reservoir on 5 November. The HO3S was badly buffeted by crosswinds and strained to bite into the chilly thin air. Three days later, Captain Pope's helicopter was blown out of the sky by turbulent winds while on a resupply run. The helicopter was a wreck, but Pope escaped without serious injury. Lieutenant Ward arrived to take him out but was beset by a temperamental starter, so both pilots spent the night at a ground command post.

By 26 November, the 1st Marine Division was dangerously spread out. Little active resistance had yet been encountered, but veteran commanders were leery that things might be going too well. The Marines had moved upward

through the snow-covered Funchilin Pass over the main supply route, a treacherous, icy, winding, narrow, dirt road. General Smith wisely established a series of outposts along the way; a regimental supply base at Koto-ri just north of the Funchilin Pass, an airstrip and division headquarters at Hagaru-ri on the southern tip of the reservoir, a company-sized outpost guarded the Toktong Pass from Fox Hill, and a jump off point manned by two regiments at Yudam-ni on the western tip of the reservoir.

Conditions were terrible. Swirling snow and sub-zero temperatures were the result of the winds, which blew down from Manchuria. It would be hard to imagine more difficult flying conditions for helicopter operations. The bitterly cold, short days and lack of repair

facilities hampered helicopter maintenance. It was under these dire circumstances that the mettle of VMO-6's helicopter section was truly tested.

Beginning on the night of 27 November, the advance elements of the 1st Marine Division became heavily engaged at Yudam-ni and Hagaru-ri. The fierce fighting at the Chosin Reservoir required an all-hands effort by VMO-6 when more than six Chinese divisions tried to overrun two Marine regiments and cut the main supply route at several points. Helicopter pilots Blatt and Morrison both reported enemy roadblocks between Koto-ri and Hagaru-ri, the first official confirmation that the 1st Marine Division was surrounded. The Marines' abortive advance was about to become a breakout,

an epic of modern warfare during which the Marines "attacked in a different direction" bringing out most of their equipment and all of their wounded.

Several helicopters moved forward to Hagaru-ri to save flight time on 28 November, and all available aircraft flew from dawn until dusk each day for the next week-and-a-half. General Smith often used helicopters to visit his scattered units during that time. The helicopters of VMO-6 logged 40 sorties (1 reconnaissance, 16 transport, and 23 medical evacuations) in 73.7 flight hours on the 29th. Fifty seriously injured men were flown out and numerous vital supplies (particularly radio batteries and medicine) were brought in; General Smith visited the forward command posts, and a large group of enemy was spotted by helicopter that day. Captain Farish's HO3S was hit several times as he delivered supplies to an

isolated rifle company perched atop Fox Hill. As he later related: "They ran me off." Farish limped back to Hagaru-ri and safely landed under covering fire by the Marines in the perimeter, but his aircraft was operationally grounded due to damage to the main rotor transmission. The next day, Lieutenant Engelhardt's HO3S was hit while delivering vital radio batteries to Fox Hill. A bullet just missed the pilot, and the helicopter was so damaged that it had to return to base for emergency repairs after carrying out one wounded Marine. Forty-three other casualties were successfully brought out that day as well by the HO3S-1s of VMO-6. Helicopters carried out 50 wounded and brought in medical supplies, gasoline, radio batteries, and tank parts in almost 60 hours of flight time on 30 November.

The Marines consolidated at Hagaru-ri, broke out of the Chinese trap at Koto-ri, and moved

Although operating at the extreme edge of their performance envelope, the Marine HO3S-1s of VMO-6 provided reliable service at the Chosin Reservoir. During the most critical period the squadron's helicopters and OYs provided the only physical contact between units separated by enemy action.

National Archives Photo (USMC) 127-N-A5398



National Archives Photo (USN) 80-G-420288
Helicopter pilot 1stLt. Robert A. Longstaff poses in front of his HO3S-1 helicopter decked out in flight gear after delivering a downed Navy airman to the Sicily (CVE 118). Longstaff was the second Marine helicopter pilot killed in action when his aircraft was hit by antiaircraft fire at the Chosin Reservoir.

back toward the sea by way of an air dropped Treadway portable bridge that spanned the Funchilin Pass. Throughout the ordeal at the reservoir, helicopters were the only dependable means of physical contact between scattered units. They provided liaison, reconnaissance, and medical evacuation; whenever a "whirlybird" flew a medical supply mission, ammunition and radio batteries were part of the incoming load. These operations were not without cost. On 3 December, First Lieutenant Longstaff was killed at Toktong Pass when his helicopter was brought down by enemy fire while trying to rescue a critically wounded man. Captain Blatt played a role in a daring but ultimately tragic event. After several frustrating hours trying to start his frozen helicopter, Blatt was finally able to get his aircraft to crank up just as an emergency rescue mission came in. Blatt took off but then returned when the covering air patrol told him an ax and fire

extinguisher would be needed to free the trapped pilot, Ensign Jesse L. Brown, USN. Arriving at the scene, Blatt joined Navy Lieutenant Junior Grade Thomas J. Hudner, Jr., who had purposely crash-landed his plane in order to assist Brown. Despite their best efforts, they could not extract the mortally wounded man before he died. The saddened men had to return empty handed, but Hudner later received the Medal of Honor for his unselfish actions to rescue the United States Navy's first African-American combat pilot.

After the 1st Marine Division departed Koto-ri for Hungnam on 6 December, VMO-6 moved back to Yonpo. During the ensuing voyage from Hungnam some of the squadron's helicopters were earmarked to conduct emergency rescues during carrier-borne air operations. On 12 December, the first elements of the squadron (including two helicopters) began to back load on board LST Q082 for immediate transportation to Hungnam, which would then be followed by a seaborne redeployment to Pusan. Seven helicopters remained behind until additional ship spaces could be found. On 17 December, three HO3Ss flew from their temporary home on the beach at Wonsan to the battleship *Missouri* (BB 63) and then each transhipped to three different carriers (the *Leyte* [CV 32], *Princeton* [CV 37], and *Philippine Sea* [CV 47]) for duty as standby plane guards, a fourth HO3S served the heavy cruiser *St. Paul* (CA 73). Three additional helicopters embarked on board the *Missouri* late in the day. Enroute, Lieutenant Colonel Richard W. Wyczawski, commander of Marine Fighter Squadron 212, was charged with overseeing the movement of VMO-6's "lost sheep" during the voyage to Pusan. They were successively

located on board their various ships and then gathered together on board the light carrier *Bataan* (CVL 29) as the convoy sailed south. Unfortunately, three helicopters were damaged enroute by high winds and heavy seas. The four operable "whirlybirds" flew off their host carriers to Masan on 26 December 1950. The others were off loaded at Pusan Harbor and underwent repairs.

The return to Masan closed the books on the Chosin Reservoir campaign. During the movement north and the ensuing breakout between 28 October and 15 December, Marine helicopters flew 64 reconnaissance, 421 transport, 191 medical evacuation, 60 utility, and 11 search and rescue missions; more than 200 wounded men were flown out, most of whom would have died without speedy medical assistance. All of this, of course, could not have been possible without the outstanding support of the tireless ground crews aided by Mr. Harold Nachlin, the much-respected civilian technical representative from Sikorsky Aircraft. As impressive as these achievements were, however, the Chosin campaign once again pointed out the inadequacy of the HO3S as a military aircraft. A more effective medical evacuation platform was desperately needed, as was a viable transport helicopter. Fortunately, each of these was in the pipeline and would soon see combat service.

Pohang to the Punchbowl

The unexpected Communist Winter Offensive initiated the longest retreat in American military history. While X Corps pulled back from northeast Korea, the Eighth Army fell back more than 600 miles before halting south of Seoul. During the next eight

months the U.S. Marines would rest and rebuild at Masan, chase elusive North Korean guerrillas near Pohang, lead the United Nations Command drive up central Korea from Wonju to the Hwachon Reservoir, survive the last major Chinese offensive of the war, then once again claw their way north to a rugged mountain area just north of the 38th Parallel where the U.N. lines would remain until the end of the war. Throughout those U.N. counteroffensives the helicopters of VMO-6 continued to provide outstanding support.

While the Marines in Korea were slogging their way back from Chosin, several Bell HTL helicopters arrived in Japan. The HTL was a two-seat, single-engine aircraft that was already familiar to every helicopter pilot because they had learned to fly helicopters using Bell-made trainers at Lakehurst and Quantico. These small "fishbowls" (so called due to their prominent plexiglass bubble canopies) mounted two evacuation pods, one on each side of the fuselage. This handy configuration made the Bells much better adapted for medical evacuation than the venerable Sikorskys. Unfortunately, their relatively underpowered engines were unsuited for high-altitude, cold-weather operations, so they were kept in reserve until the Marines returned to Pusan. Most of the older HTL-3s were assigned to headquarters or maintenance squadrons while all of the newer HTL-4s went to VMO-6. The plan was to gradually replace the HO3S-1s as HTL-4s became available. On 28 December 1950, three HTL-4s, two HTL-3s, and another HO3S-1 joined the ranks of VMO-6. First Lieutenant John L. Scott flew the first operational mission with an HTL-4 on 2 January 1951. As the New Year dawned, VMO-6 mus-



VMO-6 Historical Diary Photo Supplement, Nov52

Bell HTL

Thanks to the opening credits of the long-running television series “M*A*S*H,” a helicopter delivering wounded men to a field hospital remains one of the most enduring images of the Korean conflict. The aircraft featured on that show was a Bell Model-47, the same type flown by the Marines under the designation HTL and by the Army and Air Force as the H-13.

The Model-47 first flew in 1946, was granted the first ever U.S. commercial helicopter license in 1947, and remained in production for almost 30 years. Military versions saw extensive service in both Korea and Vietnam, and several generations of naval aviation helicopter pilots learned to fly using HTLs. Early model HTL-2 trainers used at Lakehurst Naval Air Station, New Jersey, mounted wheels instead of skids and were covered in fabric when the first Marine trainees learned to fly rotary-wing aircraft. The Chief of Naval Operations designated the HTL as the prospective observation helicopter in 1949. The press of combat operations in Korea, particularly the need for a more suitable aerial medical evacuation platform than the HO3S, led to a massive influx of HTL-4s to Marine Observation Squadron 6 at the end of 1950.

The unique technical feature of all Bell helicopters was a two-bladed rotor and stabilizer system that reduced flying weight without harming performance, and the unique visual feature of the HTL was its clear Plexiglas

“goldfish bowl” cabin canopy that allowed all-round vision. The HTL-4’s squat configuration and skids allowed it to land in rough terrain while the inclusion of two exterior stretcher pods made it the preferred aircraft for field evacuations of seriously wounded men. Unfortunately, it had an unreliable engine and a notoriously weak electrical system that together required inordinate maintenance time while its limited fuel supply severely reduced the helicopter’s combat radius.

Several generations of naval aviators learned to fly using HTL trainers, and the Bureau of Aeronautics eventually purchased more than 200 HTLs, the last of which were still regularly flying more than two decades after the first one took to the air. Advanced versions of the HTL developed into the UH-1 Huey and AH-1 Cobra, the utility and attack helicopters that arm today’s Fleet Marine Forces.

Aircraft Data

Manufacturer: Bell Aircraft Company

Power Plant: 200 hp Franklin O-335-5

Dimensions: Length, 41’5”; height, 9’ 2”; rotor, 35’ two blade with stabilizer

Performance: Cruising speed, 60 mph; ceiling, range, 150 miles

Lift: Pilot plus two passengers or two externally mounted stretchers



National Archives Photo (USMC) 127-N-A130600
Capt George B. Farish, a helicopter pilot with VMO-6, stands by his Bell HTL. Farish, by late 1950, had participated in more than 100 combat missions and was responsible for the evacuation of more than 55 seriously wounded United Nations troops.

tered 13 helicopters and nine OY observation aircraft. An influx of fresh faces was a welcome sight as well because, according to Captain Gene Morrison, "the old hands . . . were . . . pretty tired" after six-months' of grueling combat duty. Just as with the ground units, a significant personnel change was underway. The Regulars were giving way to recalled reservists. By the end of January 1951, the number of Reserve pilots in VMO-6 equaled the number of Regulars.

The 1st Marine Division spent a month recuperating throughout the uneventful respite at the Masan Bean Patch. During that time, VMO-6 operated from an airstrip near the waterfront. A maintenance detachment including four officers and 11 enlisted men moved from Korea to Itami Air Base in Japan to prepare the growing fleet of arriving helicopters for combat service. Most helicopter missions at Masan were utility and liaison flights, although occasional aerial reconnaissance and familiarization flights were

also made. Concurrently, plans were being formulated for the Marines to move about 70 miles northeast to secure the X Corps eastern flank by conducting antiguerrilla operations near the coastal village of Pohang.

Helicopters proved invaluable for liaison work even before the 1st Marine Division moved to Pohang. Unfortunately, poor weather often hampered flying conditions. General Smith had several hair-raising encounters en-route to planning conferences, but he always arrived on time. Two HO3S-1s were tossed about by high winds as they carried General Smith's forward command group

to meet with the new Eighth Army commander, Lieutenant General Matthew B. Ridgway, USA, on 30 December 1950 at Kyongju. They made it on time despite the harrowing flight conditions. On 8 January 1951, General Smith was summoned to a commander's conference at Taegu. Dense fog grounded all fixed-wing aircraft, so Smith boarded Lieutenant Lueddeke's HO3S for the flight. Lueddeke followed some dimly visible railroad tracks at about 400 feet, twice having to suddenly swerve to avoid mountainsides along the way. Once, the visibility was so reduced that Lueddeke had to put the plane down in a rice

One of the little noted, but important missions performed by VMO-6 helicopters was laying telephone wire between frontline positions. Here, a squadron ground crewman loads wire spools onto a HTL-4 flown by Capt James R. O'Moore.

Department of Defense Photo (USMC) A131086



paddy; Smith lit his pipe and made small talk while waiting to resume his journey. Not long thereafter, the pair took to the air once again; this time using roadside telephone posts to guide them.

In early 1951, the 1st Marine Division rooted out remnants of a North Korean division that had infiltrated the region surrounding Pohang and threatened X Corps headquarters at Taegu. Dubbed the "Pohang Guerrilla Hunt," the campaign sought to secure this area as it held the only usable port on Korea's southeastern coast, the main supply route for east-central Korea, and three vital airfields.

The VMO-6 ground support elements moved from Masan to Pohang by air, truck convoy, and ship beginning on 13 January 1951. The move was complete by 16 February. Pohang's mountainous and forested terrain hid the enemy who quickly broke up into small groups when the Marines arrived. The solution was saturation patrolling. The Marines sent out fire-team and squad-sized patrols operating from platoon- and company-bases to flush out enemy stragglers. Helicopters were used for observation, reconnaissance, laying wire, command and control, medical evacuations, resupply of isolated small units, and transportation of fire teams to remote hilltops. The guerrillas were driven underground by relentless Marine pressure, but not decisively defeated. In the words of the official history: "In retrospect, had [a full] squadron of helicopters been available . . . its quick lift . . . increased mobility and surveillance would have made quite a difference in the conduct of action." Unrealized at the time, the use of helicopters at Pohang was actually a foretaste of the methods that would be used by the U.S. Marines and Army on a much larg-



National Archives Photo (USMC) 127-N-A131826
Capt Clarence W. Parkins points out the spot where he was forced to crash land his helicopter in the water during a test flight. Parkins later became VMO-6's acting commander.

er scale in Vietnam more than a decade later.

The most notable helicopter incident of the guerrilla hunt occurred when First Lieutenant John Scott flew the first night medical evacuation by a Bell helicopter. There were several other nerve-wracking experiences as well. On 27 January, for example, an HTL-4 flown by Captain Harold G. McRay caught a skid on a low-strung cable and crashed while attempting to takeoff from Andong. The aircraft was wrecked but neither the pilot nor his passenger, Brigadier General Lewis B. "Chesty" Puller, who had been "frocked" to this rank the night before, were injured.

The helicopters of VMO-6 evacuated 59 men, most from the 7th Marines at Topyong-dong, between 25 and 31 January. Helicopter evacuations directly to hospital ships became routine operations. The advantages of this time-saving and life-saving method were enumerated by Captain John

W. McElroy, USNR, the commander of the hospital ship *Consolation* (AH 15): "tests . . . conclusively proved the superiority of [helicopters for] embarking and evacuating patients to and from the ship. There was less handling in that patients were moved directly from airstrip to ship in one short hop, thereby eliminating . . . long and rough stages by boat and ambulance [and] 'choppers' [could] operate when seas were too rough for boat handling." When the *Consolation* returned stateside for an overhaul in July, a helicopter-landing platform designed by Marine Major Stanley V. Titterud was added and Marine pilots instructed the ship's company in proper landing procedures. Upon return her to Korean waters, a pair of Sikorsky H-19 (U.S. Air Force designation for the HRS) search and rescue helicopters were stationed permanently on board the *Consolation* to carry out medical evacuation flights. U.S. Army aircraft eventually replaced these Air Force helicopters. Operations became so smooth that it was not unusual for a litter case to be off the helicopter and on the way to the emergency room within a minute or less. Eventually, all hospital ships were similarly outfitted with landing platforms. There is no definitive tally as to how many seriously wounded men were saved due to the swift treatment afforded by the helicopters of all Services, but most estimates reach well into the hundreds.

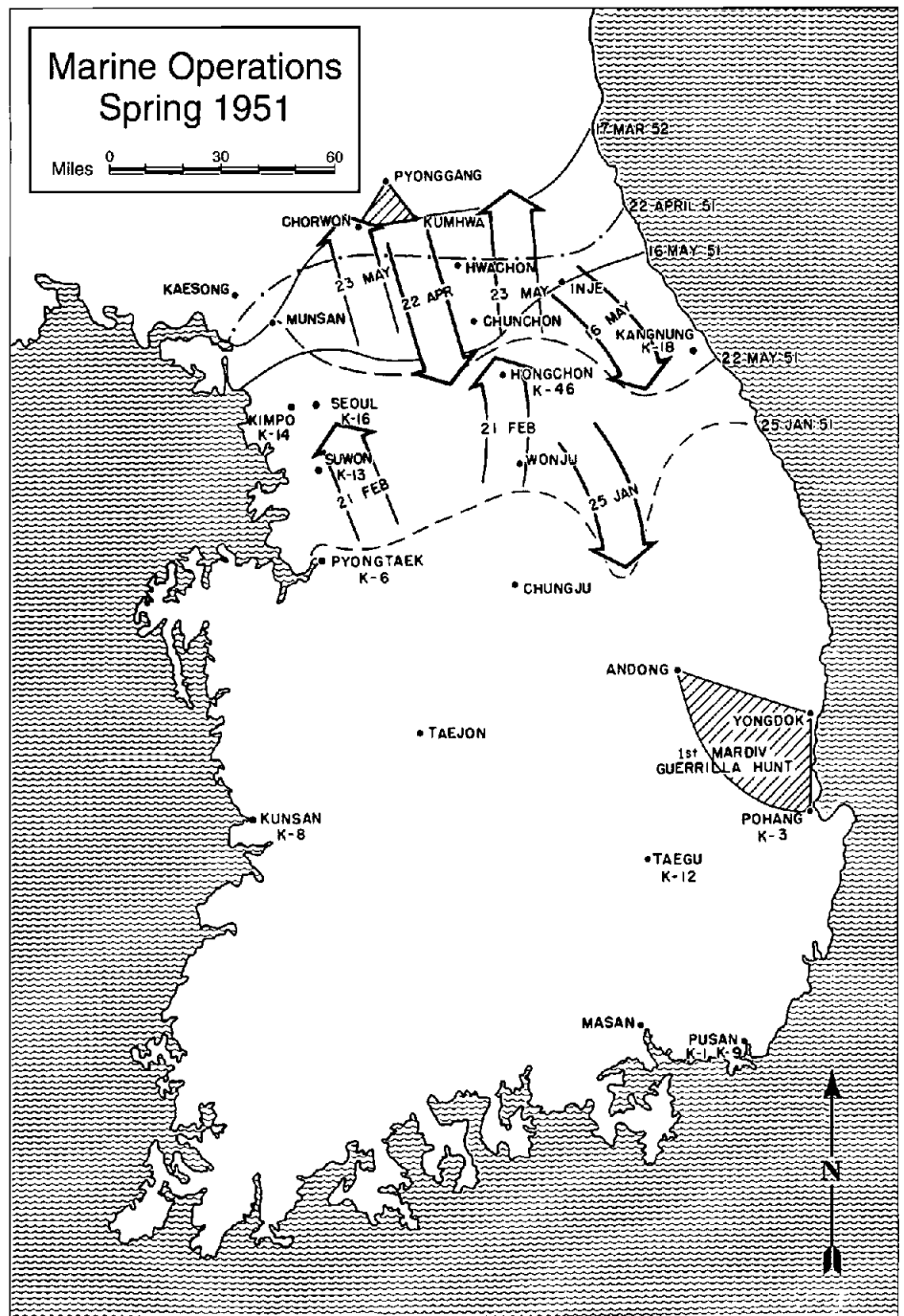
On 1 February, Captain Gene Morrison made a daring night landing on the deck of the *Consolation*. The next day a similar evacuation flight to the *Consolation* almost ended in tragedy when a delirious patient became so violent that Captain Clarence W. Parkins had to make an unscheduled landing so he and the corps-

man on board could subdue and bind the man. Parkins then resumed the mercy flight.

From Pohang, the Marines were tapped to lead IX Corps up the center of the peninsula during a series of limited objective attacks, Operations Killer, Ripper, and Rugged, collectively called the "Ridgway Offensives." These successive attacks, which began in late February and continued throughout March and April, gradually pushed the Communists out of the Som River Valley and back above the Hwachon Reservoir. During that time, VMO-6 followed in trail of the advance, successively moving forward from Pohang to Chung-ju, Wonju, Hongchon, and Chungchon, only to move back again when the Chinese mounted their spring offensives.

The Marines jumped off on 21 February, but traffic congestion delayed the arrival of Marine assault troops and hampered command and control. Luckily, General Smith had the use of a helicopter and was able to communicate directly with his subordinates and be present to observe the initial attack. In the words of Marine Corps historian Lynn Montross: "Only the helicopter . . . enabled General Smith to solve his time and space problems prior to Operation Killer. The division was required to move 150 miles by road and rail from Pohang to the objective area near Wonju in central Korea, with only one road being available for the last 30 miles."

Three days later, Marine General Smith was hurriedly summoned to the IX Corps advanced command post to take command after the commanding general died of a heart attack. This battlefield promotion, however, was only temporary until a more senior Army general arrived. Smith commandeered a Marine helicopter to



use during his time at IX Corps. As he later explained: "at the Corps level the helicopter was even more essential for command purposes than at the division level."

Just as before, although not an official task for observation squadrons, combat search and rescue missions remained a high priority. Captain Morrison picked up a Marine fighter pilot downed near Song-gol on 12 March. On 27

March, two Marine helicopters flown by Captain Norman C. Ewers and First Lieutenant Robert A. Strong were called out to conduct a search and rescue mission for an Air Force C-119 Flying Boxcar that had gone down behind enemy lines. They found the site, set down, picked up three injured crewmen, and recovered the body of a fourth airman. The impact of helicopters on operations in Korea was such that by that time this dar-

ing mission that would once have garnered stateside headlines, had become routine.

Between 1 January and 30 March, VMO-6 evacuated 539 wounded Marines (60 in January, 99 in February, and 370 in March). The helicopter section was extremely fortunate; it lost only two aircraft (General Puller's HTL-4 and an HO3S-1 lost to a takeoff incident on 12 March) and suffered no one killed in action. Unfortunately, the month of April was a tough one; three helicopters would be lost during heavy fighting.

April began with a command

change for VMO-6. Major Gottschalk departed on the last day of March and the officer-in-charge helicopter section, Captain Clarence W. Parkins, became the acting squadron commander until the arrival of Major David W. McFarland who would command the squadron for the next six months. The squadron at that time numbered 28 officers and 125 enlisted men with nine OY observation aircraft, five HO3S-1s, and six HTL-4s.

The 13th of April was a busy day for helicopter search and rescue. First, Captain James R. O'Moore and Technical Sergeant

Philip K. Mackert took off to search for a lost aircraft with the help of a flight of Marine Corsairs. They were unable to locate that pilot and one of the Corsair escorts was shot down. O'Moore set his HO3S down, then he and Mackert rushed over to try to save the pilot but it was too late. Later that day, Captain Valdemar Schmidt, Jr.'s HO3S-1 was brought down by enemy fire during a rescue mission about 20 miles behind enemy lines. Several hits from small arms fire caused a loss of power and control as the helicopter made its final approach. He crash landed in

As commanding officer of VMO-6, Maj David W. McFarland initiated night aerial observation flights by OY planes. Instead of the intended improvement in Marine

artillery accuracy, the mere presence of an OY overhead would often silence enemy artillery.

National Archives Photo (USMC) 127-N-A131464



hilly terrain and his aircraft rolled over upon impact. Schmidt suffered only minor injuries, but his passenger, Corporal Robert Sarvia wrenched his leg, cut his hand, and went into shock. American aircraft circling above kept the enemy at bay with strafing runs until helicopter pilot Captain Frank E. Wilson arrived on the scene. Wilson picked up the two Marines in addition to the Air Force pilot they had come after and then made his precarious way back in the dark, flying an overloaded helicopter without navigational aids. Jeeps, trucks, and flares lit the field for Wilson's returning aircraft.

Not every mission had a happy ending. Sometimes, despite great effort on the part of helicopter pilots, a rescue could not be made. On 14 April, Captain Gene Morrison made three attempts to pick up a downed pilot, but his HO3S was turned away by enemy fire each time. Captain Norman Ewers then tried, but he took so many hits he had to return to base empty handed as well. Plans were made to rig a stretcher to lift the pilot out the next morning, but inclement weather intervened. When OY aircraft flying over the target area could not locate the man, the helicopter rescue was scrubbed.

On the night of 22 April, the Chinese mounted their long expected Fifth Phase Offensive. When a South Korean unit on the Marines' left flank broke and ran, the 1st Marine Division pulled back and formed a semi-circle on the high ground to defend several vital river crossings. The bitter fighting, collectively known as the battle of Horseshoe Ridge, was marked by fierce hand-to-hand combat and several last ditch defensive stands by isolated units that equaled the combat intensity at

the Naktong bulge or the Chosin Reservoir. The division suffered about 500 casualties in three days fighting.

The last days of April found the helicopters of VMO-6 busily evacuating wounded men from dawn until dusk in an all-hands effort until the Marines reached the No Name Line. At about 0600 on the 23d, all helicopters were airborne and most continued operations throughout the day with 36 individual flights made (15 by HO3S-1s and 21 by HTL-4s). Fifty wounded Marines were evacuated. Captain Dwain L. Redalen logged 18 evac-

uations in almost 10 hours of flying; First Lieutenant George A. Eaton was a close second with 16 men brought out. The next day an HTL-4 was lost to enemy fire when First Lieutenant Robert E. Mathewson was shot out of the sky as he attempted a medical evacuation. Enemy fire hit the engine, instrument pedestal, and tail sections rendering Mathewson's aircraft uncontrollable as he hovered over the air panels set out to mark the landing zone. Mathewson crash-landed but was uninjured. Lieutenant John Scott, who set a record with 18 evacuations in one

Capt Norman G. Ewers receives word that a helicopter is needed in the forward area for a reconnaissance mission. During daylight hours VMO-6 pilots stood by with elements of the 1st Marine Division, maintaining constant contact with tactical air controllers by field telephone.

National Archives Photo (USMC) 127-N-A131065





National Archives Photo (USMC) 127-N-A132015

1stLt Joseph C. Gardiner, left, an HO3S-1 pilot with VMO-6, is awarded a Navy Commendation Ribbon and a pair of gold stars denoting second and third awards of the Air Medal for combat actions during the Inchon-Seoul campaign. Marine helicopters played an important role in the drive inland by providing transportation, medical evacuation, and visual reconnaissance for the 1st Marine Division.

day, tried to fly in despite the danger, but was waved off by Mathewson who then picked up a rifle and temporarily joined the infantry. His crippled aircraft was destroyed by demolitions before the Marines departed. Thirty-two helicopter missions were flown, and about another 50 seriously wounded were evacuated by Mathewson's fellow pilots.

The United Nations Command briefly regrouped behind the No Name Line, repelled a second Communist offensive, then once again set off north—this time heading the Kansas Line along the 38th Parallel. Non-stop fighting had exhausted the enemy and his forces were seriously depleted after suffering grievous losses in the recently concluded spring offensive. The desperation of the enemy was evident as unprecedented numbers of them began to surrender. This time it was the

Communists who were “bugging out.” By the end of June, the United Nations Command was once again about to enter North Korea. At that point, the Communists called for a cessation of offensive actions as a prelude to peace talks. The United Nations accepted this condition, and the fighting forces of both sides temporarily settled down along a line not far from the original pre-war border between the two Koreas.

During August, VMO-6 operated from Songjong until the 28th, then moved to Sohung. The month saw several rescue missions. First Lieutenant Joseph C. Gardiner, Jr., picked up a downed Marine fighter pilot on 12 August. On 28 August, Major Kenneth C. Smedley used his HTL-4 to pull two communications men stranded on a small island in the middle of a rapidly rising river out of harm's way. That same day, Captain

Frank E. Wilson lost control of his HTL-4 when a crewman jumped out of the hovering aircraft during an attempted rescue. Captain Frank G. Parks was credited with saving several lives by delivering whole blood in darkness on 29 August despite the fact his helicopter had no lit instrumentation, no landing lights, and no homing locator.

When peace talks broke down in September, Lieutenant General James A. Van Fleet, USA, commander of the Eighth Army since mid-April, mounted a series of limited attacks intended as much to pressure the Communists back to the peace table as to secure dominating terrain just north of the Kansas Line. The Marine sector featured a volcanic depression known as the Punchbowl. Its capture was a bloody three-week slugfest fought over nearly impassable roadless mountain terrain, so helicopters were much in demand. Marine pilots were at risk as they courageously defied enemy fire on their missions of mercy. The HO3 and HTL helicopters delivered small loads of medicine, ammunition, and radio batteries to the front and then brought out 541 severely wounded men. Another frequent mission was the delivery of whole blood to forward-deployed Medical Companies A and E of the 1st Medical Battalion.

On 16 September the light helicopters of VMO-6 evacuated 85 men. First Lieutenant Joseph Gardiner led the pack with 17 medical evacuations. Major Edward L. Barker's HTL was hit by enemy artillery as he tried to lift out a pair of wounded Marines. He escaped without injury, but one of his passengers succumbed to his wounds before reaching medical sanctuary. The following day, Captain William G. Carter's HTL-4 crashed while conducting an

emergency medical evacuation. Ground personnel attempting to assist the landing on rough terrain grabbed the helicopter's skids but inadvertently tipped the aircraft causing it to crash. The aircraft was lost and the pilot suffered non-threatening injuries. Captain Gilbert R. Templeton's HO3S-1 was hit by enemy fire during a resupply mission on 21 September; Templeton was able to return to base for repairs, but the mission had to be scrubbed. Major Kenneth C. Smedley, the squadron's executive officer, crashed when his HO3S-1 lost hover and set down hard on uneven ground. When the plane began to slip over the steep cliff, Smedley had to intentionally roll the helicopter on its side to stop its descent. Neither he nor his passenger was injured, but the helicopter was wrecked.

The fighting for the Punchbowl lasted until late September. After that, both sides settled down and began to dig in. The capture of the Punchbowl marked the last major offensive action by the Marines in Korea.

As the first year of the Korean War came to a close there could be little doubt that the helicopter was the most important tactical innovation to date. The plucky little aircraft had proven themselves adaptable, versatile, and survivable. The ability of the helicopter to traverse difficult terrain, to land in tight spots, and to rapidly scout unfamiliar territory made it the preferred mode of transportation for generals and colonels; downed pilots could look forward to being hoisted out of the freezing water or grabbed up from behind enemy lines with a certainty never before experienced; and almost 2,000 men had been lifted to hospitals within a few hours of being wounded, a factor that greatly increased survival rates. There was little doubt

the helicopter was here to stay, but thus far in the war the "whirlybirds" had not yet been used for their proposed main missions and original *raison d'être*: vertical envelopment and assault support. This was due to the inadequate lift of the machines currently available, but that was about to change as the war entered its second year.

Arrival of HMR-161

Marine Transport Helicopter Squadron 161 (HMR-161) was the first transport helicopter squadron in history. It was also the first full helicopter squadron committed to combat. Mounted in brand new Sikorsky HRS-1 helicopters, HMR-161 arrived in Korea in early September 1951 and was soon testing new operational methods under actual combat conditions, a little more than one year after Brigadier General Edward Craig's original recommendation that such a squadron be sent into combat. The squadron's arrival at that particular juncture in the war was fortuitous because the 1st Marine Division, then slogging its way north against stubborn Communist resistance in the mountains of east-central Korea, was led by two early and very influential proponents of helicopters—division commander Major General Gerald C. Thomas and his chief of staff Colonel Victor H. Krulak. Both Marines were plank holders in the helicopter program; from Washington, D.C., and Quantico, Virginia, they pushed for adoption of rotary-winged aircraft and created a test-bed squadron immediately after the war. Krulak helped write initial helicopter doctrine and drew up many of the first operational plans used by HMX-1, while Thomas pushed for expanded helicopter development at Headquarters Marine Corps in the

immediate post-war period, then gained practical experience in their use at Quantico after his return from China in the late 1940s. Both men were known throughout the Corps as innovators and visionaries, but they also garnered reputations for thorough planning and meticulous execution of those plans. In retrospect, it was clear that HMR-161 and the 1st Marine Division formed a perfect match.

Plans to create transport helicopter squadrons had been on the board well before the outbreak of the Korean War. In fact, early post-war planners envisioned a Marine helicopter aircraft wing comprising 10 squadrons with 24 helicopters each. The proposed machines should be able to carry 15-20 men or 4,000 pounds of cargo. This was no small order because that number of aircraft just about equaled the entire American helicopter production to that time and no existing helicopter could come close to lifting the specified number of troops or amount cargo. The main sticking points were lack of funds, a ceiling on aircraft procurement, and—most importantly—lack of a suitable aircraft. The demands of the Korean War loosened up funding and virtually eliminated aircraft procurement restrictions. Thus, the only remaining roadblock became the machines themselves.

Long-range plans in the late 1940s called for the creation of up to six transport helicopter squadrons by the mid-1950s. This leisurely pace was driven as much by technology as by anything else. The Marines wanted a reliable, high-performance, heavy-lift helicopter to carry cohesive tactical units ashore from escort carriers and then rapidly build up supplies within the beachhead. The problem was the machines of the day were too limited in range, lift, and



National Archives Photo (USN) 80-G-43339

Sikorsky HRS-1

The HRS transport helicopter was the military version of the Sikorsky S-55 commercial aircraft. It featured the familiar Sikorsky design signatures, a single overhead main rotor and a small anti-torque rotor on the tail boom. Although many of its components were simply enlarged versions of similar ones found in the HO3S, the HRS did not look much like the Marines' earliest observation helicopter. It was much larger, its cargo space included seats for eight passengers, the two-seat cockpit was located high on the fuselage and set farther back than the HO3S, and the engine was mounted low on the front of the aircraft rather than high amidships. Although initially selected as only an interim model until a larger heavy-lift helicopter became available, the Navy Department eventually purchased 235 variants of the S-55. The U.S. Army and Air Force flew similar models as H-19s, and the Coast Guard variant was the HO4S-3G.

The Marine Corps turned to the Sikorsky S-55 after its first choice, the Piasecki H-16, outgrew the ability to operate from small escort carriers—foreseen as the transport helicopter's primary mission. The Navy was already looking at one version of the S-55; an antisubmarine variant designated the HO4S. There was no obvious external difference between the HRS and the HO4S. This was because the main difference was each respective aircraft's mission. The Marine transport helicopter did away with mine detection equipment but mounted troop seats and had self-sealing fuel tanks. The most innovative feature of the S-55 was its engine placement. It was set low in the helicopter's nose. A drive shaft ran up through the back of the cockpit to provide power to the three-bladed overhead main rotor. The engine placement made it easy to reach, cutting maintenance time. That configuration also eliminated critical center-of-gravity problems that plagued both the HO3S and the

HTL. The HRS also mounted a drop hook to carry external loads under the cabin. The main shortfalls of the HRS were that the machine was underpowered and mechanical failures required them to be grounded on several occasions. No Marine HRSs were lost to enemy fire, but several crashed while hovering and at least two went down in mid-air due to engine failure.

The HRS was a great step forward, but it was not the transport helicopter Marine planners envisioned. They wanted an aircraft that could carry 15 or more men to ensure unit integrity during assaults and generating enough lift to carry most division equipment. The main problem with the HRS was lifting power. Although rated for eight passengers, in the harsh reality of the Korean mountains the HRS could only carry about six men—only four if they were fully combat loaded. Both Igor Sikorsky and Frank Piasecki worked feverishly to deliver a more capable aircraft, but that advance would have to wait until the development of a practical turbine helicopter engine.

The first batch of Marine HRS-1s included 60 machines and the second order of HRS-2s mustered 91, the final version (HRS-3) included 89 more. Only the first two variants saw action in Korea, but some HRS-3s were still in the Marine inventory when their designation was changed to the CH-19E in accordance with the Department of Defense unified designation system in 1962.

Aircraft Data

Manufacturer: Sikorsky Aircraft Division of United Aircraft Corporation

Type: Transport helicopter

Accommodation: Ten-places (two crew and eight passengers)

Power Plant: One 600 hp Pratt & Whitney R-1340-57

Cruising speed: 80 mph

Payload: 1,050 pounds

avionics. Frank Piasecki's tandem rotor helicopters seemed to offer the best potential. However, the development of an improved version of the Flying Banana was taking too long, and its projected size was not compatible with escort carrier deck space. The Marines, therefore, reluctantly opted to go with an interim transport helicopter until a more capable aircraft became a reality. The machine they chose was a variant of the Sikorsky model S-55, which was already in naval service as the HO4S. The HO4S featured the standard Sikorsky frame: a single overhead rotor with a tail-mounted anti-torque rotor. Many of its components were little more than larger versions of those of the HO3S, but a front-mounted engine greatly enhanced ease of maintenance and in-flight stability. Luckily, the antisubmarine warfare HO4S helicopter required only minor modifications to meet Marine Corps

requirements. A Marine assault transport helicopter, designated the HRS, was created by eliminating the antisubmarine warfare suites and then adding self-sealing fuel tanks and placing troop seats in the cargo bay. An initial order for 40 HRS-1s was sent to Sikorsky Aircraft in July 1950. The "interim" tag, however, may have been premature. Every U.S. Armed Service and many of our allies eventually used the S-55 (designated H-19 by the Army and Air Force), and 235 HO4S/HRS variants entered naval service over the next decade.

On 15 January 1951, the first Marine transport squadron was formed at Marine Corps Air Station El Toro. The unit tentatively was designated HMR-1 ("H" for helicopter, "M" for Marine, "R" for transport, and "1" for first), but that name was changed before the squadron became operational. The new squadron was given the prefix "1" because it would be

assigned to the 1st Marine Aircraft Wing; the middle number "6" was adopted because the highest fixed-wing designator to that time had been "5"; and the last "1" indicated it was the first squadron formed, thus the new squadron became HMR-161. The commanding officer was Lieutenant Colonel George W. Herring, the former executive officer of HMX-1. A mix of regulars and reservists populated the new transport helicopter squadron. Most of the pilots, like the squadron's executive officer Major William P. Mitchell, had been fixed-wing pilots in the Pacific. Lieutenant Colonel Herring, however, had received the Navy Cross as a Marine raider before receiving his wings. While the mix of regular and reserve pilots was about equal, most of the squadron's enlisted personnel were reservists. The squadron trained at the Navy's former lighter-than-air base located at

In July 1951, Marine Helicopter Transport Squadron 161 staged a helicopter demonstration for the press at Camp Pendleton, California. Its purpose was to show how helicopters

would be used in modern warfare as envisioned by the Marine Corps.

Marine Corps Historical Center Photo Collection





Marine Corps Historical Center Photo Collection

A Marine Sikorsky HRS-1 transport helicopter is loaded on board the escort carrier Sitkoh Bay (CVE 86) at San Diego, California, for the journey to Korea. The arrival of HMR-161 and the HRS-1 would mark a new era in Marine airborne support to ground troops.

Tustin, California, not far from Camp Pendleton while waiting for its new helicopters. The squadron gradually built up to its full strength of 43 officers and 244 enlisted men flying 15 HRS-1 helicopters before receiving orders to prepare to ship out for Korea in July 1951.

The squadron embarked at San Diego on 16 August with the helicopters and aircrews on board the escort carrier *Sitkoh Bay* (CVE 86) and the equipment and a working party on board the civilian-manned cargo ship *Great Falls*. The squadron arrived at Pusan on 2 September. In Korea, HMR-161 came under the administrative

control of the 1st Marine Aircraft Wing and the operational control of the 1st Marine Division, the same command and control arrangements used by VMO-6. Four days after landing, HMR-161 moved from airfield K-1 (Pusan East) to airfield K-18 (Kangnung Airdrome) in central Korea. From there, the advance echelon moved by truck and air to X-83 at Chodo-ri, an auxiliary airstrip not far from the division headquarters, already hosting VMO-6. A rear echelon remained at K-18 to conduct advanced maintenance and make complex repairs.

The fact that HMR-161 was even in Korea was at least partially due

the efforts of Major General Thomas and Colonel Krulak who actively pushed to speed the pace of getting transport helicopters into the combat zone. Thomas and Krulak were well aware of the technical limitations of the HRS-1 and the demands of Korea's difficult weather and rugged terrain, so they began testing its abilities slowly. The initial helicopter operations were modest ones to test the waters, carefully conducted with little risk. First came a couple of resupply efforts well shielded from enemy observation and direct fire. Next came small-scale troop lifts, eventually increasing to battalion-sized movements. Tactical innovations were also on the agenda: counter-guerrilla activities; a night assault; and rapid movement of rocket batteries. It was not long before a division of labor emerged. The smaller aircraft of VMO-6 concentrated on medical evacuations, reconnaissance, observation, and liaison work, while HMR-161 conducted aerial resupply, moved troops, and experimented with vertical envelopment. Although the HRS could do everything its smaller kin could, medical evacuations and combat search and rescue were secondary missions for HMR-161. This was possible because of the static nature of the fighting. In fact, the combat situation eventually became stable enough that it was possible to increase emphasis on amphibious training even though the squadron remained in the combat zone, a factor that lent elements of realism and urgency to the helicopter training program that were probably not present at Quantico, Virginia, or Onslow Beach, North Carolina. The stunning success in Korea of helicopters used for assault support silenced critics and converted skeptics. In the words of historian



National Archives Photo (USMC) 127-N-A156740
LtCol George W. Herring, right, commanding officer of HMR-161, is welcomed to Korea by LtCol Edward V. Finn, the 1st Marine Division's air officer. LtCol Herring commanded the world's first transport helicopter squadron used in combat.

Lynn Montross, with the introduction of HMR-161 to Korea "a new era of military transport had dawned."

The first order of business was to conduct familiarization flights so the pilots could become accustomed to the terrain and get a feel for the tactical and operational conditions at the front. The veteran pilots of VMO-6's helicopter element indoctrinated the new men of HMR-161 in flying conditions and combat procedures. Also during this time various potential landing zones and flight routes were identified. While the pilots were busy flying, selected members of the shore party battalion became familiar with helicopter landing and loading procedures while planners met to prepare for the squadron's first combat opera-

tion. General Thomas wisely decided to use a series of cautious activities until both the helicopter crews and ground units got up to speed, he then pushed an aggressive agenda featuring a wide variety of missions that became progressively more complex and that thoroughly tested existing operational procedures and new theories for helicopter employment.

The initial combat operation by HMR-161 took place only two weeks after its arrival. It was dubbed Operation Windmill to honor the HRS's unofficial nickname, "Flying Windmill." Mindful of the chaotic experiences of the first Packard exercise at Camp Lejeune, North Carolina, and well aware of the dictates of *Phib-31*, Krulak and Thomas ensured the new transport helicopters would be carefully

MajGen Gerald C. Thomas, center, in command of the 1st Marine Division, discusses plans for using the new 10-place Sikorsky HRS-1 helicopters with the leaders of HMR-161, LtCol George W. Herring, the commanding officer, right,

and his executive officer, Maj William P. Mitchell. Thomas was instrumental both in bringing helicopters into the Marine Corps and getting the first Marine helicopter transport squadron to Korea in 1951.

National Archives Photo (USMC) 127-N-132027





Department of Defense Photo (USMC) A156768

Vital supplies are transferred from a truck to a helicopter for delivery to front-line troops. Helicopters often offered the only practical way to supply positions in the trackless mountain terrain near the Punchbowl.

integrated into a Marine air-ground combat team, not just used as a “nice-to-have” aviation adjunct as was sometimes the case with VMO-6’s light helicopters. One of the first steps in this process was to train elements of the 1st Shore Party Battalion for helicopter operations. Shore parties had been formed during World War II to handle supplies coming ashore by landing craft. The logical extension of this mission to landing zones as well as landing beaches eventually led to the formation of specially trained helicopter support teams. In addition, the energetic division chief of staff, Colonel Krulak, held a series of planning conferences with the 1st Marine Division staff even before HMR-161 was in Korea to draw up tentative standard operating procedures. Ground units needed to learn the intricacies of helicopter movement and their leaders were encouraged to apply the unique capabilities of helicopters in tactical situations. Before HMR-161 left Korea, its helicopters had per-

formed virtually every mission envisioned under operational conditions. The squadron’s main functions, however, were to test the practicality of vertical envelopment and to practice assault support by ferrying troops and delivering supplies to units in the field. The latter was the most exercised mission while on the East-Central Front. After moving to western Korea in 1952, emphasis eventually shifted to vertical envelopment using a continuing series of amphibious exercises. These exercises and combat operations were the foundation of the sophisticated airmobile tactics and techniques still used by the U.S. Army and Marine Corps of today.

In September 1951, Marines were clearing the enemy from a series of ridges around an extinct volcano called the Punchbowl. The ground battalion commander, Lieutenant Colonel Franklin B. Nihart described the difficult tactical situation:

“We were attacking from Hill

673 toward Hill 749 . . . our supply and evacuation route was four miles of mountainous foot trails. The only way to keep supplies moving . . . was by using Korean Service Corps porters. . . . [They] could not keep up with the logistical demands imposed by heavy casualties and high ammunition expenditure [so] HMR-161 was called in to fill the . . . gap.”

On 12 September, the first combat helicopter support team—a platoon from 1st Shore Party Battalion—attended briefings about proper loading techniques and learned how to transmit landing signals to incoming aircraft. The next morning was devoted to arranging supplies into 800-pound bundles. The first flight consisting of four helicopters made its way about seven miles and then deposited the shore party landing point section to enlarge and improve the landing zone, direct landing operations using hand signals, unload arriving helicopters and collect cargo bundles, establish supply dumps, and load battle casualties. In mid-afternoon, seven HRS-1s began lifting off with cargo loads suspended from belly hooks. The ingress and egress routes followed a deep valley that masked the helicopters from direct enemy observation. A restrictive fire plan was in effect to avoid friendly fire. The landing zone was marked with fluorescent panels, but the first incoming aircraft could only place two of their four wheels on the landing platform, which was situated on the reverse slope of a steep hill. The first supply helicopter dropped its sling at 1610 and then picked up seven battle casualties (two stretcher cases and five walking wounded). Operation Windmill I comprised 28

flights that delivered 18,848 pounds of supplies and evacuated 74 seriously wounded men. The elapsed time was two hours and 40 minutes with a total of 14.1 flight hours logged. Lieutenant Colonel Nihart's final evaluation of HMR-161's first combat action in support of his battalion was that "they . . . performed admirably."

Continued fierce fighting in the vicinity of the Punchbowl, particularly for an outcropping dubbed "the Rock," led to the second transport helicopter assault sup-

port mission. Spurred on the unquestioned success of Windmill I as well as the need for heavy fortification materials such as sand bags, timber, barbed wire, and land mines, it was decided to conduct a follow-on aerial supply operation, Windmill II. The need to move bulky fortification materials to a nearly inaccessible position drove operational planning. Sand bags, barbed wire, land mines, and timber were all too cumbersome and heavy to be moved forward by Korean laborers so

General Thomas turned to his rotary-winged "mule train" for the second time in a week. The formal request was made on the morning of 19 September, approved before noon, and underway before nightfall. Ten HRS-1s delivered more than 12,000 pounds of cargo using 16 flights in about one hour. The same operational procedures for Windmill I were used: an advance helicopter support team was inserted to operate the landing zone; the helicopters used covered and concealed routes; and material was delivered using sling-loaded bundles for speed and ease of handling. The major difference was the rapid planning process, this time preparations took only a few hours instead of several days. Once again, the helicopters of HMR-161 did within a few hours what would have taken the trail-bound South Korean porters several days.

With the ability of HMR-161 to deliver supplies fully established, the next evolution was to lift human cargo. This was Operation Summit. The mission was for the 1st Marine Division reconnaissance company to replace a South Korean unit occupying Hill 884, a key observation post located atop a rugged mountain. It was estimated that it would take a Marine rifle company about 15 hours to scale the roadless heights with all resupply thereafter accomplished either by foot or by helicopter. General Thomas decided instead to mount the first combat helicopter troop lift in history.

Once again, careful planning and preparation were the hallmarks of this operation. Lieutenant Colonel Herring and Major Mitchell coordinated their tactical plans with Major Ephraim Kirby-Smith (the ground unit commander) and worked out the loading plans with First Lieutenant Richard

Marine transport helicopter "HR-10," one of 15 HRS-1s assigned to HMR-161, lands to deliver supplies near the Punchbowl. Detachments from the 1st Air Delivery Platoon loaded the supplies while helicopter support teams from the 1st Shore Party Battalion controlled the unloading at forward area landing zones.

Department of Defense Photo (USMC) A131993





National Archives Photo (USMC) 127-N-A156727

A Sikorsky HRS-1 transport helicopter delivers supplies using "sling loading" techniques. Sling loading employed prepackaged materials that were carried in nets, lifted by a powered winch, and dropped by a remotely controlled hook that allowed helicopters to rapidly deliver vital supplies without landing.

C. Higgs, representing the division embarkation section. Aerial reconnaissance indicated the landing was going to be a tight squeeze. The only two available spots were located some 300 feet below the topographical crest about a football field length apart, and each was less than 50-foot square with a sheer drop on two sides. Terrain limited each landing zone to one arrival at a time. Operational planning was based upon the dictates of *Phib-31* and practical experience during the Windmill operations. The landing force would consist of a reinforced reconnaissance company. Helicopter support teams from the 1st Shore Party Battalion would control loading and unloading. Landing serials were compiled and rehearsals began on 20

September. H-hour was slated for 1000 the next day.

Several problems soon became apparent. First was the number of troops each helicopter could carry. The HRS-1 was rated to carry eight combat-loaded troops but practical experience in California and Korea quickly showed this figure to be overly optimistic. The actual safe load was six men carrying only small arms and personal equipment. A second problem was weather. The threat posed by high winds and the possibility of limited visibility or rain influenced operations. An additional problem in the mountainous region was reliable radio communications. The solution was to earmark one helicopter as a radio relay aircraft, the first use of a helicopter for air-to-air

command and control during ground operations.

Operation Summit was delayed on the morning of 21 September by dense ground fog. Finally, about a half-hour later than expected, the first wave of three helicopters at landing field X-83 departed for the 14-mile run to Hill 884. They approached their objective flying low along a streambed between the ridgelines and then hovered over Hill 884's reverse slope. A security element went hand-over-hand down knotted ropes and then fanned out. Next in were two landing site preparation teams. About 40 minutes later, idling helicopters at X-83 received word to begin loading. Each carried five riflemen. Two hundred and twenty four men, including a heavy

machine gun platoon, and almost 18,000 pounds of equipment were brought in using 12 helicopters requiring a total elapsed time of about four hours. The bulk of the equipment and supplies were delivered by suspended cargo nets, which had to be released on top of the mountain because the hillsides were so steep. This took place in full view of the enemy, but no helicopters were hit by enemy fire. The final touch was the airborne laying of two telephone lines in about a quarter hour from Hill 884 to the ground command post more than eight miles away. This would have been a daylong task for a wire party on foot. The event was headline news in the States, and congratulations from higher headquarters poured in: General Shepherd noted Operation Summit was “a bright

new chapter in the employment of helicopters”; and X Corps commander Major General Clovis E. Byers claimed: “Your imaginative experiment with this kind of helicopter is certain to be of lasting value to all the Services.”

Holding the Minnesota Line

In late September 1951, the United Nations Command once again halted offensive operations. All across the trans-peninsular frontline troops began digging in. Soon, a series of interconnected trenchlines reminiscent of World War I extended from the Sea of Japan in the east to the Yellow Sea in the west, and the U.S. Eighth Army was prohibited from launching new attacks. Ground activities were limited to conducting daily foot patrols, mounting tank-

infantry raids, manning small outposts, and setting up nightly ambushes. The overriding tactical concern was a penetration of the main line of resistance by the Communists. The war in Korea had once again entered a new phase; but, unlike the others, this one would last from the fall of 1951 until the ceasefire almost two years later.

The 1st Marine Division was assigned 22,800 yards of front along the northern edge of the Punchbowl with orders “to organize, construct, and defend” the Minnesota Line. Much of the main line of resistance ran through roadless mountains, and the reserve regiment was located almost 17 miles to the rear. With his manpower stretched to the limit and terrain and distance limiting rapid overland reaction by reserve

An aerial view of auxiliary airfield X-83 located near Chodo-ri, not far from 1st Marine Division headquarters.

Both helicopter squadrons (VMO-6 and HMR-161) shared this forward airfield situated near the Punchbowl.

HMR-161 Historical Diary Photo Supplement, Nov-Dec51





National Archives Photo (USMC) 127-N-A132540

All veteran World War II fighter pilots, the officers of Marine Helicopter Transport Squadron 161 pose with their commanding officer, LtCol George W. Herring, kneeling in front left, and the squadron's executive officer, Maj William P. Mitchell.

forces, General Thomas turned to HMR-161 to help solve his time and distance problems. He decided to test-lift a single rifle company. In addition, since most Chinese attacks occurred under cover of darkness, this helicopter lift would take place at night.

Once again careful planning and detailed rehearsals were conducted. Fortunately, the HRS-1, unlike the light utility helicopters of VMO-6, had flight attitude instruments, albeit not the sophisticated instrumentation found on fixed-wing aircraft. Daylight reconnaissance of the operational area, day-

time practice inserts, and night indoctrination flights were conducted. The helicopter embarkation zone was a dry riverbed southeast of Hill 702, and the landing zone was located near the northwest rim of the Punchbowl. The straight-line five-mile ingress route, however, actually became a 13-mile round trip due to tactical considerations.

A daylight rehearsal on the morning of 27 September got Operation Blackbird off to an inauspicious start. Six helicopters lifted more than 200 men into a 50-by-100-foot area cleared by a

provisional helicopter support team. This practice lift took about two hours. During the march out, however, a rifleman detonated an antipersonnel mine, and subsequent investigation revealed that the proposed route to the main line of resistance was seeded with unmarked mines. It was decided to change the ground scheme of maneuver but to keep the helicopter landing zone the same.

At 1930 on the 27th, Operation Blackbird, the first night combat helicopter troop lift in history, got underway. Departing at three-minute intervals as they shuttled

between the departure and arrival landing zones, each aircraft carried five riflemen. Different altitudes were used for ingress and egress to avoid collisions, and running lights were switched on for two minutes as aircraft neared the landing zones. Only two hours and 20 minutes were required to lift all 223 men, a movement that would have required at least nine hours by foot.

Unfortunately, there were many problems. Rotor wash blew out many of the flare pots that illuminated the embarkation area, battery-powered lanterns in the landing zone were inadequate, windshield glare temporarily blinded the pilots, artillery flashes distracted the pilots as they wormed their way through the high mountain ridges, and many in-bound pilots needed radio assistance to find the landing zone. As the squadron's after action report candidly stated:

HMR-161 pilots and crewmen attend a pre-mission brief for Operation Blackbird, the first major night helicopter troop lift. Careful planning and rehearsals were conducted to test the feasibility of night helicopter operations; after action reports noted it was possible in an emergency, but Blackbird was the only night helilift actually carried out.

HMR-161 Historical Diary Photo Supplement, Nov-Dec51



“Night lifts are feasible with present equipment [but they] should be limited to movements within friendly territory.” Although the operation was a marginal success that affirmed the possibility of emergency night reinforcement and intermittent night indoctrination flights continued, Operation Blackbird was the only major night helicopter troop lift conducted in Korea.

The next day, HMR-161 lost its first helicopter to an operational mishap. A dozen light helicopters (HO3S-1s and HTLs) had been previously lost to enemy fire and operational mishaps, but this was the first HRS to go down. The HRS-1 piloted by Major Charles E. Cornwell and First Lieutenant Frederick D. Adams came into the landing zone too low. The helicopter struck the ground, bounced into the air, canted on its side losing all lift, and then careened to

the ground and caught fire. The flaming helicopter was a total wreck, but both pilots escaped without injury.

The ability to rapidly move a single rifle company had been established by Operations Summit and Blackbird, so Thomas and Krulak were eager to see if the same principles could be applied to a larger lift. On 9 October, a warning order for Operation Bumblebee, the lift of an entire rifle battalion, was issued. Second Lieutenant Clifford V. Brokaw III, at that time an assistant operations officer with the 7th Marines, recalled that the genesis of the operation actually occurred much earlier when Colonel Krulak inquired if helicopters could support a frontal attack. Colonel Herman Nickerson, the regimental commander replied with a firm “no!” While in reserve, however, the regiment was tasked to prepare an amphibious contingency plan including a helicopter lift. Then, at Krulak’s insistence, that plan was adapted to provide for the heliborne relief of a rifle battalion on the main line of resistance. Well aware that such a major helicopter event would become headline news, the division public relations officer asked what the operation was going to be called. Sergeant Roger Hanks, a former University of Texas football player, mindful of the many vociferous skeptics who questioned the viability of helicopters for combat duty, quickly piped up: “Bumblebee because supposedly they can’t fly either.”

Colonel Krulak headed the planning group that included Lieutenant Colonel Herring and Major Mitchell from HMR-161, Lieutenant Colonel Harry W. Edwards, the rifle battalion commander, and Lieutenant Colonel George G. Pafford, the shore party

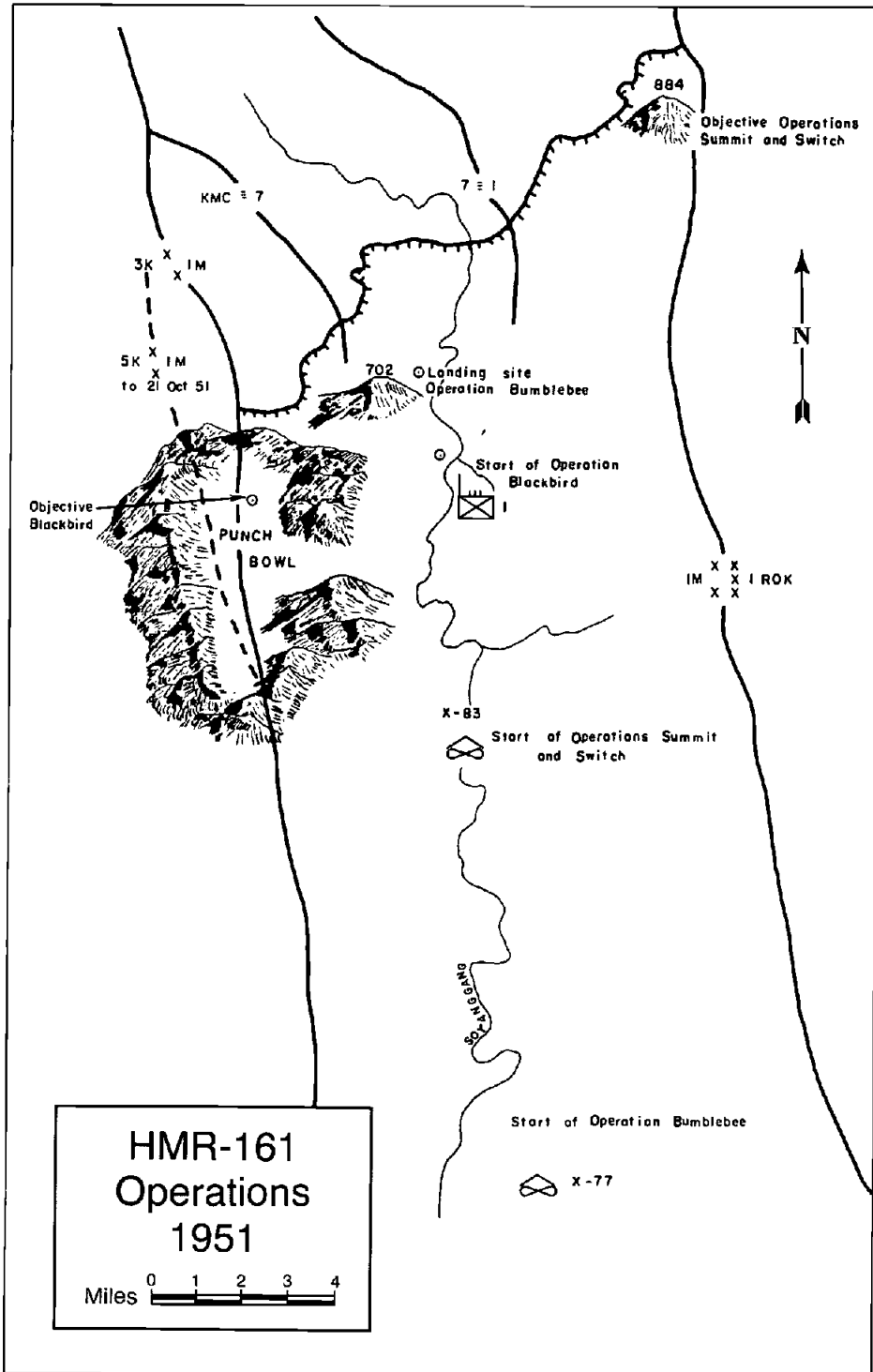
battalion commander. Bumblebee was planned as if it were an amphibious operation. Assignment and loading tables were carefully constructed, detailed arrival and departure schedules were prepared, and helicopter loading and unloading serials were established with each person assigned a specific spot in the heli-

copter, and order of embarkation and debarkation charts were distributed. Lieutenant Brokaw recalled that this time eight troops, carrying only small arms and limited ammunition loads, were squeezed in and only one pilot flew each helicopter to test if such "surge loading" was practical in an emergency. Familiarization classes

and rehearsals were held on 10 October.

Operation Bumblebee kicked off at 1000 on 11 October. Twelve HRS-1 helicopters, working at about 30 second intervals and flying nap of the earth 15-mile routes, carried 958 passengers and more than 11 tons of supplies from airfield X-77 to Hill 702 using 156 individual flights in a total elapsed time of a little more than six hours. Two debarkation zones, Red and White, were used. In each, passenger manifests were used to control loading. The men moved from an assembly area to the "standby" box to the "ready" box and then into the helicopter. If any serial was short, additional passengers were summoned from a nearby "casual" area. At the offload spots shore party personnel "vigorously assisted the passengers by grasping their arms and starting them away from the aircraft." The first man out was the team leader and the last man out checked to see if any gear was adrift. Guides furnished by the ground units hurried the debarking men on their way to keep the landing zones clear for the oncoming waves. Bumblebee made the stateside headlines, but more importantly for the Marine Corps it was a giant step toward turning vertical envelopment theory into reality.

Four days later, the helicopters of HMR-161 again demonstrated their flexibility by mounting Operation Wedge, a short notice lift of 10 tons of ammunition and the evacuation of two dozen seriously wounded South Korean soldiers. Upon learning that a Republic of Korea unit was surrounded and in need of ammunition and medical assistance, Major Mitchell led six HRS-1 helicopters to the rescue. Captains Albert A. Black and James T. Cotton each made four flights into the embattled landing





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Troops load on board an HRS-1 at Airfield X-77 during Operation Bumblebee in October 1951. The Bumblebee troop lift was actually made to test contingency plans in case Chinese Communist forces cracked the Minnesota Line.

zone. At the end of this ad hoc operation IX Corps commander, Major General Claude F. Ferenbaugh, USA, personally thanked each pilot for his effort in support of an allied nation.

While the main focus of effort was defense of the main line of resistance, several incidents behind the lines led to the use of HMR-161 helicopters for antiguerrilla activities. The first of these, Operation Bushbeater, used helicopter-borne teams to sweep the Soyang River Valley in late October. Unfortunately, the uneven terrain and lack of emergency power combined to make this operation the most costly in Korea in terms of aircraft lost. Three HRS-1s went down on 22 October while trying to insert ground units

using knotted ropes for debarkation due to rough terrain. The pilots had difficulty maintaining station at the specified landing site. It was virtually impossible to hover above the ridge because inconsistent wind conditions sometimes caused the sudden loss of ground effect. When an aircraft is near the surface a thick layer of air builds up between the rotor and the surface. This cushion is known as "ground effect," and it creates additional lift. The loss of ground effect requires quick action by the pilot, who must either add power or go into motion before the helicopter plummets. Most pilots were able to avert a crash by gaining forward speed, making an abrupt turn, or diving into the valley. Unfortunately, three helicopters were

unable to take such actions and crashed; two were lost and the third badly damaged its tail rotor; fortunately, only one man was injured. The follow-on salvage operation became another pioneering effort. Supervised by Major Edwin E. Shifflett, and led by Technical Sergeant Thomas M. McAuliffe, Marine working parties were able to dismantle the injured aircraft so all usable parts and one airframe could be recovered. Major Mitchell used his HRS as a "flying crane" to lift out an entire fuselage secured by ropes and harnessed to his cargo hook. Despite the initial setback, the operation continued when more suitable sites were used. Forty insertions were made and more than 200 men landed. Post-crash investiga-

tors determined that similar operations should continue but only after a careful study of the proposed terrain and evaluation of existing atmospheric conditions.

Several other heliborne anti-guerrilla operations followed. Operation Rabbit Hunt used helicopters for systematic patrols of the vast wilderness area behind the main line of resistance. This operation was not unlike those mounted by the 1st Marine Division to control the An Hoa Basin southwest of Da Nang in the Republic of Vietnam 15 years later. Operation Houseburner was mounted on 26 October to deprive enemy irregulars hiding behind

friendly lines of much-needed shelter as winter approached. Two helicopters each carried four-man destruction teams armed with demolitions, flamethrowers, and incendiary grenades. Initially, one ship provided cover while the other hovered and sprayed the target area with a flammable mixture prior to dropping incendiary grenades. Later, both helicopters landed and let the destruction teams do their work from the ground. Operation Houseburner II used four helicopters to destroy 113 dwellings on the last day of the month. This action also featured the first extended firefight between helicopters and ground

troops when an airborne automatic rifle team engaged an enemy position. Although the helicopter itself was not armed, this incident was probably the forerunner of the helicopter gunship.

Operation Switch, the relief and replacement of a full regiment at the frontlines, was the largest helicopter effort so far. On 11 November, nearly 2,000 combat loaded troops swapped positions between Hill 884 (unofficially dubbed "Mount Helicopter" because so many helicopter lifts took place there) and airfield X-83 in about 10 hours. Standard operating procedures included a three-plane flight that dropped off the advanced helicopter support team to supervise operations at the landing zone, departure teams controlled operations at X-83, and naval gunfire kept enemy heads down during flight operations.

Operation Farewell on 19 December saw the rotation of one battalion for another and marked the last flight by HMR-161 commanding officer Lieutenant Colonel George Herring. After that flight, he departed Korea to assume duties as commanding officer of HMX-1 at Quantico. His replacement was that unit's previous commander, Colonel Keith B. McCutcheon. The holder of an advanced degree in aeronautical engineering, McCutcheon had been a proponent and pioneer of Marine close air support during World War II before learning to fly helicopters. Major Mitchell remained as squadron executive officer.

After only two months in the combat, HMR-161 had logged more than 1,200 flight hours comprising more than 1,000 sorties to deliver 150 tons of supplies and carry out 192 medical evacuations. The "flying windmills" of HMR-161 participated in morale building as

A helicopter-borne Marine destroys a potential enemy guerrilla hideout during Operation Rabbit Hunt. In addition to troops on the ground, Marine demolition crews on board helicopters sprayed gasoline on huts serving as enemy cover and then set them ablaze with phosphorus grenades.

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Col Keith B. McCutcheon, left, shakes the hand LtCol George W. Herring, the departing commanding officer of HMR-161. The squadron's last troop lift under Herring was dubbed "Operation Farewell" in his honor.

well as tactical operations: they delivered large cakes so the front-line Marines could celebrate the Marine Corps birthday on 10 November; on Thanksgiving they brought turkey dinners to the front; a heavy snow storm interrupted plans for Christmas feasts, but the arrival of several United Service Organization entertainers around the new year helped raise morale. The New Year also saw implementation of an additional duty that would last until the end of the war. After ice destroyed a bridge spanning the Imjin River, one HRS-1 and its crew were dispatched on a weeklong rotation to the United Nations Command advanced headquarters at Munsan-ni to ferry United Nations peace delegates to and from Panmunjom.

Colonel McCutcheon's first full

month as squadron commander was the most ambitious helicopter-borne effort thus far; HMR-161 flew the most missions (820) in a single month so far and logged the most combat missions (506) in a single month during the entire war. Three major efforts were launched in January 1952—Muletrain, Changie-Changie, and Mouse Trap. Each exercised a different capability. Muletrain and Changie-Changie were assault support (helicopter-borne resupply and troop transport), while Mouse Trap was an exploration of tactical vertical envelopment. Operation Muletrain (named for a popular song of the day) called for the complete supply of a battalion located on the main line of resistance for one week. The destination was once again Hill 884.

McCutcheon's squadron used a "flying crane" technique developed by Major Charles E. Cornwell whereby the HRS-1s mounted underslung nets carrying about 850 pounds and controlled from the cockpit to deliver cargo rather than pallets as had been previously done. Tentage, stoves, rations, fuel oil, and ammunition comprised the various loads. Four helicopters, operating on a rotating basis, were so effective that they actually flew in more cargo than could be handled by the shore party during the first week of January; 219 loads equaling 150,730 pounds were ferried about 10 miles from the supply dump to Mount Helicopter.

Operation Changie-Changie (pidgin Korean-English meaning "exchange") was a troop lift that



National Archives Photo (USMC) 127-N-A159212

Marines in Korea for the first time are moved into frontline positions the "modern way." Instead of climbing the steep trails, and spending hours to reach the ridges' crest, helicopters airlift troops in a matter of minutes.

began on 10 January. The essential difference between this troop movement and previous ones was that this time the helicopters flew into company-sized positions located within a few hundred yards of the frontline. In addition, the 35-man 1st Air Delivery Platoon took over helicopter ground support operations, relieving the hard-pressed 1st Shore Party Battalion of that duty. This realignment of missions was more in line with each unit's stated missions; First Lieutenant William A. Reavis' 1st Air Delivery Platoon was thereafter tasked "to prepare and deliver supplies by air, whether by parachute, air freight, or helicopter." Operation Mouse Trap, conducted from 14 to 17 January, tested the ability of Marines to launch a counter-guerrilla reaction operation on short notice. The squadron was not notified until just after midnight to be prepared to mount a two-company lift by mid-morning on the 14th. The operation went off with only minor difficulties

and was so smooth that three similar lifts were made by the 17th.

For the most part, HMR-161 ceded deep search and rescue operations to VMO-6. The most

Hot chow is served at the HMR-161 forward operating base near the Punchbowl; after finishing their meal, Marines go through the wash line. Living and working conditions were primitive, but the hard-working ground crews carried on.

Department of Defense Photo (USMC) A133622



notable such mission occurred in early February when the Eighth Army-Fifth Air Force Joint Operations Center requested help to bring back a fighter pilot and helicopter crew downed in enemy territory. Two previous attempts had been turned away by the time Major Mitchell's HRS-1 departed X-83 for airfield K-50 where it would pick up fighter escorts. Diverted enroute, the helicopter landed on the cruiser *Rochester* (CA 124) for a pre-flight brief before setting out. Fighter planes strafed the valley and surrounding ridgelines as the helicopter neared the crash site, but no activity was spotted so Mitchell reluctantly aborted the mission. The techniques used on this mission became standard operating procedure even though the rescue attempt had come up empty.

February 1952 was a harbinger of trouble on the horizon. Another relief in place, Operation Rotate, was successfully conducted on 24th. That same day, however,



HMR-161 Historical Diary Photo Supplement, Jan52

The Marine metal shop was located at K-18 airdrome near Kangnung in central Korea. This major maintenance facility served HMR-161 which was flying from the forward strip X-83 at Chodo-ri, behind the Minnesota Line.

Captain John R. Irwin was enroute from Seoul to X-83 when he encountered severe vibrations. After putting down to locate the trouble, he was amazed to discover the broken remnants of his tail assembly lying in the snow. Four days later, Captain Calvin G. Alston's HRS-1 began to buck and jerk without warning. Suspecting he had been hit by enemy fire, Alston set down to inspect the damage. Like Irwin, he quickly found that a broken tail assembly was the culprit. Similar accidents outside the combat zone prompting the Chief of Naval Operations to ground all HRS-type aircraft until the problem could be isolated, analyzed, and corrected. The squadron was not able to resume normal operations until after new tail assemblies for each aircraft

were installed in mid-March.

After the end of the fighting at the Punchbowl, VMO-6 continued to support the 1st Marine Division flying from Sinchon in the X Corps sector of the East-Central Front. Indicative of the changing roles for light utility helicopters, the squadron listed four HO3S-1s and four HTL-4s in October 1951, but only one HO3S-1 remained on the rolls by March 1952 while the number of HTL-4s had increased to 10. The wisdom of combining helicopters and fixed-wing aircraft within observation squadrons was confirmed by combat experience. A well-defined division of labor between the fixed-wing airplanes and helicopters of VMO-6 had evolved since the early days of the war. The nimble OY were best suited for reconnaissance, artillery spotting, and airborne control of close air support while the helicopter niche combined combat search and rescue and medical evacuation. Transportation and administrative flights were divided

Sikorsky representative, Louis Plotkin, left, explains the intricacies of an HRS-1 aircraft engine to HMR-161 pilots. Representatives of the Bridgeport, Connecticut, company accompanied the squadron to Korea not only to assist with technical problems, but also to report on how the aircraft performed in combat.

HMR-161 Historical Diary Photo Supplement, Nov-Dec51





HMR-161 Historical Diary Photo Supplement, Jul 52

In March 1952, the 1st Marine Division moved from the Minnesota Line located in central Korea to the Jamestown Line in western Korea. HMR-161 likewise relocated its forward base to A-17 (Yongpu-ni), while the rear echelon's maintenance facility was moved to A-33 not far from the massive supply base at Ascom City outside the capital of Seoul.

about equally between fixed-wing and rotary-wing aircraft. Unfortunately, hopes for all-helicopter observation squadrons still were considered impractical. As time passed, HTL-4s gradually replaced the aging HO3s-1s, and by February 1952 the one remaining Sikorsky was no longer flying combat missions. The helicopter section's priorities gradually changed to reflect the new tactical situation as well. Positional warfare placed more emphasis on ground support and administrative missions while deep combat search and rescue had become the bailiwick of Navy and Air Force helicopter detachments. In September 1951, medical evacuation and combat search and rescue had been at the top of the list, but by

March 1952 the new priorities were: evacuation of wounded; reconnaissance and observation; liaison and transportation; administrative and resupply flights; and combat search and rescue, in that order. The vulnerability of helicopters was an early concern, but this proved not to be the case as few helicopters were lost and the number coming back with bullet holes became all too common to merit special mention.

Between October 1951 and March 1952, the helicopter section logged 2,253 total flights (1,277 combat and 976 non-combat missions), including 637 medical evacuations to deliver 1,096 seriously wounded men. Most transportation flights involved bringing distinguished visitors to the front.

Among them was Dr. Charles Mayo of the famed Mayo Clinic who visited units of the 1st Medical Battalion. Liaison flights included transportation of the Commandant of the Marine Corps, and Fleet Marine Force, Pacific, and IX Corps commanders. The bulk of the administrative and resupply flights went for medical support; the delivery of fresh whole blood or plasma, medicine, and medical records. After the frontlines stabilized, very few search and rescue missions were called for. Only seven such missions were flown between 1 October 1951 and 15 March 1952.

The helicopter section's only combat casualty during that time occurred when Captain David T. Gooden's HTL-4 was shot down as

it wandered past friendly lines during a medical evacuation mission on 7 February. Neither the pilot nor the helicopter could be recovered due to their location behind enemy lines.

Defending the Jamestown Line

With both sides roughly equal in manpower and firepower on the ground, the frontlines remained unchanged during the winter of 1951-1952. In March, the United Nations Command decided to realign its forces. The 1st Marine Division moved from its positions along the Minnesota Line on the East-Central Front to the Jamestown Line astride the Pyongyang-Seoul corridor on the western flank. This move initiated the so-called "outpost war" which lasted from March 1952 until July 1953 during which no significant changes of territory occurred. The major

actions of the outpost war included those at "Bunker Hill" in August 1952, a temporary incursion of the main line of resistance at the "Hook" in October 1952, tough fighting for positions "Berlin" and "East Berlin" in early 1953, the "Nevada Cities" (Outposts Reno, Carson, and Vegas) battles in March 1953, and the last fight at "Boulder City" just before the armistice in July 1953.

Although the generally flat terrain of western Korea simplified logistical challenges, the Jamestown Line was no tactical bargain. Terrain and diplomatic conditions prohibited defense in depth and severely hampered the ability of Marine commanders to maneuver or commit reserve forces in case of a Communist breakthrough. The 35-mile Marine sector was the longest defensive zone held by any Eighth Army division. The low-rolling hills on the Marine side

of the line were dominated by the high ground on the far side of no-man's-land held by the Communists. To make matters worse, the Imjin River, with only four crossing points, ran behind the main line of resistance. Major waterways separated the line at two points, and a diplomatic demilitarized "neutral corridor" from Munsan-ni to Panmunjom divided the defensive zone. The United Kingdom's 1st Commonwealth Division anchored the Marine flank on the northeast at the Samichon River, where the 38th Parallel crossed the Jamestown Line. From there the main line of resistance generally traced the Imjin for about 10 miles until it intersected that river; the main line then followed the south bank of the Imjin estuary to where the Han River joined the Imjin, and across the Han an isolated defense sector was located on the Kimpo Peninsula. The main line of resistance was extremely vulnerable and had to be protected by a series of combat outposts scattered throughout no-man's-land. The scrub-covered, low-lying areas that predominated the Marine sector were subject of year-round enemy observation and flooding each spring. Overall, the Jamestown Line was a tactician's nightmare.

In late March, the 1st Marine Division moved 180 overland miles from the Punchbowl to Munsan-ni, an urban rail junction located near the Imjin River about 30 miles from Seoul. Lieutenant Colonel William T. Herring's VMO-6 and Colonel McCutcheon's HMR-161 began displacing from Sinchon in mid-March and had completed their respective moves by the end of the month. Each took up residence at separate landing fields near the 1st Marine Division's command post. The VMO-6 airstrip (A-9) was located in the

His predecessor, Maj William G. MacLean, right, welcomes LtCol William T. Herring on board as the new commanding officer of VMO-6. A graduate of the Naval Academy, Herring served as the commanding officer of Marine Fighter Squadron 111 and operations officer of the 4th Marine Aircraft Wing during World War II.

National Archives Photo (USMC) 127-N-A133046





Department of Defense Photo (USMC) A134463

A badly wounded Marine receives life-sustaining plasma and will be flown to an advance medical care facility in the dark. Night evacuations were hazardous affairs because early helicopters lacked instrumentation and back lighting.

village of Tonggo-ri about three miles south of the division command post. The airfield was quickly named Bancroft Field to honor the first Marine helicopter pilot killed in action. HMR-161's forward flight echelon was located at Yongpu-ni's A-17, while its rear echelon including advanced maintenance personnel was at airfield A-33 (Taejong-ni, a well-developed airdrome that served the massive Eighth Army supply base known as Ascom City, which should not be confused with airfield K-5 located at Taejon in south-central Korea).

For the most part, VMO-6 continued flying missions as before with medical evacuation as its

number one priority. During this time the squadron's executive officer, Major William G. MacLean, Jr., developed a plan to station evacuation helicopters, crews, and maintenance personnel at the command post of the centrally located, frontline infantry regiment on weeklong rotations. This "forward evacuation echelon" was on-call around-the-clock and could reach any part of the frontline within a few minutes, cutting evacuation time in half thereby keeping severely injured men within what the surgeons called "golden minute"—the period during which immediate treatment could save a man's life. These operations began

in June, and they included the first routinely scheduled night evacuations. The normal forward evacuation echelon complement was five officers, nine enlisted men, and two helicopters. In addition, close liaison with American and other allied nations' medical stations and hospital ships was maintained. Other missions performed by VMO-6's helicopter section were liaison flights and visual reconnaissance. The former usually brought important visitors to the front while the latter flew commanders along the main line of resistance and offered high altitude glimpses into enemy territory.

Major General John T. Selden,

the commander of the 1st Marine Division, required that a strong defensive line be established but was still nervous because it would be difficult to quickly reinforce the Jamestown Line. Accordingly, two existing "fallback" lines, Wyoming and Kansas, were strengthened, and a series of rapid deployment exercises by the division reserve regiment were planned. Primary among them were those conducted by HMR-161 in the spring and summer of 1952.

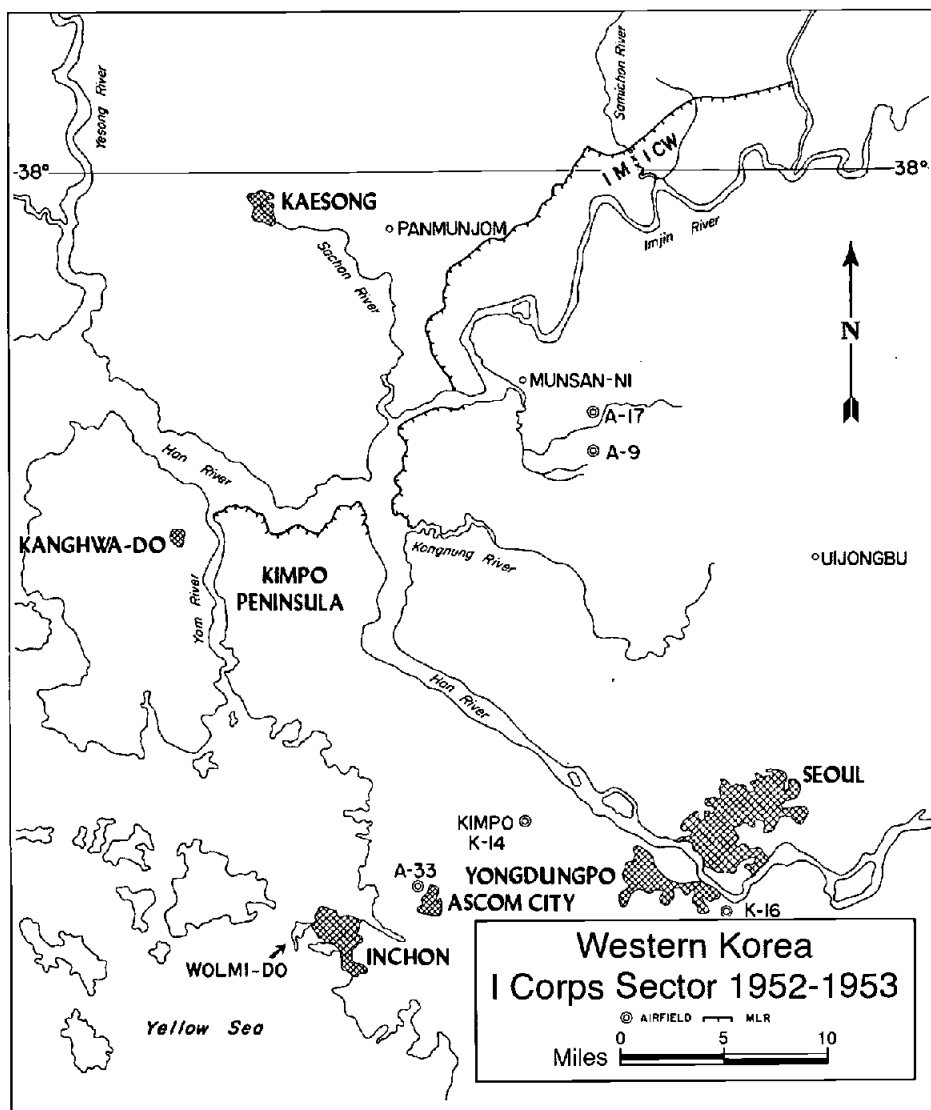
The first test of the ability to move across water obstacles was Operation Pronto. On 5 April, a 662-man battalion and about 10,000 pounds of supplies were transported from Munsan across

the Han River to the Kimpo Peninsula. Ironically, Operation Pronto was both the longest distance and the shortest notice helicopter-borne troop lift so far. Colonel McCutcheon was not notified until about 0210 in the morning, yet, the first helicopter lifted off only about three-and-a-half hours later. The initial wave carried specialists from the 1st Air Delivery Platoon to two landing zones. Thereafter, nine helicopters (seven of them manned by pilots fresh from the United States) were used. The hour-long round trips were almost 60 miles because of flight restrictions in the vicinity of the Panmunjom "neutral corridor." The squadron logged 99 flights in

more than 115 flight hours with a total elapsed time of 14 hours, an all-time high. After the operation, Colonel McCutcheon noted: "This airlift . . . proved that a Marine transport helicopter squadron can successfully operate as an 'on call' tactical tool." The operation was carried out with only minimal liaison between flight and ground units and virtually none of the detailed planning previously employed. Helicopter operations, which only a few months earlier made front-page news in the United States, had by that time, become routine.

An intermittent series of troop lift exercises were interspersed with several tactical and logistical operations over the next year and a half. Pronto was promptly followed by two-day Operation Leapfrog, the helicopter-borne exchange of one South Korean Marine battalion for another on 18 and 19 April. Operation Circus, the lift of a U.S. battalion closed out the month. All operations, except for emergencies, were discontinued on 27 April after the Chief of Naval Operations grounded all HRS-1s due to structural problems. By the middle of May, HMR-161's helicopters were back in action. Two more short notice troop lifts, Operation Butterfly and Ever Ready, were conducted in June and a third, Operation Nebraska, took place in November. The last such exercise was Operation Crossover II held the following spring.

Although combat search and rescue was not a primary mission of HMR-161, one dramatic episode occurred in late May. Two helicopters were dispatched from A-17 to look for a downed Navy pilot near Hapsu, North Korea. During the airborne search, the HRS-1 flown by Major Dwain L. Lengel and Captain Eugene V.





LtCol John F. Carey, left, bids farewell to his predecessor as commanding officer of HMR-161, Col Keith B. McCutcheon; both men had previously commanded HMX-1 at Quantico. McCutcheon made his reputation as a close

National Archives Photo (USMC) 127-N-A134367
air support advocate in the Pacific and eventually commanded all Marines in Vietnam; later he was slated to become the first active duty Marine aviator to receive a fourth star but illness intervened.

Pointer with crew chief Technical Sergeant Carlyle E.J. Gricks on board lost flight control due a combination of low speed and high altitude. Flying low to the earth, the helicopter was unable to gain enough power to maneuver around a stump. The aircraft crashed and no one was seriously injured, but the would-be rescuers now needed to be rescued. The crew quickly moved to a pick up location but had to wait almost two days due to bad weather. Squadron mates Captain Robert J.

Lesak, First Lieutenant Wallace Wessel, and Technical Sergeant Elmer DuBrey flew the rescue mission. It was a complicated pick-up procedure. In order to keep from repeating the previous crash, Captain Lesak had to keep his aircraft in motion to stay aloft. This required the downed crew to grab a trailing rope ladder as the HRS passed overhead. Fortunately, the rescue was a success, if not a frustrating one.

One of the primary purposes of rushing HMR-161 to Korea was to

test vertical envelopment concepts as they applied to amphibious operations under wartime conditions. This was not possible at first due to geographic restrictions when the Marines manned the East-Central Front. The move to western Korea brought the Marines close to the sea, but initial operational tempo and subsequent grounding of the HRS-1s delayed the opportunity until June. At that time as series of Marine landing exercises (MarLExs) were held at a rate of about two each month for

the remainder of 1952 with two more held the following year. Although there were minor variations in each MarLEx, they generally followed a similar pattern: a detachment of a half dozen HRS-1s from HMR-161 would lift one battalion of the division reserve from one small island to a larger one during a simulated amphibious assault. The purpose of these exercises was twofold. First, tactics and techniques were perfected with each passing exercise as lessons were learned and assimilated. Second, aircraft and ground personnel became familiar with the standard operating procedures for helicopter-borne operations. The

main problems were the lack of an escort carrier and helicopters. Untested Marine amphibious doctrine envisioned individual transport helicopter squadrons and rifle battalions embarked on board escort carriers during the movement to the amphibious objective area. Once there, the helicopters would conduct one portion of the ship-to-shore movement then be on call to deliver supplies and evacuate casualties until the beachhead was secured and operations could safely move ashore. The trouble was that the Navy did not have enough carriers or crews to implement this policy, and no escort carrier was readily available

to support most MarLEx operations. In addition, the demands on HMR-161 prohibited the entire squadron from participating in the exercises.

MarLEx I was held on 10 and 11 June with its announced purpose to gain experience in vertical envelopment as part of an amphibious operation. Because no escort carrier was available, the island of Sung Bong-do about 40 miles southwest of Inchon would stand in for the missing ship. Nearby Tokchok-to, a five-mile-long island with two broad sandy beaches located about six miles southeast, was selected as the objective. As was standard practice, helicopter

An HRS-1 helicopter of HMR-161 approaches the escort carrier Sicily (CVE 118). The Marine transport squadron experimented with the newly developed concept of vertical

assault in the many landing exercises conducted during the Korean War.

National Archives Photo (USMC) 127-N-A134628





1st Air Delivery Platoon Historical Diary Photo Supplement, Feb53

Col Harry N. Shea, right, commanding officer of the 11th Marines, briefs from left, 1stLt Donald L. Seller, Commanding Officer, 1st Air Delivery Platoon, 1stLt William B. Fleming, Executive Officer, 1st 4.5-inch Rocket Battery, Capt Edwin T. Carlton, Commanding Officer, 1st 4.5-inch Rocket Battery, and LtCol John F. Carey, Commanding Officer, HMR-161, prior to a fire mission in support of Korean Marines.

support teams descended from hovering helicopters using rope ladders to prepare landing zones. Seven aircraft delivered 236 fully equipped troops the first day and another 236 the following day. Unfortunately, the exercise did not go well. Communications were unsatisfactory, and the time required to land troops by helicopter was "too great in comparison to the time needed to land troops . . . by boat." It was decided to use a closer island the next time to reduce the strain on the helicopters and the time in the air. MarLEX II was held later that month. This time Soya-do, two

miles from Tokchok-to, was used as the simulated carrier. Four instead of seven aircraft were used to lift 235 men, and the exercise was deemed a success.

The Marines finally got to train with an actual aircraft carrier in September. The escort carrier *Sicily* (CVE 118) was available to support MarLEX VII. This exercise offered the most realistic test of amphibious doctrine as envisioned by planners at Quantico. On 1 and 2 September, the bulk of HMR-161's 12 HRS helicopters were used to lift 964 troops from the carrier deck to Landing Zones Able and Baker on Tokchok-to.

Five more MarLEX operations were held in 1952. They were followed by a six-month break, then two more amphibious exercises were held in the summer of 1953 before the ceasefire took effect.

On 30 July, HMR-161 received a request to launch a humanitarian effort in support of the U.S. Army and South Koreans. More than 600 American soldiers and about 150 Korea civilians had been stranded by flash flooding of the Pukkan River. Six Marine helicopters flew to the rescue. This spur-of-the-moment evacuation was made without written orders or advanced scheduling. The squadron mounted 182

flights over about three hours. The squadron after action report noted: "The average load was five men and gear [but we lifted] as many as nine small children complete with dogs and chickens . . . in one trip . . . The Army and Air Force . . . marveled at the expeditious way our helicopters carried out the operation."

The month of August saw a change of command when Lieutenant Colonel John F. Carey, yet another veteran of HMX-1, replaced Colonel McCutcheon as commanding officer of HMR-161. September was the busiest month of the war for HMR-161. The squadron flew 1,195 missions. Included in that total were the largest aerial supply operation thus far, the first of many regularly scheduled helicopter-borne troop rotations, the only amphibious exercise supported by an aircraft carrier, and the tactical lift of a rocket artillery battery.

The first of two large logistical support operations took place from 22 to 26 September. Operation Haylift was designed to completely support a frontline regiment for five days. Included in the

loads were rations, water, ammunition, fortification material, and fuel. These supplies were carried internally or suspended below the helicopter frame in wire baskets and cargo nets. The distance from loading zone to landing was about 20 miles, depending upon which loading zone was used. The 1st Service Battalion supplied Loading Zone Able while the 1st Ordnance Battalion did so at Loading Zone Baker; air delivery platoon personnel supervised loading operations and shore party personnel unloaded the incoming aircraft. More than 350,000 pounds of cargo and 75 passengers were lifted despite rainy weather. This effort tripled the output of Operation Muletrain, the previously biggest logistical operation. Operation Haylift was summed up in a single sentence in the squadron report: "No unusual problems were encountered and the operation progressed smoothly and continuously throughout."

The use of helicopters to rotate troops between the rear and the front had become routine by the summer of 1952. So much so that the 1st Marine Division initiated

regularly scheduled replacement operations intended "to effect the relief of a unit on the MLR and return the relieved unit to a rear area as expeditiously as possible," using the codename "Silent Redline." Silent Redlines were conducted at the rate of about one per month during the rest of the year, but were only intermittently used the following year due to tactical considerations (the 1st Marine Division was either off the line or heavily engaged). The first of these began on 11 September with the lift of a Korean Marine battalion. Because these operations were carried out under enemy observation, if they came under direct fire squadron aircraft were directed to seek landing spots in defilade and maintain communications while the ground troops debarked and sought the best defensive terrain. Ten aircraft, each carrying six men or five men and a crew-served weapon, transported 1,618 troops in an overall time of six-and-one-half hours during Silent Redline I.

By the summer of 1952, the strategy in Korea had developed into positional warfare and artillery began to dominate tactical thinking. Unfortunately, the Chinese actually began to outgun the Americans as a result of massive Soviet aid that furnished excellent weapons and plenty of ammunition, and in western Korea the enemy controlled the Taedok Mountain spur which gave them superior observation of the United Nations lines. The Marines countered by adopting mobile artillery tactics using multiple gun positions. One innovative solution came about as the result of a cooperative effort between the pilots of HMR-161 and the artillerymen of the 11th Marines. A particularly valuable weapon was the towed multiple rocket launcher. The problem was that these

Two rocket battery crewmen prepare the launcher for action as an air deliver platoon signalman assigned by HMR-161 to direct incoming cargo-carrying aircraft to the landing site loads a rocket round into the tube.

1st Air Delivery Platoon Historical Diary Photo Supplement, Feb53



mobile rocket launchers were vulnerable because their back blast kicked up dust and debris that was visible from the Communist side. The rapid insertion of light artillery into defiladed positions followed by a rapid withdrawal, however, would allow the Marines to land, set up, fire a barrage, and then leave before enemy counterbattery fire could pinpoint the target. Experiments at Quantico, Virginia, and Camp Lejeune, North Carolina, proved the feasibility of lifting a 4.5-inch rocket launcher along with a skeleton crew and a small amount of ammunition in a single load. On 19 August, HMR-161 put this theory into practice during Operation Ripple. Rehearsals in Korea tested new delivery methods using a variety of external hooks and release mechanisms, but there was some trouble during the initial lift of the 1st 4.5-inch Rocket Battery. The problems were solved that night and additional operations the following day went much more smoothly. Colonel Carey was able to recommend that helicopters were suitable for rocket launcher transportation, and Operation Ripple was followed by several more similar tactical operations over the next few months. These were the only operations in which helicopters were directly responsible for putting rounds on the target. As such, they were the distant forerunners of the "fire base" concept that became a tactical mainstay in Vietnam.

Beginning in October, one helicopter and a standby crew were assigned to Marine Aircraft Group 12 on a rotating basis to provide air-sea rescue and administrative transportation. As a result of heavy fighting at the Hook the squadron logged the most medical evacuations that month as well, 365. During the month, the squadron



HMR-161 Historical Diary Photo Supplement, Dec52

Transport squadron's "HR-69" helicopter is decked out as Santa Claus to deliver toys and food on Christmas Day 1952. Although the visionaries at Quantico, Virginia, before the Marines received helicopters foresaw almost every possible use for rotary-winged aircraft and made up a potential task list, it is doubtful that this humanitarian mission appeared on that list.

also began receiving Sikorsky HRS-2 helicopters. Although a newer model, the HRS-2 offered no significant increase in performance because it used the same engine as the HRS-1; the main differences were that the HRS-2 was about a foot shorter and a few inches closer to the ground. Operation Nebraska, conducted on the 13th, tested the ability of HMR-161 to move troops from one phase line to another. Ten helicopters lifted one rifle battalion and a heavy mortar platoon (820 men) in only two-and-one-half hours comprising 169 individual flights.

Activities in December included Operations Crossover, the movement of a reserve rifle battalion from the Wyoming Line to the Kansas Line; Silent Redline III, the by-then standard helicopter-borne rotation of a frontline battalion by one from the reserve area; MarLEX

XII-52, the last amphibious exercise of the year; and Operation Santa Claus during which helicopter HR-69 was made up to look like jolly old Saint Nicholas as it delivered toys and food to about 100 orphans adopted by the squadron. Also during the month, Colonel Carey flew out to the newly arrived Danish hospital ship *Jutlandia* to test its helicopter-landing platform and to familiarize the crew with helicopter landing procedures. The cold, damp weather and fog continued to interfere with flight operations, but new hangars eased the maintenance burden to some degree. Although few of the shivering mechanics would have believed it at the time, conditions on the Jamestown Line were far superior to those encountered on the East-Central Front the previous year.

January 1953 witnessed the use of HRS helicopters as "flying squad

cars" as they carried members of the 1st Military Police Battalion searching for Communist infiltrators. On the 23d, fire was exchanged between the airborne Military Police and guerrillas on the ground. Three enemy troops were killed while the helicopter suffered only minor gunfire damage.

February hosted the largest helicopter supply operation in Korea, Operation Haylift II. While Haylift I the previous September had supported one frontline regiment for five days, Haylift II was twice as ambitious. This time, two frontline regiments would receive helicopter-transported Class I (rations), III (fuel), IV (construction materials), and V (ammunition) supplies for five days, from 23 to 27 February. The planning and execution of Haylift II was similar to its forerunner, but on a much larger scale. And, this one would take place in much more difficult weather conditions. One hundred

and thirty tons per day were required to support both regiments, but this total was actually exceeded on the first day. The unloading time per load was less than one minute. On 25 February, HMR-161 brought in more than 200 tons, a record. By the third day, the supply build-up had actually surpassed the ability of the ground logisticians to cope with it. Fortunately, emergency requests for ammunition by other units lessened the backlog. Ground fog on the last two days slowed operations. Still, the final results were impressive, 1,612,406 pounds lifted without the loss of crew or aircraft. February also saw records set for the number of combat hours (765), total flight hours (1,275.5), combat flights (575), and total flights (1,183), and the gross lift of more than two million pounds that month was the largest of the entire war for HMR-161.

Sadly, that month also ended

HMR-161's streak of not losing a man. On the 12th, a three-plane flight departed A-33 for Pusan to rendezvous with a carrier that was to take them to Japan. Along the way the HRS-1 carrying Captain Allen W. Ruggles and Technical Sergeant Joe L. Brand, Jr., became separated and crashed into the sea about 25 miles south of Pusan. The cause was believed to have been mechanical failure, but this was never confirmed because there were no survivors and wreckage was never located.

On 15 March, Colonel Owen A. Chambers took over HMR-161. Ten days later, a second HRS-1 went down with three crewmembers on board. Major Doil R. Stitzel was making a test hop out of Ascom City with mechanics Master Sergeant Gilbert N. Caudle, Jr., and Sergeant Richard L. Parsell when their aircraft suddenly lost power, crashed, and burned. All three men were lost.

Only two major operations were conducted that spring, both were troop lifts from the reserve area to the Jamestown Line, Operation Crossover II and Silent Redline VI. On 27 March, all HRS-2 helicopters with more than 200 flight hours were grounded because of rotor blade problems. This was a precautionary move due to stateside incidents, and no HRS-2s in Korea were lost to this cause.

Beginning on 26 April, HMR-161 participated in Operation Little Switch, the six-day exchange of prisoners of war. The United Nations released 6,670 North Korean and Chinese prisoners while the Communists returned only 684 captives, including 15 Marines and three Navy corpsmen. From the middle of the month, HMR-161 provided transportation from Freedom Village near Munsan-ni to Panmunjom for various international delegates and

A helicopter from HMR-161 prepares to lift bundled supplies from the 1st Air Delivery Platoon area to frontline troops. The air delivery platoon signalman holds the book while the other Marine holds the net in a hook-up position.

1st Air Delivery Platoon Historical Diary Photo Supplement, Feb53



American negotiators. During the actual prisoner exchange, helicopters stood by to transport the seriously ill or wounded Marines from Panmunjom to one of three hospital ships, the *Consolation* (AH 15), the *Haven* (AH 12), or

the *Jutlandia*, riding at anchor in Inchon harbor. Four Marines had to be evacuated.

In May the 1st Marine Division came off the line for the first time since the Masan interlude ended in January 1951. While this represent-

ed a relief from the rigors of combat, it was not exactly a time of rest and relaxation. The division staff ordered HMR-161 to get busy on the first Marine landing exercise of the New Year (MarLEx I-53). On 13 May, after careful plan-



VMO-6 Historical Diary Photo Supplement, Nov52

Sikorsky HO5S

The HO5S helicopter, developed from Sikorsky's S-52 design begun in 1948, was the purpose-built replacement observation helicopter for the HO3S. The S-52 was first conceived as a compact two place machine, but it eventually incorporated recommendations from the fighting front under the designation S-52-2. The HO5S was more compact than its predecessor and featured several new design features to overcome technical problems identified in the HO3S. Forty-eight HO5S-1s were ordered for the Marine Corps in 1951 and accession began in January 1952.

Although its theoretical performance statistics appear only marginally better than its predecessor, the HO5S was actually a much-improved aircraft that addressed many of the HO3S's shortcomings. The HO5S was the first U.S. helicopter fitted with all-metal blades, could mount two stretchers internally, and was much more stable on the ground due to its low center of gravity and four-wheel landing gear. The most unique practical innovation was a hinged, two-piece, forward-mounted observation bubble. Opening the left seat side of the bubble allowed access to the cabin interior for two stretcher-borne patients. In addition, the HO5S could carry three combat-loaded men over short distances.

By the time of the armistice in 1953, almost all VMO-

6 helicopters were HO5Ss. Unfortunately, plans to replace light airplanes with HO5S helicopters in Marine observation squadrons had to be put on hold due to performance problems and structural defects that came to the fore in Korea. It was decided that the Marine Corps needed a machine that offered better stability and easier in-flight control in addition to a more powerful engine. Thus, instead of becoming the backbone of Marine observation squadrons, the HO5S was actually replaced by the Kaman HOK beginning in 1954; the later aircraft remained in operational service for the next decade until was it in turn replaced by the Bell UH-1 Iroquois ("Huey"), which remains the designated Marine observation and utility helicopter to this day. Marine observation squadrons were equipped with fixed-wing airplanes after light helicopter squadrons were created during the Vietnam-era.

Aircraft Data

Manufacturer: Sikorsky Division of United Aircraft Corporation

Power Plant: 245 hp Franklin O-425-1 engine

Dimensions: Length, 27' 5"; height, 8'8"; rotor, three 33' metal blades

Performance: Cruising speed, 96 mph

Lift: Pilot and three passengers or two internal stretchers



A seriously wounded Marine near the Jamestown Line is loaded on board a Sikorsky HO5S-1 helicopter from VMO-6. By 1953, the HO5S-1, which was designed to remedy short-

falls of the HO3S-1, had become the Marines' primary medical evacuation aircraft.

Department of Defense Photo (USMC) A169730

ning and rehearsals, HMR-161 brought a battalion landing team to Yongdong-ni, a beach area southwest of Seoul. This exercise was followed in June by a special helicopter assault demonstration as part of the rehearsal for MarLex II-53. Similar to the previous amphibious exercise in scope and purpose, MarLex II-53 actually turned out to be the last major amphibious exercise during the Korean War. The squadron returned to the lines on 10 July and thereafter continued routine operations delivering supplies to various outposts and transporting mail and

personnel until the ceasefire was declared on 27 July 1953.

The Korean Conflict had finally ended, but HMR-161 was not yet homeward bound. Immediately after the guns cooled off, HMR-161 would support a massive prisoner of war exchange and then enter a period of "watchful waiting" before returning stateside.

The intervening 16 months between the move to the Jamestown Line in March 1952 and the armistice in July 1953 were busy ones for the helicopter section of Marine Observation Squadron 6. The last of the venerable HO3S-1s

(Bureau of Aeronautics number 124343) departed VMO-6 in April 1952. Bell HTLs carried the load throughout the spring until the arrival of replacement helicopters that summer. The first of the new Sikorsky HO5S-1 helicopters arrived in July. This new machine, the first helicopter equipped with all metal rotor blades, was a three-seat utility aircraft that mounted a three-bladed overhead main rotor and a two-bladed tail rotor. Powered by a 245-horsepower Franklin engine, it could carry a 750-pound load at a cruising speed of 96 miles per hour. The

The Innovators

The first rotary-winged flight machines were children's toys believed to have been developed in China. Just after the end of World War I a rotary-winged airplane, the autogiro, was developed and gained some popularity during the Jazz Age. True helicopter technology, however, did not really take off until just before World War II. Pre-war helicopter enthusiasts in France, Italy, Spain, and Germany spread their gospel throughout Europe and on to the United States. Of the early American designers, three stand out: Igor I. Sikorsky, Frank N. Piasecki, and Arthur M. Young. Each of these men left an indelible mark on U.S. helicopter development, and their legacy lives on in the aircraft used by current Marine aviators.

IGOR I. SIKORSKY

America's preeminent helicopter advocate, pioneer, and designer was a Russian émigré who moved to the United States to escape communism. He did not invent, nor was he the first to fly, a helicopter. He did, however, formulate a solution to movement stability for rotary-wing flight that has since evolved into the most popular modern helicopter configuration—a single, large, horizontal, overhead rotor stabilized by a small,

Inventor Igor I. Sikorsky, the father of American helicopters visits HMX-1 at Marine Corps Air Station Quantico, Virginia. In the background is an HO3S-1 heli-

vertical, anti-torque tail rotor with forward movement controlled by varying the main rotor's pitch while using the tail rotor to determine direction. Igor Ivanovich Sikorsky developed a wide variety of helicopters that became versatile aircraft equally suited for both commercial and military use, aircraft able to perform unique tasks on land, at sea, and in the air. After World War II, Sikorsky worked closely with the U.S. Marine Corps to adapt his helicopters to military use, a symbiotic relationship between manufacturer and user that carried on even after his death. Today, Igor Sikorsky is rightfully considered the "Father of American helicopters."

Although long interested in rotary-wing flight, Sikorsky actually first gained fame for his multiple-engine aircraft designs. Born in Kiev, Russia, on 25 May 1889, his interest in, and aptitude for, aeronautical engineering became evident early in his life. He began experimenting with flying machines and the principles of aerodynamics prior to entering the Russian Naval Academy. After three years, Sikorsky left St. Petersburg to study in Paris and then returned to his homeland to attend Kiev Polytechnic Institute. He returned to Paris a second time to learn more about rotary-winged flight.

copter, one of the first two "Whirlybirds" assigned to the U.S. Marine Corps.

National Archives Photo (USMC) 127-N-A322389



He built his first helicopter, a wooden box mounting two horizontal propellers powered by a 25-horsepower motorcycle engine, upon his return to Kiev in 1909. He could never get this machine to fly and concluded that the technology of the day was not adequate, but he also remained convinced that in time rotary-winged aircraft would surpass fixed-wing airplanes as flying machines. Sikorsky continued his experiments using engine-powered sleighs until he turned to designing multiple-engine airplanes. In 1913, he designed and built the world's first four-engine airplane. Thus, he embarked upon a new career path for the next 40 years.

Driven from Russia by the Bolshevik Revolution, a nearly penniless Igor Sikorsky fled to the United States by way of France. In America he eked out a living teaching mathematics and consulting part time. Among his projects was a proposed, but never adopted, trimotor bomber for the U.S. Army. After much hardship, he was able to live the American dream when he converted a Long Island, New York chicken farm into the Sikorsky Aero Engineering Company in 1923. Six years later, the company joined Boeing, Pratt & Whitney, and Chance Vought in forming the United Aircraft and Transportation Corporation. These humble beginnings comprised the genesis of one of America's most successful aviation enterprises. Sikorsky's first successful U.S. design—an all-metal, twin-engine transport, the S-29A—established his reputation for building aircraft noted for their ability to withstand hard landings on rough surfaces, poor weather conditions, and continuous operations with only rudimentary maintenance. By far his most successful airplane to that time was his eight-passenger, high-wing, twin-engine S-38 amphibian. Although designed for commercial use, 16 variants bearing Bureau of Aeronautics "RS" designations were purchased by the U.S. Navy, some of which saw service with the Marine Corps. Sikorsky next turned to large, long-range, four-engine, transoceanic passenger planes. His successive S-40, -41, and -42 models gained fame as the "American Clippers," large flying boats that plied their trade for Pan-American Airways in the Caribbean and across the Pacific Ocean. Economic troubles forced the shutdown of United Aircraft's Sikorsky Division in 1938, but this setback fortuitously once again whetted his long-standing interest in rotary-winged aircraft.

Heartened by technological progress and spurred into action by recent European developments—notably Germany's spectacular public exhibitions of Heinrich Focke's Fa-61—Sikorsky went back to developing helicopters. By 1939 he had created the VS-300, an ungainly looking contraption consisting of a sprawling bare metal frame mounting a single main rotor for lift and a small-tail rotor for control. Although this "flying bed-spring" was not aesthetically pleasing and performed more like a bucking bronco than a steady workhorse, it became the first practical American helicopter after its

initial free flight on 13 May 1940. Not long thereafter, the U.S. military became interested in helicopter development. In early 1942, Sikorsky won an unofficial competition by producing the VS-316. This two-place, single-main rotor helicopter was given the military designation R-4 (R-1, -2, and -3 were competing designs by other manufacturers). It was soon followed by improved versions labeled R-5 and R-6. By the end of the war more than 400 Sikorsky helicopters had been built. The U.S. Navy procured its first Sikorsky helicopter, an Army R-4 given the designation HNS upon transfer in October 1943. Sikorsky-built helicopters have been a mainstay of naval aviation ever since. Marines currently fly the Sikorsky three-engine CH-53E heavy-lift transport helicopter, one of the largest helicopters in the world.

FRANK N. PIASECKI

Frank Piasecki, the son of an immigrant Polish tailor born in 1919, was considered the "wonder boy" of early helicopter development. By his 21st birthday he already held degrees in mechanical engineering from the University of Pennsylvania and aeronautical engineering from New York University. He began working as a mechanic for Kellet Autogyro while a teenager then became a designer with Platt-LePage after college before branching off on his own. Piasecki developed the second successful American helicopter using castoff auto parts and an outboard motor. He endeared himself to Marine helicopter proponents with his theories of how tandem rotors could support very large or heavy loads, an innovation that promised to make ship-to-shore movement of complete units and bulky equipment when other machines of the day could lift only a pilot and one or two others. Piasecki co-founded P.V. Engineering Forum, a consortium of aircraft designers interested in rotary-wing flight and was the driving force behind that firm's most successful project, the PV-3. The PV-3 was a large, elongated, bent fuselage, tandem rotor transport helicopter; the first of a series nicknamed "Flying Bananas." The PV-3 was unique because the Flying Banana was rated for eight passengers as well as a crew of two. After its first flight in 1945, the Navy purchased 22 PV-3s (designated HRP's by the Bureau of Aeronautics). The HRP's quickly established the practicality of tandem rotors for heavy lift, and orders for improved models quickly poured in. Piasecki's notable early success was the famous H-21 Workhorse, which was used by the Air Force as a rescue craft and by the Army ("Shawnees") to haul troops and cargo. The P.V. Engineering Forum became the Piasecki Helicopter Corporation in 1947, then a division of Vertol Aircraft, which in turn became a division of Boeing Aircraft. Venerable Boeing-Vertol CH-46 Sea Knight assault helicopters, lineal descendants of the first Flying Banana have been the backbone of Marine helicopter aviation for more than four decades and continue to serve with the fleet to this day.

ARTHUR M. YOUNG

The brilliant, but somewhat eccentric, scion of a wealthy Pennsylvania family, Arthur M. Young invented a rotor stabilizer bar that allowed two-bladed rotors to power light utility helicopters. His invention enabled Bell Helicopter Corporation to produce the two most prolific helicopter models in history, each of which remained in production for more than 30 years.

Young began developing his idea while employed by Lawrence D. Bell's aircraft company, the same firm that produced the first U.S.-built jet (the P-59 Bell Airacomet) and the first supersonic aircraft (the X-1 rocket plane). After 15 years of building models and researching rotary-winged flight, Young perfected his revolutionary new concept. He knew that Sikorsky's tail rotor concept eliminated torque, but he wanted to improve flight stability and reduce weight. His solution was a small counter-weighted stabilizer bar linked directly to the rotor that functioned like a flywheel, a device that kept the rotor blades independent from the movement of the fuselage. In 1941, he assigned his patents to Bell Aircraft with an agreement to oversee the production of a few prototype Model-30 helicopters. The first of these rolled out at Gardenville, New York, in December 1942, and then made its first untethered flight the following June. The second prototype looked like an automobile with its fully enclosed cabin and four wheels. That aircraft was the first helicopter used to trans-

port a doctor on an emergency call, and it also rescued a pair of fishermen stranded on an ice floe in 1945. The third prototype featured an advanced instrument panel, a bare metal tubular tail boom, and a distinctive Plexiglas bubble canopy.

Building on the lessons learned while improving the early models, Young next developed the first full production Bell helicopter labeled the Model-47. This machine, first flown on 8 December 1945, was the first helicopter certified for sale by the Civil Aeronautics Administration. It was quickly adopted as a training aircraft by the military under the Army designation H-13 and the Navy designation HTL. The Navy Department purchased 10 HTL-1s for evaluation in 1947. A dozen HTL-2s followed in 1949, with nine HTL-3s the next year. The HTL-4 was virtually identical to the HTL-3 except for some internal mechanical improvements. Eventually, nine variants of the HTL saw naval service, and the Navy purchased more than 200 of them between 1947 and 1958. The Model-47 was so successful that the last HTLs were not stricken from the Marine Corps flight line until 1962, and H-13s were still in service with the U.S. Army well into the Vietnam War.

Modern-day Marines fly two descendants of the HTL, the Bell UH-1N Huey Twin utility helicopter and the heavily armed AH-1W Super Cobra attack helicopter. Both have rendered yeoman duty thus far and are slated to continue naval service for the foreseeable future.

most unique feature of the aircraft was a removable forward canopy that allowed access for two stretchers inside the cabin. This latter feature protected injured passengers from the elements while enroute to advanced medical care, a significant improvement over both the HO3S and HTL models. The HO5S also possessed superior flight characteristics that made it a good reconnaissance and observation aircraft. Unfortunately, its underpowered engine and some structural defects limited the aircraft's performance. By the end of July, VMO-6 mustered eight HO5S-1s in addition to nine HTL-4s. Plans called for the HO5S to completely replace the HTLs as soon as possible. The number of HTLs steadily declined as time passed until only one HTL-4 remained when the ceasefire was declared a little over a year later.

Throughout the remainder of its

tour, VMO-6 had a reputation for being a "happy ship." In the words of commanding officer Major Wallace J. Slappey, Jr.: "Morale was extremely high. . . . The squadron was loaded with gung-ho personnel. Pilots were actually stealing flights from one another. . . . The engineering department was outstanding, working round the clock Every man pulled his weight by simply knowing what needed to be done and doing it willingly."

From April 1952 until the armistice in July 1953 the helicopter section of VMO-6 averaged about 600 missions per month, usually flying out between 200 and 300 wounded. More than 1,000 missions were mounted in two different months during the summer of 1952 with the single month record of 721 non-combat missions flown in September. Squadron records for combat missions (375) and medical evacuations (428) were

achieved in October 1952 during intense fighting at the Hook when the Communists made their only successful, albeit temporary, penetration of the Jamestown Line. In May 1953, the helicopter section was reorganized into three echelons: a liaison and medical evacuation flight assigned to the 1st Marine Division command post; the squadron headquarters and most aircraft located at airfield A-9; and a maintenance crew in addition to any "down" aircraft stationed at Ascom City (A-33). In May and June, HO5S-1 helicopters from VMO-6 served as standby plane guards in support of the MarLex I and II amphibious exercises.

Two HTLs and five HO5S-1s suffered major damage due operational mishaps or crashed due to mechanical failures during the squadron's stay in western Korea, and all HO5S-1s were grounded in July 1953 because of numerous

Aviator and Aircraft Losses in Korea, 1950-1953

Crews Killed

1stLt Arthur R. Bancroft
 TSgt Joe L. Brand, Jr.
 MSgt Gilbert N. Caudle, Jr.
 Capt David T. Gooden
 1stLt Robert A. Longstaff
 1stLt Charles B. Marino
 Sgt Richard L. Parsell
 Capt Allen W. Ruggles
 Maj Doil R. Stitzel

Helicopter Losses

Date	Unit	Type	BuAer No	Cause
12 Sep 50	VMO-6	HO3S-1	122514	Operational mishap
25 Sep 50	HU-1 (USN)*	HO3S-1	122720	Enemy fire
29 Sep 50	VMO-6	HO3S-1	Unknown	Operational mishap
9 Nov 50	VMO-6	HO3S-1	Unknown	Operational mishap
3 Dec 50	VMO-6	HO3S-1	Unknown	Enemy fire
27 Jan 51	VMO-6	HTL-4	Unknown	Operational Mishap
12 Mar 51	VMO-6	HO3S-1	122518	Operational mishap
13 Apr 51	VMO-6	HO3S-1	122517	Enemy fire
19 Apr 51	VMO-6	HTL-4	128638	Operational mishap
24 Apr 51	VMO-6	HTL-4	128632	Enemy fire
25 Aug 51	MAG-33	HTL-3	124566	Operational mishap
28 Aug 51	VMO-6	HTL-4	128633	Operational mishap
17 Sep 51	VMO-6	HTL-4	128902	Operational mishap
22 Sep 51	VMO-6	HO3S-1	124342	Operational mishap
28 Sep 51	HMR-161	HRS-1	127802	Operational mishap
22 Oct 51	HMR-161	HRS-1	127789	Operational mishap
22 Oct 51	HMR-161	HRS-1	127792	Operational mishap
12 Jan 52	MAMS-12	HO3S-1	122528	Mechanical failure
21 Jan 52	HMR-161	HRS-1	127797	Operational mishap
23 Jan 52	VMO-6	HTL-4	122521	Operational mishap
7 Feb 52	VMO-6	HTL-4	128892	Enemy fire
1 Mar 52	HMR-161	HRS-1	Unknown	Structural failure
14 Mar 52	VMO-6	HTL-4	128625	Operational mishap
17 Mar 52	VMO-6	HTL-4	128887	Operational mishap
27 May 52	HMR-161	HRS-1	127784	Operational mishap
12 Feb 53	HMR-161	HRS-1	127798	Mechanical failure
25 Mar 53	HMR-161	HRS-1	127822	Mechanical failure
18 Jul 53	VMO-6	HO5S-1	130112	Enemy fire

* U.S. Navy helicopter "on loan" to VMO-6 with one Navy pilot and one Marine crewman on board.

stateside tail boom failures. The only combat loss occurred on 18 July 1953 when an HO5S-1 piloted by First Lieutenant Charles B. Marino was hit by enemy anti-aircraft fire while on an artillery spotting mission. The helicopter lost control and crashed killing both the pilot and the artillery observer. This was the last helicopter-related combat casualty in Korea.

Ceasefire

At 1000 in the morning on 27 July 1953, the United Nations and Communist delegations sat down inside Panmunjom's "Peace Pagoda" to sign the formal ceasefire agreement that would bring an end to the fighting in Korea. The deed was done in only a few minutes, and the guns fell silent a half-day later, at 2000 that evening. It was, however, an uneasy peace. Neither side fully trusted the other. The fighting had stopped, but few believed the war was really over.

The Marines did not stand down and were not going home to march in any victory parades as they had in 1945. Instead, the 1st Marine Division was ordered to organize post-armistice battle positions and to establish a "no pass" line south of the Demilitarized Zone. The Marines were also charged with assisting in the final prisoner exchange of the war, Operation Big Switch. This would be a high-profile undertaking that would be conducted under the watchful eyes of the international press. Anticipating many of the former prisoners would need medical assistance, helicopters from HMR-161 stood by to carry litter patients or those too weak to travel by ambulance to the U.S. Army 11th Evacuation Hospital at Freedom Village near Munsan-ni. Seriously injured men were taken directly to the hospital ships by

helicopter or were air evacuated to Japan by fixed-wing transport planes.

Even at this late date, Marine helicopters in Korea were called upon to perform another mission never dreamed of by the early planners at Quantico. This time the HRSs of HMR-161 provided the best solution to a tangled diplomatic knot. The Marines were responsible for the safety of non-repatriated enemy prisoners, Chinese and North Koreans, who did not want to return home and would instead be placed in the custody of a neutral country, India. The problem was that Syngman Rhee, the president of the Republic of South Korea, refused permission for Indian troops to enter his country. In the words of General Mark W. Clark, USA, the United Nations field commander: "We had to go to great lengths to live up to our pledge . . . that no Indian troops would set foot on South Korean soil. Therefore, we set up an airlift operation, which carried more than 6,000 Indians from the decks of our carriers off Inchon by helicopter to the Demilitarized Zone. It was a major undertaking which just about wore out our helicopter fleet."

Marine Helicopter Transport Squadron 161 carried on in Korea for almost two more years. Its HRS-2s and -3s transported cargo, personnel, and medical evacuees until orders to prepare to leave Korea arrived in late February 1955. The squadron moved from A-17 to Ascot City and the helicopters flew to Iwakuni, Japan, to prepare for the sea journey. On 12 March, HMR-162 officially assumed responsibility for supporting the 1st Marine Division in Korea. By that time part of the squadron had already departed on board the amphibious cargo ship *Seminole* (AKA 104) and the remaining per-

sonnel, helicopters, and gear were stowed on board the aircraft carrier *Wasp* (CV 18) when it bid goodbye to the Far East and sailed for Marine Corps Air Station Kaneohe, Hawaii, on 26 March 1955.

Following the ceasefire, VMO-6's helicopter section continued to provide liaison, observation, and medical evacuation for the 1st Marine Division. The squadron also supported training exercises. The last HTL-4 departed in August 1953, and all HO5S-1s were back in action by October. The squadron reached a helicopter milestone of note when Major John T. Dunlavy flew VMO-6's 55,000th flight hour in Korea during an HO5S-1 test hop on 14 May 1954. The squadron began standing down on 4 February 1955, and finally departed Korea when four separate increments sailed from Inchon for San Diego in April 1955.

Contributions

The final accounting showed nine Marine pilots and aircrew men lost their lives during helicopter operations in Korea, four due to enemy fire. Helicopters proved to be generally more resilient and far less vulnerable to enemy fire than most thought possible prior to the test of combat—only six (all from VMO-6) of more than two dozen helicopters destroyed during the war were shot down while an uncounted number suffered some damage at the hands of the enemy but returned to base for repairs. The helicopter section of VMO-6 flew 22,367 missions including 7,067 medical evacuations in 35 months of combat flying. During its time in the combat zone, HMR-161 logged 19,639 flights (4,928 combat and 14,711 non-combat), transported 60,046 people, evacuated 2,748 seriously wounded, and offloaded

7,554,336 pounds of cargo.

Marine Observation Squadron 6 was awarded a individual U.S. Presidential Unit Citation and shared two others as an organic component of senior commands. In addition, the squadron received a Navy Unit Commendation, an Army Distinguished Unit Citation, and three Korean Presidential Unit Citations for its actions in Korea. Marine Helicopter Transport Squadron 161 was recognized for its participation as a component of commands that were awarded one U.S. Presidential Unit Citation, a Navy Unit Commendation, and one Korean Presidential Unit Citation.

Some notable early Marine helicopter pilots met mixed fates after their combat service. First Lieutenant Gustave Lueddeke succumbed to poliomyelitis not long after returning to HMX-1 at Quantico, Virginia. Major Armond Delalio was killed during a test flight when his specially configured HRS caught fire and crashed at Patuxent River Naval Air Station, Maryland. First Lieutenant Lloyd Engelhardt and Captain Gene Morrison each commanded Marine Medium Helicopter Squadron 161 as lieutenant colonels in the 1960s. Morrison, in fact, got to put into practice the helicopter combat tactics and techniques he pioneered in Korea when he led the squadron during its deployment to Vietnam in 1965. Brigadier General Edward C. Dyer and Colonel Keith B. McCutcheon both sat on the influential Hogaboom Board that restructured the Fleet Marine Force in 1956. The board recommended that all Marine divisional equipment be air transportable and entire assault battalion landing teams be helilifted ashore to secure beachheads using vertical assault techniques. Captain Victor Armstrong and Colonel Mc-



HMR-161 Historical Diary Photo Supplement, Nov-Dec51

HMR-161 conducted its first aerial medical evacuation on 13 September 1951. Although medical evacuation was a secondary mission, the squadron carried more than 2,000 seriously wounded men to various locations for advanced medical care. Its sister helicopters of VMO-6 evacuated more than 7,000 during 35 months of combat flying.

Cutcheon both rose to the highest aviation post in the Marine Corps. McCutcheon was the director of aviation on the eve of the Vietnam era and then later both he and Armstrong held the post of deputy chief of staff (air) as major generals—McCutcheon from 1966 to 1970 and Armstrong in 1975. Lieutenant General McCutcheon was actually slated to become the first Marine aviator to wear four stars on active duty until he was tragically felled by cancer immediately after commanding Marine forces in Vietnam.

Much like that first Marine HO3S that guided the rescue party to the mired amphibious jeep in the marsh at Quantico in 1948, VMO-6 and HMR-161 led the way for helicopters in the other

Services. The United States Army owes a salute to the Marines for conceptualizing and testing the principles of modern airmobile warfare. The Army had long been interested in rotary-winged aircraft and actually used some primitive helicopters during World War II. The Marine Corps, however, pioneered doctrine, employed full helicopter units in combat, and developed hands-on tactical concepts in Korea. *Phib-31*, written at Quantico, Virginia, before the Marines even had a helicopter squadron, is arguably the forerunner of today's airmobile doctrine. According to Air Force historian Robert F. Futrell: "Army officers were [so] impressed by the utility of Marine helicopters in Korea [that] General Ridgway asked the De-

partment of the Army to provide four Army helicopter transport battalions, each with 280 helicopters." His request was significantly scaled down (to only two companies), but within a decade the Army went on to create an air-mobile division whose assault elements could be helilifted into combat. The Navy and the Air Force took their cues from VMO-6

whose light utility helicopters performed search and rescue, medical evacuation, liaison, and reconnaissance—missions that closely paralleled the needs of those Services.

Today the legacy of those early helicopter pioneers of HMX-1, VMO-6, and HMR-161 lives on within the Marine Corps as well. Marine skeptics were silenced by

Col Keith B. McCutcheon became one of the most versatile and best-known Marine aviators during his career. He was an innovator and theoretician as well as a doer, and, like his hero MajGen Roy S. Geiger, he commanded both air and ground units in combat.

National Archives Photo (USMC) 127-N-A132705



helicopter performance in combat, and helicopters thereafter became a full partner in naval aviation rather than the "stepchildren" they had previously been. It is a tribute to the dedication, bravery, and skill of Marine helicopter air and ground crews in Korea that helicopters are vital components of the modern Marine air-ground team. Current Marine helicopter pilots are mounted in the direct descendants of those simple rotary-winged machines that traversed the Korean skies from 1950 to 1953: Bell UH-1 "Hueys" and AH-1 Sea Cobras were sired by the HTL "eggbeaters," the tandem-rotor Boeing-Vertol CH-46 Sea Knights are advanced developments of Frank Piasecki's HRP "flying banana," and the massive Sikorsky CH-53 Sea Stallions evolved from the much smaller HO3S-1 "pinwheels." Currently, the tilt-rotor Boeing MV-22 Osprey is making true the vision of designer Frank Piasecki about the future of rotary-winged flight voiced a half century earlier: "The most dramatic progress will be increased speed of vertical-lift aircraft. This will come from two directions: helicopter designers will add speed to their machines; conversely, airplane designers will add vertical-lift capabilities to their high-speed aircraft. The result will be a blending of flight into machines fully capable of both helicopter flight as we know it and high-speed flight."

While we cannot be certain exactly what the future holds, we can safely state that vertical assault and rotary-winged assault support will remain mainstays of Marine Corps doctrine well into the 21st century. With this in mind, we should always remember this is due to the achievements of the Korean "whirlybirds" that led the way.

About the Author

Lieutenant Colonel Ronald J. Brown, USMCR (Ret), is a freelance writer, a high school football coach, and an educational consultant. The author of several official histories (*A Brief History of the 14th Marines*, *With Marines in Operation Provide Comfort*, and *With Marine Forces Afloat in Desert Shield and Desert Storm*), he was also a contributing essayist for the best-selling book, *The Marines*, and was the sole author of *A Few Good Men: The Fighting Fifth Marines*. After almost four years active duty from 1968 to 1971, Brown returned to teaching high school for the next three decades; intermittently, he served as an activated reservist traveling to Korea among other places. He is a combat veteran of both the Vietnam and Persian Gulf conflicts. He spent 20 years as a reservist with Mobilization Training Unit DC 7, the Reserve unit that supports the History and Museums Division. Lieutenant Colonel Brown commanded the training unit before retiring from the Marine Corps Reserve in 1996. He is the author of an earlier pamphlet in this series, *Counteroffensive: U.S. Marines from Pobang to No Name Line*.



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History and Museums Division oral history transcripts provided observations by: LtCol Clifford V. Brokaw III; Capt Norman G. Ewers; Maj Vincent J. Gottschalk; Capt Andrew L. McVicars; Capt Gene W. Morrison; Maj Elton Mueller; Capt Clarence W. Parkins; 1stLt John L. Scott; and 2dLt Patrick G. Sivert.

