1912 2012

100 Years *of* Marine Corps Aviation:

An Illustrated History

ROXANNE M. KAUFMAN

ART DIRECTOR LAURIE SCHMIDT

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"It is fully realized that the only excuse for aviation in any service is its usefulness in assisting the troops on the ground to successfully carry out their operations."

Major Alfred A. Cunningham
September 1920

A MESSAGE FROM
THE 35TH COMMANDANT OF THE MARINE CORPS

On May 22, 1912, First Lieutenant Alfred Cunningham reported to Annapolis, Maryland for "duty in connection with aviation," marking the birth of Marine Corps aviation. Legendary Marines including Roy Geiger, Joseph Foss, Keith McCutcheon, Gregory "Pappy" Boyington, Frank Petersen Jr., John Glenn Jr., Charles Bolden, and countless others have further enhanced Cunningham's achievements. As we stand on the shoulders of those who came before us, the past 100 years provide a remarkable legacy of success.

The United States Marine Corps is the only military service with a completely integrated aviation component, capable of deploying with its ground combat units. This model was first developed when Marines deployed to Nicaragua in the 1920s during the Second Nicaraguan Campaign came under heavy fire. In response, Marine pilots began to conduct a new type of air attack now known as close air support. From that day forward, the use of aviation assets to provide close support to ground forces would become a governing philosophy in the Marine Corps, forging an unbreakable bond between Marine pilots and their fellow Marines on the ground.

This commemorative history showcases the achievements of Marine aviation through seldom seen photographs and engaging accounts of pivotal battles and events. It celebrates the innovation and adaptability of Marine Corps aviation, including its overall importance to the vital posture of the Marine Corps as a balanced air-ground-logistics team.

As a warfighting organization rich in tradition and proud of our history, we must celebrate this 100th anniversary of Marine aviation and recognize its unique role within our Corps. On behalf of all Marines, I send congratulations and best wishes for another 100 years.

Semper Fidelis

JAMES F. AMOS
General, U.S. Marine Corps
Commandant of the Marine Corps

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FOREWORD

Those of you who are familiar with my personal history know that I was one of the early astronauts and a United States Senator representing Ohio. What is perhaps less well known is that prior to either, I was a career Marine Corps aviator who saw service in World War II and the Korean War. During my years in the Marine Corps, I had the honor to be associated with some remarkable men – men whose collective vision became the foundation of Marine aviation. Theirs is a story that has been overlooked until now.

On May 12, 2012 Marine aviation will celebrate its one-hundredth birthday. In celebration of the event, the Marine Corps has prepared this history to tell the story of these remarkable men. I choose the word story rather than history because how Marine aviation came into being, slowly grew, and reached maturity is a saga that starts with the vision of one man, First Lieutenant Alfred A. Cunningham, Marine aviator number 1.

Cunningham was but the first of a long line of pioneers who envisioned an aviation force dedicated to the support of the Marine on the ground. He and the other pioneers foresaw, although they would not have put it in these terms, the inherent power of a military force of all combined arms. It is this attribute of Marine aviation that makes it unique – and makes it evolution a saga.

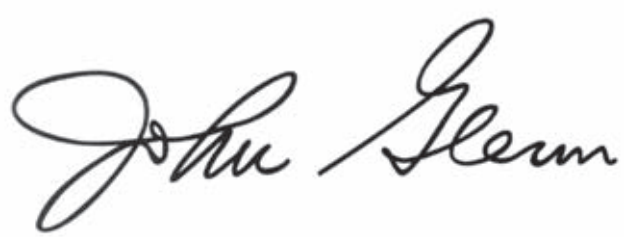
Whether you are a Marine or not, the story is both fascinating and informative – and a tribute to ability of determined men to shape events.

As you read the story you will learn how Cunningham and his peers organized, trained, and equipped – largely on their own initiative – a four- squadron force and deployed it to France in the latter stages of World War I. You will struggle along with them as they strive to keep Marine aviation viable during the austere inter war years. You will bear witness to the expansion from a handful of squadrons to over one hundred during World War II.

You will be introduced to the Marines who managed the transition from the old propeller driven aircraft of World War II to a technologically sophisticated force of jet powered aircraft and helicopters. So too with the evolution of doctrine during the Vietnam era that produced the Marine Air-Ground Task Force concept, the key to the modern Marine Corps readiness to respond to America's call to arms. And finally, you will meet a new generation of thinkers and innovators who continue to mold Marine aviation into the formidable force it is today.

As I implied earlier, this is not a history of events making the man, but rather the saga of a generation of Marines who shaped the events that became Marine aviation. I am proud to have been part of those events, and wholeheartedly recommend the story of the first one hundred years of Marine aviation to you.

Semper Fidelis,



Senator John Glenn

ABOUT THE BOOK

Based on in-depth research, this commemorative publication is not an exhaustive history on Marine aviation, but rather a hundred-year snapshot of the people, aircraft, and events that comprise the first one hundred years of Marine aviation.

Working in tandem with Art Director, Laurie Schmidt, I created this work as a "museum in a book." It includes an overview for each time period in Marine aviation, chapter introductions, feature articles, and a running timeline. This gives readers a 360-degree view, guiding them throughout the book. An oral history CD is included in the back of the book, giving voice to the visuals with first-hand accounts from select Marine aviators. Additionally, there are several appendices to serve as a reference.

Thank you to all the Marines and supporters of Marine aviation who contributed to this effort. The end product is better because of your input. A comprehensive list is in the back of the book. I would like to specifically thank Colonels Jack P. Monroe and William T. Hewes, and Major John M. Elliott for their unwavering support in this effort. It is through their eyes that I have been indoctrinated into the true "character of Marine aviation."

Roxanne M. Kaufman
AUTHOR

LAYING THE GROUNDWORK

BY MAJOR JOHN M. ELLIOTT, USMC (RET)

Marine Corps aviation began when Lieutenant Alfred A. Cunningham reported in at Greenbury Point, Maryland, on May 22, 1912, for naval aviator training. Cunningham envisioned that the future of aviation in the Marine Corps was to operate as a supporting arm for ground troops. Unfortunately, it took many years for his vision to be accepted.

In mid-1917, Marine Corps aviation consisted of only four commissioned officers, one warrant officer, and thirty enlisted men. An explosive growth followed and by the end of World War I there were 250 commissioned officers, 33 warrant officers, and 2,180 enlisted men assigned.

Although the Marine Corps was the last of the three services to become involved in aviation, it was the first to send a fully trained and equipped squadron overseas. The First Marine Aeronautic Company was deployed to Porto Delgado, Azores, to establish patrols in the vicinity and prevent German submarines from establishing a supply base.

When the Army expressly stated that there would be no Marine Corps aviation in France, Captain Cunningham looked for another way his troops could contribute. The Northern Bombing Group was formed and deployed to Northern France to operate in against German submarine bases. The Navy had the Night Wing while Marines had the Day Wing. Both the war and the targets changed, but the four Marine squadrons led by Cunningham made a credible record for the brief time they were there.

Unfortunately, with no opportunity for aviation to support Marines in France, when the war ended and the ground troops returned home, they still had no idea how aviation could support them. Fortunately, Marine aviation had its opportunity in the 1920s and 30s, when the Marine Corps participated in a number of expeditionary operations that included aviation.

Marines on the ground had been in Santo Domingo since before the War. But it was not until March 8, 1919, that an aviation unit, Squadron D, was stationed there with the ground Marines. About the same time, Squadron E landed at Port-au-Prince, Haiti, and quickly established a base at Mirebalis. In both countries working relations between air and ground units evolved gradually.

A working government was established in Santo Domingo by 1924 when the 1st Regiment and Squadron D, redesignated as Observation Squadron One, turned all its aircraft over to Observation Squadron Two in Haiti

and departed for San Diego, California, to begin Marine aviation there. Squadron E, redesignated Scouting Squadron Two, remained in Haiti until 1934 when it transferred to Quantico, Virginia.

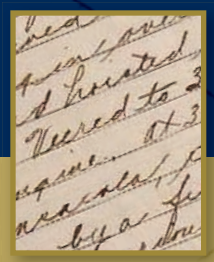
Domestically, air races and air shows became a major form of entertainment and Marine Corps aviation made the most of it to remain in the public eye. Perhaps though, the most important goal was to keep the attention of Congress and emphasize the need for new and better aircraft. In 1921, two Marine Corps DH-4B-1s made a tour from Santo Domingo to the Air Races in St. Louis, Missouri, and on to a show in San Francisco, California. Upon returning to Quantico the two engines were replaced and the Marines continued to Santo Domingo, completing a trip of 10,953 miles in 127 hours of actual flying. The longest flight at that time was 11,063 miles made in twenty-nine days in a twin engine airplane.

In 1921 Flight L, later renamed Marine Scouting Squadron One, departed the United States for Guam where they established an air station. The squadron conducted operations to support the fleet and strengthen the defenses of Guam before the limitations of the Washington Naval Disarmament Treaty became effective.

The Nicaraguan president requested Marine assistance in 1926 to monitor the forth-coming elections amid political unrest in the country. Along with the troops, six DH-4B-1 aircraft were dispatched from San Diego. Eventually it grew to a force of twenty-two aircraft and seventeen landing fields, seven of which were large enough to service the Fokker transports. This operation proved to be the training ground for the future leaders, both air and ground, of World War II.

Renewed civil unrest in China in 1927 necessitated an increased Marine presence. This buildup included aviation, the bulk of which came from the newly formed unit at San Diego. The lack of negotiation with the Chinese government prevented the aviation contingent landing and it had to sail to Olongapo in the Philippines, until the problem was resolved. When the aviation contingent arrived in China, its primary task was to keep track of the opposing Chinese armies.

By January 1933, due to limited funding, all expeditionary troops were recalled. Budgetary constraints slowed the rate of improvements until the war started in Europe. As industry tooled up to support the Allies, the government loosened the purse strings for expansion of the U.S. military. The Marine Corps experienced an explosive growth as the world situation deteriorated. New equipment was obtained and new bases were built. By the end of 1941, the bulk of west coast Marine aviation had been deployed to Hawaii.



CHAPTER ONE

DAWNING OF AWARENESS

By the 1890s, a few military leaders and far-sighted civilians recognized the potential of heavier-than-air flight. Assistant Secretary of the Navy Theodore Roosevelt and the War Department saw its potential in the military sphere. Innovators like Samuel Pierpont Langley and Alexander Graham Bell were intrigued by the possibility of aerial navigation and foresaw a mode of transportation.

Yet it was two practical brothers, Wilbur and Orville Wright, who made it happen. They viewed flying as a skill that could be attained only through careful study, trial and error, and perseverance. This approach paid off for the Wrights in 1903, when their flying machine took to the air at Kitty Hawk, North Carolina.

The Wrights' success did not immediately herald the dawning of American aviation, however. While the brothers continued to experiment in secrecy to protect their invention from potential competitors, European inventors began openly to race ahead. With government backing, foreign aircraft were breaking speed and altitude records, advancing technology, and creating a sense of national pride. Every milestone and newspaper headline heightened the public's awareness of Europe's growing commitment to aviation. Even the conservative-minded in the U.S. military began to take notice, and aviation's role in securing America's future began to take shape.

The Army used observation balloons in the Civil War and by the turn of the century had started to experiment with airships. In 1907, the Army became the first service to form an aviation arm under the Army Signal Corps. Two years later the Army Aeronautical Division took delivery of its first U.S. military aircraft, the Wright Military Flyer.

On September 26, 1910, the Navy entered the flight pattern when Secretary of the Navy George von L. Meyer selected Captain Washington I. Chambers, USN, as the Assistant to the Aid for Material, and the officer to whom all correspondence on aviation should be referred. This was the first official provision for aviation in the Navy. Over the next eight months, Chambers attended several aviation demonstrations and worked with the citizen-formed U.S. Aeronautical Reserve. The following April, he became the Navy's first officer in charge of aviation, working under the direction of the General Board. Then on May 8, 1911, the official birthday of naval aviation, Captain Chambers ordered the Navy's first airplanes, two Curtiss pusher biplanes.

From hot air balloons to the Wright brothers' first flights to the acquisition of military aircraft, aviation had grown at a dizzying pace. One newspaper reporter wrote, "It is hardly worth buying a book on aviation; what is written about today becomes obsolete tomorrow."

A MARINE IN THE COCKPIT

Marine pilots initially received land plane training from the Army Signal Corps at Mineola, New York. Pictured here at the controls of a Curtiss JN-2 is Captain Alfred A. Cunningham in 1916.

MAJOR JOHN M. ELLIOTT

TOC Index Previous Page Chapter Beginning

Aviation technology was rapidly advancing and enticing daring young men to take to the air. Alfred A. Cunningham, a relative unknown from Atlanta, Georgia, was one such man. With his first hot air balloon flight in 1903, Cunningham discovered a passion that stayed with him throughout his life. In many ways, he was like others who were fascinated by aviation. Yet, in one way, he stood apart. He was one of the few, one of the proud—CUNNINGHAM WAS A MARINE.

Marine Corps aviation began on May 22, 1912, when First Lieutenant Alfred A. Cunningham became the first Marine detailed to aviation. However, when he arrived at the Navy Aviation Camp in Annapolis, Maryland, much to his dismay, he received orders for expeditionary duty, not flight instruction. He returned to Annapolis in July, only to learn that there were no available aircraft for flight training. The following month the Navy sent him to a civilian flight instructor at the Burgess Company and Curtis, Inc., Marblehead, Massachusetts. Finally, on August 20, 1912, after two hours and forty minutes of instruction, Cunningham realized his dream. The Marine took to the air.

From his first flights, Cunningham envisioned Marine aviators supporting ground Marines. Enduring minimal funding and subpar equipment, he relentlessly promoted Marine air as a supporting arm. Within six years, he organized the First Marine Aviation Force, led Marine aviation through World War I, and eventually became the Marines' first officer in charge of aviation. After 1920, he was permanently detached from flying duty; however, he continued to champion the value of Marine air until his retirement in 1935.

Once Marine aviation had its patriarch, the next four Marine aviators cultivated and built upon his vision. Even though flying was about individual talent, collectively these men defined the role of aviators within the Marine Corps. In 1916, Marine aviation included an innovator, a pioneer, a risk-taker, and a future leader. As if by design, their contributions illustrated the character of a Marine aviator, long before anyone would appreciate what that was.

GRAY RESEARCH CENTER

With an engineering background, Marine aviator No. 2, First Lieutenant Bernard L. Smith, focused on the experimental and technological aspects of aviation. Smith became the first Marine naval attaché, conducted aerial bombing tests with the Navy, and flight-tested both heavier-than-air and lighter-than-air craft. He resigned his commission in 1920 and continued to work in aircraft development, frequently collaborating with inventor Glenn Curtiss. For a brief period, he joined the Navy, only to reenter the Marine Corps in 1937 and retire in 1946. Throughout his military career, he espoused the value of Marine aviation in support of naval aviation.

Smith's engineering background, coupled with an inquisitive nature, advanced naval aviation and made him the first in a long line of innovators.

In 1916, two years after completing naval aviator training, Marine aviator No. 3, Second Lieutenant William M. McIlvain, became the first Marine ordered to land plane training. Prior to this, the Marines flew only water-based, pusher-type aircraft, which left them seated and exposed (imagine an underpowered and mechanically challenged paddle boat with wings). When McIlvain began land plane training in a Curtiss JN-4, he immediately remarked on the sense of security he felt inside a cockpit. Soon, his land plane experience paid off. He led the First Aviation Squadron through training and commanded one of four Marine aviation squadrons in France during World War I. Even though McIlvain left the Marine Corps shortly after the war, with him the precedent was set—Marines had land planes.

While attempting to loop a seaplane in 1917, First Lieutenant Francis T. Evans, Marine aviator No. 4, discovered how to recover from a spin and solved one of the major safety issues of the day. Soon after, his technique was incorporated into the student naval aviator curriculum at Pensacola, Florida. Though most documentation suggests he discovered the process by accident, his nickname "Cocky" gives insight into his character. He commanded the first Marine aviation squadron to deploy for combat during World War I and invented the aerial ambulance transport system used in Haiti and Santo Domingo, staying in the Marine Corps until 1944. Evans' superior flying skills and ingenuity established a tradition of Marine aviators rising above equipment constraints and adapting to obstacles both in the air and on the ground.

After five years of experience on the ground, First Lieutenant Roy S. Geiger, Marine aviator No. 5, foresaw the utility of an air-ground team. When Cunningham took to the air in 1912, Geiger was already serving in Nicaragua. Four years later, as a seasoned infantry officer, Geiger reported to Pensacola for flight instruction. By 1918, he established the first Marine airfield and commanded one of four Marine aviation squadrons in France. In the post-war years, he was the steady, guiding hand that Marine aviation needed to survive and to transition into a professional organization. Drawing on his early experiences, he would lead Marine aviation through World War II and become the first Marine to command a field army.

By 1916, in addition to five aviators, Marine aviation included twenty enlisted men. Although there is little documentation about the first enlisted men detailed to aviation, what remains today is telling. In a letter to Major General Commandant William P. Biddle, Cunningham requested Sergeant James Maguire, the first enlisted man detailed to aviation, by name. Cunningham met Maguire at the Advance Base School, where the sergeant worked as an electrician and taught telegraphy. Evidently Maguire impressed Cunningham with his technical expertise, because he trusted the sergeant enough to put him to work on his Wright B-1. Maguire deployed with naval aviation in 1913 and maintained Marine aircraft during the fleet exercises at Guantanamo Bay, Cuba. There is little documentation on Maguire after 1913, but within three years nineteen more enlisted men would join aviation to keep the Marines flying.

NEWLY COMMISSIONED

In the summer of 1891, the first Marines arrived at Naval Station, Port Royal, South Carolina. Within a few years, in response to an increasing presence, a Marine Barracks was constructed. By 1909, the Marine Barracks was converted to the Marine Officers' School. The school's mission was to indoctrinate newly commissioned officers. Three of the first five Marine aviators, Cunningham (on left holding a football helmet), Evans (center in full uniform), and Smith (standing immediately to the right of the post) graduated from the school in 1909.

IN 1916, Marine aviation included a patriarch, an innovator, a pioneer, a risk-taker, and a future leader.

As if by design, their contributions illustrated the character of a Marine aviator, long before anyone would appreciate what that was.

THE *Father* OF MARINE CORPS AVIATION

FIRST LIEUTENANT ALFRED A. CUNNINGHAM

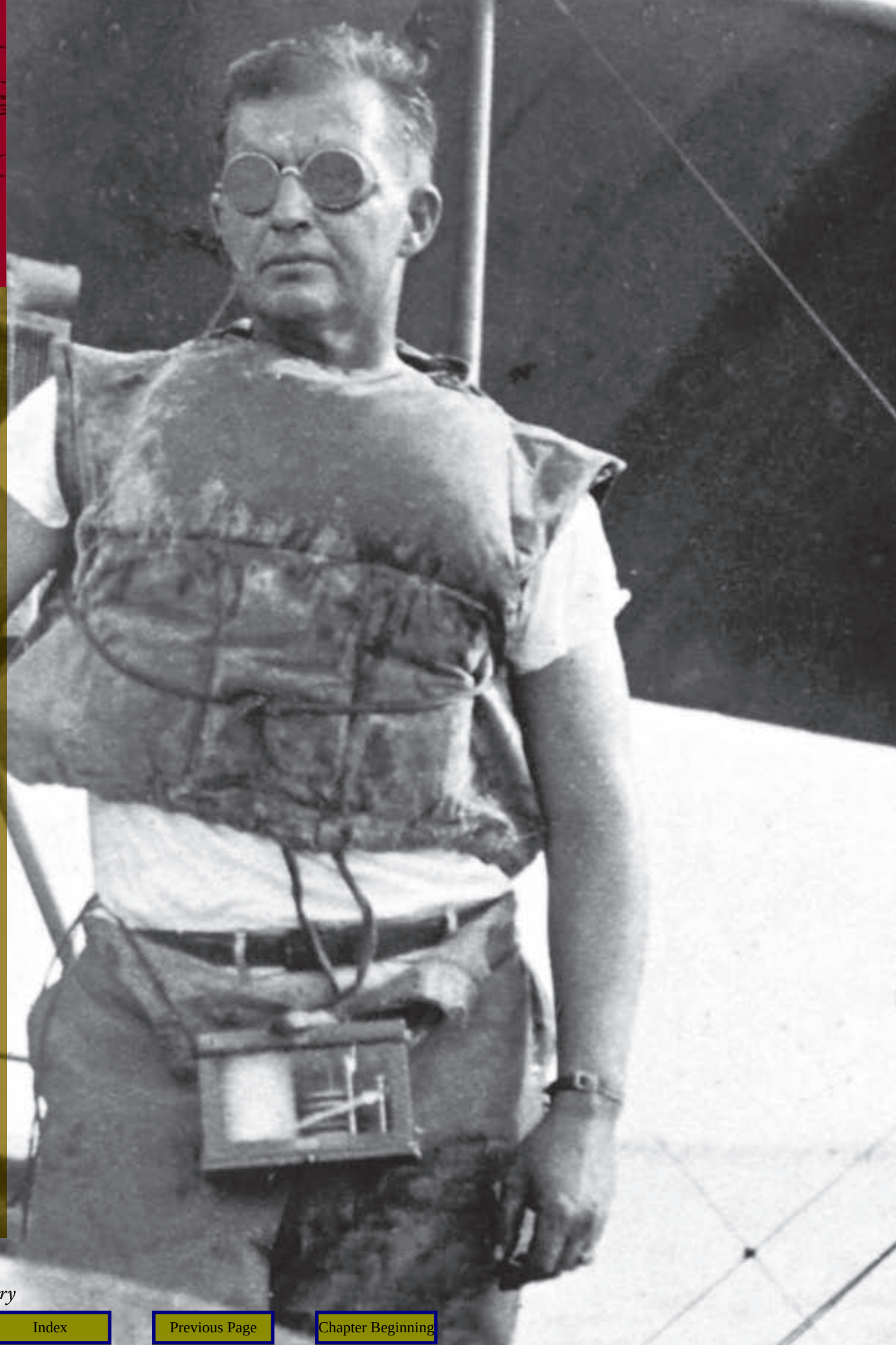
MARINE AVIATOR NO. 1

Alfred A. Cunningham was born on March 8, 1882, in Atlanta. At sixteen, he joined the 2d Georgia Infantry Volunteers and deployed to Cuba for service in the Spanish American War. Despite Cunningham's youth and inexperience, his commanding officer praised him for being intelligent, eager to learn, and well-respected by his peers.

At the end of the war he was mustered out and sold real estate in Atlanta for the next ten years. Then on January 16, 1909, he entered the Marine Corps and received a commission as a second lieutenant. By December, Second Lieutenant Cunningham graduated from the Marine Officers' School in Port Royal. His first two assignments were with the Marine Detachments of the USS *New Jersey* and USS *North Dakota*. After being promoted to first lieutenant, he commanded the Marine Detachment on the USS *Lancaster*.

In 1911, he reported to the Philadelphia Navy Yard, Pennsylvania. Drawing from his sales background, Cunningham quickly aligned himself with influential Aero Club of America members and began promoting the idea of Marine aviation. To advance his cause, he acquired an airplane and received permission to use a small area of the Navy Yard as his base of operations. His loud and underpowered plane never flew, but it gave him hands-on experience and an understanding of mechanical issues that would benefit him in the years to come. Evidently, Cunningham's efforts paid off, because he was detailed to aviation the following year.

After earning his wings, First Lieutenant Cunningham was assigned the Navy's Wright B-1. His first flight took place on October 4, 1912. Within a year, he logged over 200 flights (many were only five to ten minutes in duration) in the B-1, often cannibalizing other aircraft to keep it serviceable. A few times, he appealed to Captain Chambers, USN, for better equipment. Eventually, his equipment problem took care of itself when a storm hit Annapolis, damaging the B-1 beyond repair.



CUNNINGHAM IN FRONT OF A CURTISS AIRCRAFT

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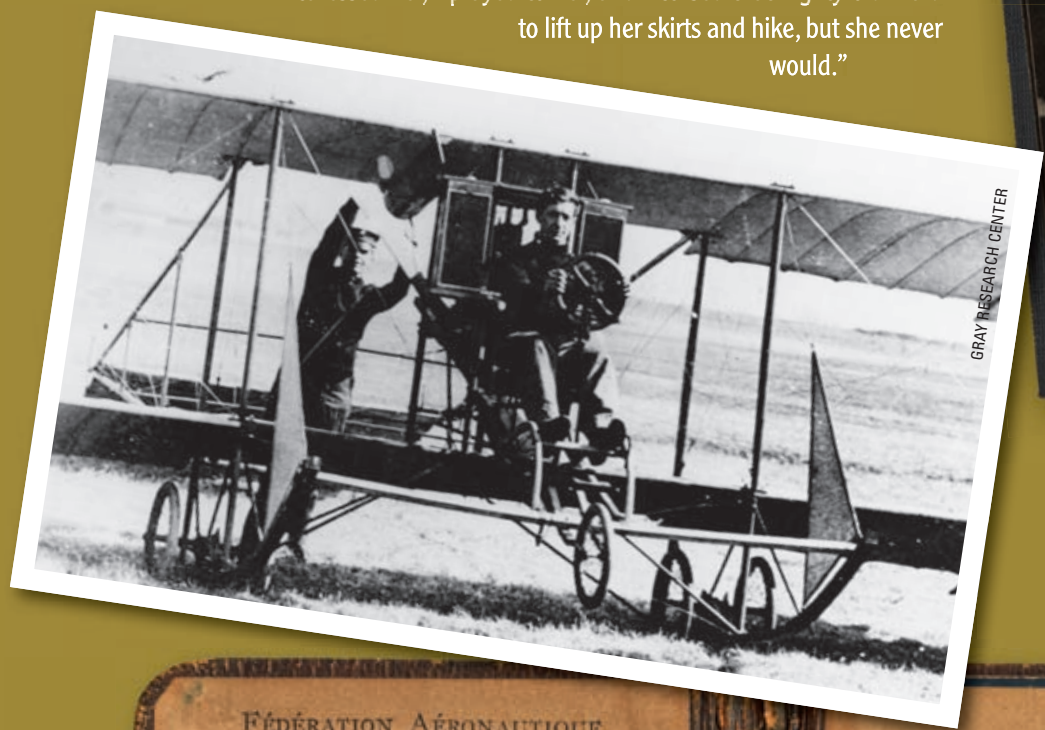
"THE FLIGHTY OLD MAID"

After arriving at the Philadelphia Navy Yard, Pennsylvania, in 1911, Cunningham met a down-on-his-luck airplane inventor. He persuaded the inventor to let him use the plane for $25.00 a month (at the time Cunningham's monthly pay was only $167.00). The inventor, Mr. Brown, is seated at the controls as Cunningham (left) tries to crank the borrowed plane, "Noisy Nan." Reflecting on his repeated attempts, he declared,

> "I caressed her, I prayed to her, and I cursed that flighty old maid to lift up her skirts and hike, but she never would."



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EAGER TO SERVE

Young Alfred Cunningham (seated far left) with eleven members of the 2d Georgia Infantry Volunteers in 1897.

FÉDÉRATION AÉRONAUTIQUE INTERNATIONALE

AERO CLUB OF AMERICA

Hydraeroplane Pilot's Certificate No. 2

The above-named Club, recognized by the Fédération Aéronautique Internationale, as the governing authority for the United States of America, certifies that Alfred A Cunningham born 8th day of March 1882 has fulfilled all the conditions required by the Fédération Aéronautique Internationale, for an hydraeroplane pilot, and is brevetted as such.

Dated June 11th 1913.

Alan R Hawley, President.

Mahmer Delano, Secretary.

Signature of pilot:

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AERO CLUB OF AMERICA issues CUNNINGHAM'S FIRST PILOT'S CERTIFICATE

The Aero Club of America was founded in 1905 by a handful of American entrepreneurs who worried about America falling behind in the international aviation scene. As a result, they petitioned the Fédération Aéronautique Internationale (the international and sanctioning authority) to charter an American chapter. Their request was approved and the club held its first meeting in November. Quickly, the membership roster became a who's who list in American society.

As part of its charter, the Aero Club issued pilots' certificates. Club officials openly encouraged pilots to attain a certificate in support of America's growing commitment to aviation (at the time, there was no government organization that licensed pilots). Additionally, if U.S. pilots wanted to participate in international events, they needed sanctioning from the Aero Club of America.

FIRST LIEUTENANT BERNARD L. SMITH

MARINE AVIATOR NO. 2

Bernard L. Smith was born on June 19, 1886, in Richmond, Virginia. By all accounts, he was a natural athlete who studied mechanical engineering at Virginia Polytechnic Institute. In 1909, Second Lieutenant Smith reported to the Marine Officers' School in Port Royal. After completing school, he joined the Marine Detachment aboard the USS *Louisiana* until 1911, when he transferred to the Marine Barracks at Philadelphia. By September 1912, Smith received orders to the Navy Aviation Camp and soloed in a Curtiss aircraft soon after. He frequently flew with the Navy side of the camp, often referred to as the "Curtiss Camp." After earning the respect of the Navy pilots, they asked Smith to participate in several developmental and experimental operations.

He traveled to Paris, France, with Navy officers and toured French aircraft factories. Shortly after his return to the United States, he was ordered back to Paris as the Assistant to the Naval Attaché for the American Embassy. While in Paris, he kept Navy leadership apprised of Europe's rapid wartime expansion. Following America's entry into the war, Smith was summoned back stateside and assigned to the Aviation Section of Naval Operations. He frequently worked at the Naval Aircraft Factory in Philadelphia on the development and testing of naval aircraft. In Smith's words, he "Outlined the general design of aircraft, advising and criticizing their construction and carrying out all tests for the development of the aircraft before turning it over to the service."

SMITH AT THE NAVAL AIRCRAFT FACTORY IN 1918

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1912

MAY 22, 1912

1stLt Alfred A. Cunningham reports for duty in connection with aviation to the Naval Aviation Camp at the Naval Academy in Annapolis, MD. He becomes Marine aviator No.1 and Naval Aviator No. 5. This marks the official birthday of Marine Corps aviation.

OFFICIAL BIRTHDAY OF MARINE CORPS AVIATION

AUGUST 20, 1912

1stLt Cunningham solos after only two hours and forty minutes of flight training with a civilian instructor at the Burgess Company and Curtis, Inc., in Marblehead, MA.

SEPTEMBER 18, 1912

1stLt Bernard L. Smith arrives at the Navy Aviation Camp for flight instruction. He becomes Marine aviator No. 2 and Naval Aviator No. 6.

SEPTEMBER 18, 1912

Sgt James Maguire reports to the Navy Aviation Camp and becomes the Marine Corps' first aircraft mechanic.

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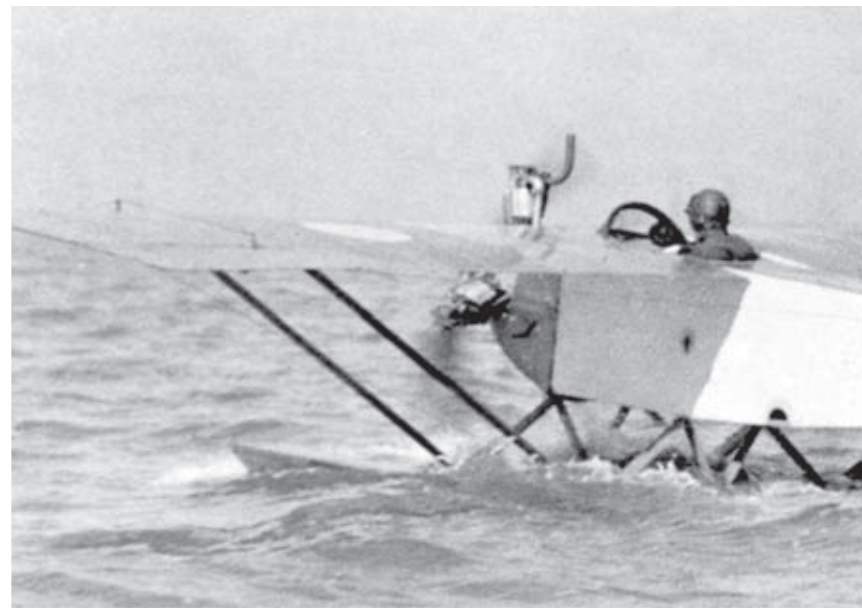

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In 1913, First Lieutenant Smith deployed with the naval aviation unit to Guantanamo Bay for the annual fleet exercises. Smith (far left, in hat) is pictured in front of his quarters with two unidentified men.

Besides flight training and participating in fleet maneuvers, Smith conducted test flights for the Navy. While in the Marine Corps, he flew over twenty-five experimental aircraft. In 1918, Smith flight-tested the Loening M-3 Cat (above) at Anacostia, Washington, DC. He also flew the aircraft's land variant known as the Kitten.

Although Smith and Cunningham began flying for the Marine Corps within a few months of one another, they seldom flew together after the first year. Yet in 1912, Smith (on left) received flight instruction from Cunningham (on right) in the B-1 at Greenbury Point, Maryland.

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OCTOBER 4, 1912

1stLt Cunningham makes his first entry in his logbook. Throughout the next year, he records over 200 flights in the Navy's Wright B-1.

JANUARY 6, 1913

Naval aviators, including Marines, depart for fleet maneuvers at Guantanamo Bay, Cuba. The exercise will last eight weeks and emphasize reconnaissance and spotting submerged objects from the air.

AIRCRAFT MECHANICS

In 1914, while deployed to Vera Cruz, Mexico, these unidentified enlisted mechanics received fifty cents per day while deployed.

SMITH
An Expert Aviator

Although the Navy and Marine Corps already had a handful of trained aviators at the outbreak of World War I, the first military certificates recognizing those officers were not issued until January 1915. As proof of their accomplishments, many, but not all, aviators also applied to the Aero Club of America for certification. First Lieutenant Smith attained two certificates from the Aero Club, one for hydroaeroplanes and the other for being an expert aviator (right).

According to Aero Club of America records, Smith successfully performed three separate tests to receive an expert aviator's certificate. Two were distance tests and one was an altitude test. Smith's distance flights required that he fly solo and complete a distance of at least 16,404 feet* in a closed circuit, without touching the ground or water or restarting the motor. All tests were conducted in front of randomly selected witnesses from the Aero Club membership roster.

For one of the tests, Smith launched from and landed on water.** Two posts or buoys marked his course and were placed approximately 1,641 feet apart. He alternated to the right and to the left of the course, so his flight consisted of a series of figure eights. Smith landed by stopping the motor before touching the ground or water and finished less than 164 feet from a point he indicated prior to takeoff. All of his landings were documented as normal and no observers reported any irregularities.

For the altitude flight, Smith climbed to 328 feet above his point of departure (verified by a barograph) and descended without cutting the motor.

*The international organization established the testing parameters. As a result, the distances were originally calculated in meters, which when converted to feet, look somewhat unusual.

**The hydroplane test was identical, except that he took off and landed from water for all flights.

FLIGHT GEAR

First Lieutenant Smith (left) and an unidentified man in front of the C-3. Note the two items around Smith's neck. The larger one, a barograph, measured his altitude and the smaller one, a stopwatch, calculated his air speed.

Aero Club of America

Sole Representative of the Fédération Aeronatique Internationale in America

Certifies that

1st Lieut. Bernard L. Smith, U.S.M.C.,

has complied with the requirements established by the Board of Governors for an Expert Aviator's Certificate

No. 31.

Alan R. Hawley
PRESIDENT

Howard Huntington
SECRETARY

June 23d 1915.

GRAY RESEARCH CENTER

1913

MARCH 1913

The 1914 Naval Appropriations Act recognizes aviation as a separate specialty, awarding pilots of heavier-than-air craft a thirty-five percent pay increase.

MARCH 29, 1913

1stLt Cunningham receives orders for temporary aviation duty at Marblehead, as "an actual flyer of heavier-than-air craft." His orders are antedated to March 5.

AUGUST 1, 1913

1stLt Cunningham requests leave from flight duty because his fiancée refuses to marry him unless he gives up flying. He is assigned to the Navy Yard at Washington, DC.

SEPTEMBER 8, 1913

1stLt Cunningham officially detaches from the Navy Aviation Camp in Annapolis and will report to the Navy Yard at Washington, DC.

NAVAL HISTORY AND HERITAGE COMMAND

Deploying with the Navy
GUANTANAMO BAY, CUBA

In 1913, for the first time, naval aviation deployed with the fleet during annual exercises. The thirty-four member Navy aviation unit included First Lieutenants Smith and Cunningham (seated in chairs, second and third from the left, respectively) and enlisted Marines. Besides crewmembers, the unit had two unofficial mascots, Casomole, a goat, and Gyp, First Lieutenant Smith's dog.

While in Guantanamo Bay, Cunningham and Smith located submerged objects from the air and dropped location markers to show their position. They carried over one hundred passengers and convinced many of the advantages of having a bird's-eye view. Perhaps the most significant passenger was future Commandant, Lieutenant Colonel John A. Lejeune, who spoke well of this experience and created the first table of organization for Marine air.

Later that year, Cunningham would request leave from flight duty. His fiancée, Josephine Jeffries, refused to marry an aviator for fear of becoming a young widow. Her apprehension was not surprising, because newspapers at that time reported a ninety percent fatality rate for aviators. That number is most likely exaggerated, but it illustrates the danger of flying. Probably, the most accurate estimate came from the Army in 1911, which recorded the life expectancy of aviators was one fatality for every sixty-five hours flown. Given these staggering statistics, it was not surprising that the future Mrs. Cunningham refused to marry an aviator.

OCTOBER 1913

1stLt Cunningham is one of six naval officers appointed to the Chambers Board, which will establish an official plan for organizing a naval aeronautic service.

OCTOBER 11, 1913

MajGenCmdt William Phillips Biddle recommends that Marine aviators train with the newly formed Advance Base Regiment.

MAJGENCMDT WILLIAM PHILLIPS BIDDLE
"Great benefits to an Advance Base Force…might result from trained aviators."

NOVEMBER 1, 1913

2dLt William M. McIlvain reports to the Navy Aviation Camp for flight instruction. He becomes Marine aviator No. 3 and Naval Aviator No. 12.

DECEMBER 27, 1913

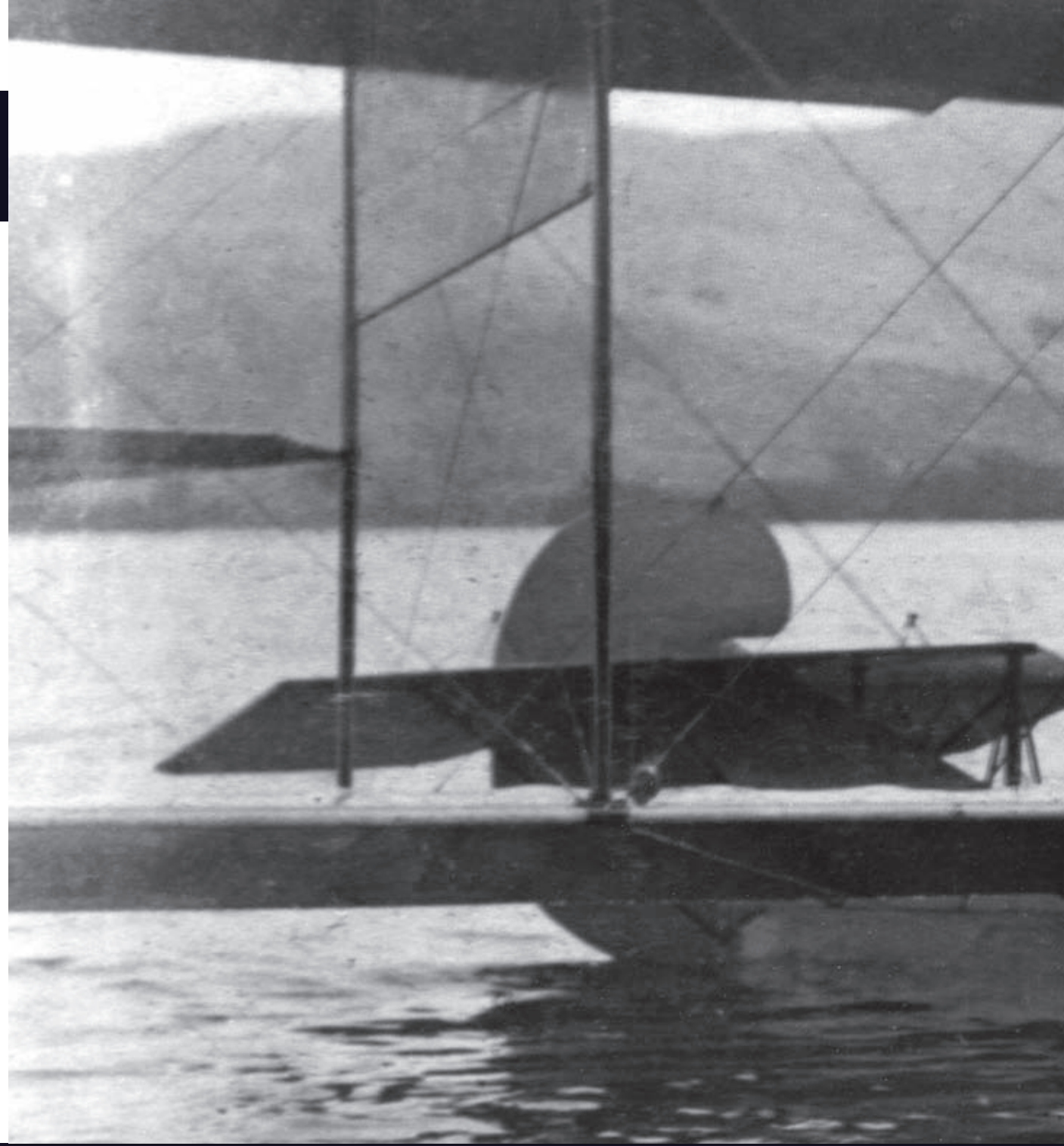
1stLt Smith, 2dLt McIlvain, and enlisted men transfer from Annapolis to the Aviation Detachment, First Advance Base Brigade, Marine Barracks, Philadelphia, PA. The unit is identified as the Brigade Aviation Detachment.

Atlantic Fleet Exercises 1914

In January 1914, the Navy assigned the Curtiss C-3, a flying boat (later redesignated the AB-2) to the Marines. The aircraft's hull was constructed from mahogany and coated with several thick coats of lacquer for protection. First Lieutenants McIlvain (seated) and Smith (standing) pose for a post-flight picture with an unidentified enlisted man.

The two flew together in the C-3 during the 1914 Atlantic Fleet Exercises at Culebra, Puerto Rico. Smith and McIlvain conducted aerial reconnaissance and scouting missions in support of the Advance Base Brigade. They recorded fifty-two flights and almost twenty hours in the air while at Culebra. Much of their flight time consisted of passenger flights carrying brigade officers in an attempt to demonstrate the potential benefits of aerial reconnaissance.

The exercises confirmed Marines' ability to occupy, secure, and defend an advance base against an enemy attack. For Marine aviation, the benefits of the exercises were not so obvious. After working with the brigade, Smith proposed how to configure and equip future air units for advance base operations. He recommended that the aviation component consist of five pilots and twenty enlisted men, equipped with three airplanes. Despite his recommendations, once the group returned to the states, it was disbanded and absorbed back into naval aviation operations at Pensacola. Notwithstanding, the exercises prompted Marine aviators to consider how to man and equip air units for specific support missions.



1914

JANUARY 3, 1914
The Brigade Aviation Detachment deploys with the Advance Base Regiment for annual fleet exercises at Culebra, Puerto Rico. Col George Barnett, who will become the next Commandant, commands the Regiment.

JANUARY 9, 1914
All Marine units arrive at Culebra. The aviation element includes 1stLt Smith, 2dLt McIlvain, ten enlisted mechanics, and two Curtiss aircraft (the C-3 flying boat and the E-1 amphibian).

JANUARY 20, 1914
Lt John H. Towers, USN, moves the Navy Aviation Camp, including Marines, from Annapolis to the newly established Aeronautic Station, Pensacola, FL.

JULY 28, 1914
1stLt Smith and Lt(jg) Victor D. Herbster, USN, conduct aerial bombing tests at Indian Head Proving Ground, Stump Neck, MD.

GRAY RESEARCH CENTER

A NOBLE MECHANIC

Jacob Makohin, a nobleman who emigrated from Russia, enlisted in the Marine Corps on August 10, 1909. Within four years, he transferred to aviation duty, serving as a one of a handful of mechanics.

AUGUST 21, 1914

1stLt Smith, LCdr Henry C. Mustin, USN, and Lt Patrick N. L. Bellinger, USN, arrive in Paris, France, for a two-day tour of aircraft factories and aerodromes.

SEPTEMBER 1, 1914

1stLt Smith and Lt(jg) Herbster, USN, report to Paris and Berlin, Germany, respectively as naval attachés.

JANUARY 9, 1915

The Marine aviation detachment at Pensacola now consists of one aviator, 1stLt McIlvain, and is informally known as the Marine Aviation Section, Navy Flying School.

SECOND LIEUTENANT WILLIAM M. MCILVAIN

MARINE AVIATOR NO. 3

William M. McIlvain was born on September 30, 1885, in Bethesda, Ohio. Entering the Marine Corps in August 1909, he attended the Marine Officers' School. After graduating, he reported to Marine Barracks, Pensacola, in January 1911. His first two assignments were with the Marine Detachments aboard the USS *Connecticut* and USS *North Dakota*, respectively.

On November 1, 1913, McIlvain reported to Annapolis for aviation duty. Surprisingly, only two months after receiving his initial flight instruction, he flew the C-3 in the 1914 Atlantic Fleet Exercises at Culebra, with First Lieutenant Smith. At the completion of the exercises in February 1914, he reported to Pensacola. He briefly served aboard the USS *Mississippi* and USS *North Carolina* with the naval aviation unit, and afterwards returned to Pensacola.

In January 1915, with Smith in Paris and Cunningham in Washington, DC, McIlvain was the only Marine aviator at Pensacola. That changed by April, when Cunningham arrived.

In 1916, McIlvain became the first Marine pilot ordered to land plane training. He received his initial land plane instruction from the Army at San Diego, California. The following year, he led the Marines' land plane squadron, the First Aviation Squadron, through flight training in New York and Louisiana. Then in March 1918, he transferred the squadron to Marine Flying Field at Miami. By July, he deployed with the First Marine Aviation Force and commanded Squadron B. For his service in World War I, McIlvain was awarded the Navy Cross.

YOUNG MCILVAIN, CIRCA 1910

GRAY RESEARCH CENTER

1915

FEBRUARY 25, 1915
1stLt Cunningham requests reassignment to aviation duty.

APRIL 11, 1915
After persuading his wife to let him resume flying, 1stLt Cunningham reports for refresher training and flight duty.

JUNE 1915
WO Walter E. McCaughtry becomes the first flying warrant officer. In four years, he will command the Marine aviation squadron in the Dominican Republic.

JULY 2, 1915
1stLt Francis T. Evans arrives at Pensacola from Guam and begins pilot training. He becomes Marine aviator No. 4 and Naval Aviator No. 26.

FIRST LIEUTENANT FRANCIS T. EVANS

MARINE AVIATOR NO. 4

Francis T. Evans was born in Delaware, Ohio, on June 3, 1886. He simultaneously attended Ohio Wesleyan University and served in the Ohio National Guard before enlisting in the Marine Corps. In January 1909, he received a commission as a second lieutenant and reported to the Marine Officers' School in Port Royal. Then in July 1915, he arrived at Pensacola for student naval aviator training.

In 1917, as a captain, Evans discovered how to recover from a spin. This was a significant discovery in aviation safety, because most pilots were lost once they went into a spin. Flying a Curtiss N-9 seaplane, Evans attempted a loop at an altitude of 3,500 feet. On the way up, his plane lost speed, stalled, and went into a spin. What he did next reveals his exceptional instincts.

Instead of panicking, Evans immediately pushed the control wheel forward to regain airspeed while arresting the turning motion of the spin with the rudder. His quick reflexes allowed him to survive the spin, yet for Evans that was not enough. He immediately repositioned himself over the airfield at Pensacola and repeated the maneuver over and over again in front of observers.

Captain Evans' technique solved a major aviation safety issue common to all types of airplanes. As a result, his spin recovery procedure was incorporated into the naval aviator training program at Pensacola. Twenty-three years later, Evans received the Distinguished Flying Cross for his discovery.

EVANS AS A MAJOR IN 1918

MAJOR JOHN M. ELLIOTT

AUGUST 17, 1915

SecNav Josephus Daniels requests that Marine and Navy aviators receive instruction in land planes.

SEPTEMBER 17, 1915

1stLt Cunningham officially requalifies as a naval aviator.

THE CO-PILOT

Whenever possible, First Lieutenant Smith flew with his dog, Gyp. The pooch even deployed with the naval aviation unit to Guantanamo Bay in 1913.

FIRST LIEUTENANT ROY S. GEIGER

MARINE AVIATOR NO. 5

Roy S. Geiger was born on January 25, 1885, in Middleburg, Florida. He completed Florida State Normal School in 1904, earned his teaching certificate the following year, and briefly worked as a junior high principal. Then he returned to college and graduated from Stetson University in 1907 with a law degree. Upon passing the bar exam, he opened a law practice. Quickly disillusioned with the legal profession, Geiger enlisted in the Marine Corps.

On November 2, 1907, he departed for basic training at Naval Station Norfolk, Virginia. For the majority of his enlisted time, he was stationed at the Marine Barracks in Washington, DC. Geiger received a commission in 1909 and reported to the Marine Officers' School in Port Royal. His first assignments were with the Marine Detachments aboard the USS *Wisconsin* and USS *Delaware*, respectively. Geiger then served in Nicaragua and China, and it was those experiences that he would carry into the air, envisioning how to improve air-ground integration.

Of the first five Marine aviators, Geiger—undoubtably had the greatest influence on the advancement of Marine aviation. When he enlisted in the Corps, military airplanes were an immature technology and untested as a weapon of war. By the end of his career, he witnessed the beginning of the jet age. Geiger embraced technological advancements and formulated innovative ways to apply them to the Marine Corps' mission.

GEIGER, CIRCA 1912

CLAY COUNTY ARCHIVE

1915

NOVEMBER 8, 1915

1stLt Cunningham attempts a catapult launch from the USS *North Carolina* in the AB-2 seaplane. He crashes into the water and injures his back.

MARCH 31, 1916

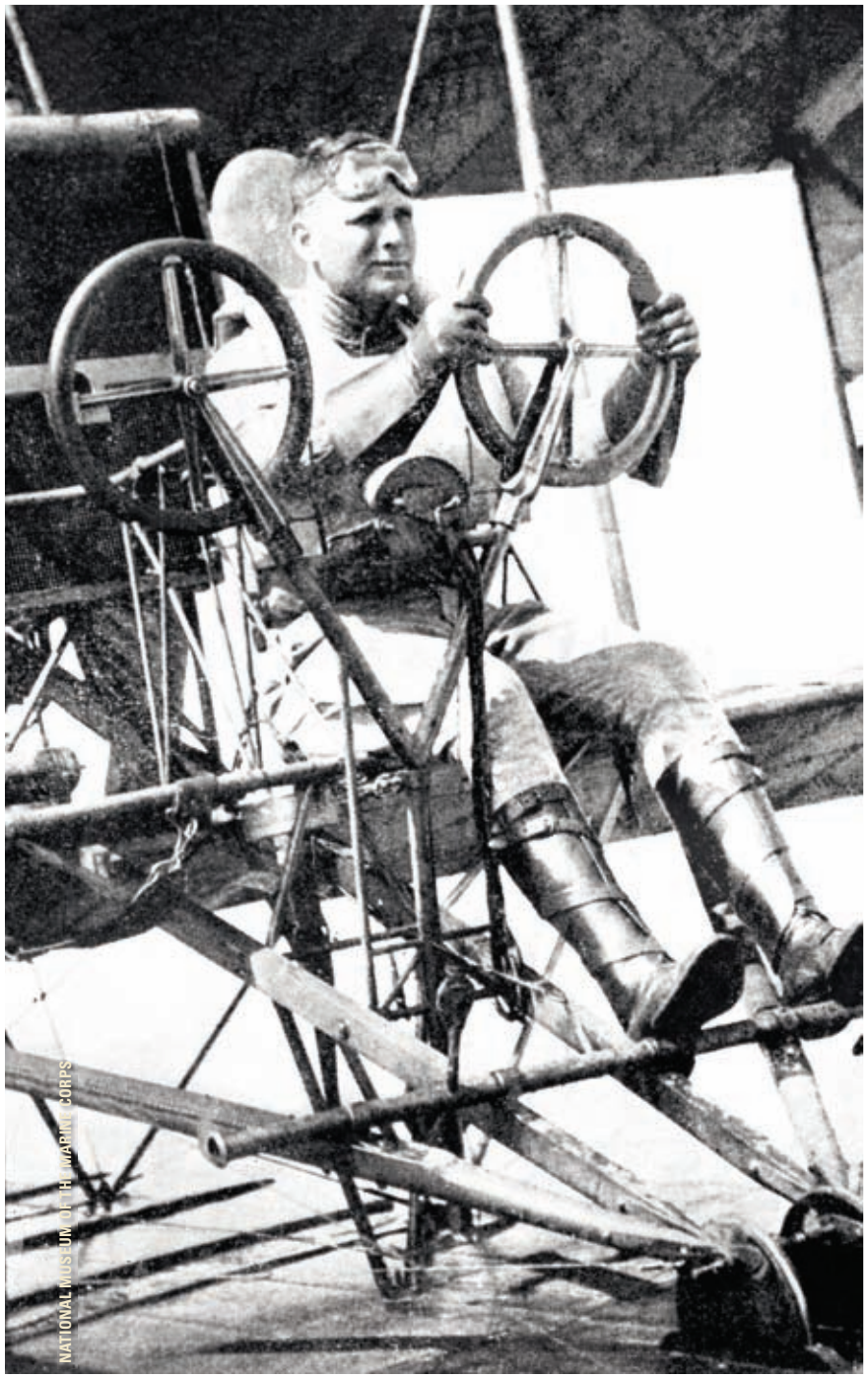
1stLt Roy Stanley Geiger arrives at Pensacola from the Legation Guard in China and begins flight training. He becomes Marine aviator No. 5 and Naval Aviator No. 49.

APRIL 1916

1stLt Cunningham, along with aviation duties, is put in charge of the Motor Erecting Shop at Pensacola.

JUNE 1, 1916

1stLt McIlvain is ordered to report to the commanding officer of the Signal Corps Aviation School on North Island at San Diego, CA. He will return to Pensacola on November 24, 1916.



NATIONAL MUSEUM OF THE MARINE CORPS

NATIONAL MUSEUM OF THE MARINE CORPS

NATIONAL MUSEUM OF THE MARINE CORPS

Geiger seated (far left) at the controls of a Curtiss Hydro Trainer. From March 1916 until the following June, he acquired sixty-nine flight hours and was designated a naval aviator on June 9, 1917. He also logged fourteen ascents in the lighter-than-air category of free ballooning.

Cunningham made this recommendation of Geiger to Colonel John A. Lejeune: "Having canvassed all of those who appear to be suitable for aviation, in order of desirability, I would place Geiger No. 1 on the list." Years later, Commandant Lejeune (above) congratulates him after a flight.

During the naval bombing experiments in 1921, Geiger (near left) and fellow pilots (left to right) Second Lieutenants Frank H. Fleer and Lawson H. M. Sanderson, First Lieutenant Ford O. Rogers, and Captain Francis P. Mulcahy dropped 230-pound bombs on the *Ostfriesland*, a German ship ceded as a war reparation.

JUNE 12, 1916

1stLt McIlvain begins flight instruction in land planes at the Army Aviation School.

JUNE 29, 1916

1stLt Cunningham arrives at the Army Aviation School for flight instruction in land planes.

AUGUST 1, 1916

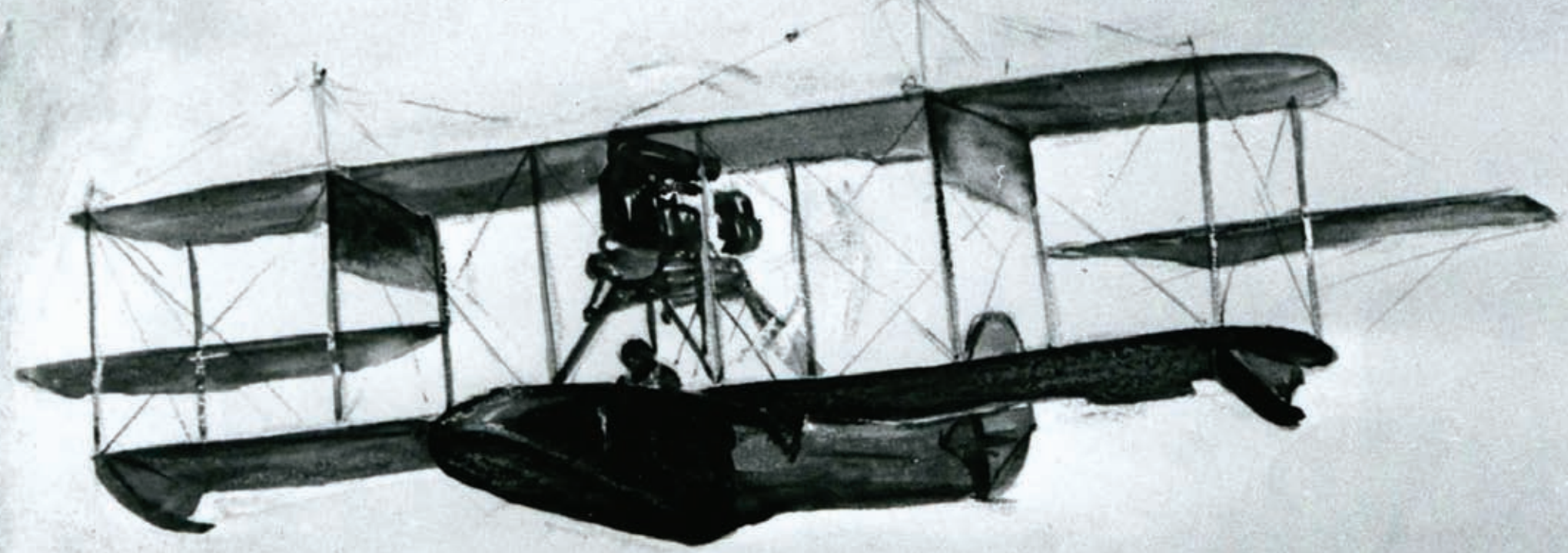
1stLt Cunningham submits a proposal to MajGenCmdt Biddle for personnel organization and a Marine Corps flying station at Philadelphia.

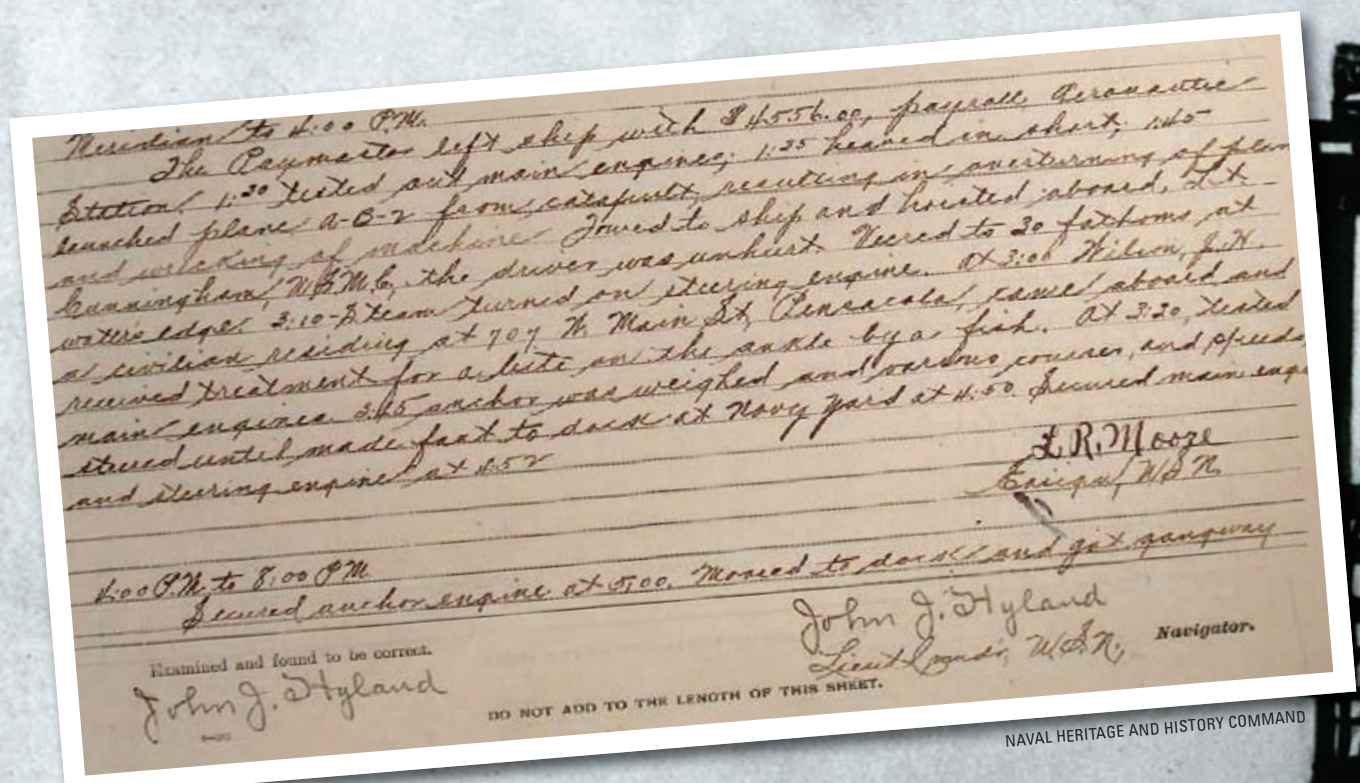
AUGUST 29, 1916

The Naval Appropriations Act of 1916 creates a Naval Reserve. The Naval Reserve will include Marine Corps and Marine aviation components.

DECEMBER 31, 1916

Marine Corps aviation consists of five officers, one warrant officer, and twenty enlisted men.





Meridian to 4:00 P.M.
The Paymaster left ship with $4556.00 payroll. Pressure
Station 1:30 tested out main engines; 1:35 heaved in chart; 1:45
launched plane A-C-2 from catapult, resulting in overturning of plane
and wrecking of machine. Towed to ship and hoisted aboard. Lt.
Cunningham, U.S.M.C., the driver, was unhurt. Veered to 30 fathoms at
water edge. 3:10 - Steam turned on steering engine. At 3:00 Wilson, fireman
a civilian residing at 707 N. Main St., Pensacola, came aboard and
received treatment for a bite on the ankle by a fish. At 3:20, tested
main engines. 3:45 anchor was weighed and proceeded, course, and speed
steered until made fast to dock at Navy yard at 4:00. Secured main engine
and steering engine at 4:52

L. R. Mooze
Ensign U.S.N.

4:00 P.M. to 8:00 P.M.
Secured anchor engine at 5:00. Moored to dock and got gangway

John J. Hyland
Lieut. Comdr., U.S.N.
Navigator.

Examined and found to be correct.
John J. Hyland

DO NOT ADD TO THE LENGTH OF THIS SHEET.

NAVAL HERITAGE AND HISTORY COMMAND

FOR THE RECORD

This excerpt from the deck log of the USS North Carolina *records Cunningham's catapult attempt on November 8, 1915. His aircraft got underway at 1:45, flipped over, and crashed into the water. After the crew retrieved "the driver," Cunningham, they towed the wrecked aircraft and lifted it onto the ship.*

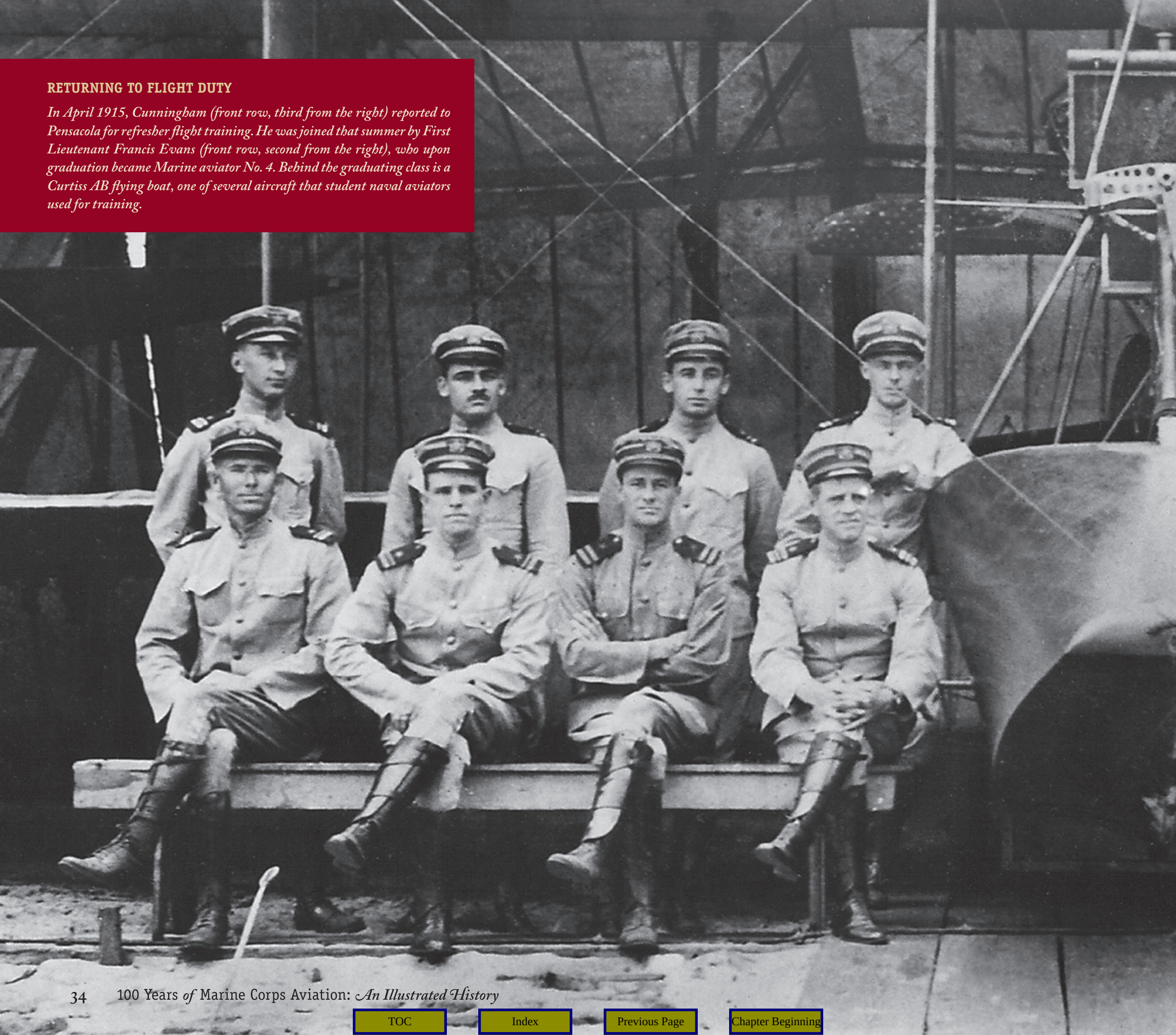
U.S. MARINE CORPS

U.S. MARINE CORPS

LAUNCHING FROM THE USS *North Carolina*

As personnel and equipment increased at Pensacola, so did training and testing. By 1915, the Navy began launching seaplanes from experimental catapults. First Lieutenant Cunningham attempted to launch from the USS *North Carolina*'s catapult in the Curtiss AB-2 (left) on November 8, 1915. The catapult mechanism failed and his plane toppled into Pensacola Bay. The ship's crew quickly retrieved Cunningham, who injured his back, but the plane was unsalvageable.

The following July, Lieutenant Godfrey de Courcelles Chevalier, USN, in the more powerful AB-3, became the first pilot to successfully catapult from a ship while underway. The *North Carolina* crew (above) recovers deChevalier's flying boat.



RETURNING TO FLIGHT DUTY

In April 1915, Cunningham (front row, third from the right) reported to Pensacola for refresher flight training. He was joined that summer by First Lieutenant Francis Evans (front row, second from the right), who upon graduation became Marine aviator No. 4. Behind the graduating class is a Curtiss AB flying boat, one of several aircraft that student naval aviators used for training.

NAVAL HISTORY AND HERITAGE COMMAND

CHAPTER TWO

A FORCE IN THE FIGHT

Although inventors and pilots were still mastering basic principles of flight, the era of backyard builders and financiers of their one-of-a-kind contraptions was quickly coming to a close.

Almost overnight, spurred by the hostilities in Europe, the airplane would become a weapon of war. As such, it would require improved engine performance, better airframe stability, and aircraft factories.

At the beginning of World War I, France already had a commanding lead in aircraft manufacturing with Voison, and Great Britain and Germany followed close behind. Within a few years, both countries boasted well-known aircraft companies. Britain had Handley Page, Sopwith, and Bristol, while in Germany, Albatros, Rumpler, and Fokker emerged. Europe's aggressive aircraft production programs created both technological and numerical advantages over the United States.

The deficit was so great that one foreign air officer referred to American military aircraft as "a magnificent retrospective museum." Although patronizing, the foreign air officer's comment was correct, because in 1914, the United States flew outdated airplanes and lagged behind in aircraft design and production.

The following year, Secretary of the Navy Josephus Daniels proclaimed: "The science of aerial navigation has reached the point where aircraft must form a large part of our naval force for offensive and defensive purposes." To accomplish this, he petitioned Congress to increase funding for naval aircraft, expand training operations at Pensacola, and build a naval aircraft factory. Congress approved his request and allocated $3,500,000—which was the largest fiscal commitment to naval aviation to date.

On November 28, 1917, just one hundred days after breaking ground, the Navy's aircraft factory opened its doors in Philadelphia. In anticipation, Secretary of the Navy Daniels publicized a program to build over 1,700 seaplanes that he believed would fill the skies of Europe. He maintained that, as naval aircraft production increased, so too would its role—at the time most naval aircraft were limited to reconnaissance. Many naval strategists, like Major General Commandant William P. Biddle and Alfred A. Cunningham, now a captain and the de facto head of Marine aviation, aligned with Daniel's vision. After five years in aviation and visiting the front in Europe, Cunningham recognized the ever-increasing capabilities of military aircraft and saw the war as an opportunity to demonstrate the value of a Marine aviation force.

THE MARINES' FIRST AIRFIELD

In February 1918, the Marine Corps acquired its first airfield from the Curtiss Flying School in Miami, Florida. The government leased the property from Glenn Curtiss and the Bright Brothers' Ranch for one dollar a year. Under Captain Roy Geiger's leadership, Marines quickly converted the flying school into a combat-training facility.

GRAY RESEARCH CENTER

In February 1917, Major General Commandant Biddle ordered Captain Cunningham to form an aviation unit in anticipation of supporting the Fourth Marine Regiment in France. With limited personnel and three airplanes, two Curtiss R-6 seaplanes and one Farman F-60 Goliath, the Marine Aeronautic Company activated at the Navy Yard in Philadelphia. By October, the unit divided into the Aviation Squadron, the land plane unit, and the First Marine Aeronautic Company, the seaplane unit. The land plane unit, lacking equipment and facilities, trained with the Army, while the seaplane unit trained at Naval Air Station Cape May, New Jersey.

As a testament to Cunningham's initiative, he personally appealed to Colonel Henry "Hap" Arnold of the Army Signal Corps to let Marines receive land plane training at the Army Aviation School at Hazelhurst Field in Mineola, New York. Colonel Arnold agreed, and soon after the First Aviation Squadron transferred to Mineola.

The Marines' quarters at Hazelhurst Field consisted of canvas tents located at the edge of the airstrip. At first the living conditions were tolerable, but that changed by December when the temperature dropped to fifteen degrees below zero. Captain William McIlvain, commanding officer of the First Aviation Squadron, packed up his men and headed south to the Army's Gerstner Field in Lake Charles, Louisiana. Along the way, McIlvain stopped in Washington, DC, to get official authorization for the move. Unfortunately, no one had notified the commanding officer at Gerstner Field of an inbound Marine squadron. Presumably this created some tension, because shortly after the Marines' arrival, the Army asked the squadron to relocate.

While his pilots trained, Captain Cunningham traveled to Europe to determine Marine aviation's potential role in the escalating war. In his absence, he trusted fellow aviator and friend, Captain Harvey B. Mims, to oversee affairs in Washington. Throughout November and December he visited British and French flying schools and aviation facilities. Typical of Cunningham's persuasive nature, he convinced Allied pilots to take him along on numerous missions that crossed German lines. From this frontline perspective he recognized that Marine aviators could play an

GRAY RESEARCH CENTER

essential role in France by supporting Marines on the ground. However, when he approached the U.S. Army Air Service leaders in France about an all-Marine mission, they quickly dismissed his idea.

Upon his return to the United States, Cunningham briefed Navy leadership on his experiences in hopes of securing an all-Marine support mission. A great debate ensued and the would-be operations underwent several changes, approaching cancellation at times. By April 1917, the Marines had their assignment—the Day Wing of the Northern Bombing Group. The Navy would operate as the Night Wing. The Marines would fly British-designed deHavilland DH-4 and DH-9A aircraft in daylight raids, while the Navy would fly Italian Caproni bombers in night raids. The mission of the Northern Bombing Group was to attack German submarine bases, operating from Zeebrugge, Bruges, and Ostend on the Belgian coast. Cunningham's efforts aside, it was the seaplane unit that deployed for combat first.

In January 1918, the First Marine Aeronautic Company became the first trained and equipped Marine aviation unit to deploy for combat operations. The squadron would operate from a naval base in the Azores, patrolling the Atlantic Ocean in search of German submarines.

Stateside, Captain Roy Geiger moved the Aeronautic Detachment to Miami on February 7, 1918, and established the Marines' first airfield. On arrival the unit had only eleven officers and forty enlisted men, equipped with two Curtiss R-6s and one Farman F-60.

Geiger, with Cunningham's endorsement, took action and quickly requisitioned the Curtiss Flying School, including its aircraft and facilities. He reportedly enticed civilian student pilots to stay on by promising them commissions in the Marine Corps Reserve upon their completion of flight school. Before long Miami was a flurry of activity and by March included personnel and equipment from the First Aviation Squadron.

Gearing up for war, Cunningham went to Miami in April and activated the First Marine Aviation Force. By June, he organized the force into a Headquarters Squadron and Squadrons A, B, C, and D. Then on July 30, 1918, the First Marine Aviation Force minus Squadron D sailed for France. The remaining unit still required additional personnel and training but joined the force in October. Once in France, the squadrons' designations changed from A, B, C, and D to Seven, Eight, Nine, and Ten.

Prior to the force's July departure, Cunningham made arrangements with the Army for delivery of seventy-two DH-4 bombers. The British designed the aircraft; however, it was manufactured in the United States. As a result, the airplanes would be shipped in crates and assembled by Marines. Yet when the First Marine Aviation Force arrived in France, the requisitioned airplanes were nowhere to be found.

While the Marines awaited the delivery of their aircraft, Cunningham brokered a deal with the Royal Air Force. After receiving approval from the Navy, he traded engines for airplanes: three American-built Liberty engines for every fully-equipped British DH-9A given to the Marines (the 12-cylinder water-cooled Liberty engine was one of America's technological contributions to World War I). As leadership resolved equipment issues, Marine pilots flew with the Royal Air Force in Squadrons No. 217 and 218.

When flying with the Royal Air Force on September 28, 1918, First Lieutenant Everett Brewer and Gunnery Sergeant Wersheiner became the first Marines to shoot down a German plane. Both men were severely wounded in the encounter but recovered soon after. Typically, Marine pilots and gunners flew three combat missions with the British then returned to their parent squadron so another crew could rotate through. The Marines finally received enough airplanes to begin flying independent missions by October.

In spite of the initial obstacles, by the end of the war Marine pilots compiled an impressive record. They shot down four German planes, dropped an estimated 52,000 pounds of bombs, and performed the first recorded food-drop mission in combat when they replenished an isolated French regiment on the Western Front. The First Marine Aviation Force participated in fifty-seven raids, forty-three with the Royal Air Force and fourteen all-Marine missions. They earned two Medals of Honor, four Distinguished Service Medals, and twenty-six Navy Crosses for their heroic efforts.

AN IDEAL CANDIDATE

While appearing before the General Board, Captain Alfred Cunningham describes the character traits he looks for when recruiting a new pilot: "He should possess that kind of determination which will allow him to take risks when there is no audience to applaud and when he would not be censured for not taking them."

GRAY RESEARCH CENTER

A STANDARD UNIFORM FOR AVIATORS?

At first, the Marine Corps required aviators to wear the standard uniform. Pilots were identifiable only by their wings above the left breast pocket, if they wore them. Usually, it was their improvised flight equipment that gave them away: note the motorcycle goggles and football helmets.

On June 22, 1917, the Marine Corps established the first official uniform provision for aviators. Known as Change No. 11, it permitted aviators to wear a summer service flying uniform of khakis in the same design as service whites, or a working uniform (coveralls) made from canvas, khaki, or moleskin.

1917

FEBRUARY 13, 1917

Proving skeptics wrong, 1stLt Francis T. Evans successfully loops a Curtiss N-9 seaplane and in the process discovers how to recover from a spin.

FEBRUARY 26, 1917

With the U.S. entry into the war looming, 1stLt Alfred Cunningham, while attached to the First Regiment, Fixed Defense Force, Advance Base Force at Marine Barracks, Philadelphia, receives orders to organize an aviation company.

APRIL 27, 1917

Commanded by 1stLt Cunningham, the Marine Aeronautic Company of the Advance Base Force activates.

APRIL 30, 1917

Capt Cunningham reports for duty at the Philadelphia Navy Yard.

THE CRITICAL LINK

Cunningham believed that recruiting good enlisted men was vital to successful flight operations in World War I. Enlisted men maintained aircraft, operated ground schools, and oversaw warehouses. Many trained as observers and gunners. Some eventually became pilots.

By the end of the war, 2,180 enlisted men were serving in aviation. Here, enlisted men from the Marine Section, Naval Air Station, Pensacola, pose on a Curtiss R-6, circa 1918.

MAJOR JOHN M. ELLIOTT

OCTOBER 10, 1917

Capt Cunningham makes an agreement with Col H.H. Arnold of the Army Signal Corps to provide training for the Marine land-based squadron personnel at the Army Aviation School at Mineola, NY.

OCTOBER 12, 1917

The Marine Aeronautic Company divides into the First Aviation Squadron (the land plane unit) with 24 officers and 237 enlisted, and the First Marine Aeronautic Company (the seaplane unit) with 10 officers and 93 enlisted.

OCTOBER 14, 1917

The First Marine Aeronautic Company moves to NCAS Cape May, NJ, for seaplane training.

OCTOBER 17, 1917

The First Aviation Squadron relocates to the Army's Hazelhurst Field at Mineola for land plane training.

NOVEMBER 1, 1917

Two officers and six enlisted men of the First Aviation Squadron report to the Army Balloon School, Fort Omaha, NE, for balloon training.

Deploying for Combat
PONTA DELGADA, AZORES

After transferring from Philadelphia to Naval Air Station Cape May, the First Marine Aeronautic Company began training in seaplanes. Student pilots flew two-seat Curtiss R-6s on reconnaissance and scouting patrols along the East Coast, which prepared them well for their wartime role. To prevent German submarines from attacking Allied ships, the U.S. State Department and the Portuguese government reached an agreement to establish a Navy base at Ponta Delgada on the island of San Miguel, Azores. The First Marine Aeronautic Company was assigned the mission. The squadron became the first domestically trained U.S. military aviation unit to deploy for combat in World War I.

Led by Captain Francis T. Evans, the unit consisted of 12 officers and 133 enlisted men with 10 Curtiss R-6s and 2 Curtiss N-9s (eventually receiving six Curtiss HS-2L flying boats). Pilots operated within a seventy-mile radius, often remarking on the lack of combat action associated with their mission.

Perhaps Lieutenant Walter S. Poague articulated it the best: "all war was monotony, utter boredom, with here and there a few hours of blazing action. We have all the monotony without the action and yet, Lord knows we run risk enough." The young pilot's words were prophetic—within four months, he drowned after crashing his plane in the water.

The First Marine Aeronautic Company never sank any submarines; however, the squadron's sustained flight operations inhibited German submarine traffic, significantly reduced attacks on Allied ships, and gave pilots invaluable flight time.

1917

DECEMBER 15, 1917
An Aeronautic Detachment, commanded by Capt Roy Geiger, organizes as part of the First Aviation Squadron. The unit will transfer back to Philadelphia.

DECEMBER 31, 1917
The First Aviation Squadron, commanded by Capt William McIlvain, leaves Mineola and relocates to Gerstner Field at Lake Charles, LA, to continue land plane training.

JANUARY 9, 1918
The First Marine Aeronautic Company, commanded by Capt Evans, sails from Cape May for anti-submarine duty at Naval Base 13, Ponta Delgada, Azores.

JANUARY 21, 1918
The First Marine Aeronautic Company arrives in the Azores. This is the initial participation of Marine aviation in World War I.

NATIONAL MUSEUM OF THE MARINE CORPS

FEBRUARY 7, 1918

Capt Geiger moves the Aeronautic Detachment from Philadelphia to Curtiss Flying Field in Miami, FL. The detachment consists of eleven officers and forty-one enlisted men.

MARCH 5, 1918

The Army commanding officer of Gerstner Field requests that the First Aviation Squadron relocate. He cites inadequate quarters and overcrowding.

ASSEMBLING AIRCRAFT

Upon arrival, enlisted men uncrated the aircraft and began the assembly process. Despite working around the clock, it typically took them weeks to get aircraft operational.

NATIONAL AIR & SPACE SMITHSONIAN INSTITUTION
DRAWN BY GEO. H. CLAPP

ORGANIZING & TRAINING
Miami Flying Field

Surrounded by the Florida Everglades, the Miami airstrip left little margin for pilot error, and emergency landings could become a rescue and recovery operation. Marines embraced the challenge and created a training and combat facility for the First Marine Aviation Force. Personnel quickly expanded the airfield and prepared for an influx of student pilots, enlisted men, and equipment. Marines constructed temporary quarters, gunnery and bombing ranges, and set up tent hangars. Records indicate that the facilities at Miami operated twenty-four hours a day, and pilots flew from dawn to dusk.

GRAY RESEARCH CENTER

Initially, pilot training consisted of an abbreviated ground school. One of the recruits from Quantico described his ground school experience as climbing into the airplane, the instructor yelling out what each stick or bar controlled, and to fasten his seat belt. As a result, many early Miami-trained aviators referred to themselves as "fly-or-die" student pilots.

Flight instruction eventually included ground school, formation flying, aerobatics and tactics, gunnery and bombing, and reconnaissance training. Perspective Marine aviators also had to qualify in seaplanes at Naval Air Station Key West, Florida (a necessity for all naval aviators).

This often irritated the Marines, who believed that they should focus on land plane training in preparation to deploy to France and receive the same compensation as Navy pilots. One such pilot was Second Lieutenant Kenneth B. Collings who said, "Some bigwig in Washington, DC, declared that until we received our seaplane training, we could not qualify as full-fledged naval aviators, and earn fifty cents per month."

At Miami, students received land plane instruction in Curtiss Jenny aircraft, which was the standard military trainer and the first mass-produced airplane in the United States. A full-complement of Jennys (right) lined up in front of the canvas tent hangars at Miami.

The Marine Corps also acquired a variant of the original Jenny, the JN-4HG-1, which was powered by a Hispano-Suiza engine, represented by the "H," a gunnery trainer as denoted by the "G," and included one gun indicated by the "-1." With fellow pilots and observers, First Lieutenant Bernard L. Smith (above, behind the propeller) formed the aerial bombing and gunnery school at Miami.

Despite all the training activity and improvements, Captain Harvey B. Mims detailed his ongoing frustration with the conditions at Miami in a letter to Major General Commandant George Barnett: "The intention was to make this a permanent site…after five months our Marines are still camping, with virtually no permanent improvements, and at anytime could be decimated by the weather." Soon after, negotiations were underway for the Marines to move either to Selma, Alabama, or Charleston, South Carolina. However, the plans were put on hold when the First Marine Aviation Force deployed to France.

Old tent hangers

FIRST MARINE AVIATION FORCE

This DH-9A (top) was one of several planes on loan from the Royal Air Force. The fuselage displays both the British designation (E8538) and the First Marine Aviation Force insignia. After receiving and assembling their DH-4Bs (bottom), Marines applied the Force's insignia, and pilots flew the first all-Marine mission on October 14, 1918.

While pilots flew combat missions, enlisted men built and repaired runways, hangars, living quarters, and base facilities. In order to clear one field for a runway, they used shovels to dig up sugar beet plants, and leveled the field with a steamroller borrowed from the Navy. Marines (center) illustrate the teamwork and strength it took to crank DH aircraft.

MAJOR JOHN M. ELLIOTT

MAJOR JOHN M. ELLIOTT

1918

APRIL 1, 1918

The First Aviation Squadron joins the Aeronautic Detachment at Miami.

APRIL 15, 1918

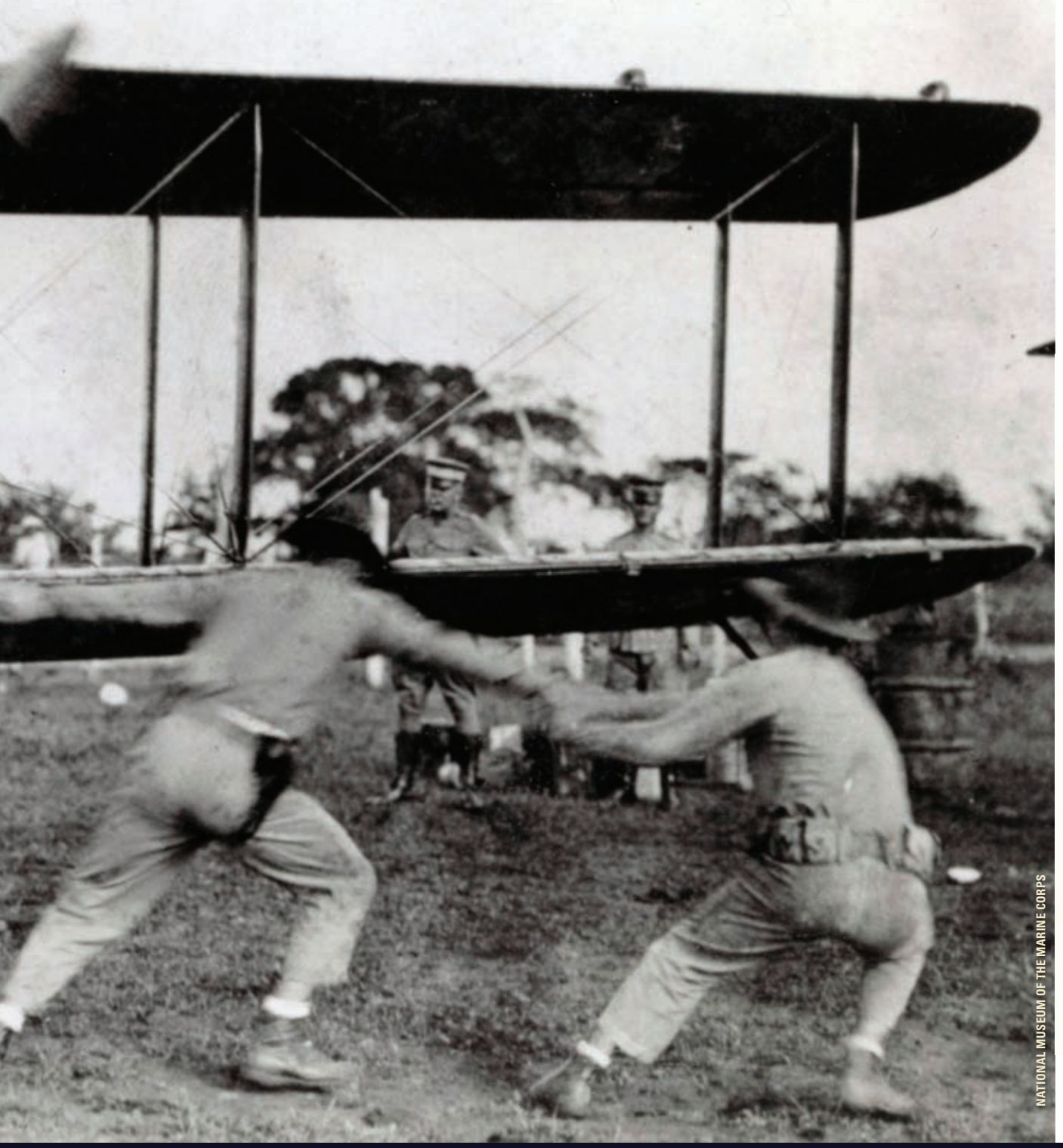
Capt Cunningham activates the First Marine Aviation Force at Miami. He combines personnel from the First Aviation Squadron and the Aeronautic Detachment, both of which had disbanded the previous day.

APRIL 30, 1918

Based on the recommendations of the General Board, the SecNav approves air operations in the Dunkirk-Zeebrugge region on the France-Belgium border. This will establish the Northern Bombing Group.

JUNE 16, 1918

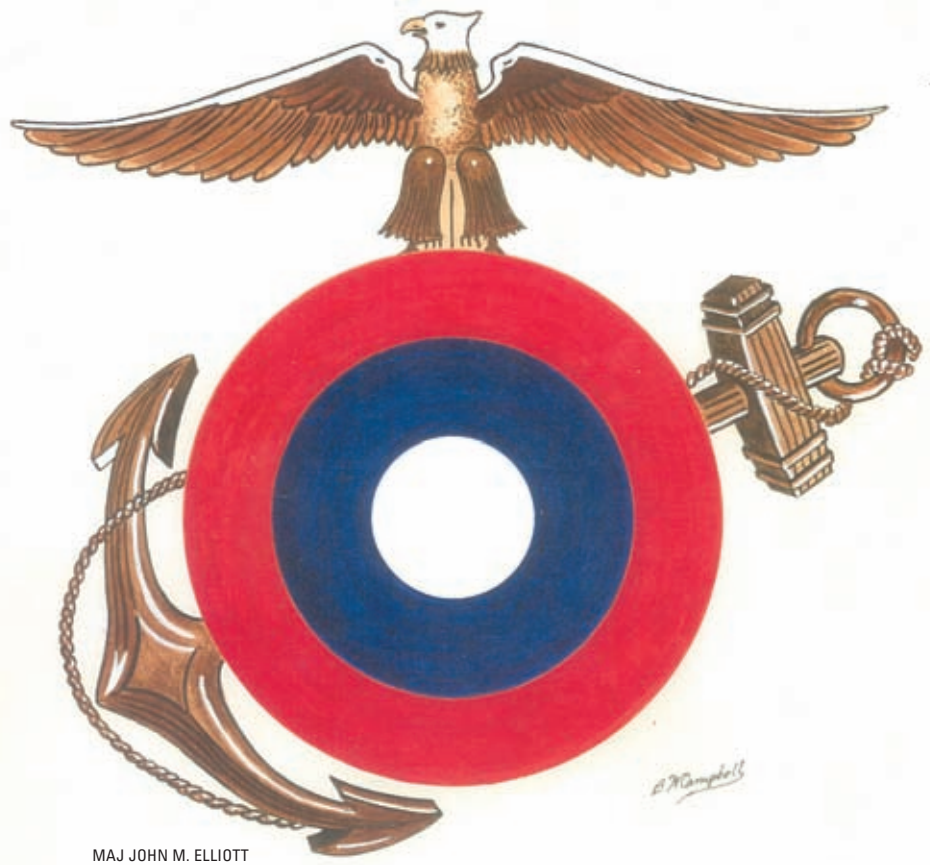
The First Marine Aviation Force organizes a Headquarters Company and four squadrons: A, B, C, and D, which will eventually consist of 182 officers and 1,030 enlisted.



NATIONAL MUSEUM OF THE MARINE CORPS

THE FIRST MARINE AVIATION FORCE INSIGNIA

In World War I, most aviation squadrons identified themselves with distinctive markings. However, Captain Cunningham insisted that all First Marine Aviation Force aircraft carry this emblem. Designed by Sergeants James E. Nicholson and John J. Engelhardt, it combined the Marine Corps insignia (introduced in 1868) and the national military insignia (three concentric circles) used during the war.



MAJ JOHN M. ELLIOTT

JUNE 28, 1918

The Marine Corps activates a balloon company at Quantico, VA, to perform heavy artillery spotting for the Tenth Marines.

JULY 1, 1918

Congress repeals all laws relating to the National Naval Volunteers and authorizes President Woodrow Wilson to transfer all its members, in their confirmed ranks and ratings, to the appropriate naval reserve organization.

JULY 10, 1918

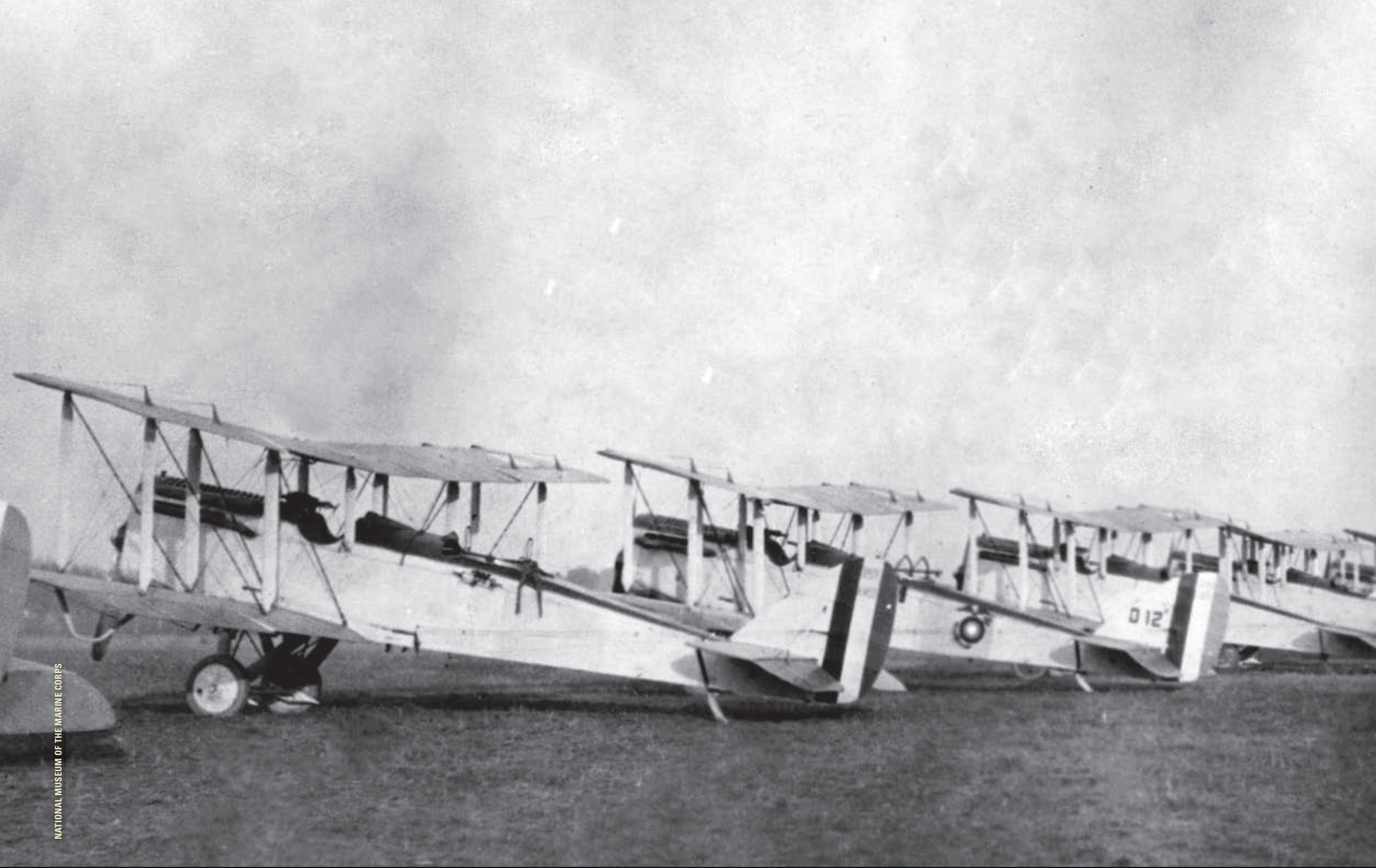
The first class of enlisted pilots begins training.

JULY 18, 1918

Under Capt Cunningham, the First Marine Aviation Force Headquarters Company and Squadrons A, B, and C sail for France. Squadron D continues to train stateside and will join the force in France.

JULY 30, 1918

Squadrons A, B, and C arrive at Brest, France. They are redesignated Squadrons Seven, Eight, and Nine, respectively, to align with Navy squadrons.



NATIONAL MUSEUM OF THE MARINE CORPS

1918

SEPTEMBER 23, 1918

Marine pilots receive their first American-built deHavilland aircraft.

SEPTEMBER 28, 1918

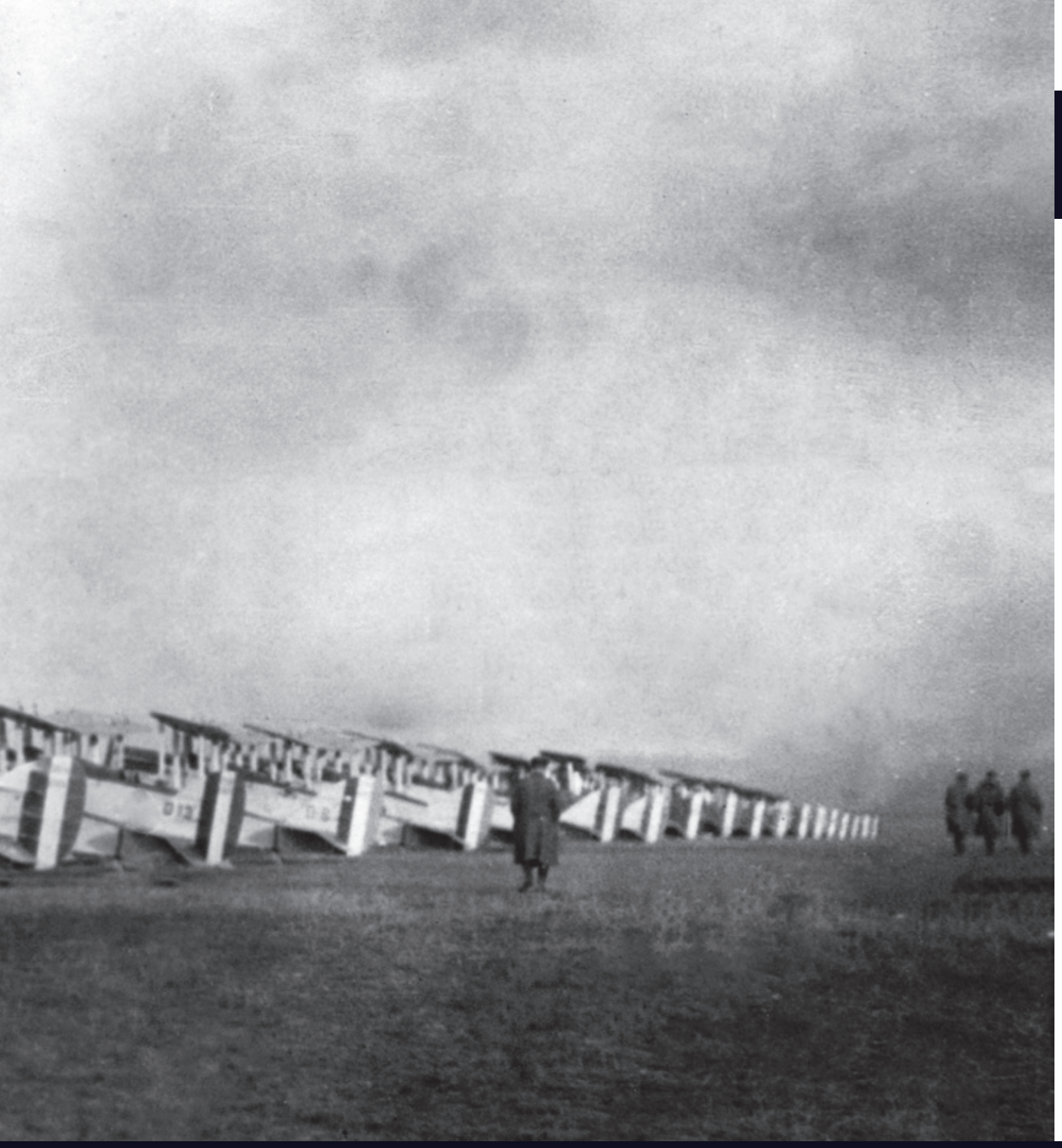
In a dogfight over Courtemarke, Belgium, 1stLt Everett S. Brewer and GySgt Harry B. Wershiner score the first aerial kill by Marines.

OCTOBER 2–3, 1918

Capt Francis P. Mulcahy, Capt Robert S. Lytle, and 1stLt Frank Nelms with crewmen GySgt Thomas L. McCullough, GySgt Amil Winan, and Cpl Henry L. Tallman fly the Marines' first aerial resupply mission during combat.

OCTOBER 8, 1918

Squadron D, redesignated as Squadron Ten, joins the First Marine Aviation Force in France.



Flight Operations
WITH THE FLYING COFFINS

In a letter to his wife, concerning air operations in France, Cunningham stated: "We are now working like veterans and the pilots are doing great work. We were right in the push offensive...we have certainly begun learning what real war is like during this past week. All of my squadron commanders are sick with the Spanish influenza, except McIlvain and he is away." By the end of the war, more Marines were lost to the influenza than during combat operations.

Cunningham continued, "The pilots have been doing very good work considering the bad weather and lack of spare parts. We made two very successful raids today. The guys are doing good work and we did not lose a man yet."

Marine DH-4 aircraft lined up for a mission at the La Frêne aerodrome in France. The deHavilland aircraft were nicknamed the "Flying Coffin," because pilot and observer sat in tandem with a gas tank in between. The aircraft had an overhead gravity feed with a thirty-gallon tank. Even the slightest turbulence could spill gasoline onto hot manifold pipes and ignite. This design defect was rectified with its follow on, the DH-4B. Marine aviators continued to fly DH aircraft as bombers and observation planes until the late 1920s.

OCTOBER 14, 1918
Marine pilots in France fly the first all-Marine mission.

OCTOBER 22, 1918
Lts Harvey G. Norman and Caleb C. Taylor are Marine aviation's first casualties of war.

NOVEMBER 11, 1918
At the Armistice, Marine aviation consists of 250 officers, 32 warrant officers, and 2,180 enlisted, of which, 182 officers and 1,030 enlisted serve overseas.

DECEMBER 21, 1918
The First Marine Aviation Force returns to the United States.

JANUARY 20, 1919
The First Marine Aeronautic Company arrives in the United States, officially ending the participation of Marine aviation in WWI.

MARINE CORPS HISTORY DIVISION

MEDAL OF HONOR RECIPIENTS

SECOND LIEUTENANT
Ralph Talbot

"For exceptionally meritorious service and extraordinary heroism while attached to Squadron C, First Marine Aviation Force, in France. He participated in numerous air raids into enemy territory, and on October 8, 1918, while on such a raid, he was attacked by nine enemy scouts, and in the fight that followed shot down an enemy plane. Also, on October 14, 1918, while on a raid over Pittham, Belgium, Lieutenant Talbot and another plane became detached from the formation on account of motor trouble, and were attacked by twelve enemy scouts. During the severe fight that followed, his plane shot down one of the enemy scouts. His observer was shot through the elbow and his gun jammed. He cleared the jam with one hand while Talbot maneuvered to gain time, and then returned to the fight. The observer fought until shot twice, once in the stomach and once in the hip. When he collapsed, Lieutenant Talbot attacked the nearest enemy scout with his front guns and shot him down. With his observer unconscious and his motor failing, he dived to escape the balance of the enemy and crossed the German trenches at an altitude of fifty feet, landing at the nearest hospital, and left his observer and returned to his aerodrome."

GUNNERY SERGEANT
Robert G. Robinson

"For extraordinary heroism as observer in the First Marine Aviation Force at the front in France. In company with planes from Squadron 218, Royal Air Force, conducting an air raid on October 8, 1918, Gunnery Sergeant Robinson's plane was attacked by nine enemy scouts. In the fight which followed, he shot down one of the enemy planes. In a later air raid over Pitthan, Belgium, on October 14, 1918, his plane and one other became separated from their formation on account of motor trouble and were attacked by twelve enemy scouts. Acting with conspicuous gallantry and intrepidity in the fight which ensured, Gunnery Sergeant Robinson, after shooting down one of the enemy planes, was struck by a bullet which carried away most of his elbow. At the same time his gun jammed. While his pilot maneuvered for position, he cleared the jam with one hand and returned to the fight. Although his left arm was useless, he fought off the enemy scouts until he collapsed after receiving two more bullet wounds, one in the stomach and one in the thigh."

TALBOT
(PICTURED LEFT)
SQUADRON C
FIRST MARINE AVIATION FORCE
FRANCE & BELGIUM
OCTOBER 8 & 14, 1918

ROBINSON
(PICTURED RIGHT)
SQUADRON C
FIRST MARINE AVIATION FORCE
FRANCE & BELGIUM
OCTOBER 8 & 14, 1918

MARINE CORPS HISTORY DIVISION

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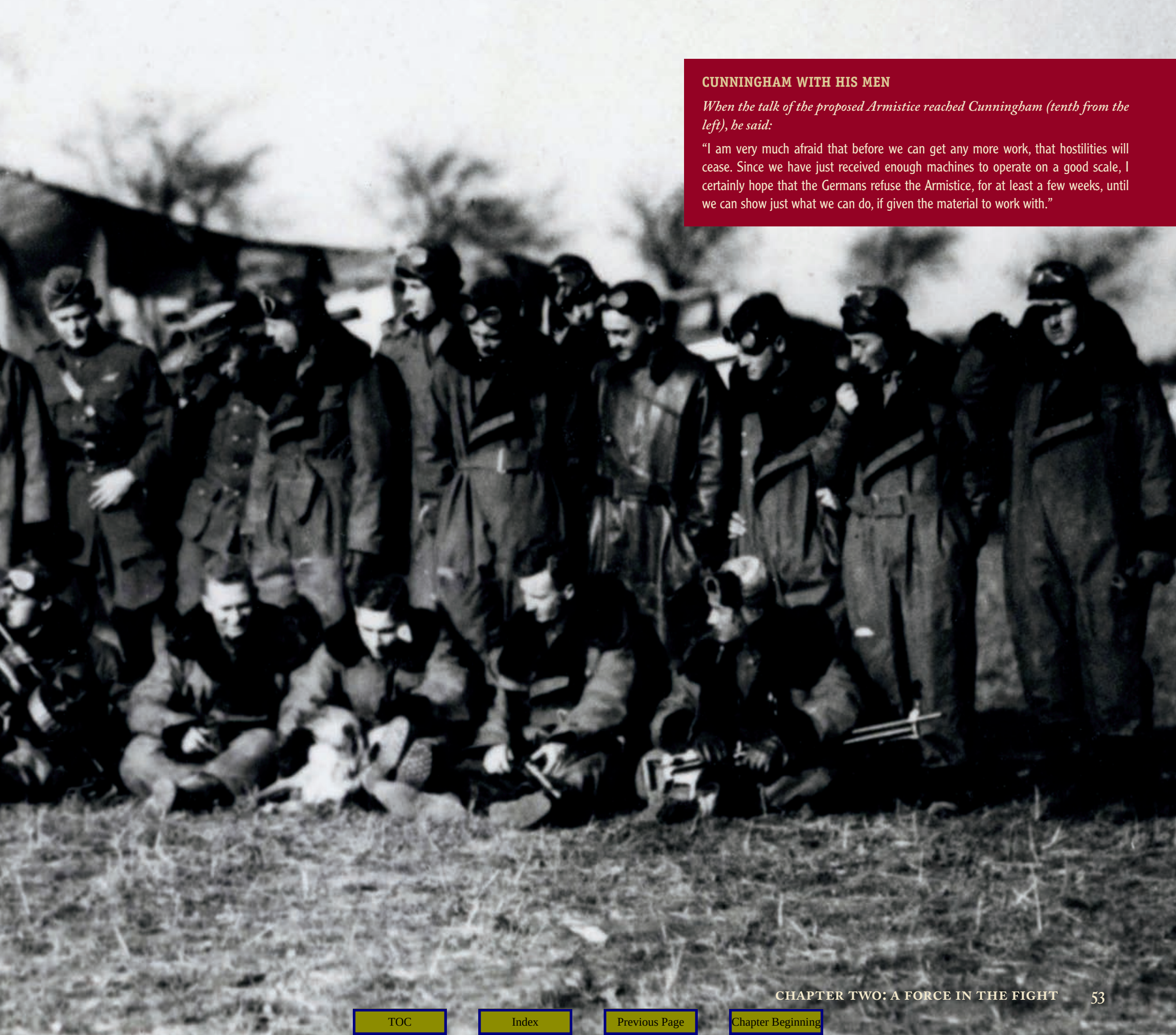


CUNNINGHAM WITH HIS MEN

When the talk of the proposed Armistice reached Cunningham (tenth from the left), he said:

"I am very much afraid that before we can get any more work, that hostilities will cease. Since we have just received enough machines to operate on a good scale, I certainly hope that the Germans refuse the Armistice, for at least a few weeks, until we can show just what we can do, if given the material to work with."

CHAPTER THREE
"OF WHAT PRACTICAL USE?"

For Major Alfred Cunningham, the end of the war brought many realities to the forefront. Although, his pilots had performed admirably during the war and earned the respect of their British counterparts, aviation had not proven its practical use as a supporting air arm within the Marine Corps. Cunningham knew that he would have to defend the value of Marine aviation, both inside and outside of the Corps.

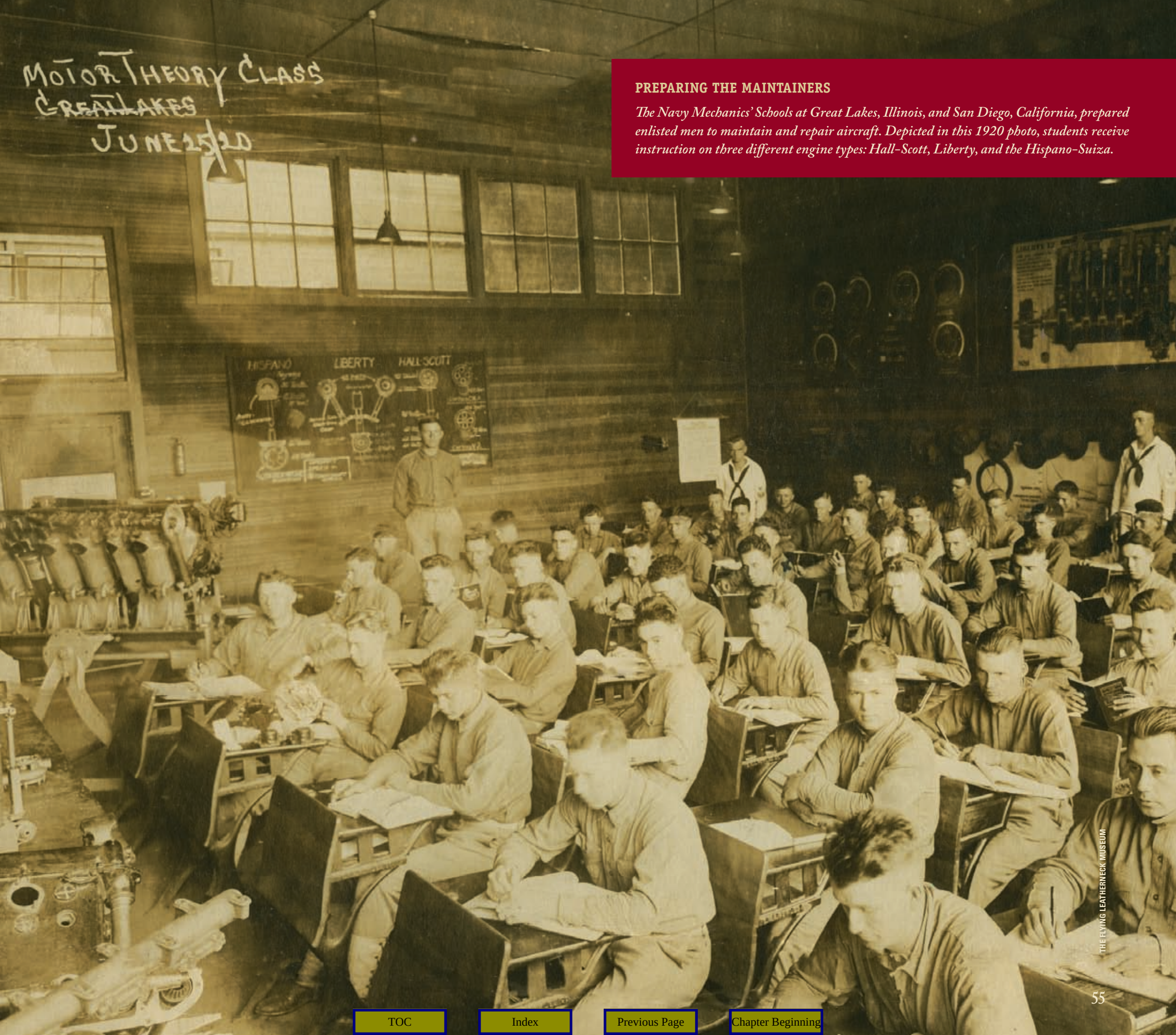
Without a clear mandate or direct appropriation in the federal budget, he had to overcome the critics' lack of understanding and appreciation for the potential of Marine aviation. Amid this backdrop, Cunningham knew that the aviation program could not weather another reduction in force and could be rendered obsolete.

Pilots were flying outdated aircraft, JN-4s and DH-4s. The Marine Corps' first airfield where pilots and crews trained for combat in World War I was closed. Three months after the Armistice, Marine aviation underwent its first of several reorganizations. In February 1919, the First Marine Aviation Force disbanded, followed by the First Marine Aeronautic Company in March. All squadron personnel were transferred either to Quantico, Virginia, or Parris Island, South Carolina.

Major Cunningham was ordered to form two new air squadrons to support Marine brigades. First Division, Squadron D would support the Marine brigade in the Dominican Republic, and First Division, Squadron E would support the brigade in Haiti. Squadron D arrived in Santo Domingo on February 28,1919, and remained there until July 1924. Commanded by Captain Walter E. McCaughtry, the unit consisted of 140 Marines. Although initially activated to support the Fifteenth Regiment, once in the Dominican Republic, the squadron supported the Second Provisional Marine Brigade. On February 22, First Division, Squadron E was activated and deployed to Haiti. The unit included 155 Marines under the command of Captain Harvey B. Mims.

Over an eighteen-month-period, Cunningham continued to look for a permanent solution and mandate. He spoke before Congress, wrote articles in magazines and newspapers, and tried to dissuade the critics. Perhaps most significantly, Cunningham insisted that Marine aviation should not be solely judged on its war record, because Marines pilots were never given the opportunity to support Marines on the ground.

While testifying before Congress in 1920, Cunningham admitted that Marine aviation had not lived up to its potential. He went on to say how Marine aviators were currently supporting Marine brigades in the jungles of the Dominican Republic and Haiti. He also asserted that within a short time, Marine pilots' involvement and record in these small conflicts would demonstrate the usefulness of aircraft.



PREPARING THE MAINTAINERS

The Navy Mechanics' Schools at Great Lakes, Illinois, and San Diego, California, prepared enlisted men to maintain and repair aircraft. Depicted in this 1920 photo, students receive instruction on three different engine types: Hall-Scott, Liberty, and the Hispano-Suiza.

In 1920, Congress set the standard troop level for the Marine Corps. They also allocated 1,020 Marines for aviation duty and designated aviation bases for Marine aviation. This was a positive step, but Cunningham knew that Marine aviation still did not translate into a permanent organization and believed that it had a long way to go before silencing its critics.

In October, Commandant, Major General Lejeune approved a table of organization for Marine aviation that included four squadrons. The First Squadron consisted of planes and crews in the Dominican Republic and in Haiti. The Second and Third Squadrons were at Quantico. The Fourth Squadron, at Port-au-Prince, Haiti, supported the First Provisional Brigade.

Soon after, the detachment at Parris Island was designated Flight L and was ordered to Sumay, Guam. In 1924, the Marine Corps moved its air units from the Dominican Republic to San Diego. The Second Air Group, which was formed in 1925, consisted of a headquarters, and observation and fighter squadrons.

Pilots concentrated on tactics and techniques for supporting ground troops during combat operations. They also fostered support within the Corps and in the general public through their repeated participation in air races and reenactments of military exercises. Aviators were not shy about creating their own headline-making exhibitions—like carrying a bathtub for President Coolidge under their aircraft during the reenactment of the Battle of Gettysburg.

In a Marine Corps Gazette article, Cunningham wrote: "The question regarding aviation which is of most interest to the Marine Corps is: of what practical use is it to us?" To answer this, he described the limitations of early aircraft and detailed

READY TO LAUNCH

In 1922 Marines from the First Division, Squadron D pull Curtiss HS-2L flying boats down the wooden ramp at the Haitian Navy Yard. Operated by a three-man crew (pilot, co-pilot, and observer), these patrol aircraft weighed approximately 4,300 pounds and had a wingspan of 74.1 feet.

MAJOR JOHN M. ELLIOTT

how as aircraft technology increased aviators would be better equipped to support Marines.

Cunningham asserted that communication between air and ground elements was essential for air-ground operations. He also looked to capitalize on new technologies to expand Marine aviation's role within expeditionary operations. This included but was not limited to radio communication, photo reconnaissance, bombing, and machine gun fire. Although a far cry from modern day air-ground capabilities, in 1920 Cunningham foreshadowed how Marines could use technology to advance the air-ground team.

THE FLYING LEATHERNECK MUSEUM

THE ACE OF SPADES

On January 1, 1921, First Division, Squadron D was redesignated as First Air Squadron, Flights A and B. Soon after, Flight A held a contest to find an insignia and First Lieutenant Hayne D. "Cuckoo" Boyden won with his "Ace of Spades" design. As the first card in the deck it represented the "First." The "A" on the top left corner stood for air and the "S" on the lower right corner stood for squadron. By August 17, 1922, the squadron was redesignated Marine Observation Squadron One, but retained the insignia. The "Ace of Spades" insignia continues to this day with its lineal descendant VMA-311.

THE FLYING LEATHERNECK MUSEUM

THE BOYS DOWN SOUTH

Monthly status reports from Santo Domingo, Dominican Republic, indicate that aircraft parts typically took three to six months to arrive from the United States. However, this did not dissuade pilots from flying reconnaissance missions, strafing bandits, and evacuating the wounded. Pilots and personnel (right) also delivered mail, transported foreign military personnel, and photographed coastlines and rivers.

1919

FEBRUARY 27, 1919

Led by Capt Walter McCaughtry, the First Division, Squadron D initially slated to support the Fifteenth Regiment, arrives at San Pedro de Macoris, Dominican Republic. Upon arrival, the squadron is reassigned to the Second Marine Brigade in Santo Domingo. This is the first instance of Marine combined arms combat action involving aviation.

MARCH 1, 1919

The chief of the *Gendarmerie d'Haiti* requests the direct assistance of the First Marine Brigade in suppressing the Caco Revolt. In response, the First Division, Squadron E arrives in Haiti to provide an aviation element to the brigade.

MARCH 8, 1919

First Division, Squadron D arrives in Santo Domingo City, Dominican Republic, and is attached to the Second Marine Brigade.

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FLYING AT QUANTICO

The first aerial activities at Quantico, Virginia, occurred on June 28, 1918 with the Balloon Company, Heavy Artillery Force. The following year the Balloon Company was augmented with seaplanes. While negotiations were underway for an airfield, roads, and facilities, anxious Marines made it a "do-it-yourself" project and constructed a 2,000-foot runway. Here, a Marine tows an aircraft [bus] to the runway circa 1920.

MARCH 13, 1919

The CNO issues a preliminary program for postwar naval airplane development. The report includes a combination land and seaplane for the Marine Corps.

MARCH 31, 1919

First Division, Squadron E joins local forces operating against bandits in Port-au-Prince, Haiti.

APRIL 6, 1919

First Division, Squadron E transfers to Bizaton, Haiti.

JUNE 12, 1919

The Marine Corps Base at Quantico, VA, leases a site for a flying field.

JUNE 13, 1919

Under the command of Maj David L.S. Brewster, Squadron C arrives at Quantico.

A GATHERING OF FRIENDS

By 1921, Major Cunningham commanded the First Air Squadron in the Dominican Republic. While there, he gathered with fellow pilots in honor of Lieutenant Colonel Turner's flight of two DH-4Bs from Washington, DC, to Santo Domingo; however, Turner was conspicuously absent. Just a short while before this event, Turner replaced Cunningham as the head of Marine aviation. The two men reportedly had a bitter rivalry.

Seated from left: First Lieutenant Basil Bradley (Turner's pilot), Captain Arthur Page Jr., Major Alfred Cunningham, Major Francis Evans, and Captain Francis Mulcahy. Standing from left: First Lieutenant Kenneth Collins, Second Lieutenant Leo Sullivan, Second Lieutenant Lawson Sanderson (pilot of the second DH), Second Lieutenant Guy Hall, Second Lieutenant Hayne Boyden, Second Lieutenant Harmon Norton, and First Lieutenant Harold Major.

MAJOR JOHN M. ELLIOTT

1919

JULY 23, 1919
Marine aircraft attack bandits at Mata de la Palma, Haiti.

AUGUST 22, 1919
SecNav Franklin D. Roosevelt gives official approval for a flying field at Quantico.

NOVEMBER 1, 1919
The Aerological School at NAS Pensacola begins classes. The initial class includes one Marine and four Navy officers.

NOVEMBER 17, 1919 - DECEMBER 12, 1920
Maj Alfred A. Cunningham
OFFICER IN CHARGE, AVIATION

MAJOR JOHN M. ELLIOTT

GRAY RESEARCH CENTER

Captain Arthur H. Page Jr. (far left) was the first Naval Academy graduate to fly in the Marine Corps. Pilots (left) take a break in front of their quarters at Parris Island.

In 1921, as a Captain, Francis Evans created an ambulance plane (below) by modifying a deHavilland aircraft with a turtle-back fuselage and equipping it with a Stokes stretcher. Using his design, two similarly modified aircraft were constructed at the Naval Aircraft Factory.

These aircraft reduced evacuation time in Haiti and Santo Domingo from three days by mule, cart, and truck to two hours round trip. In 1925, Evans received a letter of commendation from the Secretary of the Navy for his invention.

NATIONAL MUSEUM OF THE MARINE CORPS

JUNE 1920

As part of the Naval Appropriations Act, Congress sets the standard troop levels for the Navy and Marine Corps.

OCTOBER 30, 1920

MajGenCmdt John A. Lejeune approves a table of organization for Marine aviation.

DECEMBER 1, 1920

The table of organization for aviation is put into effect. Squadrons A and C deactivate, and personnel at Quantico are reassigned into four new units: Flights C and B, Second Air Squadron, and Flights E and F, Third Air Squadron.

DECEMBER 13, 1920 - MARCH 2, 1925
LtCol Thomas C. Turner
OFFICER IN CHARGE, AVIATION

JANUARY 1, 1921

Flight L activates at Parris Island, SC.

The Head of Marine Air
THE LONGEST UNGUARDED FLIGHT

On December 13, 1920, Lieutenant Colonel Thomas C. Turner (far right) became the second officer in charge of aviation. He entered the Marine Corps in 1901 and received a commission the following year. Turner served in the Philippines, Puerto Rico, and Vera Cruz before entering aviation. While commanding a Marine brigade in San Diego, he asked for permission to fly with the Army while off duty. His request was granted, and it was during this time that Turner earned his wings. He also qualified as a Naval Aviator on March 14, 1918. In World War I, he served with the Army Air Service as the commanding officer at Ellington Airfield, Texas.

After the war, he transferred to the Marine brigade in Haiti and applied for aviation duty the following year in 1920. Much to Cunningham's dissatisfaction, Major General Commandant Lejeune granted Turner's request. Regulations at the time stated that the senior aviator automatically became officer in charge, aviation. So upon Turner's arrival to aviation duty he replaced Cunningham.

As a way to promote Marine aviation, on April 22, 1921, Lieutenant Colonel Thomas Turner made aviation history when he led a flight of two deHavilland DH-4Bs on a 4,482-mile round-trip from Washington, DC, to Santo Domingo, Dominican

BREAKING RECORDS

Admiral William A. Moffett, Director of Naval Aviation (right and center), congratulated Lieutenant Colonel Thomas C. Turner, First Lieutenant Basil C. Bradley, Gunnery Sergeant Charles W. Rucker, and Lieutenant Lawson H. M. Sanderson after the flight.

GRAY RESEARCH CENTER

GRAY RESEARCH CENTER

Republic. At the time, this was the longest unguarded flight over land and water. The aircraft were not equipped for emergency water landings, nor were they provided with a line of escort vessels in case of an emergency.

Turner flew in the lead plane in the rear cockpit with Bradley as his pilot. Lieutenant Lawson Sanderson flew the second aircraft with Gunnery Sergeant Rucker in the rear. All four were awarded the Distinguished Flying Cross on December 13, 1927, for their record-breaking flight.

Turner was a larger-than-life figure and a strict disciplinarian. Turner insisted that even the young impetuous aviators maintain the highest degree of professionalism. He served two terms as officer in charge, aviation—1920 to 1925 and 1929 to 1931. His second term as officer in charge, aviation ended abruptly. On October 28, 1931, after pushing aside a young Marine to look at a Sikorsky RS-1, he stepped into the turning propeller. Turner reportedly walked without assistance to the dispensary, but died a few days later. At the time of his death, Colonel Thomas C. Turner was about to be promoted to brigadier general.

MAJOR JOHN M. ELLIOTT

1921

MARCH 17, 1921

Marine aviation operations at Guam begin when Flight L, Fourth Air Squadron arrives from Parris Island.

APRIL 22, 1921

LtCol Turner completes the longest unguarded land plane flight over land and water, when he leads a two-plane deployment of deHavilland DH-4Bs from Washington, DC, to Santo Domingo.

JUNE 1, 1921

Maj Geiger becomes the commanding officer of Marine Flying Field, Quantico.

JULY 1921

Maj Geiger commands Marine aviators participating in bombing experiments off the Virginia Capes. This exercise helps establish air-to-ground bombing procedures.

A Presence in the Pacific
SUMAY, GUAM

Realizing the strategic importance of the islands in the Pacific, the Navy sent a Marine detachment along with antiaircraft guns to Sumay, Guam, in 1920. The following year, Fourth Squadron, Flight L arrived on the island and became the first Pacific-based Marine aviation unit.

The flight's official duty was "to study local conditions and gather meteorological data." But in reality, the Navy was increasing its military presence on the island to deter Japanese forces from expanding their reach. This creative approach was necessary in order to comply with the agreement brokered at the Washington Naval Disarmament Conference held from November 6, 1921 to February 6,1922. The treaty prohibited an increase in existing naval forces and coast defenses of U.S. territories and possessions after June.

Within the year, the nine officers and ninety enlisted men of Flight L quickly constructed equipment and maintenance shops, a large hangar, and quarters. In addition to their flying duty, pilots completed navigational instruction and recurrent line training. Marine aviation operated from the island until 1934.

AUGUST 10, 1921

The Bureau of Aeronautics is established. Its duties fall under the direction of the SecNav and include designing, building, fitting out, and repairing all naval aircraft.

AUGUST 23, 1921

The first night flight at Quantico takes place.

SPECIALTIES IN AVIATION

The Marine Corps established the first aviation-related table of organization in 1918. It included six categories of personnel: Motor Shop, Erection Shop, Quartermaster, Transportation, Mess, and Police. On April 25, 1922, Table of Organization No. 37 added ordnance as a separate skill in aviation.

United States Naval Aviation
Mechanics' Schools
Great Lakes, Ill.
This is to certify that
Howard A Drapeau Pvt MC
has graduated from the Aviation Machinist Mates
course of three months this Twenty Fifth day
of July 1921
23
1
2216

Benjamin F. Belcher

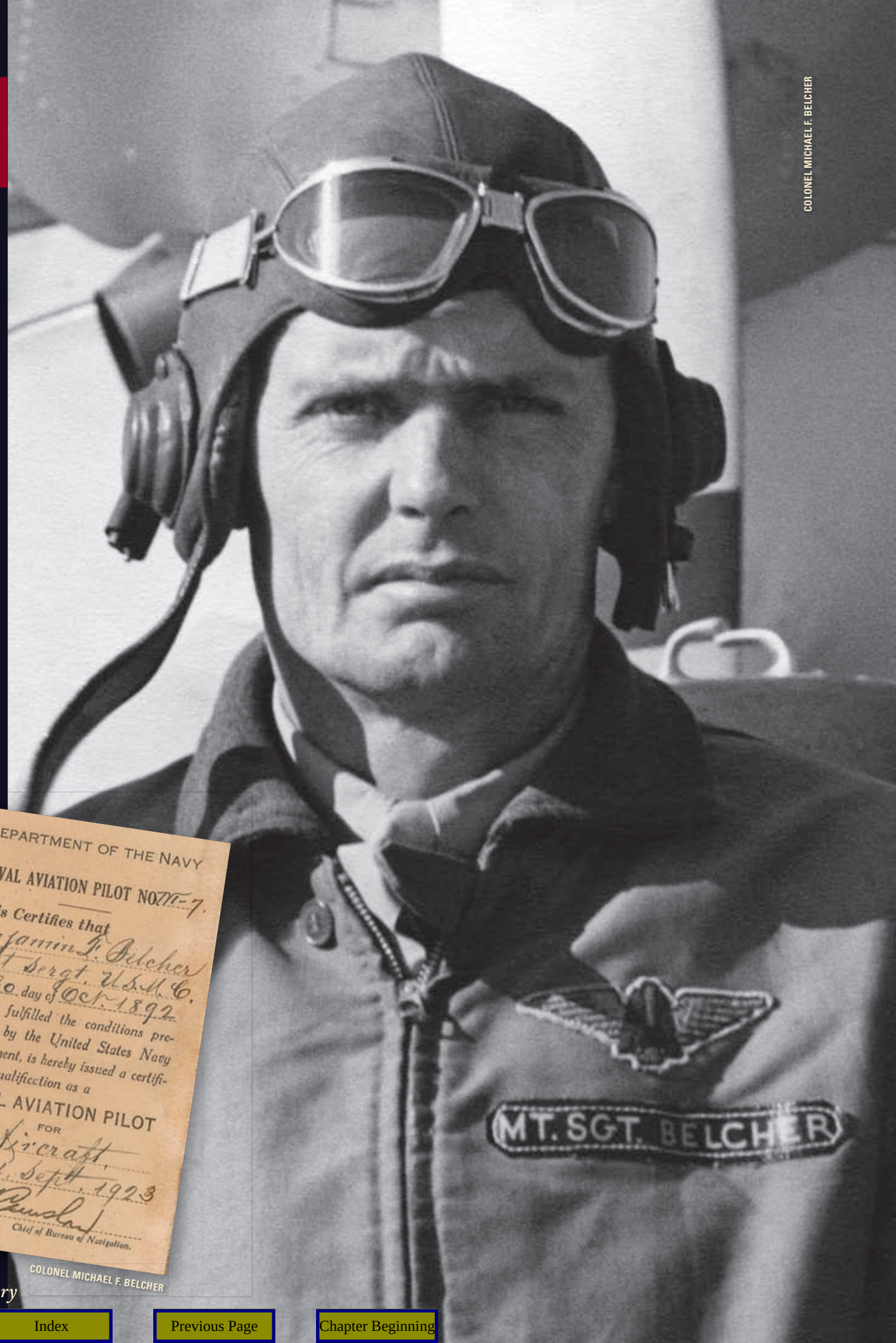
THE MARINE CORPS' FIRST NAVAL AVIATION PILOT

Benjamin F. Belcher was the first mechanic/pilot to be officially recognized as a Naval Aviation Pilot on September 14, 1923. By all accounts, he had a casual demeanor but still embodied professionalism, mechanical aptitude, and superior flying skills. Because he was raised in an orphanage, there is no documentation from his childhood or education. Select oral histories and documents reveal that he had made over 300 flights when he entered the Marine Corps. His flight time was presumably attained while working as an aircraft mechanic, wherein Belcher would repair an airplane and then go for a test flight.

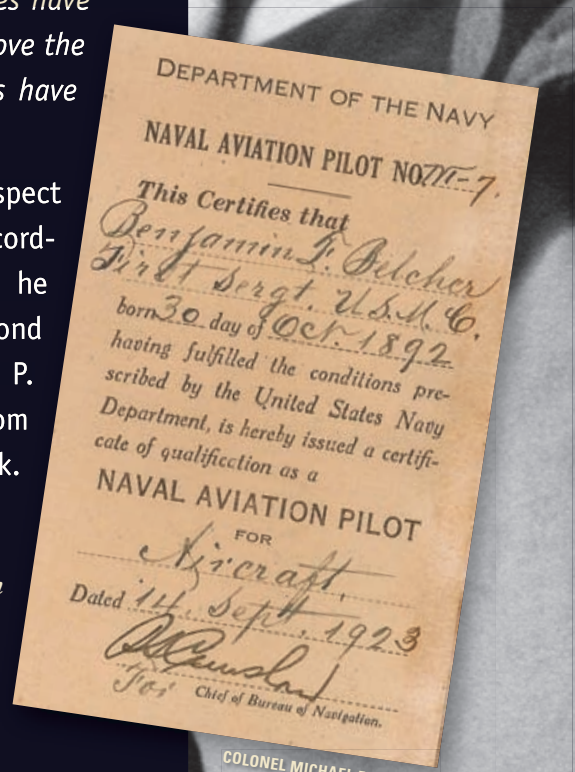
He enlisted in the Marine Corps in January 1917 and transferred to aviation by May 1920. Once there, he seamlessly transitioned between the cockpit and ground duty. His superiors described him as both a first-rate mechanic and a skilled pilot. In 1921, while deployed to Haiti, the commanding officer issued Belcher a citation:

"His exceptionable [sic] ability in handling Liberty and Hispano-Suiza motors has been principally responsible for whatever success these organizations have had during the last year. With Belcher, motor failures have been rare, and motors and planes have been scrupulously cared for. Motors have had well above the average flying time before overhaul, and the planes have always been kept in excellent condition."

Belcher's reputation earned him not only the respect of his superiors, but the second seat on many record-breaking flights as well. As a co-pilot in 1923, he joined First Lieutenant Ford O. "Tex" Rogers, Second Lieutenant Horace D. Palmer, and Sergeant Peter P. Tolusciak in a record-breaking 10,953-mile flight from Santo Domingo to San Francisco, California, and back.



COLONEL MICHAEL F. BELCHER



DEPARTMENT OF THE NAVY

NAVAL AVIATION PILOT NO. 7.

This Certifies that Benjamin F. Belcher First Sergt. U.S.M.C. born 30 day of Oct. 1892 having fulfilled the conditions prescribed by the United States Navy Department, is hereby issued a certificate of qualifiection as a

NAVAL AVIATION PILOT FOR Aircraft

Dated 14 Sept. 1923

For Chief of Bureau of Navigation.

COLONEL MICHAEL F. BELCHER

BELCHER'S NAVAL AVIATION PILOT'S LICENSE

Belcher's license (right) designated him as a Naval Aviation Pilot in 1923. However, records indicate that he had been logging flight time for years prior to his official designation.

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Even after a long day of flying, Belcher often performed maintenance. When taking off from Guantanamo Bay, Cuba, on the third leg of their record-breaking flight, the right wing of Second Lieutenant Palmer's plane hit a tree and was severely damaged. They continued to Havana with the damaged wing. Upon arrival, Belcher and fellow co-pilot Tolusciak began working on the plane. The duo worked late into the night fixing the wing with "borrowed" parts. First Lieutenant Rogers recounts the incident that occurred on September 20, 1923:

"Returned to the dark field and found that Belcher and Tolusciak had repaired the broken wing. We had rope and fabric with us, but lacked suitable material for an entering edge. Found out that he used a spare strut from a Cuban Jennie and some other items. One of the Cuban aviation officers discovered the misappropriation of his spare parts too late to save the strut, but was placated by our assuring him that we would bring him many spare parts on our return."

This renders but a snapshot of the relationship between Belcher and officers. He also flew with well-known Marine officers like Lawson H. M. Sanderson, Arthur H. Page Jr., Christian F. Schilt, and William L. McKitterick. On a few occasions, he received a temporary promotion to first lieutenant, so he could participate in air races. He also worked temporarily at the Naval Aircraft Factory in Philadelphia and then flew in the National Air Races at the Sesquicentennial Exposition in 1926. Performing in a combat demonstration, Belcher achieved the highest dive bomb score in the annual fleet-wide, shore-based Observation and Fighting Plane Squadron Competition on October 17, 1934.

Throughout his career, he ferried several types of planes, including a VE-7, O3U-6, F8C-3, F6C-4, XLH-1, TA-1, JRS-1, and other experimental aircraft. Belcher's service records detail numerous orders requesting him to fly to an airfield, work on an aircraft, and return home the next day.

Sadly, Belcher's time as one of the premier Marine aviators ended on September 26, 1938, when the plane he was piloting crashed during a night-training exercise at Quantico. A letter to Belcher's son from one of the passengers on that fateful night details the crash:

"We took off from the old field in Quantico about eight o'clock at night on a routine flight. Shortly after take off, the left engine failed and as it was too soon to have single engine performance we went into the trees along the riverbank...no blame whatsoever was attached to your father and none should be. It was a pleasure to have served with him and were he alive I would be pleased to fly with him again."

COLONEL MICHAEL F. BELCHER

Supporting Aviation
BIZATON, HAITI

Marines first landed in Haiti in 1915 to help restore order and political stability. Four years later, the First Division, Squadron E (right) arrived in Port-au-Prince to support the First Provisional Brigade there. Within weeks, the squadron moved to a nearby seaplane base at Bizaton, the Haitian Navy Yard. Commanded by Harvey B. Mims, pilots flew five Curtiss HS-2Ls, six Curtiss JN-4HG-1s, and one Curtiss N-9 against the Caco bandits.

In August 1919, squadron aircraft participated in one of the first coordinated Marine air-ground attacks. After being directed by ground forces, Marine pilots attacked the Caco's base outside Mirebalais. Given the obstacles of limited communication, impassable terrain, and lack of roads, the value of Marine pilots supporting ground forces became apparent.

A few months after flight operations began, the Marine Corps Recruiter's Bulletin declared: "Bandits have been located in dense, inaccessible areas, the aviators (at Haiti) fly over and drop a few bombs in their midst. As they come out of the jungles they are seized by the ever-ready Marines on foot." In their first fifteen months of flying, pilots from Squadron E flew over 1,270 flights.

By January 1, 1921, the squadron was redesignated Fourth Air Squadron, comprised a Headquarters and Flights G and H. The following year, the squadron's name changed again, becoming Marine Observation Squadron Two.

1921

SEPTEMBER 26 – OCTOBER 1, 1921
During the maneuvers at the site of the Civil War Battle of the Wilderness, near Fredericksburg, VA, a Marine kite balloon is flown for eleven hours and forty-five minutes.

JANUARY 16, 1922
The Marine Corps issues parachutes to pilots of heavier-than-air craft.

MAY 5, 1922
The airfield at Quantico is dedicated to the memory of 2dLt Walter V. Brown, who crashed on his way to a nearby bombing exercise.

U.S. MARINE CORPS

JUNE 19 – JULY 12, 1922

Marine aviators from Brown Field, Quantico, fly two Martin MBTs, one MT, six deHavilland DH-4Bs, six Vought VE-7 aircraft, and one type F kite balloon while participating in the maneuvers of the East Coast Expeditionary Force at Camp Harding, Gettysburg, PA.

JULY 1, 1922

The Naval Appropriations Act of 1923 contains an appropriation of $80,000 for construction of new buildings and improvements at Quantico.

OCTOBER 1922

Maj Geiger, Capts Louis M. Bourne Jr. and James Davis, 1stLt Harold C. Major, and 2dLt Christian Schilt fly two Martin MTs and three DH-4Bs to the Pulitzer race during the National Air Races near Detroit, MI.

MARCH 21, 1923

In response to safety issues with new Martin MB-3 aircraft at Quantico, MajGenCmdt Wendell C. Neville instructs Maj Geiger to have officers inspect aircraft after each flight and that pilots should not be performing stunts. Eventually, all MB-3s were determined unsafe.

Exhibitions & Air Races

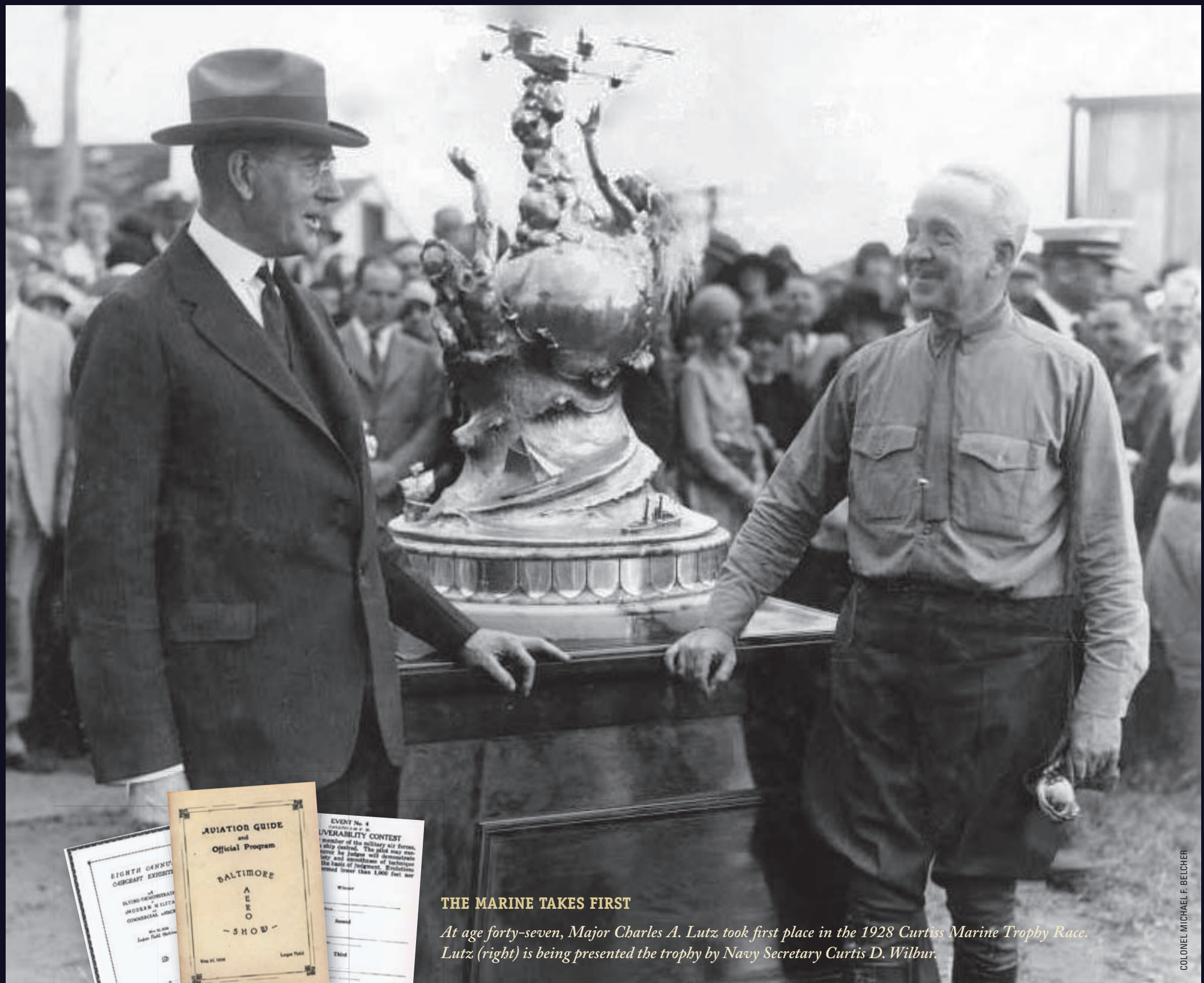
During the interwar years, the exploits of the Army Air Service often eclipsed naval aviation. To keep the abilities and exploits of Navy and Marine pilots in the minds and hearts of the American public, both services endorsed a handful of aviators to participate in record-breaking flights, aerial exhibitions, air races, and fleet maneuvers. Marine aviators' showmanship, spectacular aerobatics, and low-altitude stunt flying quickly became a favorite among spectators.

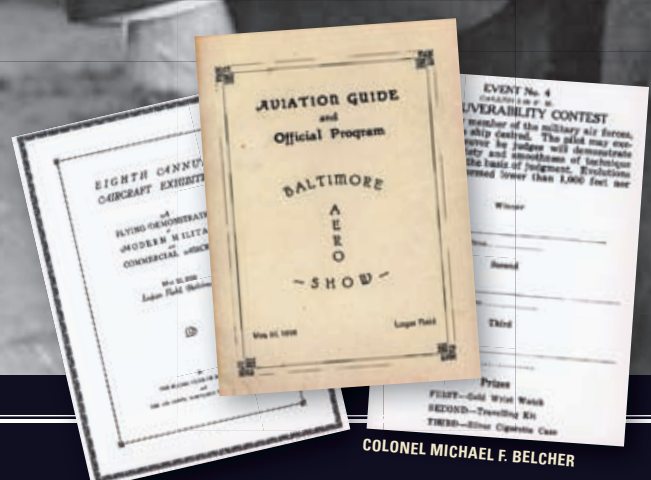
This not only translated into publicity and headlines for the Navy, because Marines were typically registered as Navy pilots, but also gave Marine aviators invaluable flight hours and an avenue to learn new skills and test equipment.

As aircraft technology and performance increased, Marine pilots fueled an already competitive spirit among the services. Aerial exhibitions entertained and educated the public on the aptitude of aviators. Although Marine pilots typically flew pontoon aircraft, pictured here is First Lieutenant Walter S. Hallenberg, skirting a pylon in a Martin MT during the 1923 International Air Meet in St. Louis, Missouri. He placed third in event for large planes in the Merchant's Exchange Trophy Race, with a speed of 106.53 miles per hour over a distance of 96 miles.

Pilots also participated in several large exercises and maneuvers during the 1920s. As part of the 1922 East Coast Expeditionary Force at Camp Harding, Gettysburg, Pennsylvania, aviators flew three Martin bombers in support of 4,000 Marines marching from Quantico to Gettysburg. Once there, ground Marines reenacted Pickett's Charge. Both ground forces and aviators performed a modern-day combat demonstration. During the exercises, pilots flew 500 hours, covered 40,000 miles, and transported both passengers and cargo.

MAJOR JOHN M. ELLIOTT





COLONEL MICHAEL F. BELCHER

THE MARINE TAKES FIRST

At age forty-seven, Major Charles A. Lutz took first place in the 1928 Curtiss Marine Trophy Race. Lutz (right) is being presented the trophy by Navy Secretary Curtis D. Wilbur.

COLONEL MICHAEL F. BELCHER

U.S. MARINE CORPS

ABOARD SHIPS

Lowe-Willard-Fowler-built DT-2 aircraft served as the Navy's standard torpedo airplanes for the first half of the 1920s. The aircraft on the right was one of six delivered to the Marines at Culebra Island, Puerto Rico, in January 1924.

The aircraft arrived disassembled on the USS *Sirius*. Marines assembled them aboard and lowered them over the side into the water. While at Culebra, Marines participated in Fleet Problems II, III, and IV, using the aircraft primarily for scouting and observation.

1923

AUGUST 27 – OCTOBER 7, 1923

Marine aviation units from Quantico participate in the Marine Corps Expeditionary Force's fall maneuvers in Northern Virginia. During the exercises, they deliver both cargo and personnel.

JANUARY 2, 1924

Division Three, Marine Observation Squadron Three, commanded by Capt Walter E. McCaughtry, embark on the USS *Chaumont* to participate in the fleet maneuvers at Culebra, Puerto Rico. They will practice bombing both ships and landing fields while conducting reconnaissance and observation flights.

MAJOR JOHN M. ELLIOTT

KEEPING THEM FLYING

Mechanics kept aging aircraft flightworthy, not only for daily operations, but also for a rigorous schedule of aerial demonstrations and long distance flights. The mechanics pictured here supported First Lieutenant Christian F. Schilt during the Schneider Trophy Race in 1926.

JANUARY 17, 1925

Adm Edward W. Eberle, CNO, submits a report to the SecNav regarding aviation development. He recommends expanding aviation opportunities at the Naval Academy and advocates a standardization process for assigning officers to aviation.

MARCH 3, 1925 - MAY 9, 1929
Maj Edward H. Brainard
OFFICER IN CHARGE, AVIATION

APRIL 1925

Marines at Quantico modify a Dayton Wright TW-3 two-seat Army trainer for use as a crop duster. After initial tests, Marine pilots would use this aircraft to spray for mosquitoes and help prevent the spread of malaria.

FEBRUARY 20, 1926

The first of six Boeing FB-1s arrive at Quantico from the Second Aviation Group at San Diego. This marks the beginning of fighter aircraft operations at Quantico.

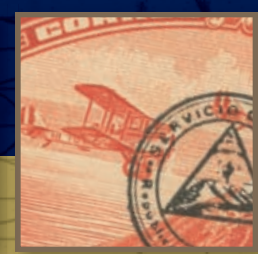
AUGUST 1926

Aviation integrates with expeditionary forces. Headquarters Marine Corps redesignates the First Aviation Group as Aircraft Squadrons, East Coast Expeditionary Forces and the Second Aviation Group as Aircraft Squadrons, West Coast Expeditionary Forces.

NATIONAL MUSEUM OF THE MARINE CORPS

NO DOUBT

In the late 1920s, Marines at Quantico evaluated parachutes and parachuting techniques as a way for crews to escape distressed aircraft. After his parachute training, one aviator remarked, "The experience has led me to believe that no one needs practice or coaching about the use of a parachute. If the time ever comes to use it one will do it more or less instinctively." Circa 1927, a young private in his parachute gear stands on the wing of a Martin Bomber prior to takeoff.



CHAPTER FOUR
MEN WITH A MISSION

Like all services during the Great Depression, the Marine Corps had to cut back and streamline squadrons. For Marine aviation, this meant ending balloon activities at Quantico and consolidating observation squadrons at San Diego and fighter squadrons at Quantico.

The realignment also included Marine aviation departing the island of Guam after fifteen years, and reassigning its personnel and aircraft. Amidst organizational changes and reductions, during the 1920s and 30s, Marine aviation became more structured. Pilots and crew began to formalize their tactics and techniques. This led to the creation of standard operations procedures.

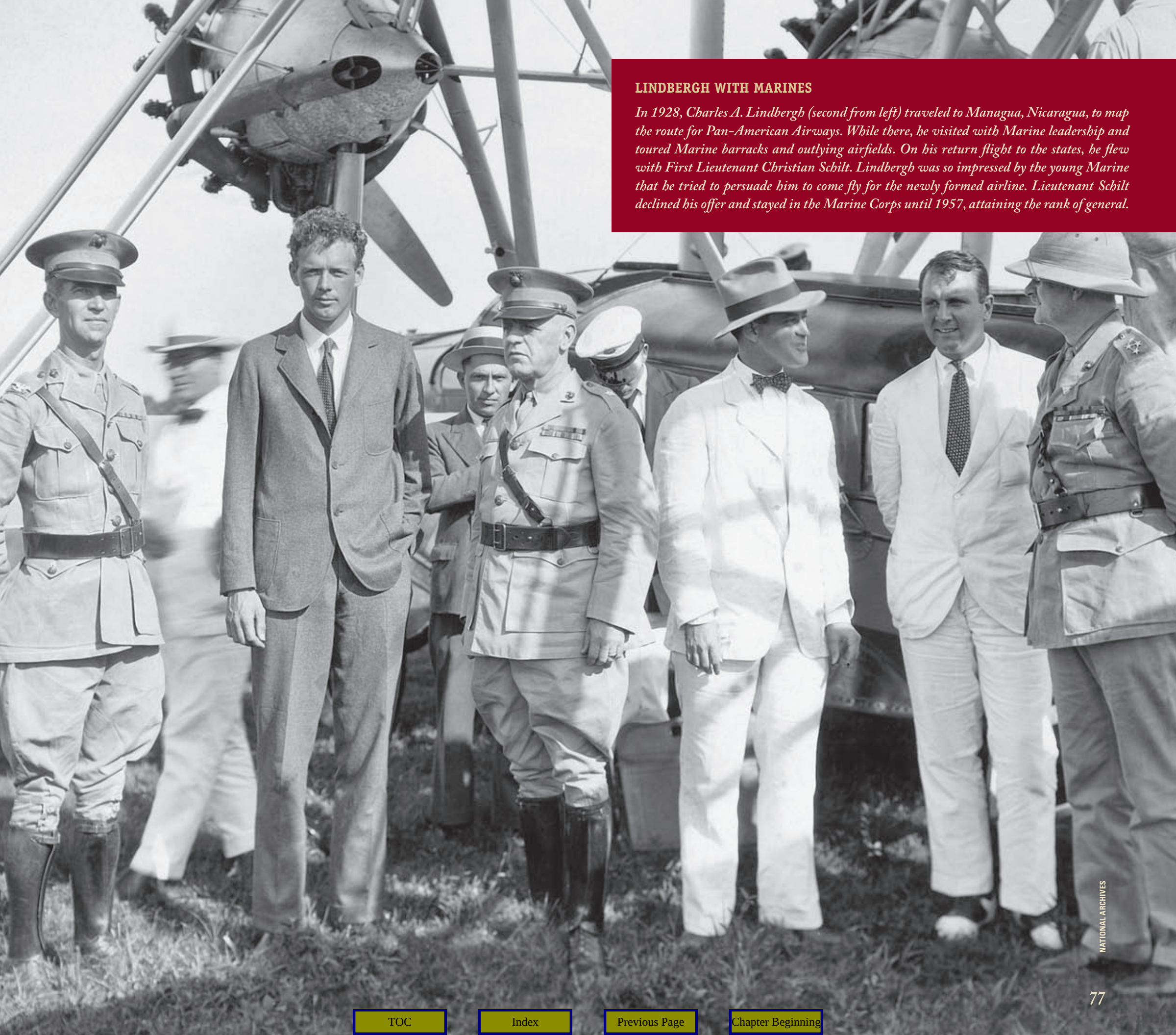
While performing expeditionary duties in the Dominican Republican and Haiti, they began to experiment with dive bombing and coordinated air-ground attacks. Although rudimentary at best, they began to search for new ways to connect ground and air forces. By the mid-1920s, Marine aviators were serving both in Nicaragua and China.

In Nicaragua, they expanded upon what they had learned during their involvement in the Dominican Republic and Haiti. Upon returning stateside, they documented their techniques and tactics and lessons learned to create a standardized procedure on the employment of Marine aircraft.

Marine aviators quickly realized the difficulties of expeditionary duty and being employed in a bush environment and operating in guerilla warfare. In 1927, the United States intervened in the civil war in Nicaragua. This guerrilla-type warfare gave aviation its first opportunity to provide sustained air support to Marines. For five years, Marine pilots witnessed sporadic bush fighting and adapted to the terrain and a new enemy.

Marines overcame the lack of roads and logistical obstacles. While also gaining an understanding of the native population, and their role within the enemy conflict. Major Ross E. Rowell wrote extensively on the dangers of attacking embedded citizens, and if not handled properly, how the conflict could escalate.

Throughout their Nicaraguan deployment, Marine pilots and aircrews experimented with dive-bombing tactics and communications. They also developed routine procedures for casualty evacuation and transport of wounded personnel. Marine Observation Squadron One and Marine Observation Squadron Two produced some notable achievements while flying in support of the Marine brigade. These squadrons helped create the standards for Marine air-ground teams of future decades. The last Marine aviators withdrew from Nicaragua in 1932.



LINDBERGH WITH MARINES

In 1928, Charles A. Lindbergh (second from left) traveled to Managua, Nicaragua, to map the route for Pan-American Airways. While there, he visited with Marine leadership and toured Marine barracks and outlying airfields. On his return flight to the states, he flew with First Lieutenant Christian Schilt. Lindbergh was so impressed by the young Marine that he tried to persuade him to come fly for the newly formed airline. Lieutenant Schilt declined his offer and stayed in the Marine Corps until 1957, attaining the rank of general.

NATIONAL ARCHIVES

Upon returning to the United States, Marines put their lessons learned in Nicaragua to good use. They created a disciplined training manual with clearly defined roles and responsibilities to further enhance air-ground communication. The teachings from this generation of pilots fostered a new period of growth for Marine aviation and advanced both air-ground communications and air support.

Although aviators continued to participate in air races, their primary focus shifted from entertaining the American public and breaking records to refining their tactics and techniques to provide better air support to Marines on the ground. This redefinition of mission also included the employment of transport aircraft. After operating in the jungles of Nicaragua, both aircrews and Marines on the ground recognized the importance of employing transport aircraft in combat to overcome poor roads, treacherous terrain, and lack of infrastructure.

Beginning in the mid-1920s, several Marine pilots qualified aboard fleet carriers. Initially, aviators received flight instruction on a converted collier, the USS *Langley*. Then, in 1931, the Navy assigned two Marine scouting squadrons, VS-14M and VS-15M, to operate as part of Aircraft Battle Force, Pacific Fleet carriers. Prior to being assigned to the Pacific Fleet, Marine air squadrons were loosely controlled with respect to carrier training and doctrine. The two scouting squadrons continued to operate on carriers with the Navy until 1934. During the three-year span, approximately fifty percent of Marine pilots participated in carrier training or operations. The benefits of this experience were soon transmitted to the training of all squadrons of the Fleet Marine Force (FMF) both East and West Coast.

With carrier-trained aviators and a renewed understanding of aviation doctrine and tactics in combat, Marine pilots were confident in their ability to support naval aviation and Marines on the ground in future conflicts. Soon, they would face veteran pilots in the Pacific equipped with superior aircraft, learning hard lessons along the way.

MAJOR JOHN M. ELLIOTT

NICARAGUAN *AIR MAIL* STAMPS

These Nicaraguan postage stamps depict the QSL (Query Station Location) communication card used by Marine Observation Squadron Four. During the 1920s and 30s, QSL cards served as "calling" or recognition cards to radio station operators.

The photographic officer of Marine Observation Squadron Four, First Lieutenant Hayne D. Boyden, designed the Marines' QSL card. He added a photo of a Marine biplane (twice) to a separate image of a volcanic mountain attributed as Momotombo. This is the only known stamp design to feature a U.S. Marine Corps aircraft.

MAJOR JOHN M. ELLIOTT

SCHILT AT THE AIR RACES

As part of the Navy's air racing team in 1926, First Lieutenant Christian Schilt placed second in the Schneider Trophy Race at Norfolk, Virginia. His Curtiss R3C-1 aircraft was acquired from the Army and could operate from land or water after being reconfigured with pontoons.

THE FLYING LEATHERNECK MUSEUM

THE FLYING LEATHERNECK MUSEUM

UNLOADING IN CHINA

The Third Marine Brigade in China (above, left) was formed from four regiments of Marines. To fly reconnaissance and observation missions in support of the brigade, pilots flew Loening OL-6 amphibian aircraft. Pictured at Hsin Ho, China, in 1927, Marines unload an OL-6 from the USS Chaumont.

1926

NOVEMBER 13, 1926

1stLt Christian F. Schilt, flying the Curtiss R3C-2, takes second in the Schneider Trophy Race at Hampton Roads, VA, with an average speed of 231 mph.

DECEMBER 13, 1926

One Marine squadron and five Navy squadrons participate in a dive-bombing exercise.

FEBRUARY 18, 1927

Marine Fighting Squadron One, consisting of eight officers, eighty-one enlisted, and six DH-4Bs, departs San Diego for Corinto, Nicaragua.

MARCH 1, 1927

Marine Fighting Squadron One arrives via train in Managua, Nicaragua.

THE FLYING LEATHERNECK MUSEUM

THE VALUE OF AVIATION

While in China, Brigadier General Smedley D. Butler (center) professed the value of aviation supporting ground operations.

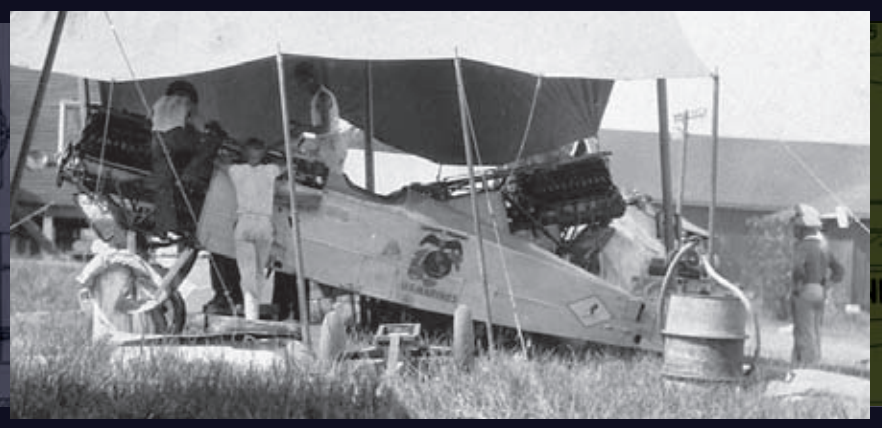
"Even though under strength, I have always firmly believed that, had it not been for the splendidly efficient air force attached to the Third Brigade in China, we could not have avoided bloodshed…we were prepared to meet any emergency."

APRIL 17, 1927

Marine Fighting Squadron Three, consisting of nine officers, forty-eight enlisted, equipped with eight FB-1s, leaves Sumay, Guam, and sails for China.

JULY 1, 1927

Marine Observation Squadron Seven arrives in Managua.



MAINTENANCE ON OLOGONAPO

In Ologonapo, Philippines, Marine Observation Squadron Five personnel conduct routine maintenance on their aircraft awaiting deployment to China.

Operating with the Third Brigade
CAMP MCMURRAY, CHINA

On March 26, 1927, a request went to the Marines at Quantico to ship six O2B-1 planes to China. The planes were quickly dismantled, loaded on flat rail cars, and shipped to the West Coast for further transfer to China. The process took approximately 6,000 man-hours. This was the first known instance of Marine aircraft being transported by rail for expeditionary duty.

With Marine planes en route, the United States did not have permission from the Chinese government to let Marine aircraft operate in China. So instead of going into China, the Marines were temporarily diverted to Naval Station Olongapo, Philippines until a settlement was reached. Even after Marines were granted permission to commence flying operations, the support from the Chinese was mixed. Many in the Peking government protested the presence of American planes, whereas the Chinese Foreign Ministry openly endorsed Marine air operations.

On July 3, the last of the aviation components arrived at Hsin Ho, China, and the Marines began building an airstrip close to the railroad station and the Hai River. Brigadier General Butler had hand-selected the location for the airfield, because of its proximity to nearby Tientsin wand the river. Situated only five miles from the mouth of the river with ground units nearby at Tientsin, Marines pilots flew surveillance and reported on river traffic activities from the city to the coast.

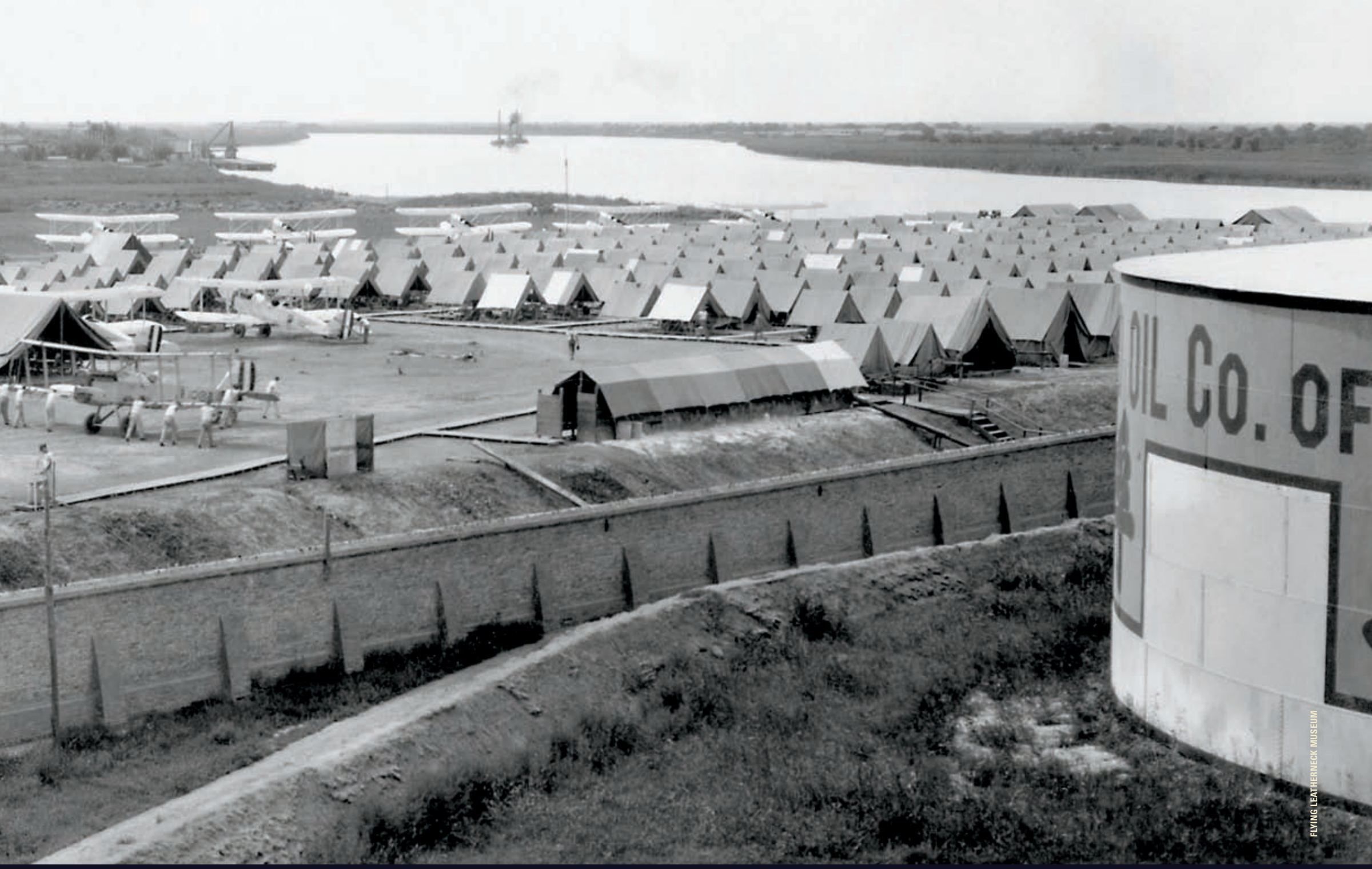
1927

JULY 16, 1927

Sandinistas launch a night attack on Marine and Guardia barracks in Ocotal, Nicaragua. In response, Maj Ross E. Rowell applies training doctrine in combat, leading five aircraft of Marine Observation Squadron Seven in a rudimentary dive-bombing attack to provide air support to Marines on the ground.

OCTOBER 8, 1927

2dLt Earl A. Thomas crashes with his gunner, Sgt Frank E. Dowdell, on Sapotillal Ridge, Nicaragua. A ground patrol attempts to retrieve the two men, but they are besieged by bandits. Pilots and aircrews drop provisions to the patrol. In order to reveal enemy concealment and request an air attack, they lay out panels to communicate with pilots.



FLYING LEATHERNECK MUSEUM

NOVEMBER 23, 1927

Air patrols discover and attack El Chipote, Augusto Sandino's fortified mountain base camp.

DECEMBER 4, 1927

Marine pilots begin flying Atlantic TA-1s (a U.S.-built version of the Fokker F.VIIA) at Managua. Within six weeks, these transport aircraft carry 27,000 pounds of freight and 204 passengers.

JANUARY 6–8, 1928

1stLt Christian F. Schilt earns the Medal of Honor for evacuating eighteen wounded Marines in ten flights out of Quilali, while under heavy fire and using a makeshift runway.

MARCH 8, 1928

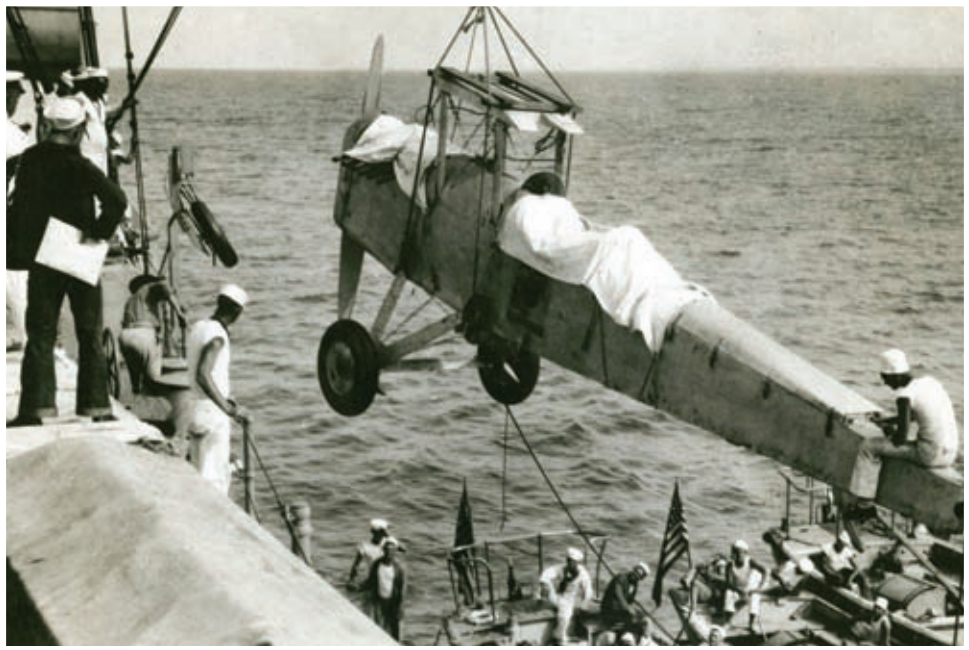
Capt Merritt A. Edson begins a Coco River patrol in Nicaragua to hunt for Augusto Sandino.

MAY 19, 1928

Maj Charles Lutz wins the Curtiss Marine Trophy Race in a Curtiss F6C-3 with an average speed of 157.6 mph over the 100-mile course.

CALLING FOR *Air Support*

Prior to 1927, Marine aircraft played only a minor role in supporting ground units. In Haiti and Santo Domingo, pilots began flying in support of infantry. However, air operations were typically limited to reconnaissance and observation. Despite the limitations of less-advanced aircraft and radios, Marine aviators began experimenting with air-ground coordination and dive-bombing tactics. Initially, the accomplishments of Marine pilots were negligible and offered little understanding of the supporting arm's potential. Critics argued that aviation unjustifiably received a portion of the Corps' limited funding and personnel. Aviation to this point provided no real benefit to Marines on the ground.



DELIVERING DHs AT CORINTO

On May 11, Marine Observation Squadron Four sailed for Nicaragua. The squadron deployed equipped with two DH-4B-1s and six O2B-1s. While there, the squadron supported the Second Marine Brigade. The squadron was re-designated Marine Observation Squadron Seven the following month.

During the U.S. intervention in Nicaragua, the utilization and deployment of Marine Corps aircraft dramatically shifted, and even some skeptics began to recognize the value of Marine air. Pilots regularly scouted ahead of infantry and supported ground units during their movement. They also located enemy forces and supported the infantry during the attack, as well as initiating an assault from the air. Just a year after the arrival of Marine aircraft, Major Rowell declared them to be so important in combat operations in Nicaragua that: "A column is never sent out without a plane in almost constant attendance."

The enhancement of air support went beyond just plane and pilot. Both air and ground units experimented with innovative communication techniques. Infantry columns began to request air support by laying out large panels made from available materials. By September 1929, reconnaissance planes regularly carried bombs for the use in emergency support of ground troops. Pilots emphasized the importance of rapid communication between air and ground forces. They also stressed that infantry needed to recognize the fuel limitations of aircraft. These pioneers also recognized that both air and ground commanders may determine the need for aerial support. Marine aircraft communicated with and supported foreign military, like *Guardia National* patrols, and when asked, defended them as they retreated.

In February 1931, Captain Denny Campbell wrote, "The objective of aviation in guerrilla warfare is the attack of the armed forces of the enemy and their leaders, and the rendering of the utmost assistance to the ground forces through the service of information and its fire power." Although tactical flying officially ended on December 15, 1932, the Marine Corps recognized and put into practice many of the lessons learned in Nicaragua. Once stateside, men like Colonel Rowell described the role of combat aircraft in small wars: "Air support when ground weapons and artillery cannot be utilized." Through trial and error, air operations in combat successfully supported ground operations via panels and message drops. These methods were ultimately endorsed, solidified, and documented in the Small Wars Manual.

IN THE BACKGROUND IS A DIAGRAM OF THE THE MARINE BARRACKS AT TELEPANECA, NICARAGUA

PUERTA CABEZAS
21 DEC 1931

MEMO FOR CAPT. MULCAHY —

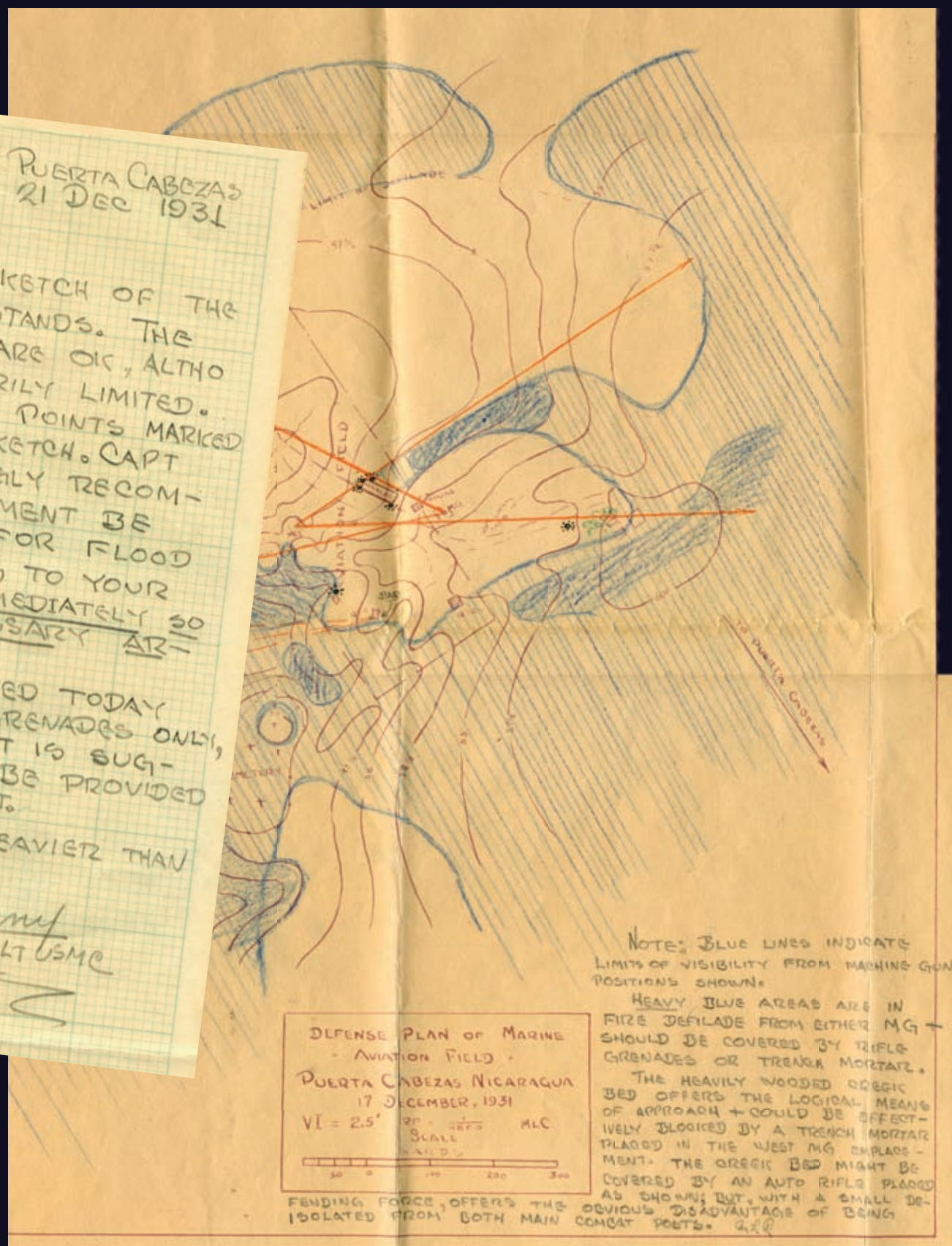
I AM ENCLOSING A SKETCH OF THE AVIATION FIELD AS IT NOW STANDS. THE LIGHTS HAVE BEEN TESTED + ARE OK, ALTHO THE ILLUMINATION IS NECESSARILY LIMITED. LIGHTS ARE LOCATED AT THE POINTS MARKED BY SMALL CIRCLES ON THE SKETCH. CAPT INMAN OF THE GUARDIA STRONGLY RECOMMENDS THAT EACH EMPLACEMENT BE SURROUNDED BY 3 POLES FOR FLOOD LIGHTS. IF THIS IS ACCORDING TO YOUR WISHES PLEASE ADVISE ME IMMEDIATELY SO THAT I CAN MAKE THE NECESSARY ARRANGEMENTS.

THE A MARINES WHO ARRIVED TODAY BROUGHT AUTO RIFLES + RIFLE GRENADES ONLY, IN ADDITION TO THEIR RIFLES. IT IS SUGGESTED THAT A THOMPSON GUN BE PROVIDED FOR THE SENTRY WALKING POST.

THERE ARE NO WEAPONS HEAVIER THAN B.A.R.'S HERE AT PRESENT.

M L Quinn
2ND LT USMC

U.S. MARINE CORPS



U.S. MARINE CORPS

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UNLOADING SUPPLIES

Transport aircraft like these Atlantic-Fokker TA-2 quickly proved their worth in Nicaragua. Moving troops by air was a significant improvement over transporting troops by ground. After a detachment of twenty-four Marines was transported from Managua to Ocotal, Captain Richard Peard said, "The only men in Ocotal who were not full of malaria, sore feet, etc., were the men that the Fokker brought here." Prior to transports it took at least ten days to get Marines from Managua to Ocotal. Aircraft accomplished the task in about an hour and ten minutes.

NATIONAL MUSEUM OF THE MARINE CORPS

1929

JANUARY 16, 1929

The CNO orders that all naval aviators must qualify for ten hours of night flying, with a minimum of twenty night landings.

MAY 10, 1929 - OCTOBER 28, 1931
Col Thomas C. Turner
OFFICER IN CHARGE, AVIATION

DECEMBER 5, 1929

As part of the Byrd Expedition to the South Pole, Capt Alton N. Parker flies over the Antarctic continent.

DECEMBER 31, 1929

All Marine balloon squadrons are decommissioned.

NATIONAL MUSEUM OF THE MARINE CORPS

REQUESTING ASSISTANCE

In 1927, Nicaraguan President Adolfo Diaz requested U.S. intervention to help maintain stability and order in Nicaragua. President Calvin Coolidge initially refused American intervention; however, after American lives and property were endangered, he sent in the Marines. President Adolfo Diaz (left) and First Lieutenant Hayne Boyden stand in front of a DH-4B-1 aircraft.

MAY 31, 1930

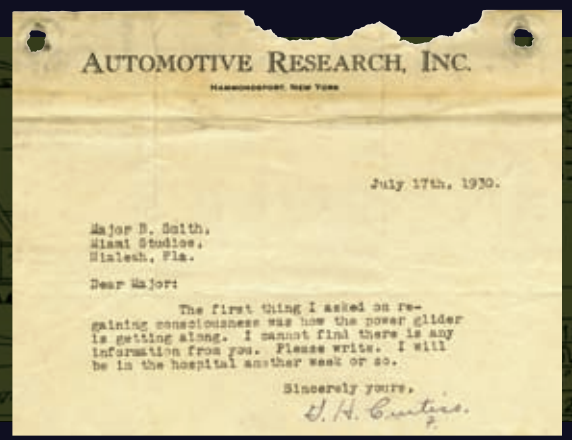
Capt Arthur H. Page Jr., flying a Curtiss F6C-3 fighter with an average speed of 164.08 mph, wins the Curtiss Marine Trophy Race.

JULY 21, 1930

Capt Page Jr. records the longest blind flight to date, piloting an O2U with a sealed hooded cockpit on an instrument flight of about 1,000 miles. The flight was from Omaha, NE, to Washington, DC, via Chicago, IL, and Cleveland, OH.

INVENTOR AND INNOVATOR

Inventor Glen Curtiss wrote Bernard Smith this letter from his hospital bed about a power diver project that the two were working on. Smith was still actively engaged in aircraft development nearly twenty years after first entering Marine aviation. Curtiss would die six days later, having fostered both land and naval aviation during his distinguished career.



AUTOMOTIVE RESEARCH, INC.

July 17th, 1930.

Major B. Smith,
Miami Studios,
Hialeah, Fla.

Dear Major:

The first thing I asked on regaining consciousness was how the power glider is getting along. I cannot find there is any information from you. Please write. I will be in the hospital another week or so.

Sincerely yours,
G. H. Curtiss.

LOUD AND CLEAR

As flight operations increased, both stateside and in combat, Marines looked for new ways to enhance and facilitate air-ground communications. While stationed at Quantico, Captains Arthur Page Jr. and Francis E. Pierce devised a process, whereby ground personnel attached a message to a wire between two uprights.

Without landing, pilots or aircrew leaned over the side of the plane, snatched the wire, and retrieved the message. This innovative configuration allowed ground Marines to communicate, sometimes requesting air support, while still maneuvering.

MAJOR JOHN M. ELLIOTT

1930

SEPTEMBER 1, 1930

Capt Page, flying the XF6C-6, is the only military entry for the Thompson Trophy in Chicago. Page gains an early lead, but on lap seventeen he encounters a mechanical failure and crashes. He survives the crash, only to die of head injuries a few days later.

FEBRUARY 26, 1931

Marine Patrol Squadron Three deactivates and leaves Guam.

MARCH 31, 1931

An earthquake shakes Nicaragua and destroys most of the city of Managua. The USS *Lexington* is ordered from Guantanamo Bay, Cuba, to assist other Navy and Marine units in relief operations. Early the next afternoon, carrier aircraft relief operations begin when five planes transport medical personnel and provisions to the stricken city.

NATIONAL MUSEUM OF THE MARINE CORPS

LOADING CASUALTIES

Evacuating the wounded by air not only increased the rate of survival, but improved troop morale on the ground as well. The techniques used by Marines to evacuate the wounded in Nicaragua led to standard casualty evacuation procedures after the war.

APRIL 1931

Personnel and aircraft from Marine Observation Squadron Ten at San Diego transfer to Marine Observation Squadron Eight at Quantico. The two squadrons merge into one, Marine Fighting Squadron Nine.

NOVEMBER 2, 1931

The first Marine air units integrate into a fleet organization. Marine Scouting Squadron Fourteen and Marine Scouting Squadron Fifteen embark on the USS *Saratoga* and USS *Lexington*, respectively. The squadrons will remain on carrier-based duty until late 1934.

NOVEMBER 6, 1931 - MAY 29, 1935
Maj Roy S. Geiger
OFFICER IN CHARGE, AVIATION

JUNE 27, 1932

The Pitcairn OP-1, an autogyro, flies in a combat zone for the first time in Nicaragua.

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U.S. MARINE CORPS

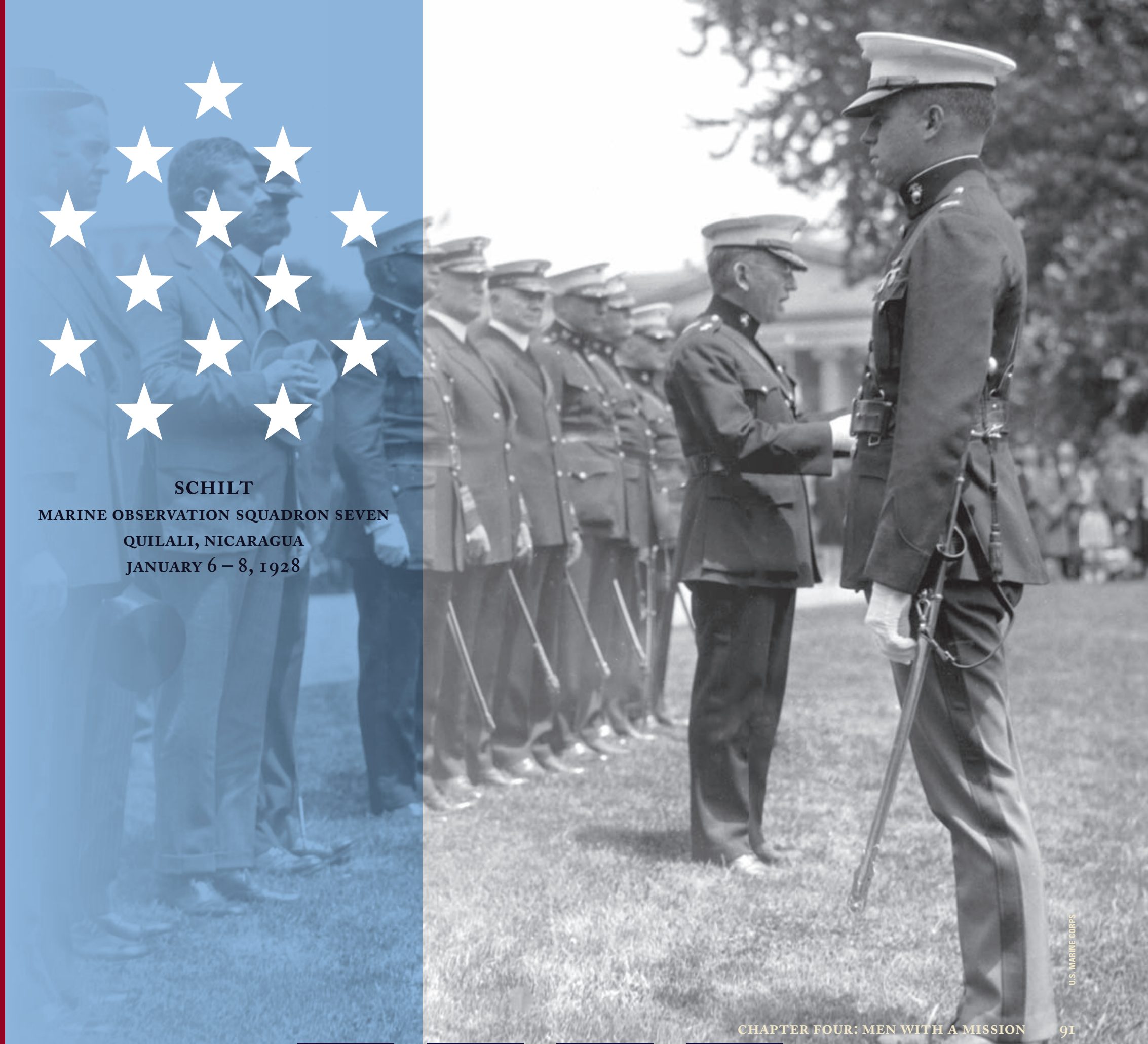
FIRST LIEUTENANT

Christian F. Schilt

MEDAL OF HONOR RECIPIENT

"During the progress of an insurrection at Quilali, Nicaragua, January 6, 7, and 8, 1928, First Lieutenant Schilt, then a member of a Marine expedition which had suffered severe losses in killed and wounded, volunteered under almost impossible conditions to evacuate the wounded by air and transport a relief commanding officer to assume charge of a very serious situation.

First Lieutenant Schilt bravely undertook this dangerous and important task and, by taking off a total of ten times in the rough, rolling street of a partially burning village, under hostile infantry fire on each occasion, succeeded in accomplishing his mission, thereby actually saving three lives and bringing supplies and aid to others in desperate need."



SCHILT

MARINE OBSERVATION SQUADRON SEVEN

QUILALI, NICARAGUA

JANUARY 6 – 8, 1928

U.S. MARINE CORPS

NEITHER A PLANE NOR A HELICOPTER

The Marine Corps' first rotary-wing machine, a Pitcairn XOP-1 autogyro, was a hybrid with both a rotor and a propeller. The autogyro had a short takeoff and landing capability, as well as the ability to auto rotate like a helicopter in the event of engine failure. Marine pilots deployed with the autogyro to Nicaragua, testing its capabilities in combat; however, it was deemed to have a limited carrying capacity.

U.S. MARINE CORPS

1932

NOVEMBER 22, 1932

After flying the autogyro in Nicaragua, Maj Francis P. Mulcahy reports on its operational capabilities. He documents that the aircraft has limited carrying capacity and poor maneuverability.

APRIL 1, 1933

Fleet aviation reorganizes. It falls under two principal commands. Commander Aircraft, Battle Force, serves as type commander for all fleet aircraft. Carriers, with their aircraft, are assigned to the force, and all tender-based aircraft and fleet air bases at Pearl Harbor, Territory of Hawaii, and Coco Solo, Panama Canal Zone, are assigned to base force.

OCTOBER 28, 1933

The development of the PBY Catalina series of flying boats begins when the Navy issues the contract to Consolidated Aircraft Corporation. The Corps will use Catalina flying boats at Guadalcanal.

MAJOR JOHN M. ELLIOTT

CRADLE OF MARINE AVIATION

One can hardly overestimate the role of Quantico-trained pilots in early Marine aviation. During the 1920s and 30s, pilots deployed for expeditionary duty in Nicaragua and China. It was through these deployments that Marine aviators transitioned from a loose-knit organization to professionals with standard operating procedures. Here, a hangar at Brown Field is painted as a tribute to Aircraft One and the early years of Marine aviation.

DECEMBER 8, 1933

The Fleet Marine Force is established, assigning the Marine Corps, including its aviation element, to an expeditionary and amphibious warfare role.

DECEMBER 20, 1933

Marine air squadrons, now part of the FMF, are redesignated. Aircraft Squadrons East Coast Expeditionary Forces become Aircraft One, FMF, and Aircraft Squadrons West Coast Expeditionary Forces become Aircraft Two, FMF.

JANUARY 1934

The *Tentative Manual for Landing Operations* is introduced. The publication defines the role of Marine air and assigns aviation responsibilities in an amphibious assault.

AUGUST 19, 1934

After fifteen years VO-9M leaves Haiti, ending the Marine Corps' presence on the island.

With an ever-increasing number of technological innovations available following World War I, naval aviation planners began to expand the capability of ships to project air power from the sea. Though naval aviators had operated flying boats from the water since 1911, these aircraft had limited range and speed.

To increase the Navy's capacity to extend air power, pilots often launched from the decks of ships; however, the pontoons on flying boats limited maneuverability during aerial conflict. Many recognized that the logical solution was to configure ships to launch land planes.

In the 1920s, the USS *Lexington* and USS *Saratoga* were notable advancements in naval aviation. With a running speed of thirty-three knots, these ships could transport and launch eighty-eight planes. They included a catapult launch, arresting gear to quickly slow the planes, and safety netting that ran along the sides of the ship that enabled deck personnel to jump to safety in case of a failed launch attempt.

USS *LEXINGTON*

VS-14M and VS-15M were assigned to the USS Saratoga *and USS* Lexington *to fill out their complement of aircraft. The two squadrons of six aircraft each remained a component of the battle fleet until November 14, 1934. Pictured here amidst other aircraft are aircraft from VS-14M.*

Both ship's hangars and machine shops warehoused the equipment and tools to maintain observation and attack squadrons, as well as bombers. The assortment of aircraft stored below deck was typically identical what was above; however, many of the planes below were not fully assembled to save space. In addition to the facilities below, both ships typically had a full complement of aircraft on deck available for expedient launch.

Marine air squadrons began qualifying for flight from carriers in the mid-1920s, with the first qualifications flying from the USS *Langley*. Initially, West Coast squadrons received more carrier training qualifications than East Coast squadrons.

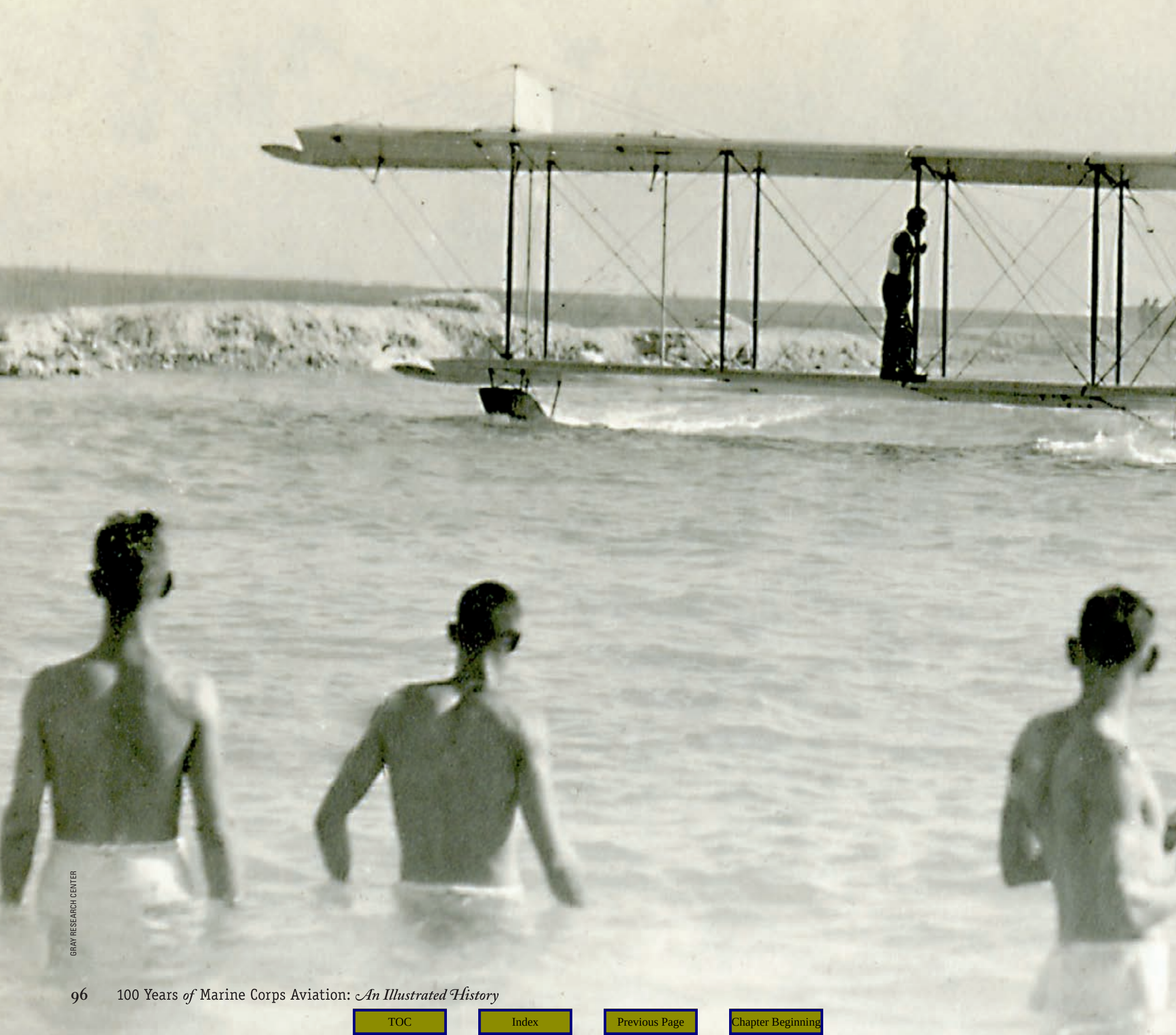
Parallel to carrier training but prior to the assignment of Marine squadrons on carriers, pilots deployed for expeditionary duty in China in the late 1920s. Instead of going directly to China, air squadrons and equipment had to stay in Olongapo, Philippines, while the United States reached an agreement with the Chinese government to operate aircraft. As a result, many argued that if Marine aircraft could operate from carriers, reaching an agreement with foreign governments to operate aircraft would become easier.

During the 1930s, Marine air squadrons responded to the demands of advancing warfare at sea. Building on early Marine innovators, aviators perfected dive-bombing techniques while refining attack, scouting, and reconnaissance missions. By 1931, two scouting squadrons based in San Diego began operation as units with the Pacific Fleet carriers. The squadrons did not rejoin Aircraft Two until 1934. During this three-year span, sixty percent of active duty Marine aviators gained valuable experience in operations with the Pacific Fleet carriers. Both West and East Coast squadrons benefited from this disseminated experience, preparing them for the carrier operations in World War II and the decades to come.

PASSING IN REVIEW

By 1931, Marine aviation was assigned to carrier duty and fulfilled Fleet Marine Force aviation's secondary mission: to provide replacement squadrons for aircraft carriers. Pictured here are aircraft from Marine Scouting Squadron Fifteen.

MAJOR JOHN M. ELLIOTT



GRAY RESEARCH CENTER

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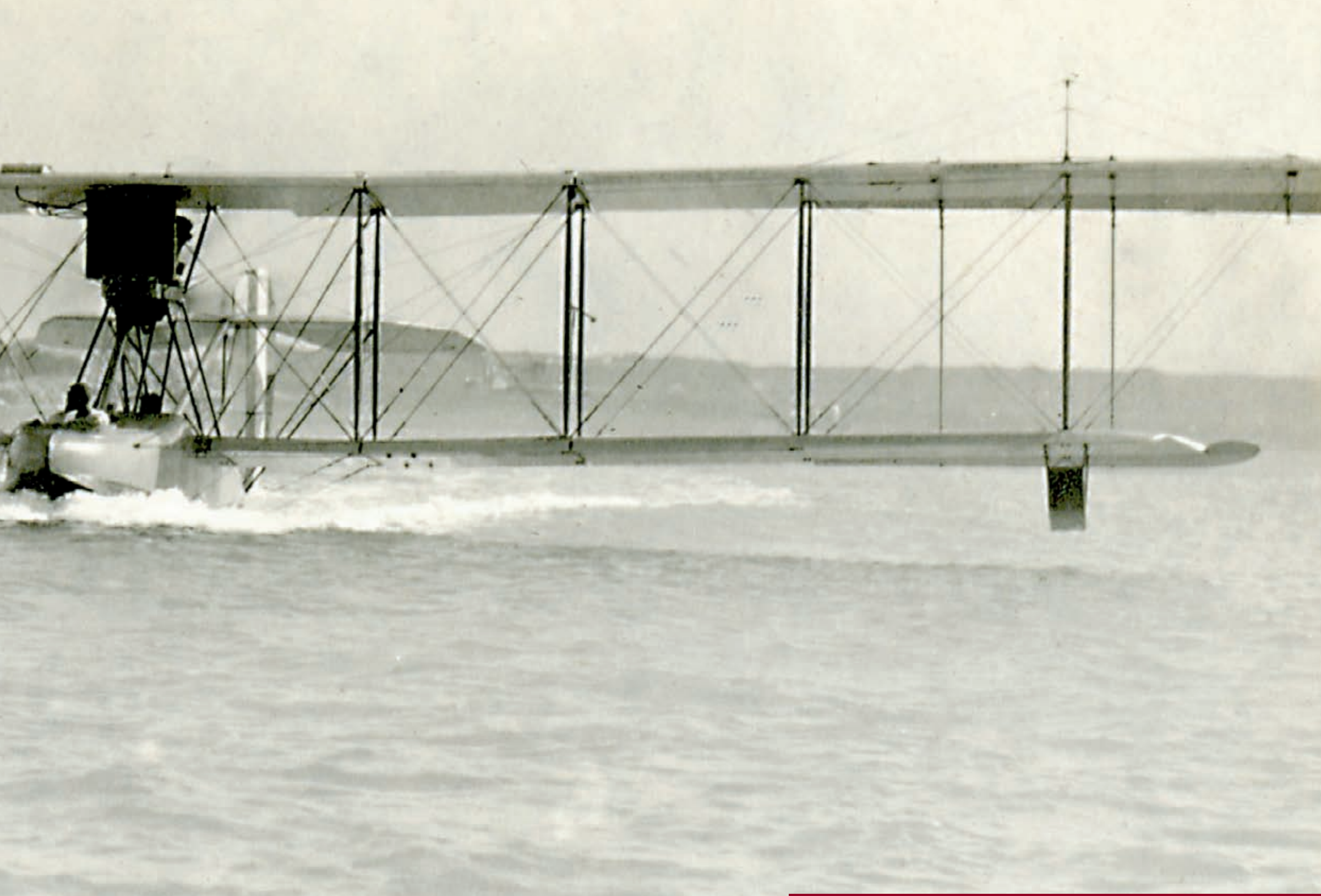


BEACHING IN GUAM

After ten years of patrol plane operations, Marine pilots departed the island of Guam in 1931. Here, enlisted crew bring in a Curtiss HS-2L seaplane.

MOBILIZING THE FORCE

BY COLONEL JACK P. MONROE, USMC (RET)

With the organization of Fleet Marine Force in 1933, Marine aviation became a vital part of the U.S. fleet. This organizational change shifted the focus of Marine aviator's deploying for expeditionary duty to an active role during the capturing of an advance naval base.

By 1935, Marine aviation underwent another significant organizational change. Instead of reporting to the Division of Operations and Training, Marine aviation transitioned to an independent section, which reported directly to the Commandant. The following year, Marine aviation was elevated to division status. With this, the head of Marine air served as an adviser to the Commandant on all aviation matters and as a liaison officer with the Navy's Bureau of Aeronautics.

This was a significant boost for Marine aviation because unlike infantry and artillery Marines, who received equipment from both the Army and Navy, aviation relied solely on the Navy for aircraft and equipment funding.

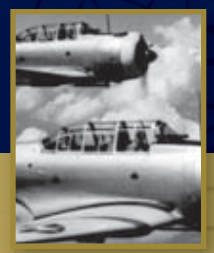
Entering the war, Marine aviation benefited from the Navy's 10,000-plane program. Marine aircraft were acquired, air bases expanded, and plans were established to form four groups of eleven squadrons each. In 1941, the 1st and 2d MAWs were commissioned. When the Japanese attacked

Pearl Harbor, each wing had only one group. MAG-11 was located at Quantico and MAG-21 was based at Ewa, with a few aircraft detached to Wake Island.

The valiant actions of Marine aviators at Wake Island and Midway set the tone for Marine aviators' record of achievement in World War II. From Guadalcanal on, pilots, flying Corsairs, Dauntlesses, and Hellcats, dealt crushing blows to Japanese aircraft.

Towards the end of the war, Marines began operating from carriers, commencing with VMF-124 and VMF-213. Carrier-based Marines hit the Philippines, and later supported Army troops. By February 1945, Marine carrier aviation supported Marines on the ground at Iwo Jima. The war began with Marine pilots shooting down their first enemy plane at Wake and their last at Okinawa.

Marine pilots scored 2,355 "shoot downs" and produced over 120 aces, 5 of whom each downed 20 or more enemy aircraft. At the peak of war, Marine Corps comprised 5 air wings, 31 aircraft groups, and 145 aircraft squadrons. The largest number of personnel assigned Marine aviation during the war was 125,162. Marines made their way across the Pacific, occupying the Japanese airfield at Yokosuka. By September 7, 1945, Marines of MAG-31 became the first aviation squadron to operate from Japanese soil.



CHAPTER FIVE
UPPING THE ANTE

On December 7, 1933, Secretary of the Navy Claude A. Swanson signed General Order Number 241, creating the Fleet Marine Force (FMF). The force was to include all Marines maintained "in a state of readiness for operations with the fleet... either afloat or ashore."

Just one page in length, this document would have far-reaching implications in the Marine Corps' preparations for war. This order ensured that the FMF would be an integral part of the Navy's annual plans and budgets and, though not mentioned specifically, opened the door for the Marines' new role in amphibious operations.

The composition of the FMF was left to the discretion of the Commandant, who directed that it would include all Marine Corps aviation squadrons. As a result, Aircraft Squadrons, East Coast Expeditionary Force located at Quantico, Virginia, was redesignated Aircraft One, FMF, while Aircraft Squadrons, West Coast Expeditionary Force at San Diego, California, became Aircraft Two, FMF. Each force was built around a fighter squadron, a light bomber squadron, two observation squadrons (one of which was deployed to Haiti), and two utility transport/support squadrons. In all, there were just over ninety aircraft and 130 pilots.

This reorganization allowed the Marine Corps and its air arm to make the best possible use of its personnel and equipment. In June 1935, the control of Marine aircraft and squadrons transferred from the Division of Operations and Training to the Officer in Charge, Aviation, who reported directly to the Commandant. The head of Marine aviation (Colonel Ross E. Rowell) would advise the Commandant on all aviation matters and work with the Navy's Bureau of Aeronautics regarding the Corps' aircraft and aviation equipment. The title changed to Director of Aviation the following April, when the position was upgraded to division level. This allowed the head of Marine aviation to have the highest level of input as the FMF evolved and developed the doctrine, techniques, and equipment to expand the role of amphibious warfare.

As Japan's expansionist agenda increased tensions in the Pacific, the ability to conduct amphibious assaults became increasingly important to the Marines' mission of seizing advanced naval bases in the event of war. As articulated in the "Tentative Landing Force Manual" in 1935, Marine aviation would play a critical role during the landings and seizure of the beachhead. However, there still remained the problem of bringing Marine aviation within range of those beachheads.

NEW TO THE MARINES

In 1931, Navy squadron VF-1B received twenty-one Boeing F4B-3 fighters. By 1933, most of the surviving aircraft were turned over to the Marines. This formation includes aircraft from VB-4M, the Red Devils.

U.S. MARINE CORPS

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Actions in Central America and the Caribbean could be supported from airfields in friendly countries or on neighboring islands, but the Pacific offered few options within range of Japanese fortifications. To rectify this, the Marine Corps recommended the assignment of dedicated aircraft carriers. At the time, however, the entire fleet consisted only four aircraft carriers, and Marines would not see carrier duty until late in World War II.

The entire production run of Vought SB2U-3 Vindicators purchased for Marines was delivered with fittings for rapid reconfiguration as floatplanes. This allowed for support of ground forces while operating out of island coves and lagoons, if necessary, but the idea was dropped soon after the Marines received their aircraft. Under prewar plans and early wartime practice, Marine aviation operations did not commence until a beachhead was already secured and an airfield established.

Approximately half of the Marines received operational training aboard the Navy's carriers during the 1930s. These deployments, however, obligated Marine aviation to support the fleet, rather than working with the fleet in support of ground forces. Marine pilots did not operate from the Navy's battleships or cruisers, nor did they patrol the coasts and oceans in flying boats, missions already conducted by the Navy's own squadrons. Ultimately, one Marine air unit, Marine Scouting Squadron 3, would end the 1930s flying light amphibians from St. Thomas, in the U.S. Virgin Islands, as one of the Navy's inshore patrol squadrons. With newer aircraft, the squadron continued in this role, unique for any Marine unit, through 1944.

Despite reluctance from Congress to increase military budgets during peacetime, the events unfolding in Europe and Japan forced U.S. lawmakers to take steps to prepare for war. Marine aviation benefited from the increased funding. When the Japanese attacked Pearl Harbor, Hawaii, the Marine Corps had over 600 pilots and 200 aircraft in 13 squadrons: 4 fighter squadrons, 4 scout-bomber squadrons, 1 observation squadron, 1 scouting squadron, and 2 utility squadrons. Ten additional scouting squadrons were assigned to the Marines' prewar reserves.

MAJOR JOHN M. ELLIOTT

In common with all naval aviators, the new Marine pilots of this expanding force had trained in a variety of fixed-wing aircraft types before receiving their wings.

"After initial training, they transferred to one of two bases for final squadron training on the East Coast, Marine Corps Air Station (MCAS) Cherry Point, North Carolina, which replaced Quantico as the focal point of aviation training. Built with an extensive system of satellite training fields and located near Camp Lejeune, North Carolina, Cherry Point was an ideal location to train with Marine ground units.

On the West Coast, MCAS El Toro, California, replaced San Diego as the principal aviation instructional facility. The proximity to a major Marine ground base (in this case, Camp Pendleton) proved beneficial in training for the ground support mission."

Marine aviation underwent another reorganization prior to the war. On July 1, 1941, Aircraft One, FMF, located at Quantico, reorganized as the 1st Marine Aircraft Wing (MAW), while Aircraft Two, FMF, located at San Diego, became the 2d MAW. As originally envisioned, each wing would carry several Marine aircraft groups (MAG), each organized around a specific mission.

The first group organized under the 1st MAW became MAG-11, the second would be MAG-12, and so on. Within each group, squadrons would be designated sequentially by the addition of a third digit to the group number. MAG-23's first squadron was Marine Scout Bombing Squadron 231 (VMSB-231), its second VMSB-232, and so on.

Theoretically, this allowed planners to quickly recognize any squadron's assignment in the chain of command. But, by the beginning of the war, each wing had only a single group. The system was soon abandoned as the wartime need for mobility and flexibility in unit reassignment meant that squadron numbers would bear no relation to group or wing assignments.

Those reassignments began in the autumn of 1941. As most of the U.S. Fleet had moved to the Territory of Hawaii, the first elements of the 2d MAW began moving to Ewa (pronounced "Eva") Field, Hawaii. Other units would move farther west, with just over half of Marine Fighting Squadron 211's (VMF-211) F4F-3 Wildcats deployed to Wake Island as part of the preparation efforts of the island's air defenses. Eighteen aircraft of VMSB-231 were bound for Midway Island aboard the USS *Lexington*, when word came that Japan had attacked Pearl Harbor shortly before delivering a declaration of war.

TAILOR-MADE FOR SCOUTING

The Vought SB2U-3 Vindicator was designed to provide Marine scouting squadrons with longer range aircraft. In March 1941, the Vindicator was assigned to the first of four squadrons, two scouting and two utility. The Marine Corps lost several Vindicators during the Battle of Midway and stopped flying the aircraft in late 1942. Pictured here in a Vindicator are pilot and gunner of VMSB-131.

U.S. MARINE CORPS

1935

APRIL 15, 1935

Congress institutes the grade of aviation cadet in the Marine and Navy Reserves.

MAY 30, 1935 – MARCH 10, 1939
Col Ross E. Rowell
OFFICER IN CHARGE, AVIATION*
*BECOMES DIRECTOR OF AVIATION APRIL 1936

APRIL 1, 1936

Aviation is established as an independent division under the CMC at Headquarters. Additionally, the title of the Officer in Charge, Aviation changes to Director of Aviation.

JULY 1, 1937

The naval aviation squadron designation system is revised. For Marine air squadrons, the V will be followed by the letter M, and then by the mission letters (for example, VMF-1).

Ready for Flight
EXPERIMENTING WITH GLIDERS

Impressed by the early-war successes of German assault gliders, the U.S. military began developing similar gliders in 1941. Supported by Secretary of the Navy, Frank Knox, the program initially called for enough gliders and pilots to transport two Marine battalions. As conceived, the group would need 150 pilots and 75 gliders.

The Marine Corps' glider program began with the activation of Glider Group 71. In early 1942, volunteer Marine glider-pilot trainees (left) listen to an instructor at Page Field on Parris Island, South Carolina. The predominant glider in use was the tandem-seat Schweizer LNS-1. Before the cancellation of the Marine glider program, four experimental wooden twelve-seat flying boat transports were built, two XLRAs by Allied Aircraft Corporation and two XLRQs by Bristol Aeronautical Corporation. Two larger twin-hull twenty-two man amphibious gliders were on order. Marine pilots, flying Naval Aircraft Factory N3N-3s, towed the gliders.

The tactical disadvantages of glider attacks on small Pacific islands were soon realized, and the program was deactivated on May 1943; however, it gave young and inexperienced pilots valuable flight training that they would soon use on fixed-wing aircraft.

JULY 1, 1938
The Naval Reserve Act of 1938 establishes a Marine Corps Reserve, consisting of a Fleet Marine Corps Reserve, an Organized Marine Corps Reserve, and a Volunteer Marine Corps Reserve.

JANUARY 1, 1939
The General Board of the Navy approves a formal mission statement for Marine aviation. The primary mission is to be equipped, organized, and trained to support the FMF in landing operations and troop activities in the field. The secondary mission is to serve as replacements for carrier-based naval aircraft.

JANUARY 3, 1939
The Hepburn Board proposes a blueprint for military expansion in the Pacific. From 1939 to 1941, Marines help construct the island's defenses.

MARCH 11, 1939 - MARCH 29, 1943
BGen Ralph J. Mitchell
DIRECTOR OF AVIATION

U.S. MARINE CORPS

AVIATION CADETS

By 1935 the grade of aviation cadet was created, which allowed for the appointment, instruction, and pay of the newly commissioned second lieutenants as cadets. The initial class of Navy and Marine cadets included future Medal of Honor recipients, Gregory "Pappy" Boyington and Robert E. Galer.

1939

MAY 1, 1939
Aircraft One and Aircraft Two are redesignated as 1st Marine Air Group (1st MAG) and 2d Marine Air Group (2d MAG), respectively.

MAY 27, 1939
LtCol Cunningham, the father of Marine aviation, dies at his home in Sarasota, FL.

JUNE 30, 1939
The Marine Corps activates 1st MarBde at Quantico and the 2d MarBde at San Diego.

JUNE 14, 1940
A series of Congressional measures is approved by President Franklin D. Roosevelt and become collectively known as the Two Ocean Navy Act. They will enlarge the fleet, naval aviation, and authorize 1,500 aircraft for the Marine Corps.

MAJOR JOHN M. ELLIOTT

TRAINING WITH THE ARMY

In April 1941, VMF-1 accepted the first Marine Grumman F4F-3As. The squadron was redesignated in August as VMF-111 and became one of five Marine units that participated in the U.S. Army's Louisiana Maneuvers. Red cross markings identified the aircraft as members of the Red Force in the war games.

The joint exercises highlighted differences between Army and Marine tactics, training, and equipment, but left little time to resolve those differences. Eight days after the exercises ended, the Japanese attacked Pearl Harbor.

OCTOBER 5, 1940
The airstrip at Parris Island, SC, opens to serve as an outlying field for Quantico-based aviation units.

DECEMBER 16, 1940
All aviation units of the Marine Reserve are mobilized and their personnel transferred to active duty.

FEBRUARY 3, 1941
A Marine airfield is established at Ewa, HI. MAG-21 transfers from Ford Island, Oahu, HI, to Ewa.

JULY 7, 1941
The 1st MAW, commanded by LtCol Louis E. Woods, organizes at Quantico.

JULY 10, 1941
The 2d MAW organizes at San Diego under the command of Col Mulcahy.

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Wake Island

VMF-211

Situated about 2,000 miles west of Honolulu and 1,300 miles east of Guam, Wake Island (an atoll of three islands: Wake, Wilkes, and Peale), occupied a vital strategic location in the Pacific. The island was within 600 miles of the Japanese-held Marshall Islands.

The United States claimed jurisdiction over the island in 1898, transferring authority to the Navy Department in 1934. The following year, Pan American Airways established Wake as a stop in its route to the orient and constructed a small air facility and hotel on the island.

In early 1941, civilian contractors began construction on a long-range reconnaissance seaplane base. As conceived, Marine aircraft would launch from the base and fly over the mid-Pacific area, including the Japanese-mandated islands.

On August 19, 1941, the 1st Marine Defense Battalion arrived with about 400 men, becoming the first permanent military presence on the island. On December 4, MAG-21 brought the first Marine fighter aircraft to the island. Commanded by Major Paul A. Putnam, the twelve officers and forty-nine enlisted men were equipped with twelve new Grumman F4F-3 aircraft. Ten Navy pilots and fifty-eight enlisted men augmented VMF-211 personnel.

The airfield was operational but not completed, the facilities and revetments were under construction, and the island's radar equipment was pending transfer from Pearl Harbor.

Personnel on Wake learned of the Japanese attack on Pearl Harbor on December 8 (the island is across the international dateline). At the time, Major Putnam was airborne and instructed Captain Henry T. Elrod to launch another patrol of aircraft. The initial Japanese attack included thirty-six twin-engine bombers. By the end of the assault, twenty were killed, eleven wounded, and all Marine aircraft on the ground were destroyed. This left VMF-211 with an inventory of four aircraft to defend Wake. Furthermore, most of the squadrons' spare parts and equipment were damaged.

The second wave of Japanese aircraft attacked Wake the following day. VMF-211 pilots Lieutenant David S. Kliewer and Technical Sergeant William Hamilton shoot down a Japanese bomber. Wake loses four Marines and fifty-five civilians. On December 10, Captain Elrod hits two Japanese bombers.

A Japanese naval task force attempted to land a force of over 400 men on December 11. Artillery batteries and Major Putnam, Captains Elrod, Herbert C. Freuler, and Frank C. Tharin thwart the operation, sinking a destroyer and damaging two light cruisers and a transport. With a skeleton contingent of four aircraft, pilots of VMF-211 flew ten sorties, convincing the Japanese to abandon the landing operation. Captain Elrod's aircraft is lost and another Marine aircraft is damaged. This left VMF-211 with two fully operational aircraft.

During a follow-on attack, less than four hours later, Second Lieutenants George C. Kinney and Carl R. Davidson encountered Japanese bombers. Kinney severely damaged one aircraft and Davidson shot down two. The Japanese conducted raids on December 12 and 14, scoring a direct hit on one of the Marine's remaining aircraft.

On December 20, personnel on Wake got a much-needed boost when the aircrew from a visiting Navy Consolidated PBY informed them of incoming U.S. forces. Later that day, Japanese dive bombers destroyed all remaining planes of VMF-211.

Meanwhile, Task Force 14 departed Pearl Harbor aboard the USS *Saratoga*, the USS *Astoria*, and the USS *Tangier* to provide additional defenses to the island.

At dawn on December 23, Japanese Special Naval Landing Force invaded on the island. Marines both air and ground fought for over twelve hours, eventually surrendering to the Japanese. By the end of the day, fifty-six Marines were killed and forty-four were wounded.

PICTURED RIGHT IS CAPTAIN ELROD'S F4F-3 WILDCAT.

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U.S. MARINE CORPS

CAPTAIN

Henry T. Elrod

MEDAL OF HONOR RECIPIENT

"For conspicuous gallantry and intrepidity at the risk of his life above and beyond the call of duty while attached to VMF-211, during action against enemy Japanese land, surface and aerial units at Wake Island, from December 8 to 23, 1941. Engaging vastly superior forces of enemy bombers and warships on December 9 and 12, Captain Elrod shot down two of a flight of twenty-two hostile planes and, executing repeated bombing and strafing runs at extremely low altitude and close range, succeeded in inflicting deadly damage upon a large Japanese vessel, thereby sinking the first major warship to be destroyed by small caliber bombs delivered from a fighter-type aircraft.

When his plane was disabled by hostile fire and no other ships were operative, Captain Elrod assumed command of one flank of the line set up in defiance of the enemy landing and conducting a brilliant defense, enabled his men to hold their positions and repulse determined Japanese attacks, repeatedly proceeding through intense hostile fusillades to provide covering fire for unarmed ammunition carriers. Capturing an automatic weapon during one enemy rush in force, he gave his own firearm to one of his men and fought on vigorously against the Japanese. Responsible in a large measure of the strength of his sector's gallant resistance, on December 23, Captain Elrod led his men with bold aggressiveness until he fell, mortally wounded. His superb skill as a pilot, daring leadership and unswerving devotion to duty distinguished him among the defenders of Wake Island, and his valiant conduct reflects the highest credit upon himself and the United States Naval Service. He gallantly gave his life for his country."

ELROD

VMF-211

WAKE ISLAND

DECEMBER 8 – 23, 1941

U.S. MARINE CORPS

U.S. MARINE CORPS

GEIGER ON READINESS

On December 10, 1941, while head of the 1st MAW, General Roy Geiger spoke on East Coast aircraft: "Only fifteen of the sixty-seven aircraft may be considered combat ready." His assessment of combat ready aircraft included the practically outdated and underpowered Vought SB2U Vindicator. Here, Geiger stands in front of his airplane at Quantico.

1941

NOVEMBER 19, 1941

The ground echelon from MAG-21 leaves Ewa to prepare Midway Island to receive aircraft.

NOVEMBER 29, 1941

Maj Walter L. J. Bayler arrives at Midway with a detachment of Marines from MAG-21 to set up air base communication facilities.

DECEMBER 1, 1941

Cherry Point, NC, commanded by Col Thomas J. Cushman, is designated as an MCAS for developmental purposes and to relieve the facilities at Quantico.

DECEMBER 1, 1941

Marine Air Facility Bourne Field, Virgin Islands, is redesignated MCAS Saint Thomas and is commanded by LtCol Ford O. Rogers.

MAJOR JOHN M. ELLIOTT

THE DAUNTLESS

Between September and December 1940, the Marines' two bombing squadrons traded in their Great Lakes BG-1 biplanes for the Douglas SBD "Dauntless." The aircraft would prove well-suited for the close air support mission and served through the end of the war.

DECEMBER 4, 1941

Twelve F4F-3 Grumman Wildcat fighter planes of VMF-211 fly from the USS *Enterprise* to Wake Island.

DECEMBER 17, 1941

Seventeen Vought SB2U-3s from VMSB-231 leave Hickam Field, HI, for Midway. These single-engine land planes fly the longest mass flight over water to date.

DECEMBER 25, 1941

The air echelon of VMF-221 arrives on Midway Island from the USS *Saratoga* after attempting to relieve personnel on Wake Island. It immediately begins daily air searches and patrols.

FEBRUARY 10, 1942

A Japanese submarine fires two rounds at American installations on Hawaii before being engaged by VMF-221.

MARCH 1942

Gen Douglas MacArthur, USA, is ordered to leave the Philippines. Marine pilots, flying Brewster F2A-3 Buffalos, intercept two Japanese flying boats off Midway.

Midway Pre-Battle
VMSB-241 CREWS

In May of 1942, the pilots and aircrew of VMSB-241 (right were flying SB2U-3 Vindicators at Midway. On May 26, the squadron received SBD-2 Dauntlesses and a group of new, inexperienced, pilots. Two days later, two of the pilots in this image left Midway. Most of the men in this photo transitioned to the new Dauntlesses, but a few pilots continued flying the slower Vindicators.

The squadron was sent into combat against the Japanese fleet in the opening actions of the Battle of Midway. Six of the twenty-two men in this photo would be lost in action. Among them was squadron commander Major Lofton R. Henderson (front row, center), whose aircraft was one of the first brought down by enemy fire. Henderson Field on Guadalcanal would later be named in his honor.

Front row (seated): Second Lieutenant Albert W. Tweedy (KIA on June 4), First Lieutenant Bruce Prosser, Major Lofton R. Henderson (CO, KIA on June 4), Captain Leo R. Smith (XO), First Lieutenant Elmer G. Glidden Jr.

Middle row (kneeling): Second Lieutenant Thomas J. Gratzek (KIA on June 4), Second Lieutenant Robert W. Vaupell, First Lieutenant Daniel Iverson Jr., Second Lieutenant Jesse D. Rollow Jr., Second Lieutenant Harold G. Schlendering (bailed out eight miles from Midway), Technical Sergeant (NAP) Clyde H. Stamps

Rear row (standing): Second Lieutenant Maurice A. Ward (KIA on June 4), First Lieutenant Richard L. Blain (ditched at sea on June 4 and rescued on June 6), Second Lieutenant Sumner H. Whitten, Second Lieutenant Thomas F. Moore Jr., First Lieutenant Armond H. DeLalio, Second Lieutenant Bruce H. Ek (KIA on June 4), First Lieutenant Leon M. Williamson, First Lieutenant Richard E. Fleming, Second Lieutenant Robert J. Bear, Gunner (NAP) Howard C. Frazer, Second Lieutenant Bruno P. Hagedorn (KIA on June 4)

1942

MARCH 1, 1942
MAG-22 activates on Midway from VMSB-231 and VMF-221.

MARCH 10, 1942
Twelve fighters, commanded by Capt Robert M. Haynes, intercept a Japanese Kawanishi 97 flying boat at Midway. This sighting gives added weight to the CinCPac's assessment that the Japanese are planning a new offensive against Hawaii.

MARCH 19, 1942
The advance echelon of MAG-13 arrives on Tutuila, American Samoa, for duty with the Headquarters Samoan Area Defense Force.

MARCH 29, 1942
The forward echelon of VMF-212 arrives at Efate, in the South Pacific, to construct an airstrip. By May, the squadron will operate from New Hebrides.

U.S. MARINE CORPS

APRIL 18, 1942

VMF-211 flies onto the Palmyra atoll from the USS *Lexington*.

MAY 26, 1942

Aboard the USS *Kitty Hawk*, sixteen SBD-2s and seven F4F-3s arrive at Midway.

JUNE 3–6, 1942

The Japanese push to occupy Midway begins. This attack is met by an outnumbered U.S. carrier force composed of TF 17; TF 16; and Midway-based Marine, Navy, and Army air units.

JUNE 4, 1942

Japanese forces approach Midway. MAG-22 aircraft are directed against the Japanese task force, 150 miles to the northwest. Several Marine pilots are lost, including Maj Lofton R. Henderson and Maj Benjamin W. Norris. Capt Marion Carl shoots down two Zeros.

JUNE 5, 1942

Capt Marshall Tyler leads an attack against Japanese battleships off the coast of Midway. During the attack, Capt Richard E. Fleming's aircraft is hit and crashes into the rear turret of the Japanese cruiser, Mikuma. Fleming is posthumously awarded the Medal of Honor.

Marines at Midway
TURNING THE TIDE

The Battle of Midway in June 1942 marked the turning point in the Pacific war. After suffering heavy losses, the Japanese fleet received its first major defeat after seven months of victories. A 1938 report commissioned by U.S. Fleet Commander in Chief Admiral Arthur J. Hepburn emphasized that "an air base at Midway atoll would be second in importance only to Pearl Harbor." The two main islands at Midway, Sand Island and Eastern Island, were critical to the defense of Hawaii and to the projection of U.S. sea power. In Japanese hands, Midway posed a significant threat, putting Oahu within range of Japanese flying boats and bombers.

In 1939, Colonel Harry K. Pickett was sent to Midway to prepare defenses and conduct military reconnaissance operations. When news came of the Japanese attack on Pearl Harbor on December 7, 1941, the island's defenses were far from complete. Midway personnel spent the day preparing for blackouts, issuing additional ammunition, digging foxholes, and checking communication systems. Those on Midway were fortunate that day. A planned Japanese air strike was canceled because of bad weather. The only enemy action personnel encountered was a twenty-three minute shelling by two Japanese destroyers. Midway's air power consisted of fourteen Consolidated PBY Catalina flying boats, one of which would be wrecked in the destroyers' night attack.

Eighteen Vindicators were inbound on the USS *Lexington*, but the carrier with aircraft was recalled to Pearl Harbor. Ten days later, VMSB-231 pilots flew directly from Hawaii to Midway. The 1,137-mile flight took almost 10 hours, becoming the longest over-water distance covered by a group of single-engine aircraft.

On Christmas Day, fourteen Brewster F2A-3 Buffalos from VMF-221 arrived from the USS *Saratoga*, giving Midway its first fighter defenses. The incoming aircraft were a welcome sight, as noted by First Lieutenant David Silvey: "The men stood on top of their gun emplacements and cheers [sic] when the planes droned overhead. They represented a real

U.S. MARINE CORPS

MAJOR LOFTON R. HENDERSON, COMMANDING OFFICER OF VMSB-241

Christmas present." It would be months before those air defenses were tested.

By January 1942, Lieutenant Colonel W. J. Wallace, commander of Midway's Marine aviation detachment, reported that, " preparations for defense are well under way with operators being trained in radar calibration, personnel shelters being constructed, and portable fueling expedients created for use in an emergency."

On March 1, the two Marine squadrons, VMF-221 and VMSB-231, reorganized into four squadrons. VMF-221 remained unchanged and was joined by VMF-222. VMSB-231 returned to Hawaii, its aircraft and personnel transferred to VMSB-241. A new scouting bomber squadron, VMSB-242, was activated. The four squadrons became part of the newly formed MAG-22, which was initially commanded by Lieutenant Colonel W. J. Wallace. On April 20, Lieutenant Colonel Ira L. Kimes relieved Wallace as commander of MAG-22, moving Major Lofton R. Henderson up to command VMSB-241.

The first test of Midway's air defense occurred on March 10 when Captain James L. Neefus and three other Buffalo pilots intercepted and destroyed a Japanese Kawanishi H8K1 flying boat. The aircrews returned safely to Midway, though one aircraft was damaged and its pilot wounded.

Just two months later, U.S. code breakers would uncover the Japanese plan to capture Midway. On May 26, twenty-two pilots arrived with seven Grumman F4F-3 Wildcats and nineteen SBD-2 Dauntlesses. Although made aware of a pending Japanese air strike, personnel on Midway could not know that only twelve days remained to prepare.

The battle opened on June 3, with U.S. Army B-17s bombing the Japanese naval formation that was well beyond the range of the Marines aircraft.

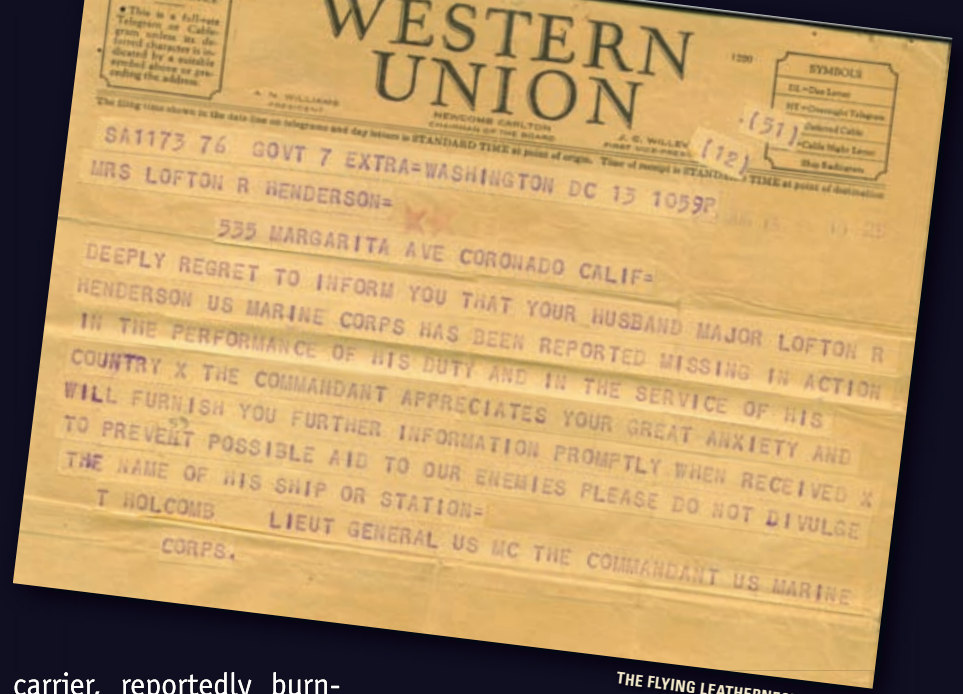
Before dawn on June 4, Midway's radar located a large force of approaching enemy planes. Within minutes, MAG-22 had sixty-two of its aircraft airborne. The fighters, nineteen Buffalos and six Wildcats, were divided into sections led by Major Floyd B. Parks and Captain Kirk Armistead, and moved into defensive positions around the island. Major Parks then spotted a large formation of Aichi D3A dive bombers and dove to attack. Joined by Armistead's section, the twenty-five Marine fighters were soon met by Japanese A6M Zero fighters. These Japanese combat veterans ripped through the American aircraft.

Fifteen Marines, including Major Parks, were killed. All but two of the Marine fighters were damaged so heavily as to be unflyable. Within an hour veteran Japanese pilots eliminated VMF-221 as a fighting force. The Japanese reported nine aircraft lost, three to ground fire, with thirty-four others damaged.

The destruction of VMF-221 left Major Henderson's sixteen SBD-2s and eleven SB2U-3s without a fighter escort. With a slight speed advantage, the SBDs reached the Japanese ships first. Most of these pilots were inexperienced in dive bombing; however, the Marines began glide-bombing attacks on the Japanese carriers. No hits were made, and eight of the aircraft, including Major Henderson's, were lost to enemy fighters and antiaircraft fire.

Fifteen minutes later the Vindicators arrived, beginning glide-bombing attacks on a battleship. At best the SB2Us scored a near miss, but at least they fared better than the SBDs. Only two were shot down in combat, with a third splashing down a few miles short of Midway.

Later that day, U.S. carrier aircraft reached the Japanese and sank four aircraft carriers. VMSB-241 launched six SBD-2 and five SB2U-3 aircraft to attack an enemy carrier, reportedly burning some 200 miles from Midway. Commanded by Major Ben Norris, the squadron never found the Japanese. Ten of the dive bombers returned to base after dark, but Major Norris' aircraft had disappeared.


WESTERN UNION

SA1173 76 GOVT 7 EXTRA=WASHINGTON DC 13 1059P

MRS LOFTON R HENDERSON=

535 MARGARITA AVE CORONADO CALIF=

DEEPLY REGRET TO INFORM YOU THAT YOUR HUSBAND MAJOR LOFTON R HENDERSON US MARINE CORPS HAS BEEN REPORTED MISSING IN ACTION IN THE PERFORMANCE OF HIS DUTY AND IN THE SERVICE OF HIS COUNTRY X THE COMMANDANT APPRECIATES YOUR GREAT ANXIETY AND WILL FURNISH YOU FURTHER INFORMATION PROMPTLY WHEN RECEIVED X TO PREVENT POSSIBLE AID TO OUR ENEMIES PLEASE DO NOT DIVULGE THE NAME OF HIS SHIP OR STATION=

T HOLCOMB LIEUT GENERAL US MC THE COMMANDANT US MARINE CORPS.

THE FLYING LEATHERNECK MUSEUM

The next morning, June 5, VMSB-241 launched a third strike. Captain Marshall Tyler, the squadron's third commander in twenty-four hours, led six SBDs and six SB2Us to two Japanese heavy cruisers, both of which had been damaged in a collision the previous evening. The Dauntlesses made a conventional dive-bombing attack on *Mogami* but registered no hits. The Vindicators, led by Captain Richard E. Fleming, made glide-bombing attacks on *Mikuma*, reportedly scoring no hits. Fleming, who had participated in all three Marine strike missions during the battle, was shot down. His Vindicator was the only Marine aircraft lost on this mission. He was posthumously awarded the Medal of Honor.

Following the war, however, Japanese witnesses reported that Fleming's aircraft had actually crashed into *Mikuma*, causing extensive damage. *Mikuma* struggled on, only to be sunk by Navy SBDs on June 6. The Joint Army-Navy Assessment Committee split the credit for *Mikuma's* destruction between the Navy and Marines, one of the few Marine victories in the battle.

Their aircraft were new but obsolete; however, the inexperienced Marine pilots were courageous. The Japanese advantages were diminished by heavy personnel losses at Midway. Marine pilots continued to fight an uphill battle in months ahead. Still, the momentum shifted, better aircraft were in production, and the Marines would learn their lessons well.

MAJOR JOHN M. ELLIOTT

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RESCUE AND RECOVERY

The Marines flew several versions of Grumman J2F aircraft (the last version was subcontracted to Columbia Aircraft Corporation). Known as the "Duck," it was used during the war to rescue downed pilots. Here, in 1942 is a J2F-5 aircraft over the Pacific Ocean.

CHAPTER SIX
GOOD CORSAIR DRIVERS

The Battle of Midway halted Japan's eastward expansion, but it was the campaign to capture Guadalcanal and the Solomon Islands that began the rollback of Japanese conquests. Few Americans had heard of Guadalcanal before the Marines landed there in August 1942, but today the island represents America's resolve and determination against a skilled and capable enemy.

As the Japanese moved southward through the Solomons with little or no opposition, the airfield they began constructing on Guadalcanal became strategically important to the United States and its Allies. Once the airfield became operational, Japanese aircraft based on Guadalcanal were easily in range of the shipping lanes between the U.S. West Coast with Australia and New Zealand. The 1st Marine Division was tasked with seizing the island before the airfield could be completed.

The landing forces went ashore on August 7, 1942. Ground forces quickly captured the airfield, now code-named "Cactus," and rushed it to completion for the first elements of MAG-23, which would arrive on August 20. There were two Marine squadrons in the South Pacific: VMF-212 at Efate and VMO-251 at Espiritu Santo. Both flew Grumman F4F Wildcats, and VMO-251 had some aircraft configured as long-range photo aircraft.

VMF-223 and VMSB-232, commanded by Captain John L. Smith and Major Richard C. Mangrum, respectively, flew off the USS *Long Island* with new F4F-4 Wildcats and Douglas SBD-3 Dauntlesses. Ten days later, the group's remaining two squadrons, VMF-224, led by Captain Robert E. Galer, and VMSB-231, commanded by Major Leo R. Smith arrived. They would form the core of the Cactus Air Force.

Japan's response to the American presence on Guadalcanal was disorganized at first. Most Imperial troops there had originally been sent for construction, not combat, though they soon countered with determination and ferocity. The Japanese Navy arrived off shore on the third day, driving away the U.S. transports and eviscerating the Allied cruiser screening force in a one-sided night battle. A nightly "Tokyo Express" would slide through the "Slot," a channel running through the center of the Solomon Islands, for resupply, reinforcement of Japanese forces on Guadalcanal, and bombardment of the American positions. Each day, Japanese bombers would return to wreak havoc on U.S. airfields and positions. With little shore artillery available, and a naval force overmatched by a stronger Japanese fleet, the Marines relied on the Cactus Air Force for their defense against the marauding enemy forces.

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COVERING THE LANDINGS

VMF-213 Commander Major Gregory J. Weissenberger (third from the left) briefs his men before a fighter sweep. The squadron covered several landings in 1943. During one air strike, Weissenberger destroyed three enemy fighters before being shot down. Bailing out at low altitude, he was struck in the chest by the tail of his own aircraft. Luckily, Weissenberger landed in the water near an American destroyer.

THE FLYING LEATHERNECK MUSEUM

The leaders and men on Guadalcanal turned the tide with their sweat, blood, and a handful of Wildcats and Dauntlesses. As the 1st Marine Division held back Japanese land forces, eventually expanding the perimeter to cover more and more of the island, Marines and others in the air supported ground troops, took back the skies, and punished the "Tokyo Express." By November, increases in the number of Cactus aviation units allowed the Commander for Aircraft, Solomons, to begin limited offensive air operations farther up the Solomons chain.

Hitting the "Tokyo Express" before it could begin its nightly trips south forced the ships to assemble farther and farther north until they could no longer make the entire run under the cover of darkness. Increased daylight attacks by Allied bombers meant that fewer ships could survive a trip down the Slot. The toll of Allied and Japanese vessels sunk in the Slot led to a new nickname, "Iron Bottom Sound."

From the Solomons, Marine aircraft were directed to join in the aerial assault on Rabaul in northern New Britain. The Japanese had captured Rabaul in February 1942, rapidly converting the surrounding area into a primary base for offensive military operations on New Guinea, the Solomons, Australia, and in the Central Pacific. U.S. Army and Navy squadrons first struck Rabaul shortly after Japanese forces arrived. The attacks grew in strength, and Rabaul, like other islands in the Solomons, were isolated by American forces.

Guadalcanal, the first American foothold in the Solomons, became a wellspring of aces and a symbol of the resolve among Marine aviators. Many went unrecognized and unknown, while others earned justifiable praise for their accomplishments, such as Major General Roy Geiger, who first commanded the Cactus Air Force. A new generation of future leaders honed their skills in the Solomons: Bill Wallace, Dick Mangrum, John Smith, Bob Galer, and Leo Smith led in the earliest days, joined later by Joe Bauer, John Hart, Joe Renner, Oscar Brice, Leonard Davis, Joe Foss, Ben Robertshaw, Paul Fontana, Pat Moret, and Bob Richard. As the survivors of these squadrons

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rotated out at year's end, they had set the bar high for success and created a road map to aid future aviators.

TRANSPORTING THE WAR

On November 24, 1942, the command of all Marine transport aircraft transitioned to South Pacific Combat Air Transport Command (SCAT). As part of SCAT, Marine pilots and aircrew continually supported the war effort, hauling supplies, shuttling troops, evacuating the wounded, and delivering time-critical spare parts. Here, Marine pilots transport a propeller (attached to the fuselage with a makeshift carrier) on a Douglas R3D aircraft.

With Guadalcanal secured in early 1943, Allied commanders began planning their moves northward through the Solomon Islands, taking aim at New Georgia, Vella Lavella, the Treasuries, Bougainville, and Green Island, all with an eventual eye on the Japanese fortress stronghold of Rabaul in New Britain.

As ambitious as these plans may have seemed at the time, they would be aided in February 1943, by the arrival of the first Chance Vought F4U Corsairs on Cactus. These superlative fighters, powered by 2,000-horsepower radial engines, were the finest fighters in the Pacific and gave Marine pilots their first advantage over anything the Japanese could put in the air. Even though the first Corsairs arrived after Wildcats and Dauntlesses had secured Guadalcanal, the F4U, with its clean lines and bent inverted-gull wings, represents all Marine pilots who fought in the Solomons.

Other Marine aircraft would perform missions throughout the Solomons. TBF/TBM Avengers would augment the medium bomber force, supplementing the Dauntlesses that would remain in service through 1945. Long-range PB4Ys, the Navy's version of the Army's B-24 bomber, would be modified for photo-reconnaissance flights over the enemy's distant island possessions. Converted patrol bombers, PV Harpoons, would serve as the Marines' first radar-equipped night fighters. Large enough to carry the primitive heavy radar sets and their crews, the PVs were still too slow to excel at their job and were eventually replaced by radar-equipped F6F Hellcats and F4U Corsairs. R4Ds (Navy DC-3s) provided the Marines' first experiences in military airlift during the war. The modern Brewster Buffalos and Vought Vindicators that equipped Marine units at the beginning of 1941 were replaced by aircraft of a completely different epoch by the beginning of 1943.

With a venerable fleet of aircraft, Marine aviators began sweeping through the Central Solomons in late June 1943. MAG-21 not only provided close air support to a joint Marine and Army force, but also fulfilled its primary mission to weaken Japanese air and neutralize enemy strongholds.

The tide turned in the Solomons for the Marines. The warriors had been bloodied, their mettle tested by combat, their equipment honed or replaced, their resolve fixed, and their confidence restored. Before Guadalcanal, a nation feared a seemingly invincible enemy. By the time Allied airfields opened on Bougainville in late 1943, America expected not only victory, but unconditional surrender.

PREPARING PILOTS

In order to maintain experienced troops in combat and flight instructors at home, the Marine Corps began assigning women to diverse roles. With the establishment of the Marine Women's Reserve Program, women served as mechanics, drivers, and instrument training instructors (right). By the end of the war, over 23,000 women served in the Marine Corps.

By mid-1942, U.S. aircrews received more training than their Japanese counterparts. Here, in 1943 (center), Marines practice turret manipulation at Marine Corps Air Station El Toro. In addition to hands-on instruction, pilots and aircrew (far right) receive classroom instruction in aircraft recognition and sighting.

THE FLYING LEATHERNECK MUSEUM

NAVAL AVIATION MUSEUM

1942

JULY 14, 1942

MCAS Edenton, NC, is designated Marine Corps Glider Base, under the 5th Naval District.

JULY 23, 1942

VMO-251 pilots and crew photograph Guadalcanal prior to the landings and are intercepted by Zeros.

AUGUST 2, 1942

Elements of VMO-251 begin to arrive at Espiritu Santo airfield.

AUGUST 7, 1942

The Marine Corps activates 1st MAW, Pacific. The wing will oversee administrative control and logistics for squadrons assigned to the Pacific Fleet.

NAVAL AVIATION MUSEUM

AUGUST 7, 1942

Operation Watchtower, the Allied invasion of Guadalcanal, commences. Task Groups Yoke and X-Ray of the 1st MarDiv land in the Tulagi area and on Guadalcanal with naval and air support in the first American land offensive in the Pacific Campaign.

AUGUST 11, 1942

VMO-251 arrives at Espiritu Santo. The squadron will operate sixteen F4F-3 long-range photo aircraft.

AUGUST 12, 1942

The airfield on Guadalcanal is named after Maj Lofton R. Henderson and receives its first aircraft, a Navy PBY.

AUGUST 20, 1942

VMF-223 and VMSB-232 take off from the USS *Long Island* and arrive at Henderson Field.

AUGUST 21, 1942

Japanese forces on Guadalcanal launch a major ground attack less than three miles from Henderson Field. Marine air units engage Japanese air units over Guadalcanal. Capt John L. Smith shoots down his first Zero.

Henderson Field
GUADALCANAL

The first Marine aircraft landed on Henderson Field on August 20, 1942. The base at Lunga Point was named for Marine Major Lofton R. Henderson, the commander of VMSB-241 lost in action against the Japanese in the Battle of Midway. The field was quickly completed and remained operational for most of the battle. However, the facilities and operations shack remained rudimentary, until continuing attacks by Japanese warships and aircraft were curtailed in November 1942.

MAG-23 consisted of Grumman F4F Wildcats of VMF-223 and the Douglas SBD Dauntlesses of VMSB-232. The close knit group of pilots that rotated through Guadalcanal would become known as the "Cactus Air Force." Once there, they immediately went into action against Japanese forces, claiming fifty-six enemy planes in their first ten days on the island. By the end of the war, VMF-223 was credited with 110 aerial victories, while suffering a 57 percent casualty rate.

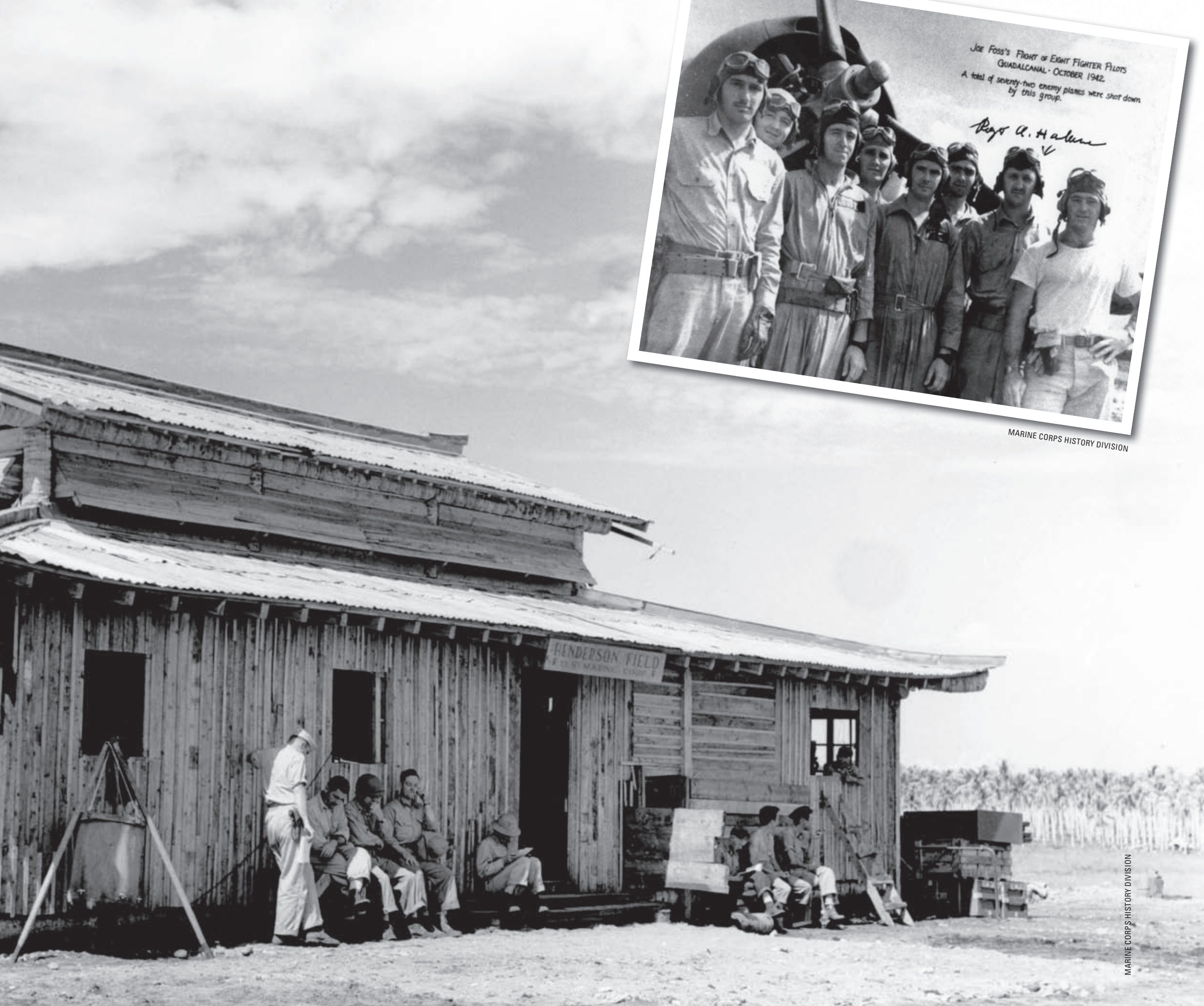
The following are but a sampling of the notable pilots that rotated through Henderson Field. Captain John Smith was the first commanding officer of VMF-223. On August 24, 1942, the squadron intercepted a Japanese air raid from the carrier *Ryujo*, which consisted of fifteen bombers and twelve fighters. VMF-223 shot down ten of the bombers and six of the Zeros at the cost of three Marine pilots.

In forty-four days of combat over the skies of Guadalcanal, Marine pilot Joseph J. Foss destroyed twenty-six Japanese aircraft. Foss also survived being shot down, being wounded in action, and contracting malaria. He was awarded the Medal of Honor, the Distinguished Flying Cross, the Silver Star, and the Purple Heart.

Marion Carl graduated college in 1938 and accepted a commission in the Army Reserve. After resigning his commission, he completed flight school with the Navy, and reported to VMF-1 at Quantico, Virginia, in 1940. Carl deployed to Guadalcanal with VMF-223 in August 1942. Within seven days he had flown six missions, encountering enemy aircraft on three of those missions. He claimed six victories and became the Marine Corps' first ace. He left Cactus in October, having flown twenty-six additional missions, and obtaining ten additional aerial victories. Carl later became one of the Marines' first helicopter pilots and a record-breaking test pilot, retiring as a major general after thirty-four years of service.

While based at Efate in September 1942, Lieutenant Colonel Harold W. "Indian Joe" Bauer and several of his VMF-212 pilots rotated through Guadalcanal to fly combat missions with VMF-223. In mid-October, Bauer and VMF-223 took up permanent residence on Cactus. Bauer downed eleven enemy aircraft before being lost following aerial combat on November 14, 1942. He was posthumously awarded the Medal of Honor.

PICTURED RIGHT, PILOTS AND CREW RELAX IN FRONT OF "THE PAGODA" AT HENDERSON FIELD.



MARINE CORPS HISTORY DIVISION

MARINE CORPS HISTORY DIVISION

THE FLYING LEATHERNECK MUSEUM

EYE IN THE SKY

VMD-154 was the first Marine squadron to fly long-range, four-engine aircraft in combat. The squadron was equipped with PB4Y-1 Liberators modified with additional fuel tanks, search radar, and cameras. Forward echelons arrived in the South Pacific late in 1942 and began photographing Japanese installations. In January 1943, one of the unit's Liberators photographed the Puluwat atoll in the Caroline Islands, the first penetration of the Japanese-held islands surrounding Truk.

1942

AUGUST 24, 1942
Capt Carl shoots down three Japanese planes over Guadalcanal.

AUGUST 30, 1942
VMF-224 and VMSB-231 touch down at Henderson Field.

SEPTEMBER 1942
The F4U Corsair passes carrier qualification tests.

SEPTEMBER 2, 1942
VMF-224 first encounters Japanese aircraft. Maj Robert E. Galer, the CO of VMF-224, opens his squadron's scorecard by downing two Zeros.

MARINE CORPS HISTORY DIVISION

PHOTO PLANE

VMO-251 relocated to the South Pacific in early August 1942, becoming the second Marine squadron in theater. Equipped with the F4F-3P photographic variant of the Wildcat, the squadron moved to Guadalcanal in December. Here, one of the squadron's reconnaissance Wildcats is refueled on Kirby Schuessler Field in the New Hebrides.

SEPTEMBER 7, 1942

VMF-123 activates at San Diego. Within four months, the squadron will depart for combat and serve two tours in the Pacific.

SEPTEMBER 22, 1942

BGen Geiger uses a Dauntless to bomb the Japanese at Cape Esperance, forty miles to the west of Guadalcanal.

SEPTEMBER 23, 1942

VMSB-141, led by Maj Gordon A. Bell, arrives on Guadalcanal.

OCTOBER 11, 1942

VMF-121 begins combat operations over Guadalcanal.

OCTOBER 13, 1942

Capt Joseph J. Foss makes his first kill. Foss is nearly shot down and forced to make an emergency landing at Henderson Field.

The Bent-Wing Bird Arrives
EXPLOITING ITS STRENGTHS

The Vought F4U Corsair's tendency to stall when landing, combined with poor approach visibility from its cockpit, caused the Navy to initially reject the aircraft for carrier operations. As a result, the Navy assigned the majority of the production run of F4U aircraft to the Marines. Known as the "Bent-Wing Bird," the aircraft was a vast improvement over the F4F Wildcat. It had twice the range of F4F aircraft and a climb speed of 3,000 feet per minute. This enabled Corsair pilots to fly at lower altitudes and to climb rapidly during aerial confrontation.

On February 12, 1943, pilots of VMF-124 became the first Marines to deploy with the Corsair in combat when they arrived at Guadalcanal. Initially, the performance of F4U pilots was mediocre at best; however, Marines quickly adapted to their new aircraft and learned how to exploit its capabilities. They soon gained the upper hand against enemy fighters, and Japanese pilots began calling Marine Corsairs the "Whistling Death."

All eight Marine fighter squadrons in the Solomons were trained and equipped with the Corsair by June 1943. Several Marine pilots attained "Ace"* status while flying the Bent-Wing Bird. Within eighteen months, Marines would also begin carrier-based operations with F4U aircraft. Today, the Corsair remains an icon of the valiant actions of Marine aviators during World War II.

**five or more enemy kills*

1942

OCTOBER 14, 1942
Maj Jack R. Cram destroys a Japanese transport vessel off Guadalcanal with two torpedoes dropped from his PBY Catalina.

OCTOBER 15, 1942
The Japanese begin offloading men and supplies only ten miles away from Henderson Field in preparation for an offensive to retake the airstrip.

OCTOBER 16, 1942
VMF-223 and MAG-23 rotate out of Guadalcanal.

OCTOBER 16, 1942
VMF-212 arrives at Guadalcanal. Before landing, LtCol Harold W. Bauer, CO of VMF-212, shoots down four Japanese dive bombers. MAG-14 relieves MAG-23.

MAJOR JOHN M. ELLIOTT

OCTOBER 25, 1942

Japanese forces launch a major offensive against American forces on Guadalcanal. A carrier battle off the coast of Guadalcanal develops.

NOVEMBER 1, 1942

Commanded by LtCol William O. Brice, MAG-11 arrives at Henderson Field.

NOVEMBER 7, 1942

BGen Woods relieves MajGen Geiger at Guadalcanal.

NOVEMBER 12, 1942

American and Japanese ships begin to fight off Guadalcanal. Eight Lockheed P-38 fighters arrive at Henderson Field.

NOVEMBER 14, 1942

Marine and Navy dive and torpedo bombers depart for air strikes against Japanese ships. LtCol Bauer is shot down.

ON TARGET

With cannibalized aircraft across the field, ordnance personnel boresight an F4U-1 using a makeshift hoist.

MARINE CORPS HISTORY DIVISION

1942

NOVEMBER 26, 1942
A Royal New Zealand Air Force squadron of Lockheed Hudsons lands at Henderson Field.

DECEMBER 7, 1942
Maj Joe Sailer, CO of VMSB-132, is shot down.

JANUARY 1, 1943
Black-painted Black Cat PBYs, equipped for low-altitude night missions, make their contribution to the war.

JANUARY 1, 1943
The 2d Marine Aviation Engineer Battalion and the 27th Infantry, USA, land on Guadalcanal and begin support operations.

U.S. MARINE CORPS

IN FORMATION

The TBF Avenger torpedo bombers brought the Marines greater range and slightly higher speeds than their SBDs. Marine Avengers based at Guadalcanal mined Japanese harbors around Bougainville. Here, Avengers fly in formation while training stateside.

JANUARY 15, 1943

Capt Foss shoots down three enemy planes, giving him twenty-six kills and tying the World War I ace Capt Eddie Rickenbacker, USA.

FEBRUARY 11, 1943

Based on Guadalcanal, twelve Chance Vought F4U Corsairs of VMF-124 fly their first combat mission. The squadron escorts a PB2Y Dumbo to Vella Lavella, Solomon Islands, to rescue downed pilots.

FEBRUARY 13, 1943

The F4U Corsair makes its combat debut when pilots from VMF-124 meet air opposition while escorting PB4Ys of VP-51 on a daylight strike against enemy shipping in the Kahili area of Bougainville.

FEBRUARY 21, 1943

In a series of amphibious operations, American forces move from Guadalcanal up the Solomon Islands towards the Japanese naval base at Rabaul, Bismarck Archipelago, Papua New Guinea.

MARCH 16, 1943

2dLt James E. Swett arrives at Guadalcanal. He will log 433 hours of flight time within a month. He attains 15.5 kills during his service in the Pacific.

CORSAIR DRIVERS

The introduction of the Corsair provided a much-needed boost to the morale of Marine pilots and the troops they supported. Here, pilots of an unidentified unit ride a jeep to their waiting aircraft.

GRAY RESEARCH CENTER

1943

MARCH 20, 1943

Forty-two Marine Corps and Navy Avengers, on a night flight from Henderson, mine Kahili Harbor, Bougainville. A coordinated attack on Kahili airfield by AAF heavy bombers contributes to the success of the first aerial mining mission in the South Pacific.

MAY 11 – 30, 1943

CVE-based aircraft provide air support in the Pacific. The Support Air Commander afloat debuts. The team consists of three officers and a radioman stationed at a card table aboard the USS *Pennsylvania*.

MAY 13 – OCTOBER 15, 1943
MajGen Roy S. Geiger
DIRECTOR OF MARINE CORPS AVIATION

MAY 18, 1943

The Marine Corps cancels the transport glider program for combat troops, thereby returning the Navy's glider development program to an experimental basis.

A NEW AIRFIELD

On December 10, 1943, the first Marine Corsairs from VMF-216 arrived at the newly constructed airfield at Cape Torokina, Bougainville. The completion of the airfield on Cape Torokina meant that Allied aircraft were operating within 200 miles of Rabaul and pushing closer towards other Japanese-held islands.

GRAY RESEARCH CENTER

JULY 17, 1943

Solomon-based aircraft conduct a 192-plane strike, targeting Japanese shipping lanes near the southern end of Bougainville Island. Marine pilots claim forty-one of the fifty-two enemy planes shot down.

JULY 18, 1943

Maj William H. Pace leads four Corsairs of VMF-214 against enemy bombers that were attacking the seaplane tender *Chincoteague*.

JULY 22, 1943

VMTB-143 sinks the 9,000-ton seaplane tender *Nisshin* as part of a larger attack on Japanese shipping lanes.

SEPTEMBER 9, 1943

F4Us from VMF-123 and -222 sink nine Japanese barges.

SEPTEMBER 11, 1943

The air echelon of VMF(N)-531 arrives on the Russell Islands and becomes the first naval aviation night fighter squadron to operate in the South Pacific.

NEWLY DECORATED

Captains John Smith, Robert Galer, and Marion Carl (left to right) after receiving the Navy Cross from Admiral Chester W. Nimitz on September 30, 1942.

MARINE CORPS HISTORY DIVISION

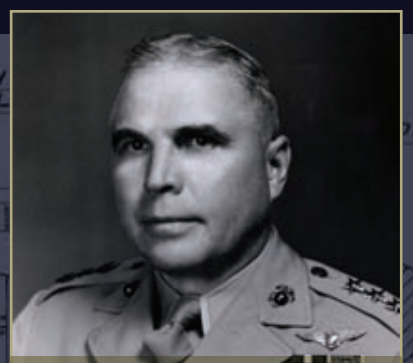
1943

OCTOBER 9, 1943

The airstrip at Nukufetau atoll in the Ellice Islands becomes operational. VMF-111 will land on the airstrip eleven days later.

OCTOBER 12, 1943

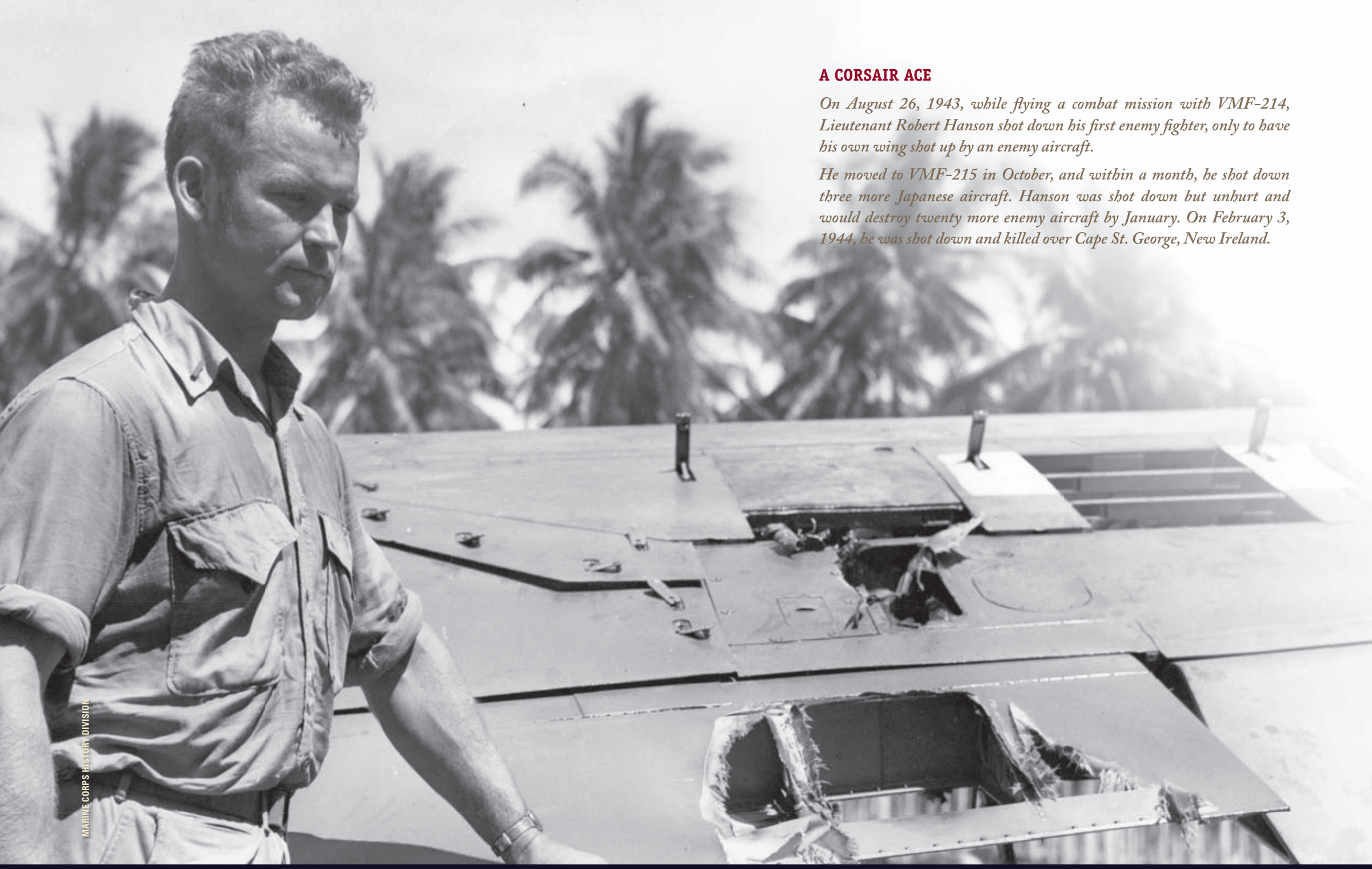
Allied air forces, in the first of a series of raids planned to support the pending Bougainville operation, mount the largest strike of the war against Rabaul airfield and Simpson Harbor, New Britain.



OCTOBER 15, 1943 - JULY 17, 1944
BGen Louis E. Woods
DIRECTOR OF MARINE CORPS AVIATION

OCTOBER 15, 1943

Allied aircraft, including sixteen Marine F4Us, begin intensive pre-invasion bombardments of Bougainville.



MARINE CORPS HISTORY DIVISION

A CORSAIR ACE

On August 26, 1943, while flying a combat mission with VMF-214, Lieutenant Robert Hanson shot down his first enemy fighter, only to have his own wing shot up by an enemy aircraft.

He moved to VMF-215 in October, and within a month, he shot down three more Japanese aircraft. Hanson was shot down but unhurt and would destroy twenty more enemy aircraft by January. On February 3, 1944, he was shot down and killed over Cape St. George, New Ireland.

OCTOBER 27, 1943

VMO-1, the first Marine air observation squadron, activates at Quantico.

OCTOBER 31, 1943

Maj Thomas E. Hicks and TSgt Gleason from VMF(N)-531, provide ground-based fighter direction during a night attack of Vella Lavella.

OCTOBER 31, 1943 - NOVEMBER 1, 1943

Marine aircraft from Munda, New Georgia, and Solomon Islands, participate in naval and air bombardment, and the 3d MarDiv(Rein) lands at Cape Torokina, Bougainville. The division front lines are extended inland about 600 yards to the Laruma River and about 1,000 yards in front of Cape Torokina.

NOVEMBER 1, 1943

Following air and naval bombardments, the 1st MarDiv conducts an amphibious assault at Cape Torokina, Empress Augusta Bay, and establishes a beachhead perimeter.

RECIPIENTS APPEAR LEFT TO RIGHT, TOP TO BOTTOM AS THEY ARE LISTED (MARINE CORPS HISTORY DIVISION)

MEDAL OF HONOR RECIPIENTS

LIEUTENANT COLONEL HAROLD W. BAUER

"For extraordinary heroism and conspicuous courage as squadron commander of VMF-212 in the South Pacific Area from May 10 to November 14, 1942."

CAPTAIN RICHARD E. FLEMING

"For extraordinary heroism and conspicuous intrepidity above and beyond the call of duty as flight officer, VMSB-241 during action against enemy Japanese forces during the Battle of Midway on June 4 and 5, 1942."

MAJOR ROBERT E. GALER

"For conspicuous heroism and courage above and beyond the call of duty as Leader of VMF-224 in aerial combat with enemy Japanese forces in the Solomon Islands Area, August to September, 1942."

MAJOR JOHN L. SMITH

"For conspicuous gallantry and heroic achievement in aerial combat above and beyond the call of duty as commanding officer of VMF-223, during operations against enemy Japanese forces in the Solomon Islands Area from August to September 1942."

CAPTAIN JOSEPH J. FOSS

"For outstanding heroism and courage above and beyond the call of duty as executive officer of VMF-121, at Guadalcanal, Solomon Islands from October 9 to November 19, 1942."

FIRST LIEUTENANT JEFFERSON J. DEBLANC

"For conspicuous gallantry and intrepidity at the risk of his life above and beyond the call of duty as leader of a section of six fighter planes in VMF-112, during aerial operations against enemy Japanese forces off Kolombangara Island in the Solomons Group on January 31, 1943."

FIRST LIEUTENANT JAMES E. SWETT

"For conspicuous gallantry and intrepidity at the risk of his life above and beyond the call of duty, as a division leader in VMF-221 in action against enemy Japanese aerial forces in the Solomon Islands Area on April 7, 1943."

FIRST LIEUTENANT KENNETH A. WALSH

"For conspicuous gallantry and intrepidity at the risk of his life above and beyond the call of duty as a pilot in VMF-124 in aerial combat against enemy Japanese forces in the Solomon Islands Area on August 15, 1943."

MARINE CORPS HISTORY DIVISION

LEARNING AS THEY GO

Operating from Guadalcanal presented ground personnel with a new set of challenges ranging from Japanese aircraft sporadically dropping bombs on the airfield to the surrounding terrain alternating between black dust and molasses-like mud. Maintainers learned how to adapt daily and were quickly indoctrinated on how to work amidst intensifying combat and sweltering heat.

Marines (near right) work on an F4U-1 aircraft. As the air war shifted further up the Solomon Islands, personnel (center) finally had time to relax. Their example of adapting along the way (far right) would be followed through the war.

MARINE CORPS HISTORY DIVISION

1943

NOVEMBER 5, 1943

TF 38, assisted by Solomons-based aircraft, flies the first carrier-based air strike on Rabaul. These aircraft damage Japanese warships, preventing an attack on the beachhead on Bougainville.

NOVEMBER 9, 1943

MajGen Geiger becomes the Commanding General, I Marine Amphibious Corps. He is relieved by LtGen Vandegrift, who becomes the 18th CMC.

NOVEMBER 18, 1943

Planes from the Southern Carrier Group attack Betio, Tarawa atoll, and are joined the following day by Cruiser Division 5, who will conduct surface bombardment.

NOVEMBER 19, 1943

Land- and carrier-based aircraft join the final bombardment of the Pacific Gilbert Islands, Marshall Islands, and Nauru in preparation for the invasion of the Gilberts.

MARINE CORPS HISTORY DIVISION

MARINE CORPS HISTORY DIVISION

NOVEMBER 20, 1943
MajGen Ralph J. Mitchell relieves MajGen Nathan F. Twining, USA, as Commander, Aircraft, Solomons.

DECEMBER 1, 1943
The first Marine air-transportable, air-warning squadron is commissioned at Cherry Point.

DECEMBER 9, 1943
Ground crews of VMF-212 and -215 land on the Torokina fighter field on Bougainville.

DECEMBER 10, 1943
The Torokina airstrip is operational and VMF-216 flies onto the field.

DECEMBER 13, 1943
VMF-216 flies a direct air support mission with Hellzapoppin Ridge, Bougainville, as the target.

READY FOR ACTION

Within three months, all eight Marine fighter squadrons in the Solomons were equipped with Corsairs. Squadrons had been thoroughly trained in its employment and maintenance.

MARINE CORPS HISTORY DIVISION

1943

DECEMBER 17, 1943

Allied fighters from New Georgia airfields, including F4Us of VMF-214, attack Japanese planes leaving the Lakunai airfields on Matupi Island during a fighter sweep against Rabaul.

DECEMBER 17, 1943

Commander, Aircraft, Solomons, joins the air campaign to reduce the Japanese Naval Base at Rabaul with a fighter sweep of Marine, Navy, and New Zealand planes, led by Maj Gregory H. Boyington.

DECEMBER 20, 1943

Adm Chester W. Nimitz, CinCPOA, issues the final Joint Staff study for the invasion of the Marshall Islands, setting forth the following strategic decisions: the neutralization of Wotje, Maloelap, and Mille by bombing; the reduction of Eniwetok and Kusaie by air; and the seizure of Kwajalein atoll as a fleet anchorage with air bases at Kwajalein and Roi.

BOYINGTON AND THE "BLACKSHEEP"

One of the Corps' top aces, "Pappy" Boyington had served with VMF-2 before the war. In late 1941, he joined the American Volunteer Group (The Flying Tigers) in China. Returning to the Marine Corps in early 1942, he served in the South Pacific before forming VMF-214 "Blacksheep" from replacement pilots in August 1943. The squadron was credited with destroying or damaging 203 Japanese planes in 84 days of combat. Here, Boyington lands at Turtle Bay.

MARINE CORPS HISTORY DIVISION

DECEMBER 23, 1943

Aircraft of VMF-214 attack Rabaul, imposing heavy losses on Japanese interceptors over Cape St. George.

DECEMBER 23, 1943

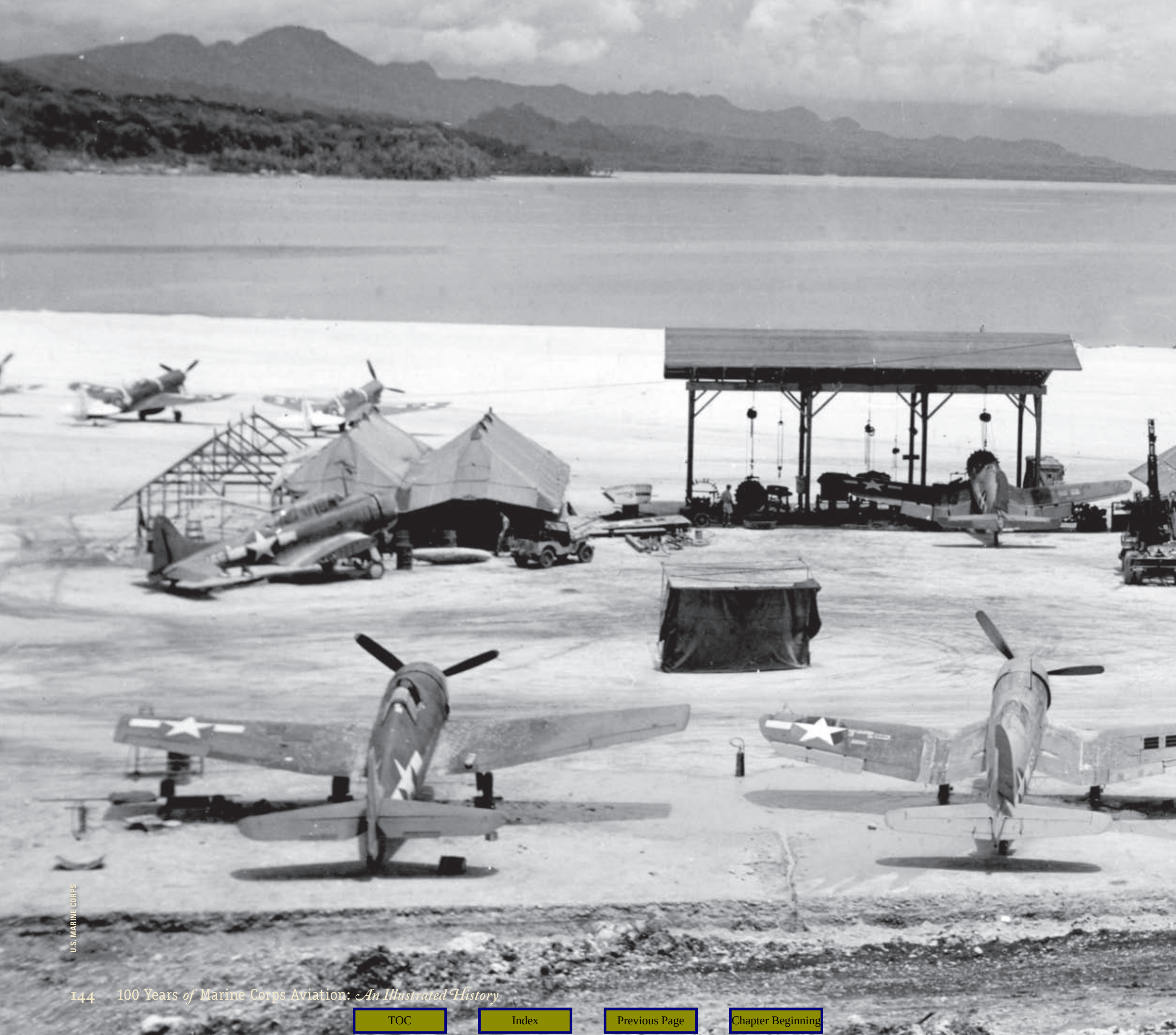
Maj Boyington leads a fighter sweep of forty-eight planes against Rabaul. The sweep by U.S. Forces claims a total of thirty kills at a cost of three American planes.

DECEMBER 30, 1943

The forward echelon of Headquarters Squadron, 4th Marine Base Defense Aircraft Wing, commanded by BGen Lewis G. Merritt, arrives on Tarawa.

DECEMBER 30, 1943

The 1st and 5th Marines overrun the final enemy defenses and seize the airfields at Cape Gloucester.



U.S. MARINE CORPS

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BARAKOMA FIELD

Allied forces in the Central Solomons opened Barakoma Field on Vella Lavella in September 1943. Marine aircraft operated from the airfield when they first attacked the remaining Japanese forces on Vella Lavella, subsequently shifting Japanese forces' attention north to Bougainville and west to Rabaul. Seen here in mid-January 1944, Barakoma's maintenance facilities hosted Corsairs, a Dauntless, and a Navy Hellcat.

CHAPTER SEVEN
THE LEARNING CURVE

As Marine Corps doctrine evolved, close air support of ground troops became the raison d'etre for Marine aviation. Planning, training, and the Corps' interwar combat experience emphasized operations close to the front lines, with an expectation that Marine aircraft would protect and support Marine forces during amphibious operations. However, the vast distances between many of the Pacific islands placed targets beyond the range of land-based aircraft.

When the assault on Guadalcanal came on August 7, 1942, Army and Navy aircraft covered the Marine landings. The first Marine aircraft did not arrive until the completion of Henderson Field almost two weeks later. From that time through the end of 1943, the relatively short distances between the islands of the Solomons chain meant that Marine aircraft, typically Dauntlesses, Avengers, and Corsairs, could cover Allied forces moving north towards Bougainville.

It was during the Solomons campaign that the Marines introduced the first air liaison party (ALP), a rudimentary ground-based team parceled out to Army units to help coordinate air support missions. The first ALP mission occurred in New Georgia in July 1943. The one- or two-man teams requested air strikes from a planner, who coordinated the mission and sent briefing packages to the squadrons. The missions were usually flown the following day. Radio difficulties and lines of authority often prevented the ALP from communicating directly with its air support. Still, despite the system's many complications, the ALP would grow into an important component of the Marine close air support team.

Another advance in that mission came in December 1943 during the invasion of Cape Gloucester in Southern New Britain. The 1st Marine Division began using light planes for artillery spotting. After borrowing twelve of the Army's Piper L-4 Cub liaison aircraft, the division scoured its ranks to find an officer and eleven enlisted men who had received flight training as civilians. With additional training, these men flew over Allied ground forces as a provisional liaison squadron, spotting artillery fire, reconnoitering enemy positions, and providing transport and utility support. When the unit disbanded in mid-1944, all twelve pilots received air medals. Ironically, none of these men ever received wings, flight orders, or flight pay.

As with the ALPs, the provisional liaison squadron's successes came despite difficulties with radio communications, maintenance support, and training. The 1st Marine Division had proven to higher headquarters that light aircraft were an important weapon in the support of ground forces. By September 1944, an organized and trained forward air control unit, VMO-3, was sent to support Marine ground forces at Peleliu.

Still, the ability of Marine combat squadrons to provide close air support depended on the availability of airfields. In November 1943, for example, the 4th Marine Base Defense Air Wing controlled 10 squadrons and about 200 aircraft in the Central Pacific. None, however, could be based close enough to Tarawa to support the Marines who stormed the beaches at Betio.

RESTRUCTURING IN RESPONSE

In response to an ever-increasing number of Japanese suicide planes, the Navy restructured its aircraft inventory on carriers. For the USS Franklin*, this meant that VMF-214 and -452 augmented the Navy's complement of aircraft. On March 19, 1945, as aircraft were taking off for a strike mission just sixty-five miles off the coast of Japan, a single Japanese bomber slipped through the defenses and dropped two bombs on the ship.*

The arrival of Marine Corsairs on Bougainville in late 1943 was soon followed by the first F4U fighter sweep of Rabaul on December 17th. SBDs and TBMs were later added to the mix. In March 1944, Marines were equipped with twin-engine PBJ Mitchells, the Navy-designated B-25 medium bombers. The combined Allied aerial assault proved so effective that by early March all major elements of the Japanese fleet and surviving Japanese aircraft and pilots evacuated. The Allies no longer needed to invade Rabaul since its 50,000 Japanese troops were isolated from escape or relief due to continuous Allied bombing missions.

The story was similar in the Marshalls, a constellation of strategic atolls spread out over some 800 miles of the Central Pacific. Army heavy bombers and Navy carrier aircraft began striking Japanese positions there in December 1943. By the beginning of February 1944, the Japanese had lost their last fighter, limiting aerial defenses to antiaircraft guns. Toward the end of the month, Marine squadrons were established on Roi (in the northwest) and Majuro (centered between the remaining four Japanese-held atolls). As with Rabaul, enemy forces on Jaluit, Mille, Maloelap, and Wotje were bombed, rocketed, and strafed until the war's end.

Harkening back to establishment of the FMF in 1933, Marine squadrons were also to be available for service on Navy carriers, yet that tenet would not be implemented during the first year and a half of the war. Several Marine squadrons launched their aircraft from carriers en route to island air bases. Rather than waste training, the Navy, with Marine consent, eliminated the carrier qualification from the Marine pilot syllabus. Within a few years, the shortsightedness of this decision became apparent.

Previously, operating from carriers proved to be the only way Marines could support most amphibious landings. In mid-1944, the Marines negotiated the assignment of several new escort carriers (CVEs) for use by Marine air squadrons. Navy inventory records referred to these ships as "Marine Carriers," however, the ships continued to be manned by Navy crews and

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assigned to Navy task forces. Each CVE carried a Marine fighter squadron and a Marine torpedo bomber squadron. The first of these newly commissioned ships was ready in early 1945, and Marine aviators again started training for carrier operations.

In the interim, a new problem arose—the kamikaze. This threat posed by Japanese pilots forced the Navy to adjust the composition of some of its carrier air groups, increasing the number of fighter squadrons from one to three, with a commensurate decrease in the number of bombers and torpedo aircraft on each ship. While the Marines could supply several fighter squadrons, most of these pilots also needed training in carrier takeoffs and landings. The remedial training for the new mission in their high-powered Corsairs would cost several pilots their lives, but most would succeed, and in the last week of 1944 the first two squadrons, VMF-124 and -213, boarded the USS *Essex*. They quickly moved to combat in the South China Sea during the first two weeks of January, claiming twenty-three aerial victories and destroying sixty-four additional aircraft on the ground.

READY ROOM

Each carrier squadron had its own ready room, a place to plan for the mission, wait for aircraft to be prepared, and debrief. Pictured here are Corsair pilots of VMF-124 during a briefing aboard the USS Essex.

Within the next few months, four more carriers received two Marine squadrons, the USS *Bennington* with VMF-112 and -123, the USS *Wasp* with VMF-216 and -217, the USS *Bunker Hill* with VMF-221 and -451, and the USS *Franklin* with VMF-214 and -452. At Iwo Jima, Marine Corsairs provided some direct support to ground forces, though air defense over the fleet and the beachhead remained their primary mission.

In March, the *Bennington*, *Bunker Hill*, and *Franklin* began a series of air strikes against the Japanese home islands. After only two days in combat, the *Franklin* was struck by two Japanese bombs during flight operations. She burned for four hours, leaving 724 dead, including 65 Marines. On May 11, the *Bunker Hill* was hit by two kamikazes during the landings at Okinawa. The ship burned at a cost of 389 dead, including 29 Marines. The *Bennington's* Marine squadrons continued to hit the Japanese until early June, with missions including preemptive dive-bombing strikes against bases on the Japanese home islands.

The eighty-four day battle for Okinawa, which became the war's final and largest amphibious invasion, marked the apex of Marine close air support. The first Army troops came ashore on April 1, once again under the cover of Army long-range bombers and Navy carrier aircraft. Army engineers immediately began rebuilding two captured Japanese airfields, the first of which received a Marine Stinson OY Sentinel artillery spotter squadron the next day. On April 3, two more spotter squadrons arrived, and all three were immediately set to work directing fire at Japanese targets. The first four Marine Corsair squadrons arrived on April 7, flown off the CVEs that transported them to the theater. Their airfields were so close to the front lines that many pilots took off, dropped their bombs, and returned to base without bothering to retract their landing gear! By the end of the campaign, the Marine squadrons based on Okinawa consisted of fifteen fighter squadrons, two torpedo bomber squadrons, one medium bomber squadron, and four observation squadrons.

Approximately sixty percent of the Okinawa support missions were launched from escort carriers. This included two Marine carriers, the USS *Block Island* and USS *Gilbert Islands*. The Navy's decision to employ carrier-based Marine aircraft for other operations limited pilots' ability to support ground forces and proved to be a questionable allocation of air assets. However, air support had come a long way since the Solomons campaign. Air strikes usually came within an hour of a request, rather than a day later. ALPs also directed supply drops to friendly troops, with an estimated ninety-eight percent accuracy by June.

With Okinawa secured in late June, the Allies prepared for Operation Olympic, the invasion of the southern Japanese island of Kyushu scheduled for November. For this operation, the ALPs recommended the use of Support Aircraft Direction Emergency (SADE), a Marine-developed radio link that allowed the air liaison party to communicate directly with the strike aircraft. Marine ALPs used SADE successfully in the Philippines but did not employ it on Okinawa. A complete integration of arms was needed.

The ground-based ALP limited its work to directing air strikes, while the airborne observation squadrons spotted ground- and sea-based artillery. A homogenization did not develop until after the war. In August 1945, the United States dropped atomic bombs on Hiroshima and Nagasaki, the Japanese surrendered, and World War II was over.

U.S. MARINE CORPS

AVENGERS ON VELLA LAVELLA

In 1943, Marine squadrons received their first Avenger torpedo bombers. They were built by two manufacturers: Grumman as the TBF and General Motors as the TBM. Shaded beneath the wing of their TBM, Captain Earl R. McLaughlin (pilot, right), Corporal Neal J. Bandy (tunnel gunner, center), and Sergeant George R. Smith (turret gunner, left) prepare for their next mission from Vella Lavella.

1944

JANUARY 3, 1944

Maj Boyington shoots down three enemy planes during a fighter sweep over Rabaul, only to be shot down and captured.

FEBRUARY 4, 1944

Two PB4Ys from VMD-254 fly the first photo reconnaissance of Truk on a twelve-hour night flight from the Solomon Islands.

FEBRUARY 19, 1944

AirSol aircraft attack Rabaul. VMB-413 relieves the Army B-25s and raids around the clock until May.

FEBRUARY 19, 1944

In the last significant aerial battle over Rabaul, an AirSol 139-plane strike executes the last opposed air raid against 30 enemy fighters and claims 23 kills. Following the raid, the Japanese abandon all air defenses at Rabaul.

U.S. MARINE CORPS

NIGHT FIGHTERS

The size and weight of early intercept radar sets meant that only larger, twin-engine aircraft could be equipped for night fighting. For this reason, the initial Marine night fighter squadron, VMF(N)-531, operated the Lockheed PV Harpoon. In September 1943, the squadron moved to the South Pacific where it was plagued with a perpetual shortage of spare parts and systems that refused to function properly. "Chloe," one of the squadron's Harpoons based on Barakoma, also carried a small bomb for night bombing missions.

MARCH 1, 1944
MAG-22 arrives on Engebi, Eniwetok atoll.

MARCH 15, 1944
Pilots of VMB-413 use the twin-engine North American Mitchell PBJ during an attack on Rabaul.

MARCH 26, 1944
VMF-113 Corsairs from Engebi fly the first fighter escort for AAF B-25s on the 360-mile bombing mission against Ponape, Caroline Islands.

APRIL 1, 1944
The 9th MAW, commanded by Col Schilt, is commissioned at Cherry Point.

APRIL 14, 1944
Near the Marshall Islands, VMF(N)-532 flies a night interception with F4U aircraft.

QUEEN OF RABAUL

Combat aircraft were often returned to the United States to boost civilian morale and aid in war bond drives. This Grumman TBF-1C Avenger, "The Queen of Rabaul," returned to Wright Aeronautical Corporation, an engine factory, as part of the Seventh War Bond Drive from May to June 1945.

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1944

MAY 2, 1944

VMF-115 arrives on Emirau Island, St. Matthias Islands, and flies its initial combat air patrol.

JUNE 11, 1944

VMO-4 and VMF(N)-532 arrive at the captured airfields on the Marianas.

JULY 18, 1944 - FEBRUARY 24, 1948
MajGen Field Harris
DIRECTOR OF MARINE CORPS AVIATION

AUGUST 4, 1944

Aircraft from MAG-21 land on Guam. This is the first Marine air presence on the island in thirteen years.

U.S. MARINE CORPS

PULLING THE PROP

VMF-222 began operating out of Vella Lavella, in the Solomons, participating in the first fighter sweep over Rabaul. Here a Marine "pulls through" the propeller before starting the engine of this F4U-1.

AUGUST 7, 1944

Marine pilots fly their initial combat missions over Guam. VMF-225 will operate from Orote airfield on Guam.

AUGUST 10, 1944

The commander of Southern Troops and Landing Force, MajGen Geiger, declares that most Japanese resistance has ended and initial clean-up operations can commence.

AUGUST 31, 1944

The initial land-based squadrons arrive from Peleliu.

SEPTEMBER 20, 1944

Headquarters, 1st MAW receives word that its seven dive-bomber squadrons will be employed in the Luzon campaign in the Philippines.

SEPTEMBER 24, 1944

The first Marine fighter planes, an advance echelon from VMF(N)-541, fly onto Peleliu airfield.

NICKERSON & ROBERTSHAW

Second Lieutenant W. A. Nickerson and Major Louis B. Robertshaw stand by an SBD before a mission against the Tokyo Express. The presence of the dive bombers disrupted Japanese attacks and resupply efforts. The Tokyo Express operated until November 1943.

MARINE CORPS HISTORY DIVISION

1944

OCTOBER 1, 1944

MAG-24 becomes an all-SBD outfit, comprising VMSB-133, -236, -241 and -341, and a new headquarters. MAG-32 departs Hawaii and will command the 1st MAW's remaining SBD squadrons, VMSB-142, -224, and -243.

OCTOBER 17, 1944

Four Marine officers from the 1st MAW, including MajGen Mitchell, Commander, Aircraft, Northern Solomons, land in the Philippines.

OCTOBER 21, 1944

A new command, Marine Carrier Air Group, activates under AirFMFPac. The group will direct the formation and training of squadrons destined to operate from escort carriers.

DECEMBER 3, 1944

VMF(N)-541 of the 2d MAW on Peleliu and MAG-12 (VMF-115, -211, -218, and -313) from the Solomons arrive at Tacloban, Philippines.

NATIONAL MUSEUM OF THE MARINE CORPS

THE SPOTTER

The Stinson OY-1 Sentinel became the standard spotting aircraft of Marine observation squadrons. Before mid-1943, higher command had little interest in using light aircraft for the observation mission. But, by the time ground troops landed on Okinawa, they could rely on the support of four Marine observation squadrons and their Sentinels.

DECEMBER 5, 1944

Aircraft of MAG-12 and VMF(N)-541 make their initial contact with Japanese fighters while covering naval forces near Leyte.

DECEMBER 7, 1944

Marine aircraft attack a Japanese convoy carrying reinforcements to Ormoc Bay, Philippines. Pilots of VMF-211 damage a Japanese destroyer departing from Leyte in the Philippines. Later, VMF-218, -313, and Army P-40s sink a troop transport, damaging two destroyers in the convoy.

DECEMBER 10–25, 1944

Pilots of MAG-12 participate in operations on Leyte. The group supports the landing at Mindoro, provides air support for ground troops, and sinks several Japanese cargo ships.

CONFERRING WITH COMMANDERS

The first two Marine fighter squadrons, VMF-124 and -213, served on carriers in December 1944. Aboard the USS Essex, *Lieutenant Colonel William Millington served as the commanding officer for VMF-124. In January, when the Japanese shot down the aircraft of Navy Commander Otto Klinsman, he took over as group commander. Millington (left) confers with two of his pilots.*

MARINE CORPS HISTORY DIVISION

1944

DECEMBER 11, 1944

Twelve F4Us from MAG-12 join Army P-40s, twice intercepting a Japanese reinforcement convoy off the northeast tip of Panay Island, in the Philippines. The aircraft later sink four Japanese ships near Palompon, Philippines.

DECEMBER 12–17, 1944

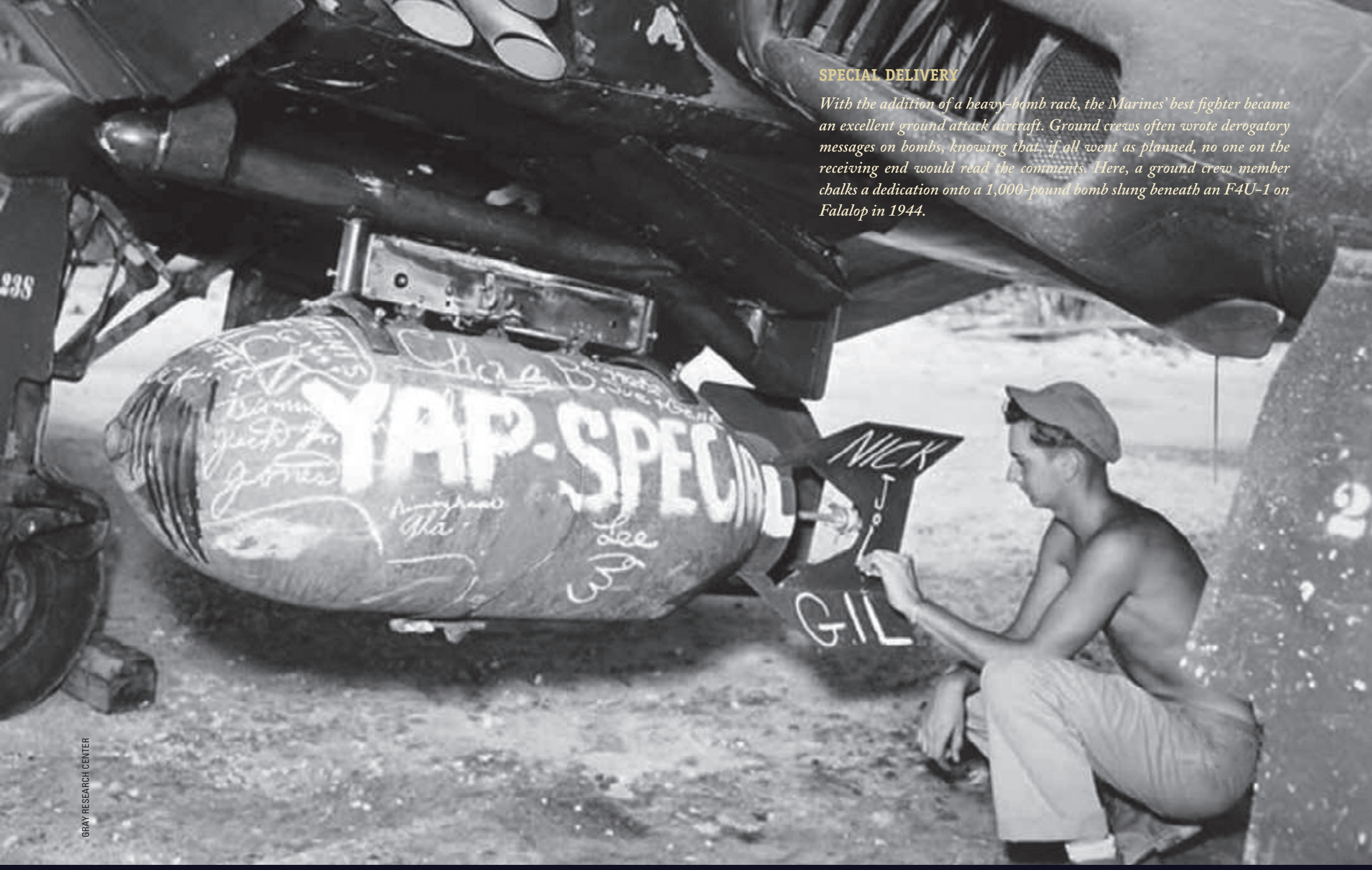
Six escort carriers of Task Unit 77.12.1 and shore-based aircraft fly cover for the passage of transport and assault shipping through Visayas, Mindoro, Philippines. The escort carriers provide direct support for landing Army troops.

DECEMBER 28, 1944

VMF-124 and -213 board the USS *Essex* at Ulithi. They will conduct a series of strikes on Formosa and Luzon from January 3-9, 1945.

JANUARY 6, 1945

Marine and Navy pilots from carriers of the 3d Fleet make repeated air strikes on Luzon, destroying over one hundred Japanese aircraft.



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SPECIAL DELIVERY

With the addition of a heavy-bomb rack, the Marines' best fighter became an excellent ground attack aircraft. Ground crews often wrote derogatory messages on bombs, knowing that, if all went as planned, no one on the receiving end would read the comments. Here, a ground crew member chalks a dedication onto a 1,000-pound bomb slung beneath an F4U-1 on Falalop in 1944.

JANUARY 12, 1945

VMF-124 and -213 aboard the USS *Essex* participate with the 3d Fleet in a series of air strikes against targets in Hong Kong, Formosa, and on the coast of Indochina.

JANUARY 25, 1945

The first planes from VMSB-133 and -241 arrive at Mangaldan airstrip, Luzon, to provide close air support for U.S. Army operations in the Philippines.

JANUARY 27, 1945

Aircraft of VMSB-241 fly the first mission by MAG, Dagupan, in support of U.S. Army operations in the Philippines.

FEBRUARY 19, 1945

The first carrier-based Marine air support during a combat amphibious assault occurs on D-Day at Iwo Jima.

FEBRUARY 26, 1945

Two planes from VMO-4 become the first U.S. aircraft to land on Iwo Jima.

CARRIERS FOR THE MARINES

By late 1944, the Navy agreed to assign the Marines eight small escort carriers to be organized into two Marine air support groups (MASG). Only one of the groups, MASG-48, would see combat. The other one, MASG-51, was still outfitting when the war ended.

In May 1945, the USS *Cape Gloucester* was assigned as MASG-48's fourth and final escort carrier. The ship's air unit, Marine Carrier Group Four (MCVG-4), consisted of twelve TBM Avengers of VMTB(CVS)-132 and eighteen F4U Corsairs of VMF(CVS)-351.

THE FLYING LEATHERNECK MUSEUM

1945

MARCH 3, 1945

Marine aircraft support U.S. Army troops landing on Masbate, Buria, and Ticao Islands, Philippines.

MARCH 6, 1945

MCVG-2 embarks at San Diego on the USS *Gilbert Islands*, the second Marine escort carrier to be commissioned, and departs for the Pacific the following month.

MARCH 10, 1945

Elements of the U.S. 8th Army, augmented by ground echelons of MAG-12 and -32 and AWS-4, assault Mindanao, Philippines, near Zamboanga. MAG-12 and -32 provide air support for the landing.

MARCH 10–13, 1945

VMF-112, -123, -124, -212, -213, -216, -217, and -451 are detached from TF 5 and return to the United States. Marines ground personnel remains and will service Navy F4Us.

U.S. MARINE CORPS

BOYINGTON RETURNS

Presumed dead but listed as missing in action for the rest of the war, Boyington suffered frequent beatings at the hands of his captors. His beatings intensified when the international press picked up the story that President Roosevelt was awarding him the Medal of Honor. Following his liberation in August 1945, Boyington flew to NAS Alameda, California, where he met with former members of his squadron. A few weeks later he received the Medal of Honor from President Harry S Truman.

MARCH 14–20, 1945

VMF-214 and -452, aboard the USS *Franklin*, join the 5th Fleet and participate in attacks on Kure and other harbors.

MARCH 15–18, 1945

MAG-12 Corsairs fly onto Moret Field, Mindanao, from Leyte. They are the first air units to arrive at the new Marine air base.

MARCH 19, 1945

The escort carrier, the USS *Block Island*, is commissioned. The Marine Carrier Group 1 (VMF-511, VMTB-233, and CASD-1) embarks at San Diego and departs for Pearl Harbor, HI.

APRIL 2, 1945

VMO-2 lands at Yontan Airfield, Okinawa, Japan.

APRIL 7, 1945

The first F4U of MAG-31 arrives at Yontan.

U.S. MARINE CORPS

MAJOR
Gregory Boyington

"For extraordinary heroism above and beyond the call of duty as commanding officer of VMF-214 in action against enemy Japanese forces in Central Solomons Area from September 12, 1943 to January 3, 1944. Consistently outnumbered throughout successive hazardous flights over heavily defended hostile territory, Major Boyington struck at the enemy with daring and courageous persistence, leading his squadron into combat with devastating results to Japanese shipping, shore installations and aerial forces. Resolute in his efforts to inflict crippling damage on the enemy, Major Boyington led a formation of twenty-four fighters over Kahili on October 17, and, persistently circling the airdrome where sixty hostile aircraft were grounded, boldly challenged the Japanese to send up planes. Under his brilliant command, our fighters shot down twenty enemy craft in the ensuing action without the loss of a single ship. A superb airman and determined fighter against overwhelming odds, Major Boyington personally destroyed twenty-six of the many Japanese planes shot down by his squadron and by his forceful leadership developed the combat readiness in his command which was a distinctive factor in the Allied aerial achievements in this vitally strategic area."

FIRST LIEUTENANT
Robert M. Hanson

"For conspicuous gallantry and intrepidity at the risk of his life above and beyond the call of duty as a fighter pilot attached to VMF-215 in action against Japanese forces at Bougainville Islands, November 1, 1943, and New Britain Island, January 24, 1944. Undeterred by fierce opposition and fearless in the face of overwhelming odds, First Lieutenant Hanson fought the Japanese boldly and with daring aggressiveness. On November 1, while flying cover for our landing operations at Empress Augusta Bay, he dauntlessly attacked six enemy torpedo bombers, forcing them to jettison their bombs and destroying one Japanese plane during the action. Cut off from his division while deep in enemy territory during a high cover flight over Simpson Harbor on January 24, First Lieutenant Hanson waged a lone and gallant battle against hostile interceptors as they were orbiting to attack our bombers and, striking with devastating fury, brought down four Zeros and probably a fifth. Handling his plane superbly in both pursuit and attack measures, he was a master of individual air combat, accounting for a total of twenty-five Japanese aircraft in this theater of war. His great personal valor and invincible fighting spirit were in keeping with the highest traditions of the United States Naval Service."

BOYINGTON
(PICTURED LEFT)
VMF-214
CENTRAL SOLOMONS
SEPTEMBER 12, 1943 – JANUARY 3, 1944

HANSON
(PICTURED RIGHT)
VMF-215
BOUGAINVILLE & NEW BRITAIN ISLAND
NOVEMBER 1, 1943 & JANUARY 24, 1944

U.S. MARINE CORPS

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Mitchell Bombers

PBJ

The Marines commissioned twelve wartime Mitchell squadrons, seven of which saw combat in the Pacific. Before World War II, the only twin-engine bombers flown by the Marines were a handful of Martin MBT biplanes delivered in 1921. The delivery of North American PBJ Mitchells (modified Army B-25s) in 1943 gave the Marines a medium bomber with a 1,500-statute-mile range and a 2-ton payload.

Unlike most early Army B-25s, Marine Mitchells were generally modified to carry a tail gun position. Several PBJ-1Cs and PBJ-1Ds were modified with a .50-caliber tail gun position. The same modification was available to the Army, though rarely installed. The effectiveness of this upgrade led to the factory installation of improved twin-fifty tail mounts in PBJ-1Hs and PBJ-1Js.

Bombardiers and navigators from the North American PBJ Operational Training Unit were initially trained in the Beech SNB (the Navy's version of the C-45 transport aircraft). Seven bomber squadrons flew the PBJ-1D Mitchell bomber in World War II. VMB-431 was the first to bomb in the Rabaul area in 1944.

A pilot remarked, "The PBJ obviously lacked the glamour of the Corsair, and some of the more exotic breeds such as the 'Black Widow,' the 'Jug,' and the 'Hellcat.' Perhaps that's why aviation chroniclers have shunned her. But her story must be told. Since pilots tend to categorize their birds as women, using such terminology as 'sweet,' 'sleek,' 'unforgiving,' etc., I can only characterize her as a 'mother-in-law.' Dumpy, dependable, and loud."

1945

APRIL 9, 1945

The Kadena Airfield, Okinawa, is ready for operations and MAG-33 begins tactical operations.

APRIL 14, 1945

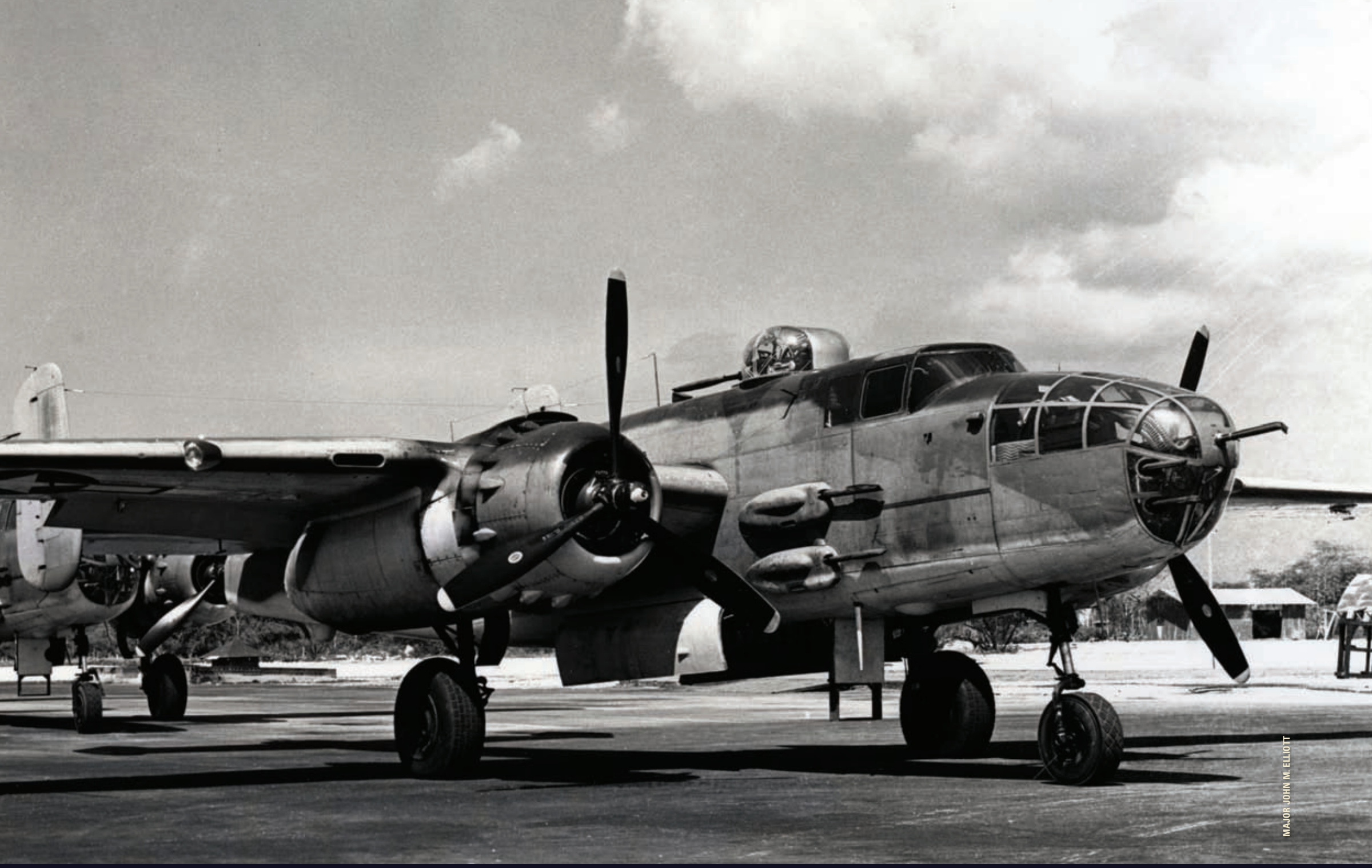
SBDs from MAG-24 fly the last Marine aviation mission of Luzon, in support of the 37th Army Division. The mission validated the training provided at the Marines' first formal air school.

APRIL 22, 1945

MAG-24 aircraft on Malabang commence air operations in support of the 24th and 31st Army Divisions pushing eastward across Mindanao.

MAY 3–4, 1945

The Japanese launch an all-out ground and air attack on the XXIV Corps, U.S. Army positions, and U.S. shipping off the island. Marine aircraft, antiaircraft gunners, and units of the 1st MarDiv assist in repulsing the assault.



MAJOR JOHN M. ELLIOTT

MAY 15, 1945
MAG-14 ends combat operations at Samar, Philippines, in preparation for its departure to Okinawa.

MAY 21, 1945
VMTB-231 lands on Ie Shima, Ryukyus, to participate with other squadrons of MAG-22 in the Okinawa campaign.

MAY 25, 1945
Pilots from the USS *Gilbert Islands* fly their first combat air patrol and close air support strikes on Okinawa.

JUNE 7, 1945
MAG-14 commences transfers by air from Samar, Philippines, to Okinawa.

JUNE 8, 1945
VMF-112 and -123, the last remaining Marine squadrons in TF 38, are detached from the force and sent to Leyte, Philippines.

MARINE AVIATION PERSONNEL

By the end of World War II, Marine aviation constituted a truly massive force of more than 100,000 officers and men, of which 61,000 were serving overseas with headquarters squadrons, aircraft wings, carrier groups, and in a variety of other ground support roles.

Initially conceived as a close air support force for amphibious operations and land campaigns, Marine aviators had instead flown ground attack missions only when land bases were within range of the front lines. As a result, Marine pilots fought during the war as a part of the Navy's land-based air force.

THE FLYING LEATHERNECK MUSEUM

1945

JUNE 17, 1945

The fourth Marine escort carrier to be commissioned, the USS *Vella Gulf*, with MVCG-3 aboard, sails from San Diego for Pearl Harbor.

JUNE 21, 1945

MajGen Geiger, commanding the 10th Army, declares Okinawa secured. He is the first Marine to command a field army.

JULY 4, 1945

The USS *Cape Gloucester* with Marine Carrier Group 4 (VMF-351, VMTB-132, and CASD-4) arrives at Okinawa where it is attached to Task Group 31.2.

JULY 24, 1945

Marine pilots operating from the USS *Vella Gulf* attack Japanese positions on Pagan Island in the Marianas. In two days, they will hit Rota Island.

MARINE CORPS HISTORY DIVISION

TAG

Soon after Marines landed on Iwo Jima on February 28, they were supported by three transport squadrons. Flying R5C Commandos, Naval versions of the Army C-46, the Transport Air Group provided much-needed tactical and strategic airlift support for ground forces. Note the iconic "baggage tag" painted on the nose of each aircraft, an emblem derived from the Transport Air Group's "TAG" acronym.

AUGUST 1, 1945

MCVG-4, aboard the USS *Cape Gloucester*, departs Okinawa, Japan, to conduct minesweeping operations in the East China Sea and to launch air strikes against Japanese shipping routes in the Saddle and Parker Islands.

AUGUST 9, 1945

VMB-413, -423, and -443 fly the Marine Corps' last bombing mission against Rabaul.

AUGUST 13, 1945

Marine pilots fly the last U.S. air raid on Wake atoll against Peacock Point Battery.

AUGUST 23, 1945

MAG-31 at Chimu airfield on Okinawa, Japan becomes the air group to support the northern occupation.

AUGUST 27, 1945

The forward echelon of VMB-611 leaves for Peleliu to join the 4th MAW.

MAJOR JOHN M. ELLIOTT

SBDs OVER BOUGAINVILLE

By early 1944, Allied military planners had abandoned their plans for an invasion of the Japanese bases at Rabaul in Northern New Britain and Kavieng in Western New Ireland, deciding instead to neutralize both bases with continuing air strikes. These SBDs were part of a strike on Kavieng by VMSB-133 and -236 in September 1944. The background smoke was generated by one of the area's active volcanoes.

INNOVATIVE READINESS

BY COLONEL WILLIAM T. HEWES, USMC (RET)

Proud of its combat record in World War II, the Marine Corps faced the future believing that its place in America's defense establishment was secure. Certainly, downsizing was in the cards as it had been after World War I. Money would also be tight, but the Corps had survived periods of austerity throughout its history and was confident it could do so once again.

Seemingly, the only problems facing the Corps were modernizing amphibious doctrine to accommodate the requirements of the atomic age and repairing the ties that bound air and ground together. The concept of vertical envelopment would provide a solution to the former while close air support, as conducted by Marine aviators in Korea would forever heal the latter.

Overshadowing both was the threat to the Marine Corps' existence that arose from the effort to unify the armed forces. It was a fight that sought to reduce the Corps to shipboard policemen, and it was not until passage of the National Security Act of 1947 and its amendment in 1952 that the Corps had a mission and fixed structure.

By 1950 the downsizing had reached the point where the two active Marine divisions and aviation wings had been reduced to skeletons. The weakened state of our Corps was not unique to U.S. armed services. This then was the picture on June 25, 1950, when North Korea launched their surprise invasion of South Korea.

Seventeen days after the crisis began, the First Marine Brigade and its aviation element, MAG-33, were on their way to Korea, where they served as the "Fire Brigade" in the Pusan perimeter. Marine Corsairs operating from escort carriers demonstrated the value of responsive tactical air, providing close air support for both Marine and Army units. Close air support sealed the deal in the frozen hell of the "Frozen Chosin," where Marine air, the 1st Marine Division's most effective supporting arm, enabled the division to escape entrapment by the Chinese Communists.

Division Marines continued to benefit from the same level of responsive support until 1951, when the Air Force introduced the single manager concept and took control of Marine air.

Late in the Korean campaign, the World War II era propeller-driven aircraft began to give way to turbojet aircraft, first with the Grumman F9F, then the McDonnell F2H, and Douglas F3D. Korea was also where the helicopter began to demonstrate its utility, evacuating wounded, delivering critically needed supplies, and later conducting the first lift of a rifle company to the front lines.

The years after Korea were marked by transition to an all-jet, fixed-wing force and to develop more capable helicopters. Similarly, Marines developed a command and control system and more powerful radars. Having begun in Korea, efforts continued to improve Marine aviation's electronic warfare and electronic

counter measures capability. The short airfield for tactical support was developed and tested. Doctrine, too, was not ignored in the modernization efforts, which featured the fleshing out of the Marine air-ground task force concept.

In addition to routine deployments to the Mediterranean and western Pacific, two contingencies arose in the 1960s in which Marine air played a significant role. The political crisis in the Dominican Republic featured extensive use of helicopters to land Marines, their supplies and equipment, and to evacuate civilians. The more serious Cuban Crisis employed the full spectrum of Marine Corps capabilities, ground and air.

Initially, less prominent was the introduction of a Marine helicopter squadron into South Vietnam in April of 1962 to support Vietnamese forces fighting a growing communist insurgency. In September, Shufly moved north to the old French airbase at Danang, and the rotation of helicopter squadrons continued even as the conflict grew in intensity.

Finally in 1965, a naval confrontation in the Gulf of Tonkin led to full-scale American involvement, beginning with the landing of the Ninth MAB at Danang, followed by the First MAB landing at Chu Lai. By March 1966, III MAF, comprising the 3rd and 1st Marine Divisions, and 1st MAW was fully established in the I Corps Tactical Zone. Airbases capable of supporting helicopters were carved out at Marble Mountain, Ky Ha, Phu Bai, and Dong Ha. Vietnam would turn out to be primarily a helicopter war.

The first battle, Operation Starlite, occurred in August of 1965, when the 1st Viet Cong Regiment bore the brunt of a four battalion assault from land and sea. The fight was quintessentially Marine, featuring the application of all six functions of Marine aviation in support of a killer ground attack. It set the tone for the ever-larger battles that would characterize the transition from guerilla war with the Viet Cong to conventional war with the NVA until withdrawal began in 1971.

In 1972, the NVA launched its Easter Offensive to seize Vietnam. In response Marine fighter and attack squadrons quickly redeployed to Vietnam to provide air support for the hard-pressed Vietnamese. MAU composite helicopter squadrons supported the South Vietnamese forces from ships steaming off the DMZ.

The final act came in 1975, when the government of South Vietnam, hard pressed by the multi-pronged NVA invasion, collapsed. Marine helicopters, operating from Seventh Fleet ships offshore, evacuated the last civilian and military personnel remaining in Saigon.

For Marine aviation, the Vietnam War had two important outcomes. First and foremost, it validated the Marine concept of tactical air support – responsive, on time, and on target. Second, it demonstrated the validity of the Marine air- ground team in the only true test environment – combat.

CHAPTER EIGHT

ADAPTING TO THE THREAT

While the United States demobilized the largest force in its history, a conflict between the Communists and Nationalists escalated in China. In October 1945, the 1st MAW deployed to Tientsin, China, and began flying security and surveillance patrols. This was not the only conflict brewing, however.

With President Harry Truman at the helm, military planners developed a proposition to unify the U.S. military into a single service, the Army. To defend the Marine Corps' position, Commandant Alexander A. Vandegrift, General Clifton B. Cates, and fellow general officers testified before Congress. They detailed the historic contributions of the Marine Corps in amphibious warfare, both air and ground. They also asserted that the Corps was a necessity as a force-in-readiness for the future. In 1947, the National Security Act defined the mission and responsibilities of the Marine Corps. The most significant was the role of the FMF in future amphibious landings.

As communism spread to nations still weakened by the recent world conflict, a mutual distrust between the communist nations and Western capitalist nations developed. The United States and Soviet Union improved their ability to deliver nuclear weapons, while trying to prevent others from doing the same. Research budgets focused on long-range bombers, high-speed jet fighters, missile systems, and helicopters. Some of these systems and technologies included new tools for Marine aviation.

After witnessing the aftermath of the atomic tests at Bikini atoll, Lieutenant General Roy S. Geiger foresaw that the Marine Corps needed to adapt its approach to an amphibious assault. He believed that rapid ship-to-shore troop insertion by air was the key to fighting future wars and urged General Alexander Vandegrift to appoint a special board to investigate alternatives in conducting amphibious landings.

Led by Major General Lemuel C. Shepherd Jr., the board established the Marine Corps' vision for a practical helicopter. It also initiated the activation of a developmental helicopter squadron, Marine Helicopter Squadron One (HMX-1). Activated on December 1, 1947, the squadron began testing the capabilities of helicopters in ship–to–shore movement, medical evacuation, aerial resupply, and observation.

A TIME OF TRANSITION

During the late 1940s and early 1950s, Marine aviation transitioned from advanced propeller aircraft to developmental jets. The short ranges and limited ordnance capacities (both a problem for Marines' ground-support mission) of new aircraft offset their speed advantages. Trained as a carrier squadron, VMF-223 began transitioning to Grumman F9F-2 Panthers in July 1950. Here, Marines aboard the USS Franklin D. Roosevelt *work on a Panther.*

MAJOR JOHN M. ELLIOTT

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As the Marines foresaw the continued need for dedicated air support of ground forces in non-nuclear military conflicts, the first chance to test their doctrine and new equipment came on June 25, 1950. The communist army of the Democratic People's Republic of Korea (North Korea), moved south across the 38th Parallel, invading the Republic of Korea (South Korea).

Although the U.S. military was generally unprepared, the 1st Provisional Marine Brigade's MAG-33 was alerted for combat duty on July 5 and deployed within the week. By the time the first of two Marine fighter squadrons entered combat on August 3, most of South Korea was overrun. U.S. Army and Marine ground forces bolstered remaining South Korean forces, defending a small perimeter around the coastal port city of Pusan.

Marines entered combat with improved versions of prop-driven Corsairs, aircraft that had served so admirably in World War II. The Corsairs were overall still better suited for most air support missions, with a longer time on target and a greater ordnance capacity than the newly fielded jets. However, jets had greater accuracy with strafing and rocket-propelled weaponry often requiring fewer passes to destroy a target.

Marines also brought their Sikorsky HO3S helicopters and Stinson OY observation planes, delivering food and water to surrounded allied forces, evacuating the severely wounded, and searching for enemy positions. By mid-September, Marine air was supporting the landings at Inchon, the first in a series of planned moves that would eventually drive the North Korean military out of South Korea, and north toward the border with communist China.

The tide shifted again dramatically in late October when the Chinese sent hundreds of thousands of their troops south to

TRANSFORMING AMPHIBIOUS WARFARE

Pictured here are HMX-1 helicopters unloading Marines during an exercise.

GRAY RESEARCH CENTER

assist North Korea. Chinese forces soon surrounded the 1st Marine Division and allied forces at Chosin Reservoir. With the aid of Marine close air support, the encircled forces broke out of the trap, avoiding annihilation.

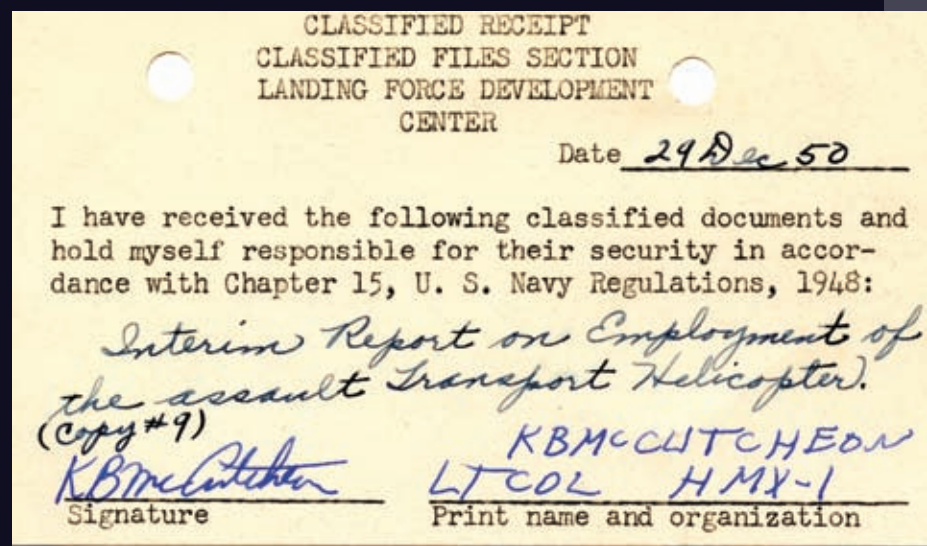
During the latter part of November and beginning of December 1950, as the Marines fought their way through masses of communist forces, aircraft of the Marine Corps, Navy, and Air Force supplied the division by airdrops and evacuated more than 5,000 casualties. Marine aircraft, aided by the Navy, provided close air support, an important factor in the 1st Marine Division's breakout of the enemy trap and its fighting withdrawal to Hamhung.

Between August 1950 and July 27, 1953, units of the 1st MAW flew more than 118,000 sorties. Approximately 39,000 sorties were flown as close air support missions. The Marines developed new tactics to press their early jets into ground support missions. During the same period, Marine helicopter squadrons evacuated almost 10,000 personnel. The results of the Korean War validated the Marines' view of tactical air support and interdiction. It also gave the first indications of the versatility and potential of the helicopter in modern combat.

When the Korean War ended, the 1st MAW remained in the Far East, supporting the Marine units stationed in Japan and Okinawa as the spear point of U.S. foreign policy in the region. The 2d MAW, stationed at Cherry Point, North Carolina, and the 3d MAW, at El Toro, California, served in a similar capacity. Both provided fighter and helicopter squadrons for duty aboard carriers in the Atlantic, Mediterranean, and Pacific. Marine aviation also demonstrated its readiness in responding to international crises in Taiwan and Lebanon, conducting humanitarian operations in South America, and participating in training exercises with Allied nations.

The pace of aircraft modernization accelerated throughout the 1950s. Fixed-wing squadrons received improved versions of first-generation jets and also took delivery of entirely new aircraft. Entering combat with either Vought F4U Corsairs or Grumman F9F Panthers, squadrons transitioned to improved Grumman F9F-6, -7, and -8 Cougars, or the North American FJ-2, -3, and -4 Fury aircraft after the war.

As aircraft technology progressed during the post-war period, so too did the evolution of aviation doctrine. The six functions of Marine aviation were expanded to keep pace with missile-armed fighters, attack aircraft with nuclear capability, advanced electronic countermeasures, aerial refueler-transports, and assault support helicopters. Similarly, more sophisticated weapons and weapons delivery techniques required updates to close air support procedures. Undergirding all of these changes was the development of an automated air command and control system.


CLASSIFIED RECEIPT
CLASSIFIED FILES SECTION
LANDING FORCE DEVELOPMENT
CENTER

Date 29 Dec 50

I have received the following classified documents and hold myself responsible for their security in accordance with Chapter 15, U. S. Navy Regulations, 1948:

Interim Report on Employment of the assault Transport Helicopter.
(Copy #9)

KBMcCutcheon
Signature

KBMCCUTCHEON
LT COL HMX-1
Print name and organization

GRAY RESEARCH CENTER

CRITICAL TO THE MISSION

While commanding officer of HMX-1 in 1951, Keith McCutcheon wrote a paper on the economics of helicopter development for widespread military use. He believed that the helicopter was the backbone of amphibious warfare. Pictured here is his receipt to hand carry classified documents on the employment of assault transport helicopters.

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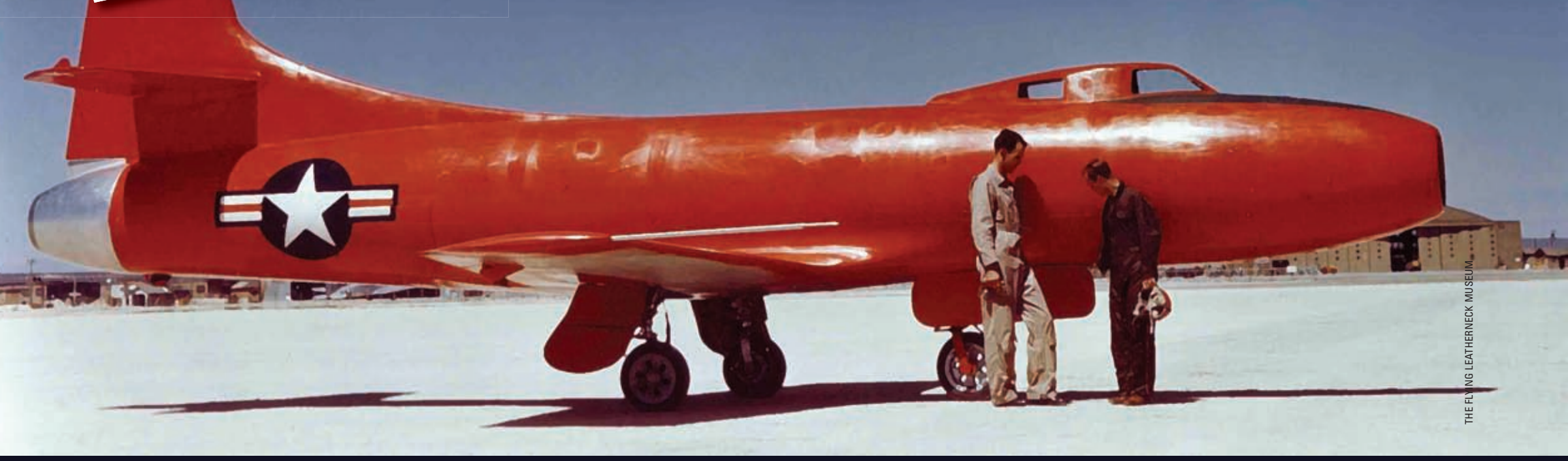
BREAKING THE SOUND BARRIER

After graduating from the first test pilot class at Naval Air Station Patuxent River, Maryland, Commander Turner Caldwell, USN, (left) and Major Marion Carl were selected to fly the Douglas D-558-1 Skystreak at Muroc Dry Lake, California (today it is Edwards Air Force Base). On August 25, 1947, Carl reached a speed of 650.6 miles per hour or Mach 0.82. He later remarked, "It was an exhilarating experience and the nearest thing to combat flying since the war."



1945

SEPTEMBER 8, 1945

The U.S. Navy lands Army ground forces at Inchon, South Korea. The following day, Japanese forces surrender south of the 38th Parallel on the Korean peninsula.

OCTOBER 6, 1945

The 1st MAW, under MajGen Claude E. Larkins, arrives at Tientsin, China. Its mission is surveillance and show-of-force flights, in an effort to impress the Japanese and make Communist forces pause.

OCTOBER 11, 1945

VMO-6 reaches Tsingtao, China, with orders to support ground troops with reconnaissance and liaison, while also recovering downed aircrew when necessary.

JULY 1946

The Marine Corps has 21 air squadrons, down from 132 at the end of WWII.

U.S. MARINE CORPS

MARINES GET JETS

With the delivery of McDonnell FH-1 Phantoms in November 1947, VMF-122 became the first Marine fighter squadron to be equipped with jets. Initially commanded by Major Marion Carl, pilots of VMF-122 toured as an exhibition team, the "Marine Phantoms." Here, Marines at Cherry Point, North Carolina, come to see their new jets.

JULY 21, 1946

Initial carrier-qualification testing for one of the first-generation Navy jets, the McDonnell XFD-1 Phantom, begins aboard the USS *Franklin D. Roosevelt*.

AUGUST 8, 1946

Maj Armond H. DeLalio is the first Marine to be designated as a helicopter pilot.

NOVEMBER 1946

Maj Marion Carl tests the Army Air Forces' new Lockheed P-80 to determine its suitability for carrier operations.

DECEMBER 16, 1946

A special board, under MajGen Lemuel C. Shepherd Jr., recommends that the Marine Corps develop helicopters and seaplanes for use in amphibious landings.

JANUARY 3, 1947

VMO-6 leaves China aboard the USS *Chilton*. The squadron disembarks at San Diego and will be stationed at Camp Pendleton, CA.

TESTING VERTICAL CAPABILITIES

On February 9, 1948, HMX-1 based at Quantico accepted the Marine Corps' first helicopters, a pair of Sikorsky HO3S-1s. With squadron personnel, Commanding Officer Colonel Edward C. Dyer (fifth from the left) stands behind Mr. Igor Sikorsky (left) and Major General Oliver P. Smith (right).

By November, HMX-1 and the Marine Corps School at Quantico published the *Marine Corps Schools' Employment of Helicopters—PHIB-31*.

Although few Marines flew helicopters prior to 1946, on August 8, 1946, Major Armand H. DeLalio (right) became the first Marine to be designated as a helicopter pilot.

MARINE CORPS HISTORY DIVISION

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1947

JANUARY 11, 1947
The initial flight of the McDonnell XF2D-1 Banshee occurs. VMF-114, -122, -214, and -533 will fly the production version of the Banshee as a fighter.

AUGUST 25, 1947
Maj Carl sets a world speed record in the Douglas D-558-1 Skystreak, for which he is awarded his fourth Distinguished Flying Cross.

OCTOBER 24, 1947
The Marine Corps' first jet fighter squadron, VMF-122, activates at Cherry Point. Maj Carl commands the squadron, which is equipped with McDonnell FH-1 Phantoms.

NOVEMBER 21, 1947
The initial flight of Grumman F9F-2 Panther occurs.

He was a fixed-wing pilot during World War II. From 1946 to 1948, he served as the executive officer of the Navy's only helicopter training and development squadron, VX-3. DeLalio was killed during a test flight in 1952 at Naval Air Test Center, Patuxent River, Maryland.

In August 1948, the Marine Corps received its initial Piasecki HRP-1 helicopter, known as "The Flying Banana." Marines frequently demonstrated the capabilities of helicopters in front of members of Congress and senior officials from the Department of Defense. Their demonstrations illustrated how ground forces could deploy rapidly to the field from a carrier via helicopters. Here, HRP-1 helicopters deliver troops to the field.

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DECEMBER 1, 1947

HMX-1, the Marine Corps' first helicopter squadron, activates at Quantico. The squadron is instrumental in testing and developing the Marine Corps' vision for the employment of helicopters.

FEBRUARY 9, 1948

HMX-1 receives its first helicopters, two Sikorsky H03S-1s. The helicopter can carry three people and travel at a speed of 103 mph.

FEBRUARY 24, 1948 - SEPTEMBER 1, 1950
MajGen William J. Wallace
DIRECTOR OF MARINE CORPS AVIATION

MARCH 23, 1948

The initial flight of the Douglas F3D Skyknight occurs. The F3D is the world's first jet fighter specifically designed as a carrier-based night fighter.

MAY 1948

HMX-1 carries out Operation Packard II, demonstrating the capability of conducting amphibious operations by helicopter. Flying five H03S-1s, the squadron makes thirty-five flights, transporting sixty-six Marines and equipment ashore.

As the United Nation's position in Korea deteriorated, the 1st Provisional Marine Brigade, consisting of the 5th Marines and MAG-33 (VMF-214, -323, VMF(N)-513, and VMO-6), was notified of the upcoming deployment. Just five days later, this air-ground team would deploy for combat operations.

At departure, the strength of the brigade numbered 6,534 men, and MAG-33 included 192 officers and 1,358 enlisted. The group's aircraft included sixty Vought F4U Corsairs and eight Consolidated OY Sentinels. To augment the aircraft, VMO-6 had four Sikorsky HO3S-1 helicopters transferred from HMX-1.

Originally, the plan called for the brigade to remain in Japan during the first month of the war; however, once the situation escalated the 1st Marine Provisional Brigade was quickly called into action. After a quick check by mechanics, the aircraft were transported via land to Kobe. On July 31, MAG-33 embarked for Korea.

The first aircraft from VMF-214 landed aboard the USS *Sicily* on August 3 and began flying air strikes against

DEATH LINED UP

From August 1950, the "Death Rattlers" of VMF-323, flying off the USS Badoeng Strait, *played an integral role in providing close air support.*

THE FLYING LEATHERNECK MUSEUM

NIGHT DEFENSES

First Lieutenant Campbell (left) piloted this WF-19 aircraft when VMF(N)-513 provided night defenses for Air Force aircraft in 1952. The squadron attained ten night victories during the war, including the first jet-versus-jet night fighter kill.

North Korea. The following day, VMF-323 landed on the USS *Badoeng Strait*. Both squadrons would be tasked with providing close air support for the brigade.

VMF(N)-513 was assigned to the 5th Air Force's operational control and began night heckler operations from Itazuke airfield on the island of Kyushu, Japan. On arrival at Kobe, a tank landing ship was waiting to reembark MCTACS-2 and the ground echelon of VMO-6 for transport to Pusan. The squadron's aircraft joined them after being readied at Kobe and Itami. Less than thirty days after activation, the air-ground integrity of the brigade was intact as it entered its first combat—a remarkable achievement of the Marine air-ground team.

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THE PANTHERS ARRIVE

In December 1949, VMF-115 received Grumman F9F-2 Panthers. The squadron trained through the summer of 1950, carrier-qualified aboard the USS Franklin D. Roosevelt *by November, and deployed to Korea in February 1952.*

MAJOR JOHN M. ELLIOTT

1948

NOVEMBER 1948

The Marine Corps School publishes the *Employment of Helicopters—PHIB-31*.

MAY 1949

HMX-1 carries out Operation Packard III with eight Piasecki HRP-1s, three Sikorsky H03S-1s, and a Bell HTL.

MAY 1, 1950

The 1st MAW participates in an amphibious demonstration, known as Demon III, with students from the Senior Course, Amphibious Warfare School.

JUNE 1950

The Marine Corps has sixteen air squadrons, which is only three more than at the onset of WWII.

PROBLEMS AT PUSAN

By the beginning of January 1951, the only land-based fighter squadron still in Korea was VMF-311. Pictured here at Pusan is a Panther aircraft of VMF-115 heading out to the runway.

MAJOR JOHN M. ELLIOTT

JUNE 1950

BGen Thomas J. Cushman is named Assistant Wing Commander of the 1st MAW. He commands the forward echelon, which will provide air support for the 1st ProvMarBde at Pusan, South Korea.

JUNE 15, 1950

President Truman visits HMX-1 and witnesses a simulated assault landing using HRP-1 "Flying Banana" helicopters.

JUNE 25, 1950

North Korea launches an invasion of South Korea, initiating the Korean War.

JULY 7, 1950

The 1st ProvMarBde activates and leaves for combat within the week. It is equipped with four HO3S-1 helicopters, marking the Marine Corps' first deployment of helicopters in combat.

AUGUST 3, 1950

VMF-214 aircraft flying from the USS *Sicily* strike targets near Chinju and Sandon-ni, South Korea. This begins Marine air operations during the Korean War.

PLANNING THE MISSION

While launching air strikes from the USS Badoeng Strait, *the squadron commander of VMF-323, Colonel Arnold A. Lund (center) reviews the tactical situation with his pilots. The squadron continued carrier-based operations until February 1951, when it moved to an airfield near Pusan, South Korea.*

U.S. MARINE CORPS

1950

AUGUST 4, 1950

VMO-6 conducts the first medical evacuation by a Marine helicopter.

AUGUST 6, 1950

The aircraft of VMF-323, aboard the USS *Badoeng Strait*, launch air strikes against Chinju, South Korea, along the Namgang River.

AUGUST 7, 1950

MAG-33, the 1st ProvMarBde, and other air-ground units enter into combat.

AUGUST 7, 1950

Capt Jesse V. Booker is the first Marine aviator shot down and captured during the Korean War.

THE FLYING LEATHERNECK MUSEUM

FAST AND EFFECTIVE

During the Korean War, Marine aviators validated the wisdom of operating from carriers. Inherently naval in character, Marine Corsairs remained close to the fight and effectively engaged enemy forces in and around the Pusan perimeter.

AUGUST 8, 1950

Flying H03S-1 helicopters, VMO-6 makes the first night evacuation of the wounded.

AUGUST 11, 1950

VMF-323, working with USAF F-51s, attacks a North Korean column in what is later declared the "Kosong Turkey Shoot." They stop the column at both ends, allowing the fighters to destroy over one hundred enemy vehicles.

SEPTEMBER 1, 1950 - APRIL 1, 1952

BGen Clayton C. Jerome

DIRECTOR OF MARINE CORPS AVIATION

SEPTEMBER 3, 1950

In preparation for the attack on Inchon, elements of the 1st MAW arrive in Tokyo.

SEPTEMBER 15, 1950

The 1st MarDiv launches a daring amphibious assault on Inchon. VMF-214 and -323 use rockets, bombs, and napalm to provide invaluable close air support.

Corsairs
STILL PROVIDING CLOSE AIR SUPPORT

During the initial phase of the Korean War, Marine Corsairs provided sustained close air support from aircraft carriers and land bases. With VMF-323 and -214 already conducting air strikes from carriers, VMF(N)-513 arrived in Japan ready for action. Soon nicknamed the "Flying Nightmares," the squadron flew radar-equipped Vought F4U-5N Corsairs at night.

In September, VMF-312, the "Checkerboards," arrived to augment the nightfighters. The squadron quickly got to work supporting the 1st Marine Division during the fierce fighting at Chosin Reservoir. In March 1951, VMF-312 embarked upon the USS *Bataan*, flying escort and blockade missions until June. During 1952 and 1953, the Checkerboards, redesignated as VMA-312, flew missions from the decks of the USS *Bairoko,* USS *Bataan,* and USS *Sicily*. In 1953, one of the squadron's cannon-armed Corsairs shot down a MiG-15 Soviet jet fighter.

As testimony to the effectiveness of carrier-based air support during the war, one North Korean prisoner of war remarked: "the weapons he feared the most were the blue ones [Corsairs]."

1950

SEPTEMBER 19, 1950
Gen Robert E. Cushman Jr. establishes Tactical Air Command X Corps at Kimpo, South Korea. MGCIS-1, MTACS-2, VMO-6, VMF(N)-542, VMF-212, and -312 arrive the same day.

OCTOBER 14, 1950
VMF-312 and VMF(N)-513 move to Wonsan, North Korea. They are primarily supplied by air.

OCTOBER 23, 1950
The initial two helicopters from VMO-6 fly from Kimpo to Wonsan. The rest of the squadron, minus a flight of helicopters, arrives four days later.

NOVEMBER 27, 1950
The Battle of Chosin Reservoir begins.

THE FLYING LEATHERNECK MUSEUM

NOVEMBER 30, 1950

Marine air conducts 144 land-based and 10 carrier-based sorties in support of the beleaguered X Corps units in and around Chosin Reservoir.

DECEMBER 6, 1950

While the 1st MarDiv withdraws from Hagaru-ri, North Korea, a Douglas R5D operates as a tactical air direction center to provide close air support.

JANUARY 1951

The Marine Corps receives authorization to increase its number of fighter squadrons from eighteen to twenty-one.

APRIL 3, 1951

Capt Paul L. Martelli, a Corsair pilot with VMF-323, is shot down in North Korea and captured by Chinese troops. He is taken to Pyongyang and is interrogated.

APRIL 21, 1951

Carrier-based pilots make the Marines' first aerial kill when they down two Soviet Yak-9s.

EVACUATING THE WOUNDED

On August 4, 1950, pilots of VMO-6 evacuated the first casualties of the conflict in HO3S helicopters. The squadron received its first Bell HTL-4 in December (right). Marine helicopters transported the critically wounded from forward aid facilities to more advanced medical centers, including off-shore hospital ships equipped with helicopter landing platforms. A Marine (below) guides in an evacuation helicopter as corpsmen wait with a casualty.

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1951

JULY 9, 1951

VMR-152 of the 1st MAW conducts extensive airlift of personnel from the 1st MarDiv. During a 4-day-period, they transport 6,698 men during 56 round trips.

AUGUST 31, 1951

HMR-161, equipped with fifteen Sikorsky HRS-1 helicopters, arrives in Korea to support the 1st MarDiv.

SEPTEMBER 21, 1951

Pilots of HMR-161 launch a new age of battlefield mobility by transporting 224 combat-loaded Marines to Hill 884 during Operation Summit. This validates the Marines' new doctrine of "vertical envelopment."

NOVEMBER 4, 1951

While flying an F-86 with the 5th Air Force, Capt William F. Guss becomes the first Marine aviator to shoot down a MiG-15.

FORWARD AIR CONTROL

In addition to helicopters, VMO-6 pilots flew small fixed-wing observation aircraft as forward air controllers. In 1951, Cessna OE-1 Bird Dogs (pictured left and center) replaced OY-1 Sentinels.

THE FLYING LEATHERNECK MUSEUM

FEBRUARY 25, 1952

VMJ-1 activates and initially has the highest number of enlisted pilots of any squadron in the Marine Corps. The squadron is assigned eleven planes: five F2H-2P Banshees, four F7F-2P Tiger Cats, one F9-2P Panther, and one F4U-5P Corsair.

APRIL 1, 1952 - JULY 31, 1955
LtGen William O. Brice
DIRECTOR OF MARINE CORPS AVIATION

APRIL 20, 1952

MAG-12 relocates to Pyongtaek, South Korea. VMA-212, -312, and -323 fly Corsairs, while VMA-121 flies Skyraiders.

APRIL 30, 1952

Marine pilots, flying F9F-2 Panthers, engage in air-to-air combat when they are attacked by eight MiGs.

MAY 2, 1952

Capt Ted Williams, famed baseball player, reports for duty with the Marine Corps.

COVERING THE GAME

On January 3, 1952, Marine helicopters conducted a unique mission. They transported cameramen from the KTLA television station to provide coverage of the Rose Bowl game.

THE FLYING LEATHERNECK MUSEUM

1952

JUNE 7, 1952

VMF(N)-513 pilot 1stLt John W. Andre, flying an F4U-5N, shoots down a Soviet Yak-9. Adding to his four Marine nightfighter kills in WWII, his fifth kill makes him the first Marine nightfighter ace.

AUGUST 5, 1952

Col Robert E. Galer, CO of MAG-12, is shot down for the fifth time in his career. He is rescued by helicopter, one hundred miles behind enemy lines.

SEPTEMBER 10, 1952

While flying a piston-engine F4U Corsair, Capt Jesse G. Folmar of VMF-312 shoots down a MiG-15.

SEPTEMBER 28, 1952

Maj Alexander J. Gillis, on the last day of his tour with the Air Force, shoots down two MiGs. Gillis is shot down in the same engagement and rescued four hours later from the Yellow Sea.

MARINE CORPS HISTORY DIVISION

U.S. MARINE CORPS

THE MiG KILLERS AND THE WINGMAN

Major John F. Bolt Jr. (far left) is the only Marine aviator to become an ace in two wars. Throughout World War II, he served with VMF-214, and in Korea, he flew with the 5th Air Force in North American F-86 Sabres.

Marine pilots downed twenty-one MiG-15 aircraft while flying with the Air Force. Major John Glenn Jr. accounted for three MiG kills in this 51st Fighter Wing Sabre "MiG Mad Marine" (near left). When not flying with the Air Force, Major Glenn flew in VMF-311 with famed Boston Red Sox slugger, Captain Ted S. Williams (above, second from right) as his wingman.

Williams served in World War II and was recalled to active duty in 1952, flying thirty-nine combat missions in Korea.

U.S. MARINE CORPS

OCTOBER 22, 1952

2dLt Frank E. Petersen Jr. receives his Wings of Gold and becomes the first African-American Marine aviator.

NOVEMBER 3, 1952

Maj W. T. Stratton Jr. and MSgt Han C. Hoglind of VMF(N)-513 shoot down the first enemy jet at night with a Douglas F3D-2 Skyknight.

JANUARY 1953

VMF-311 takes delivery of six new Grumman F9F-5 Panthers and flies them to Korea.

FEBRUARY 16, 1953

Capt Ted Williams participates in a thirty-five-plane strike south of Pyongyang.

FEBRUARY 23, 1953

VMA-312 pilot Maj David Cleeland is shot down and attacked by Mongolian horsemen. The horsemen are killed by Marine aircraft.

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1953

APRIL 1, 1953
While operating at night with the 1st MarDiv, pilots use searchlights on targets, improving their close air support.

MAY 16, 1953
Maj John F. Bolt, a WWII ace, shoots down his first MiG-15 in an F-86 Sabre.

JUNE 8, 1953
VMA-312 is relieved by VMA-332 and redeploys to MCAS Miami to transition to F9F Panthers.

JULY 11, 1953
Maj Bolt shoots down his fifth and sixth MiGs, becoming the only Marine aviator to be credited with five kills [ace] in two wars.

Validating the Concept
HMR-161

On January 15, 1951, HMR-161 was activated. Initially commanded by Lieutenant Colonel G. W. Herring, the squadron deployed within nine months, flying Sikorsky HRS-1 helicopters in Korea. The HRS-1 and the improved HRS-2 operated throughout Korea, although there were never more than fifteen operational aircraft assigned to HMR-161.

By 1953, the squadron had logged more than 16,500 hours of flying time in 18,607 sorties, transporting over 60,046 troops (including over 10,000 wounded), and more than 3,750 tons of cargo. The accomplishments of this single squadron reinforced the necessity for employing helicopters in combat.

Colonel Keith B. McCutcheon became the commanding officer in December 1951, and under his leadership HMR-161 continued to improve its techniques to transport troops, supplies, and equipment to the battle zone. He believed that lessons on the employment of helicopters in combat should be continually communicated to squadrons training stateside. This dialogue would create well-prepared helicopter pilots, ensuring a fluid transition between doctrinal training and combat operations. Promoted to lieutenant general during his service in Vietnam, McCutcheon was a leader in Marine aviation until his death in 1971.

JULY 22, 1953
Maj John Glenn Jr. makes the last MiG kill of the Korean War.

JULY 25, 1953
VMF-115 and -311 fly strikes against enemy troop concentrations.

JULY 27, 1953
The Korean War ends with a cease-fire. The last jet mission of the war is flown against Chinese supply areas thirty-five minutes before the cease-fire takes effect.

AUGUST 23, 1954
The Lockheed C-130 makes its maiden flight at Burbank, CA. The Marine Corps variant is officially designated GV-1 and put into operation some three years later.

MARCH 25, 1955
The Chance Vought XF8U-1 Crusader prototype first flies. It is the first aircraft to break the sound barrier on its inaugural flight.

PROVIDING PRESIDENTIAL LIFT

Beginning in 1957, HMX-1 shared the responsibility of providing helicopter services for the President and White House staff with the Army's Executive Flight Detachment.

Soon after, President Dwight D. Eisenhower approved HMX-1 and the Army Executive Flight Detachment helicopters to land on the South Lawn of the White House, a tradition that continues to this day. Seen here are Eisenhower and other dignitaries preparing for their flight in a Marine HSS-1Z.

In 1976, Marine pilots of HMX-1 became the sole Executive Flight Detachment for helicopter services to the President.

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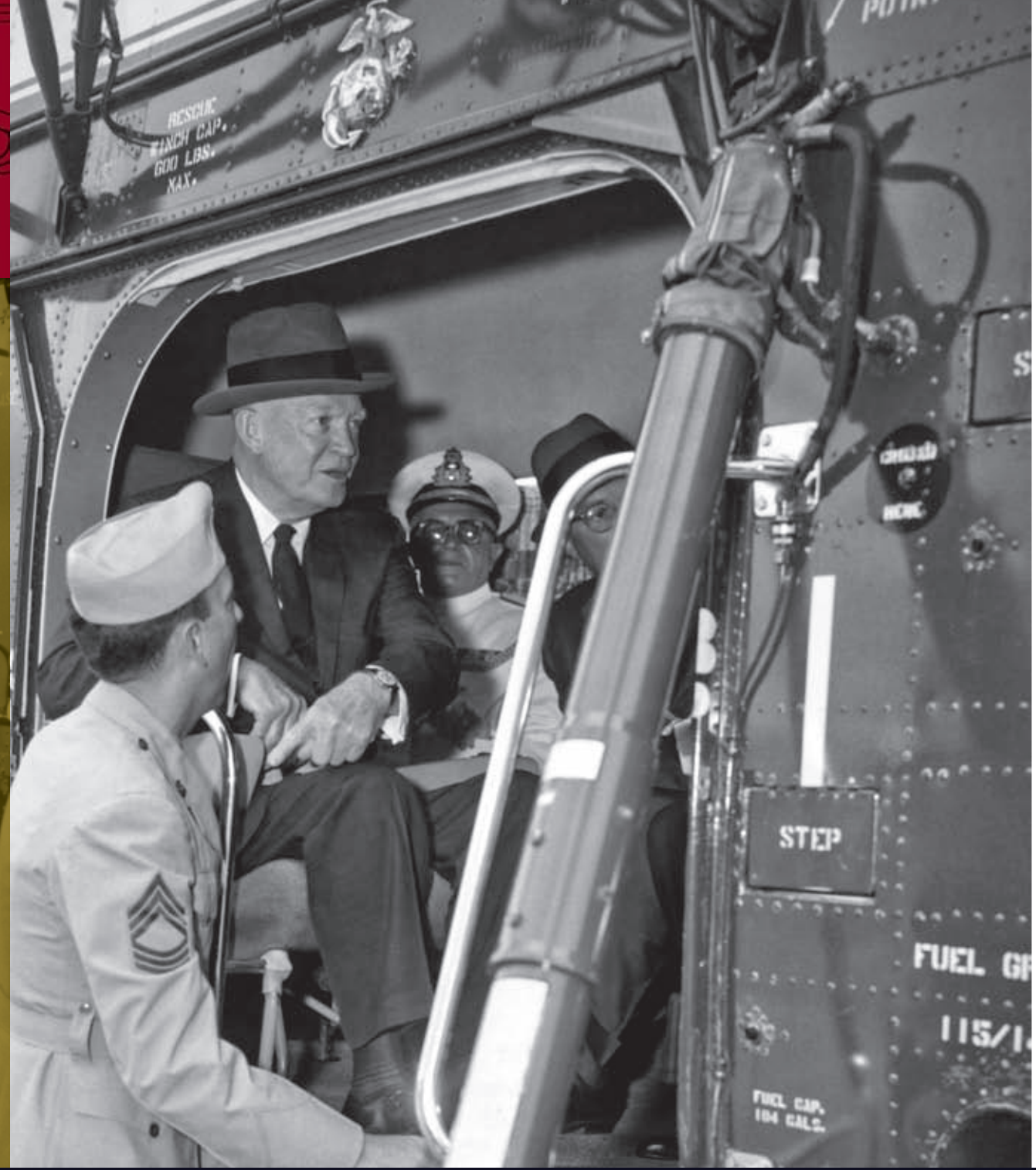


NATIONAL MUSEUM OF THE MARINE CORPS

1955

AUGUST 1, 1955 - MARCH 31, 1957
LtGen Christian F. Schilt
DIRECTOR OF MARINE CORPS AVIATION

JUNE 1956

The 1st MAW redeploys to NAS Iwakuni, Japan.

JULY 5, 1956

The Marine Corps' five year plan calls for nine light helicopter squadrons each with twenty aircraft, six medium squadrons each with fifteen aircraft, and three VMOs each with eighteen aircraft, all by 1962.

SEPTEMBER 29, 1956

VMA-333 exchanges its Douglas AD-6 Skyraiders for FJ-3 Furys and is redesignated VMF-333. The first Douglas A4D Skyhawks are delivered to VMA-224 at MCAS El Toro.

THE FURY

Difficulties with the North American FJ-2 Fury as a carrier-based fighter led to the assignment of most of the production run (approximately 200 aircraft) to Marine shore-based squadrons. One exception was VMF-235, including the aircraft seen here, which participated in handling tests aboard the USS Hancock *in spring 1954.*

JANUARY 12, 1957

The Marine Corps' first medium helicopter squadron, HMR(M)-461, activates at New River, NC, and receives the Corps' first Sikorsky HR2S-1s.

FEBRUARY 13, 1957

HMR(L)-261 receives new HUS-1 (UH-34) helicopters.

APRIL 1, 1957 - DECEMBER 2, 1957

LtGen Verne J. McCaul

DIRECTOR OF MARINE CORPS AVIATION

JULY 16, 1957

Maj John H. Glenn Jr. breaks the sound barrier, flying west to east across the United States in an F8U-1P, the photo-reconnaissance variant of the Crusader.

DECEMBER 1957

VMF(AW)-122 receives the Marine Corps' first Vought F-8 Crusaders.

SITUATIONAL AWARENESS

New jet aircraft came with additional training and safety problems. For Marine pilots, operating jets at or close to the speed of sound at high altitudes necessitated additional instruction. The simple task of breathing became a life or death situation with the very real threats of hypoxia, carbon monoxide poisoning, and aeroembolism.

In an effort to remind aviators of those risks, the signs and photos around the mirror reminded aircrews that what was beneath the buzz cut was often more important than the haircut itself.

THE FLYING LEATHERNECK MUSEUM

1958

JANUARY 14, 1958 - FEBRUARY 20, 1958
MajGen Samuel S. Jack
DIRECTOR OF MARINE CORPS AVIATION

FEBRUARY 21, 1958 - DECEMBER 14, 1959
MajGen John C. Munn
DIRECTOR OF MARINE CORPS AVIATION

SEPTEMBER 1958

VMF(AW)-115 is put on alert after Chinese Communist artillery barrages strike islands offshore of Taiwan in what became known as the Formosa Crisis.

MARCH 22, 1959

VMF(AW)-115 redeploys to Atsugi, Japan.

THE FLYING LEATHERNECK MUSEUM

TRANS-PACIFIC CROSSING

In autumn 1958, pilots of VMA-214 and -212 (seen here) conducted the first trans-Pacific crossing by single-seat Marine Corps aircraft.

JULY 11, 1959

To fill a growing shortage of pilots, the Marine Aviation Cadet Program is reestablished at Pensacola.

AUGUST 20, 1959

HMR(L)-261, operating from the USS *Thetis Bay*, completes a week-long relief effort in flood-stricken Taiwan. The squadron airlifted over 1,600,540 pounds of cargo and 833 passengers on 898 missions.

NOVEMBER 1959

VMF-333 gives up its FJ-4 Fury aircraft for Vought F8U Crusaders.

DECEMBER 15, 1959 - SEPTEMBER 10, 1961

MajGen Arthur F. Binney

DIRECTOR OF MARINE CORPS AVIATION

JANUARY 30, 1960

An exercise is conducted at Vieques, Puerto Rico, to evaluate new techniques in the employment of helicopters during a vertical assault. The findings initiate modifications to amphibious assault ships.

U.S. MARINE CORPS

LOADING TROOPS

On March 28, 1960, as part of an exercise to practice vertical envelopment in support of landing operations, Marines of 2d Battalion, 6th Marines board a Sikorsky HUS helicopter on the deck of the USS Boxer.

CHAPTER NINE
THE BUILDUP

Entering the 1960s, Marine aviation began to transition from the austerity of the post-Korean conflict years to an era in which the Department of Defense recognized the need for force modernization. Even as Marine air continued to support the full range of deployments and contingencies in both the Pacific and Atlantic, new aircraft, systems, and organizations were introduced.

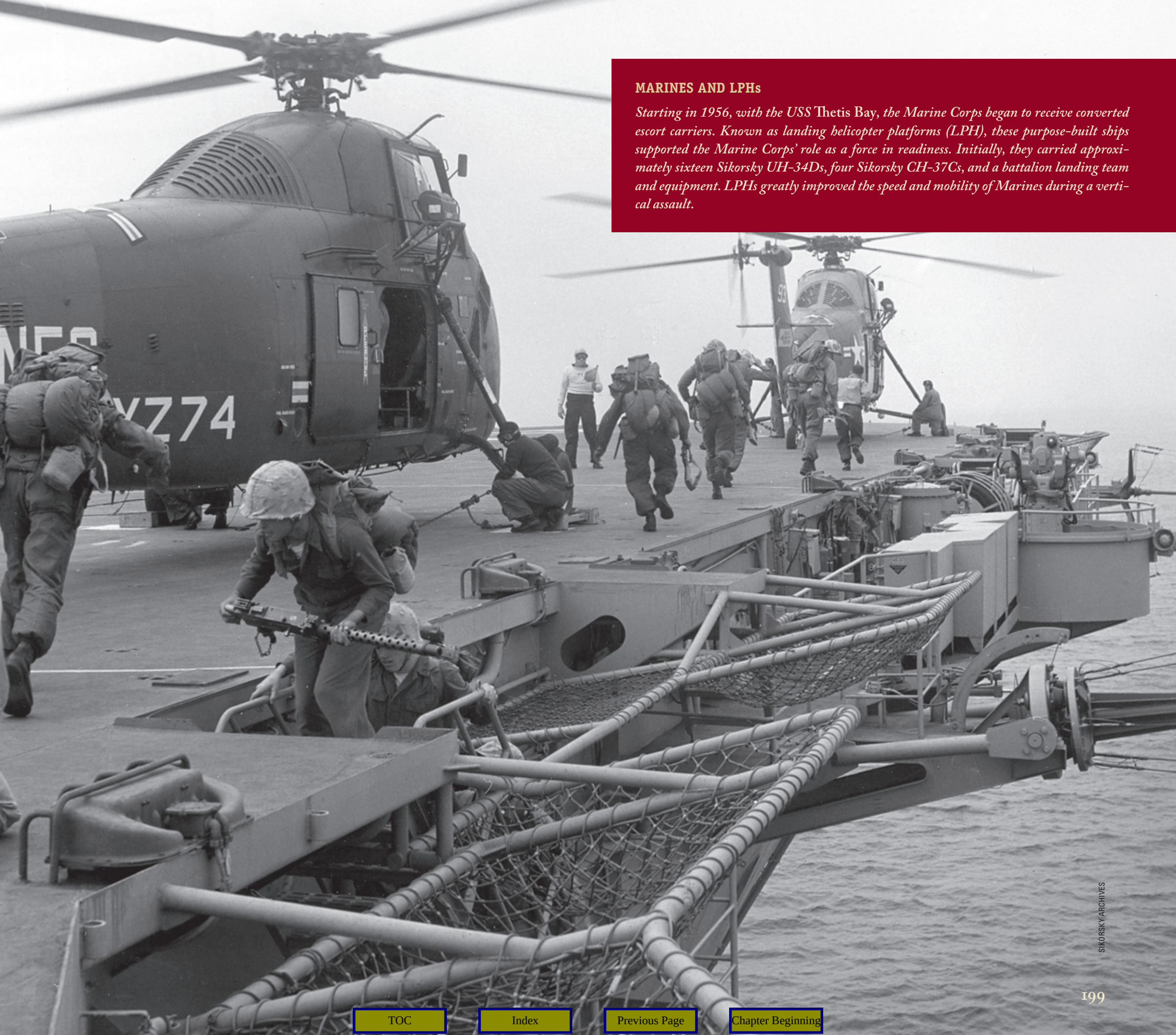
McDonnell F-4 Phantoms and Douglas A-4 Skyhawks replaced Vought F-8 Crusaders, Douglas F-4D Skyrays, and North American FJ-4 Furys in tactical squadrons. The Lockheed KC-130F Hercules transport and aerial refueler replaced the aging and increasingly obsolete Fairchild C-119 Flying Boxcar. The home all-the-way killer (Hawk) missile came online and an expeditionary airfield system was developed.

In addition to managing new programs, Marine leadership continued to develop and field new and improved capabilities. A vertical short take off and landing aircraft that could operate from small fields was envisioned. New all-weather attack aircraft and more-capable electronic countermeasures planes were in the works, as were turbine-powered helicopters that could carry additional troops and cargo. The Marine Corps updated its command and control system with a fully automated tactical data system. While nearly every corner of Marine aviation underwent some form of change, forces stirred in Southeast Asia.

In the postwar era colonial empires dissolved, often as the result of violent struggles for independence against the backdrop of the Cold War. Emerging nations were pressured by communism, the ambitions of petty dictators, and the desire for a better life. As in Korea, U.S. foreign policy fought the expansion of communism in Southeast Asia, where Marine aviation would stand against further subversion of independent states.

Many considered Vietnam to be the essential link. The superpowers squared off in the former French colony of Indochina, when Vietnam was divided between communist-controlled North and Western-oriented South. Efforts to reunify the countries were hampered by religious unrest in the South, coupled with the armed insurgency of the Viet Cong, sponsored by North Vietnam. Political assassinations, terror bombings, and attacks on villages and military outposts gave little hope for a free and open election or reunification. Subsequently, in 1961, the United States provided advisors to the armed forces of the Republic of Vietnam in an effort to stabilize the Republic of South Vietnam's government while searching for a political solution.

Against this escalating turmoil, squadrons of the 1st MAW, engaged in the SEATO exercise Tulungan in the Philippines, received orders to deploy a medium helicopter squadron to Vietnam. Task Unit 79.3.5, built around HMM-362 and MABS-16, quickly formed. HMM-362 was equipped with twenty-four Sikorsky HUS helicopters. MABS-16 had three Cessna OE-1 aircraft and a Douglas R4D.



MARINES AND LPHs

Starting in 1956, with the USS Thetis Bay, *the Marine Corps began to receive converted escort carriers. Known as landing helicopter platforms (LPH), these purpose-built ships supported the Marine Corps' role as a force in readiness. Initially, they carried approximately sixteen Sikorsky UH-34Ds, four Sikorsky CH-37Cs, and a battalion landing team and equipment. LPHs greatly improved the speed and mobility of Marines during a vertical assault.*

SIKORSKY ARCHIVES

TOC Index Previous Page Chapter Beginning

The first elements of Task Unit 79.3.5 began deploying to Soc Trang, eighty-five miles southwest of Saigon, on April 9, 1962. All forces were in place six days later, when Operation Shufly began. In the course of its tour supporting South Vietnam, HMM-362, led by Lieutenant Colonel Archie Clapp, pioneered many of the tactics and techniques used by squadrons that followed, rotating through Soc Trang every four months. Extending the doctrine of vertical envelopment, the Shufly helicopters moved troops, inserted quick-reaction forces, evacuated casualties, and performed other routine tasks supporting ground units.

In September 1962, Operation Shufly moved to Da Nang, the site originally proposed by the Marines. However, as the Viet Cong gradually increased the level of resistance, Marine helicopter squadrons continued to rotate every few months. The Marines' mission remained the same. As aircraft and personnel losses slowly mounted, the requirement for an armed escort helicopter became evident. At first, Bell HU-1 "Hueys" from the Army filled the need, but the Marines needed their own.

By early 1965, the Viet Cong departed from their usual guerilla style hit-and-run operations and began to challenge the South Vietnamese forces to stand-up battles, fights in which the Viet Cong too often dominated. The South Vietnamese government could no longer contain the situation without additional outside support.

The United States was not yet prepared to make the decision to intervene in Vietnam with ground combat units. However that commitment was soon forthcoming. On February 8, 1965, as a consequence of a deadly attack on American forces at Pleiku, South Vietnam, Marine combat forces with Light Antiaircraft Missile Battalion One deployed to Da Nang.

The situation in South Vietnam continued to deteriorate, and the decision was made to send the 9th MEB to defend the airfield at Da Nang. Already on alert, the Marine ground forces began landing by amphibious and helicopter transport on March 6, 1965. The United States was now committed to the defense of South Vietnam. The buildup of American Marine

GRAY RESEARCH CENTER

Corps forces continued in April with elements of the 3d MEB arriving at Da Nang and Phu Bai. VMFA-531 began flying combat missions from Da Nang and was among the first fixed-wing squadrons to arrive from Japan and the United States.

On May 7, the 3d MEB landed at Chu Lai to secure the surrounding area and prepare for the construction of the first short airfield for tactical support (SATS). The SATS complex provided an 8,000-foot aluminum matting runway that accommodated MAG-12 and its A-4 Skyhawk attack aircraft.

The buildup continued at such a pace that within a year the Marine presence in Vietnam consisted of III MAF, 1st and 3d Marine Divisions, 1st MAW, and Force Logistics Command. Marines were spread across I Corps, a tactical area of responsibility encompassing the five most northern provinces of South Vietnam.

Near the demilitarized zone separating North from South Vietnam, the war was typically fought on the ground with air support, pitting North Vietnamese units against U.S. Marine counterparts. Apart from a few traditional campaigns, most of the Vietnam conflict involved guerilla warfare—small Viet Cong units opposing popular forces, South Vietnam, and U.S. Marine units.

DIRECTING CLOSE AIR SUPPORT

First Lieutenant Gary O. Henkel, an A-4 Skyhawk pilot of MAG-12, directs a close air support mission for the 9th Marines during his tour as a forward air controller.

The first traditional fight with the Viet Cong occurred in August 1965 during Operation Starlite, when the 9th MAB opposed the 1st Viet Cong Regiment. The battle featured every weapon in the Marine arsenal, including artillery and naval gunfire prep fires, fixed-wing preparation of the helicopter landing zones, battalion-size heliborne assault, close air support, medical evacuation, and an amphibious landing. The 1st Viet Cong Regiment was virtually destroyed, and the operation marked one of the last times the Viet Cong dared to fight conventionally.

In contrast to the typical counter-guerilla operations against Viet Cong forces, the Marine attack against North Vietnamese forces during Operation Hastings in the summer of 1966 was a conventional battle. Task Force Delta, consisting of five infantry battalions, five helicopter squadrons, and an artillery battalion, battled the NVA 324B Division. The statistics illustrate the ferocity of the fight. In just thirteen days of active fighting, the 1st MAW flew 1,677 tactical sorties in support of ground troops. Acting in conjunction with the 1st ARVN Division, Task Force Delta fractured the 324B, driving its elements across the demilitarized zone or into the mountains.

While the foregoing characterizes the nature of the ground combat that raged across I Corps between 1965 and 1967, for which the 1st MAW provided both helicopter and fixed-wing support for, it does not capture the full spectrum of the air wing's operations. In addition to supporting the Marine air-ground team, the Wing also provided support to both the Seventh Fleet and the 7th Air Force. Early in the campaign, the aging Douglas EF-10B Skyknights of VMCJ squadrons provided electronic countermeasures support to the carrier aircraft striking targets in North Vietnam from Yankee Station (the location in the Gulf of Tonkin from which the Navy launched its air strikes). At the time, the electronic countermeasure capabilities of the Skynights were the best available.

The arrival of VMA(AW)-242 and its new Grumman A-6A Intruder provided the Wing with a much needed all-weather bomber, with which aviators attacked heavily defended targets in North Vietnam and inflicted significant losses. The F-4 Phantoms of VMF-323 flew combat air patrol sorties in support of the A-6s, and they, too, were targeted in the southern regions of North Vietnam.

A measure of the operational tempo is found in the following extract from the 1st MAW Command Chronology of December 1967: The year ending December 13, 1967, saw the 1st MAW fixed-wing aircraft expend 147,565 tons of ordnance, while flying 81,975 sorties for a total of 90,646 hours. Helicopters flew 443,553 sorties for a total of 162,646 hours, carrying 578,270 passengers and 66,761.8 tons of cargo.

The numbers overlook the human side of the story—the multitude of Marines killed and wounded, and the aircraft destroyed and damaged. The latter are replaceable, the former are lost forever.

Marine aviation had, in the tradition of Cunningham and Geiger, responded to the call. Shortages and problems were being worked out or had been overcome, proving once again, the Marine philosophy that the function of tactical air power is to directly influence the outcome of the land campaign. As 1967 drew to a close, the only outstanding question was whether the United States was winning the war.

FLYING LEATHERNECK MUSEUM

THE LARGEST HAULER

The Marine Corps used Sikorsky helicopters both in Korea and Vietnam for cargo and artillery transport, as well as medical evacuation. At the time of delivery, the CH-37 was the largest helicopter in the Western world. It used piston engines, which were heavier, yet less powerful than the turbo-shafts subsequently developed.

1960

MARCH 7, 1960

The 1st MAW, supported by the 7th Fleet, participates in Exercise Blue Star. The exercise demonstrates WestPacMar Force's capability to conduct helicopter vertical envelopment and the potential for a short expeditionary landing field.

APRIL 1, 1960

The Marine Corps becomes the first service to have a helicopter transportable electronic air defense system, which can coordinate split-second firing of Terrier and Hawk guided missile batteries.

MAY 2, 1960

The 1st Light Anti-Aircraft Missile (LAAM) Battalion, Force Troops, FMFPac, is activated at Twentynine Palms, CA, as the first Hawk missile battalion.

JUNE 18, 1960

VMF(AW)-115 is reassigned to 1st MAW, MAG-11, at NAS Atsugi, Japan.

MAJOR JOHN M. ELLIOTT

INVALUABLE IN VIETNAM

In 1962, the Marine Corps' inventory included approximately 340 helicopters, flown by four Marine aircraft groups: MAG-13, -16, -26, and -36. Operating six different types/models/series, the most common were the Sikorsky HUS (UH-34), the Kaman HOK (HH-43), and the Sikorsky HR2S (CH-37). With over 225 in service, the HUS (UH-34) was the most significant.

SEPTEMBER 5, 1960

LtCol Thomas H. Miller Jr. sets a world speed record in a McDonnell F4H-1, the Marine Corps' newest fighter.

JANUARY 31, 1961

HMR(L)-262 makes an at-sea recovery of a Mercury capsule launched from Cape Canaveral, FL. In a preliminary test for manned space flight, the capsule carries a chimpanzee named Ham, and reaches an altitude of 155 miles and travels 420 miles.

FEBRUARY 6, 1961

LtCol W.D. Patterson, CO of VMF(AW)-114, lands a Douglas F4D-1 jet on a short expeditionary landing field (SELF) in the first Marine jet landing at Vieques, Puerto Rico.

MARCH 1, 1961

VMGR-352 becomes the Corps' first in-flight refueling squadron after receiving the Lockheed GV-1, later designated the KC-130F, Hercules aerial tanker.

MAY 5, 1961

1stLt Wayne E. Koons and 1stLt George F. Cox, pilot and copilot from HMR(L)-262, retrieve America's first astronaut, Cdr Alan B. Shepherd Jr., USN, from ***Freedom 7*** in the Atlantic Ocean. They transport him to the USS ***Lake Champlain***.

SIKORSKY ARCHIVES

NATIONAL MUSEUM OF THE MARINE CORPS

1961

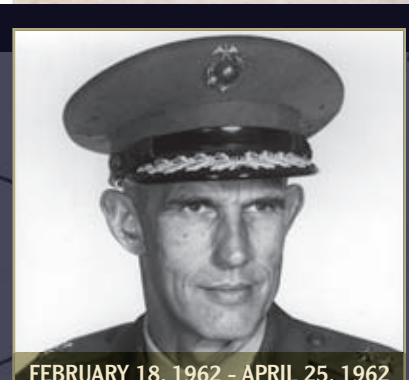
JUNE 15, 1961

HMTS(L)-262 and VMA-242, elements of the 8th MEU, participate in Phibulex 2-61, which emphasizes counter-guerrilla and riot-control training.

SEPTEMBER 11, 1961 - FEBRUARY 17, 1962
Col Keith B. McCutcheon
DIRECTOR OF MARINE CORPS AVIATION

JANUARY 15–23, 1962

VMF(AW)-451 departs El Toro for Japan, refueling en route from the recently acquired Lockheed KC-130F tankers of VMGR-352, -252, and -152. This is the first trans-Pacific deployment by a Marine tactical squadron.



FEBRUARY 18, 1962 - APRIL 25, 1962
Col Marion E. Carl
DIRECTOR OF MARINE CORPS AVIATION*
*BECOMES DEPUTY CHIEF OF STAFF (AIR) APRIL 1962

MARINES & SPACE

The crew of HMR-262 (far left) practices for the retrieval of America's first astronaut. The crew later recovered Commander Alan B. Shepherd Jr., USN, from the Atlantic Ocean and transferred him to the USS *Lake Champlain*.

Of the seven original astronauts selected in 1959 (center), there was only one Marine, Colonel John H. Glenn Jr. He poses (third from left) with the group in 1961 beside a Convair F-106B at the NASA Langley Research Center, Virginia.

Piloting *Friendship 7* (left), he became the first American to orbit the earth on February 20, 1962. His flight lasted almost five hours before the spacecraft splashed down in the Atlantic Ocean.

NATIONAL MUSEUM OF THE MARINE CORPS

FEBRUARY 19, 1962

Headquarters, 7th Marines, 1/7, 2/5, and HMM-163 begin Exercise Keel Block near Camp Pendleton, CA. Infantry battalions are helilifted from the USS ***Valley Forge***, twenty miles at sea, into "enemy" territory at Pendleton.

FEBRUARY 20, 1962

LtCol John H. Glenn Jr. becomes the first American astronaut to orbit the earth while flying in the space capsule ***Friendship 7***.

MARCH 1962

The Marine Corps orders the Grumman EA-6A, a sophisticated electronic warfare replacement for the aging EF-10B. Equipped with an electronic surveillance system and suite of jammers, the EA-6A is able to detect, identify, locate, and jam enemy search and antiaircraft fire-control radars.

MARCH 1, 1962

LtCol William C. McGraw, flying an F4H-1 at NAS Brunswick, ME, establishes new world climb records of 5.6 and 7.5 miles from a standing start in 61.62 and 77.15 seconds, respectively.

Looking Back and Looking Forward
MARINE AIR COMMAND AND CONTROL

The first Marine aviators envisioned men poised to support Marines on the ground. This vision survived the early years of improvising with minimal support, the veto of supporting the Marine brigade in France, and the fiscal austerity of the years following the "war to end all wars."

By the 1920s, fed by political instability in the Caribbean and Central America, Marine air support began to take form. To fulfill the idea of coordination, air and ground units had to develop effective methods of communication. When small detachments of aircraft and personnel were sent to the Dominican Republic and Haiti to suppress insurrections, aviators provided ground commanders rudimentary support. Pilots actions began to convince some of the skeptics that aviation could play a useful role in ground combat operations.

In Nicaragua pilots refined close air support of ground Marines. They conducted dive bombing and strafing missions against the enemy. Pilots and crews also evacuated the wounded, transported troops, and delivered supplies.

Virtually unnoticed and behind the scenes, were the efforts to create a system to command and control air operations in support of ground forces. Absent radio communications, pilots sought ways to communicate with ground units.

At first they used hand signals. This led to a more elaborate system, in which ground units laid out panels in a field or clearing, signaling their requirements in a coded pattern to aircraft circling overhead. Yet, it was not until the advent of reliable air-to-ground communications, the impetus of World War II, and the introduction of radar technology, that real progress was made. On Guadalcanal, air operations were often reactionary, with little advanced planning and timely coordination possible. Radio reports from coast watchers and basic radar alerted the Cactus Air Force to scramble their fighters to battle for air superiority.

In the same way, dive bombers were tasked to destroy the transports carrying Japanese reinforcements. Aviation came of age with the integration of amphibious operations involving sea, air, and land elements. By the time Marines invaded Okinawa, effective systems were used in both the Navy-Marine Corps and Army-Army Air Forces. In the former, command was centralized but control decentralized to allow for rapid response to changing combat situations whether afloat or ashore.

Over time, various types of control agencies were created and developed. In the Marine system, the senior agency was the tactical air control center, which assigned tasks and allocated resources. Subordinate to the tactical air control center, the tactical air operations center controlled offensive and defensive air operations. The direct air support center controlled close air support operations and coordinated with the division fire support coordination center.

GRAY RESEARCH CENTER

AIR COMMAND AND CONTROL

Surrounded by maps, charts, and communications equipment in the direct air support center, Marines coordinate air and naval gunfire.

Complementing the direct air support center on the ground was the tactical air control party. Headed by a Marine aviator, the tactical air control party was assigned at the battalion level, requesting and controlling close air support missions. By the end of World War II, the Marine air command and control system had grown to include such closely related functions as control of antiaircraft fires, standoff radar bombing, air traffic control, and terminal guidance.

Marine aviation's approach of centralized command and decentralized control was validated during the Korean War when the 1st Marine Division withdrew from Chosin Reservoir. The Marines' approach later brought them into disagreement with the Air Force. The Air Force believed in the model of centralized command and execution for all theater air operations. However, the Marine Corps saw this method as less responsive to the needs of the ground commander.

The differences, which arose again in Vietnam, led to a compromise wherein Marine air would cede sorties in excess of its needs to the Air Force for its broader range of missions. Then, as now, the core of the Marine air command and control system was the automated Marine tactical data system, which was developed and tested in the 1960s and first employed in Vietnam. More recent conflicts continue to demonstrate both the validity of the Marine Corps' concept of the command and control of air operations as well as the inherent flexibility of the Marine air command and control system.

From Iraq to Afghanistan, Marine Corps' units integrate seamlessly with the systems of the Air Force and NATO nations. Today, each aircraft wing contains a Marine air control group. The group has six squadrons, each with distinct missions and specific equipment. Marine air control group includes: the Marine tactical air command squadron, the Marine air control squadron, the Marine air support squadron, the Marine wing communications squadron, the low altitude air defense battalion, and the Marine unmanned aerial vehicle squadron.

The demands of conflicts such as Iraq and Afghanistan require a degree of organizational flexibility unheard of in previous wars. Whether fielding a Marine expeditionary unit or expeditionary force, the aviation combat element's Marine air command and control component is the single element that ensures the ground commander's requests for air support are responsively met. Whether it is bombs or rockets on a target, casualty evacuation, heliborne troop lifts, real time intelligence, or a resupply of ammo, the system works behind the scenes to make it happen. The Marine air command and control system operates as "the glue that holds the Marine air-ground team together."

OPERATION SHUFLY

During Operation Shufly, HMM-362 conducted the first airlift of South Vietnamese troops into combat on April 22, 1962. The squadron, commanded by Lieutenant Colonel Archie Clapp (near right), participated in the Corps' largest helicopter lift at that time in Vietnam when forty-one helicopters—eighteen U.S. Marine Corps, twelve U.S. Army, and eleven South Vietnamese Air Force, landed Vietnamese troops north of Saigon on July 18.

Two days later they conducted the first night troop landing. HMM-362 used quick strike methods to counter guerilla forces and became known as "Archie's Angels." Their innovative tactics were followed throughout the war and led to considerable advancement in the employment of helicopters.

FLYING LEATHERNECK MUSEUM

FLYING LEATHERNECK MUSEUM

FLYING LEATHERNECK MUSEUM

1962

APRIL 9, 1962

Operation Shufly begins. The initial elements of Task Unit 79.3.5, including a command element under Col John F. Carey, HMM-362 (Rein), and a subunit of MABS-16, lands at Soc Trang, South Vietnam, to support South Vietnamese forces.

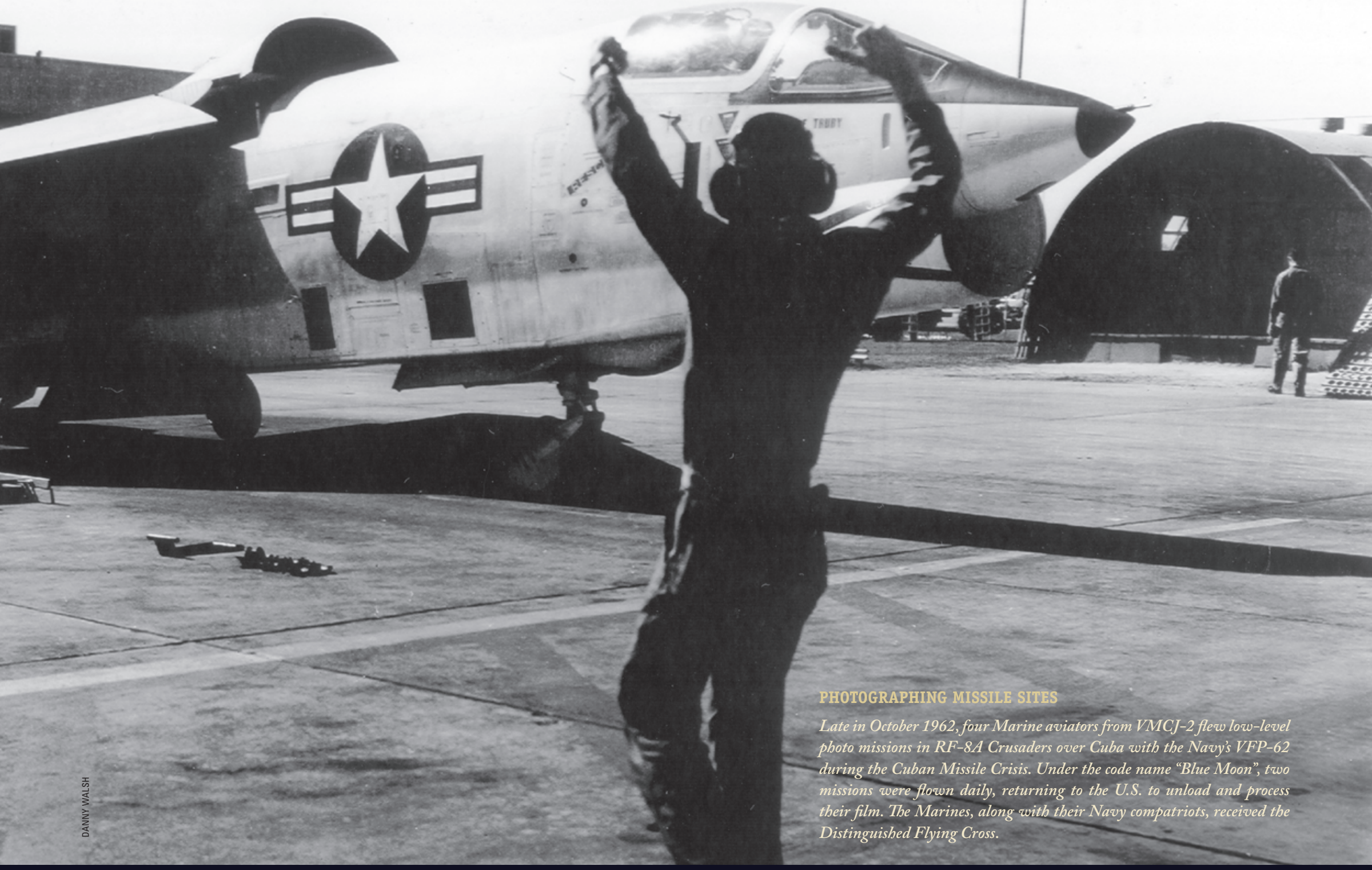
JULY 1962

The 4th MAW reactivates at NAS Glenview, IL. The Reserve organization will mirror the active duty wings in both structure and capability.

JULY 5, 1962 - OCTOBER 20, 1963
BGen Norman J. Anderson
DEPUTY CHIEF OF STAFF (AIR)

SEPTEMBER 16, 1962

Task Unit 79.3.5 moves to Da Nang, South Vietnam, to support South Vietnamese forces operating in the I Corps Tactical Zone, which encompasses the five northernmost provinces.



DANNY WALSH

PHOTOGRAPHING MISSILE SITES

Late in October 1962, four Marine aviators from VMCJ-2 flew low-level photo missions in RF-8A Crusaders over Cuba with the Navy's VFP-62 during the Cuban Missile Crisis. Under the code name "Blue Moon", two missions were flown daily, returning to the U.S. to unload and process their film. The Marines, along with their Navy compatriots, received the Distinguished Flying Cross.

OCTOBER 23-NOVEMBER 30, 1962

After the detection of Soviet ballistic missiles in Cuba, elements of the 2d and 3d MAWs deploy aircraft to Guantanamo, Cuba; Key West, FL; Roosevelt Roads, Puerto Rico; and other Caribbean bases.

NOVEMBER 5, 1962

In response to a shortage of helicopter pilots, the Marine Corps establishes a transition-training program to qualify 500 fixed-wing aviators as helicopter pilots. HMM-262 and -362 conduct the training.

NOVEMBER 26, 1962

Marine and Navy pilots, under code name "Blue Moon", photograph locations in Cuba with Vought RF-8As to ensure that Soviet forces are dismantling missiles.

DECEMBER 27, 1962

CMC issues Marine Corps Order 3120-.3, "The Organization of Marine Air-Ground Task Forces." This order provides the procedures on how expeditionary air-ground teams will activate in response to any military contingency.

SATS
Short Airfields for Tactical Support

One of the most important fixed-wing developments that arose during the 1950s was the short airfield for tactical support system (SATS). The concept addressed the urgent need to establish airfields ashore as early as possible during an amphibious operation, a requirement that could not be met in the jet age due to the time required to construct long concrete or asphalt runways. Over the next fifteen years of testing various concepts, SATS evolved into the shore-based equivalent of an aircraft carrier. Complete with a catapult and arresting gear, it could be erected in the area of operations in a matter of days instead of weeks or months. Not only did this free the supporting aircraft carriers for other missions, it produced more effective and timely air support for Marines on the ground.

The system utilized aluminum panels to create a runway. The aluminum panels that formed the landing strip were six or twelve feet in length, made of non-skid material painted Marine Corps green, and were laid in a staggered pattern for maximum strength. SATS also included an air traffic control system, refueling/arming areas, and maintenance facilities. These expeditionary airfield suites could be tailor-made in any length to best suit the requirements of a specific operation, further enhancing their utility.

A successful field test took place in October 1964 during Operation Steel Pike, off the southern coast of Spain, with the airfield becoming operational in only five and a half days. SATS operated in combat at Chu Lai, South Vietnam, with VMA-225 commencing operations with A-4E aircraft on June 1, 1965.

HERE, AN A4D SKYHAWK MAKES AN ARRESTED LANDING ON A SATS AT QUANTICO IN 1962.

MAJOR JOHN M. ELLIOTT

OPERATIONS AT MARBLE MOUNTAIN

By 1965 the situation in Vietnam had deteriorated, and in response the United States began to build up its forces. As part of this increased presence, the 9th MEB landed at Da Nang to protect the airfield from possible North Vietnamese attack. In mid-March, the air component of the brigade consisted of two medium transport helicopter squadrons, one light antiaircraft missile battalion, and a group headquarters. Soon after, MAG-16 included elements of two fixed-wing squadrons, two helicopter squadrons, and a Hawk antiaircraft missile battalion, plus air control capabilities. Marine helicopters are shown parked at Marble Mountain.

ED ALEXANDER

1963

MARCH 13, 1963

While lifting South Vietnamese Army Rangers (ARVN) to an outpost, HMM-162 Sikorsky UH-34Ds receive fire from the Viet Cong. The helicopters deliver suppressive fire with their door-mounted M-60 machine guns while the remaining helicopters continue the lift. This is the first recorded instance of a Marine helicopter providing suppressive fire.

JULY 1963

VMA-324 joins CVG-7 aboard the USS ***Independence*** for a six-month Mediterranean cruise. This is the secondary mission of Marine aviation prescribed by the Navy General Board in 1939 to serve as replacements for carrier-based aircraft.

OCTOBER 1963

VMA-214 Det. N embarks on the USS ***Hornet***, an anti-submarine warfare carrier, and deploys to WestPac. Flying A-4s, the detachment is assigned to intercept Russian long-range Bear and Badger bombers.

A VERSATILE HELICOPTER

This type of Bell UH-1E Iroquois, known as the Huey, was used exclusively by the Marine Corps during the Vietnam War. It served as a gunship for command and control, troop movement, medevac, visual reconnaissance, observation, and other light utility roles. The helicopter was first flown on October 7, 1963, and deliveries began on February 21, 1964. The Marine Corps received over 190 Hueys.

ED ALEXANDER

OCTOBER 21, 1963 - JUNE 15, 1966
MajGen Louis B. Robertshaw
DEPUTY CHIEF OF STAFF (AIR)

MAY 19-29, 1964

Amphibious Exercise Pine Tree is conducted at Camp Pendleton by the 9th MEB, consisting of elements of the 3d MAW, RLT-1, and force troops. The exercise is designed to train forces in planning and executing a combined surface/helicopter landing in a limited war situation.

JULY 13, 1964

The 5th Marines begin Exercise Crow Bar at Camp Pendleton to provide surface and helicopter assault training from amphibious transport dock ships.

OCTOBER 26, 1964

SATS, a fully expeditionary airfield equipped with catapult and arresting gear, is field-tested during Operation Steel Pike I at Almeria, Spain.

HONING THE TEAM

Even while embroiled in battle, air and ground units participated in exercises to improve interoperability. During Operation Blue Marlin, a 1965 training exercise, helicopters from MAG-36 provided medical evacuation, resupply, and helo-lift support to infantry. Here, Marines of F Company, 2d Battalion, 7th Marines, move toward an incoming UH-34. The company returned to Chu Lai at the conclusion of the exercise.

GRAY RESEARCH CENTER

1964

NOVEMBER 17–23, 1964

In a disaster relief mission, HMM-365, operating from the USS ***Princeton***, evacuates 1,700 Vietnamese flood victims, while HMM-162 delivers more than 900 tons of supplies to flood-stricken areas of central South Vietnam.

ANTIAIRCRAFT PROTECTION

On February 7, 1965, the 1st LAAM Battalion, equipped with the Hawk missile, deploys to Vietnam to provide air defense for the airfield at Da Nang.

MARCH 8, 1965

The 9th MEB with HMM-162 conducts an unopposed amphibious landing of BLT 3/9 at Da Nang. The same day BLT 1/3 is airlifted into Da Nang by KC-130s, and HMM-163 deploys there from Okinawa.

PROVIDING CLOSE AIR SUPPORT

The Marines Corps received its first McDonnell F-4B Phantom in June 1962. Within three years, VMFA-531, flying F-4B aircraft, became the first land-based jet squadron to serve in Vietnam. Based out of Da Nang, Phantom crews flew bombing missions under radar guidance and close air support missions for Marines on the ground.

FLYING LEATHERNECK MUSEUM

APRIL 12, 1965

HMM-361 conducts a night helicopter assault, lifting elements of the 2d Battalion, 3d Marines, into Elephant Valley ten miles northwest of Da Nang.

AUGUST 18–23, 1965

Operation Starlite, the first major battle of the Vietnam War, begins. The 9th MAB conducts an amphibious assault on the 2,000-man-strong 1st Viet Cong Regiment. Following a massive artillery and naval gunfire preparation, Skyhawks from MAG-12 and Phantoms from MAG-11 drop twenty tons of bombs and napalm on three landing zones. HMM-261 and -361, supported by VMO-2, conduct heliborne assaults in the landing zones to close off Viet Cong escape routes.

SEPTEMBER 1965

Since landing on March 8, III MAF forces operating in Vietnam's I Corps Tactical Zone have grown to include MAG-11, -12, -16, and -36 and the 3d MarDiv's 3d, 4th, 7th, and 9th Marines.

SEPTEMBER 2, 1965

Elements of MAG-36 arrive at Chu Lai. This includes a heavy helicopter squadron, three medium helicopter squadrons, and a few observation aircraft.

EVOLUTION OF THE GUNSHIP
Born out of Necessity

Although the Marine Corps had begun experimenting with helicopter armament in 1949, it was not until Operation Shufly moved north to Da Nang that the Corps recognized the need for armor protection for its helicopters. At Da Nang, squadrons began to experience an escalation in Viet Cong anti-helicopter defenses, resulting in damaged and lost helicopters. As a result, armor kits were developed to protect the Huey's vital areas; however, payload restrictions prevented complete protection.

Beyond armor, the most effective form of protection for the aircrew was to arm the helicopters. Marine leadership initially resisted installing machine guns on helicopters fearing it would obstruct the door, slowing the loading and off-loading of troops. As the intensity of Viet Cong opposition increased, the troop mobility concern was superseded by the loss of helicopters and aircrews. In February 1963, the Joint Chiefs of Staff updated the rules of engagement, authorizing helicopter crews to engage Viet Cong threats before they could open fire.

Although officially prohibited from serving as a close air support aircraft, the Shufly experience resulted in transforming the UH-34 into a quasi gunship. On August 17, 1964, General Wallace M. Greene Jr., Commandant of the Marine Corps, directed HMX-1 and Marine Corps Landing Force Development Center to develop an armament kit for the UH-34. The Temporary Kit-1 (TK-1) added two 2.75-inch rocket pods and two M-60 machine guns to the airframe. After an evaluation period, the TK-1-equipped UH-34 entered combat in early 1965. Though crews often stripped the UH-34 of seat pads, windows, and doors to decrease weight, the helicopter's low speed and vulnerability still made it an easy target. By spring, procurement of the kits had ceased.

CHECKING THE ROCKETS

In January 1968, VMO-2 crew chief, Sergeant D. Padilla, checks the seating of the rockets on a Bell UH-1E gunship at Chu Lai. Huey-equipped observation squadrons flew ground support, helicopter escort, and landing zone preparation missions in addition to serving as a medical evacuation aircraft.

Gunship development continued, despite the inability of the TK-1 armament package to fully compensate for other limitations. HMX-1 developed a weapons kit for the Bell UH-1E Huey. The Temporary Kit-2 (TK-2) featured an M-60C electrically fired machine guns and two rocket racks. A simple system for aiming was provided, utilizing a small piece of black tape on the forward canopy, which served as the gun sight.

The success of the TK-2 spurred additional developments, including a rotating turret below the aircraft's nose—introduced in April 1967. In addition to serving as medevac aircraft, Hueys began supporting ground objectives and preparing landing zones. Increasingly fulfilling the Marine close air support mission, the utility helicopter quickly gained the new and formidable title of "gunship."

MAJOR JOHN M. ELLIOTT

TRIAL AND ERROR

Early experimentation for an offensively armed helicopter began after the Marine Corps received its first helicopter. By summer 1960, a Bullpup 600-pound missile was mounted to the right side of a UH-34 and successfully fired by Captain Samuel J. Fulton of HMX-1. With the addition of armor, 20-mm guns, and ammunition to the UH-34, the helicopter's payload capacity was nearly maxed out.

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The CH-46 Arrives
"PHROGS PHOREVER"

By the early 1960s, the Marine Corps replaced the piston-engine-type helicopters with twin-turbine, troop and cargo assault helicopters. Boeing's acquisition of Vertol led to the development of the HRB-1, which was based on the commercial version, known as the BV 107-II. The Marine Corps version was designated as the CH-46A. Introduced to the fleet in November 1964, the helicopter could carry 17 combat troops or 4,000 pounds of cargo.

The Boeing CH-46 Sea Knight is a medium-lift turbine-powered helicopter with a highly efficient tandem rotor system. Its primary function is to provide assault support transport for combat troops, supplies, and equipment. Extremely versatile, the CH-46 performed a variety of missions including medical evacuation, search and rescue, and the insertion/extraction of reconnaissance teams.

Sea Knights were seen as a replacement for UH-34 helicopters; however, CH-46s had one distinct advantage—a factory manufactured arming kit that included two guns. These kits, although necessary, added additional weight that dramatically decreased cargo capacity. As a result, the follow-on model, the CH-46D was soon under development and delivered to the Marine Corps in 1966. The role of the CH-46 continued to grow throughout the war.

1965

DECEMBER 1965
Aircraft from MAG-11 and -12 participate in Operation Steel Tiger, striking Viet Cong supply routes in Laos and North Vietnam in coordination with Navy and Air Force aircraft.

APRIL 19, 1966
Marine Helicopter Training Group 30 is established at MCAF Santa Ana. The Group is equipped with 50 helicopters and 6,000 training and support personnel to relieve the shortage of pilots and mechanics.

MAY 14, 1966
Four A-4s from VMA-311 launch from Chu Lai. This is the first time that Marine jet aircraft launch from a land-based catapult during combat. The planes are airborne within 1,400 feet of the 8,000-foot SATS.

JUNE 15, 1966 - FEBRUARY 8, 1970
MajGen Keith B. McCutcheon
DEPUTY CHIEF OF STAFF (AIR)

GRAY RESEARCH CENTER

JOINT TRANSPORT

Besides performing their primary mission, supporting Marines on the ground, CH-46 helicopters often transported South Vietnamese troops to and from landing zones. Pictured here is a CH-46 from HMM-164 lifting off after delivering South Vietnamese troops into the Que Son Valley during Operation Colorado in 1966.

JULY 12–AUGUST 4, 1966

Operation Hastings begins. Task Force Delta, consisting of elements of five infantry battalions, an artillery battalion, and five helicopter squadrons, repels a North Vietnamese Army (NVA) attack into Quang Tri Province. Acting in conjunction with the 1st ARVN division, Delta fractures the NVA force and drives it back across the DMZ and into the mountains. Marine aircraft conduct 1,677 tactical sorties against the North Vietnamese Army during the operation.

NOVEMBER 1, 1966

VMA(AW)-242 arrives in Da Nang with the new A-6A Intruder, giving the 1st MAW a sophisticated all-weather attack capability. Later that month, VMCJ-1 deploys to Vietnam with EA-6A aircraft. This gives U.S. forces the capability to counter the changing equipment and tactics of the North Vietnamese air defense system.

APRIL 21, 1967

South of the DMZ, the 1st MarDiv, supported by the 1st MAW, conducts Operations Union I and II in the Que Son Valley, northwest of Chu Lai, to prevent the NVA from dominating the vital rice-growing region. These operations will continue until June 5.

DELIVERING THE WOUNDED

A Marine CH-46 of HMM-262 on the flight deck of the hospital ship, the USS Repose. *The squadron deployed to Vietnam in December 1966 and was subsequently reassigned to MAG-36, 1st MAW. The squadron remained in Vietnam, operating from Ky Ha, Marble Mountain, Quang Tri, Phu Bai, and the USS* Tripoli.

FLYING LEATHERNECK MUSEUM

1967

APRIL 22, 1967

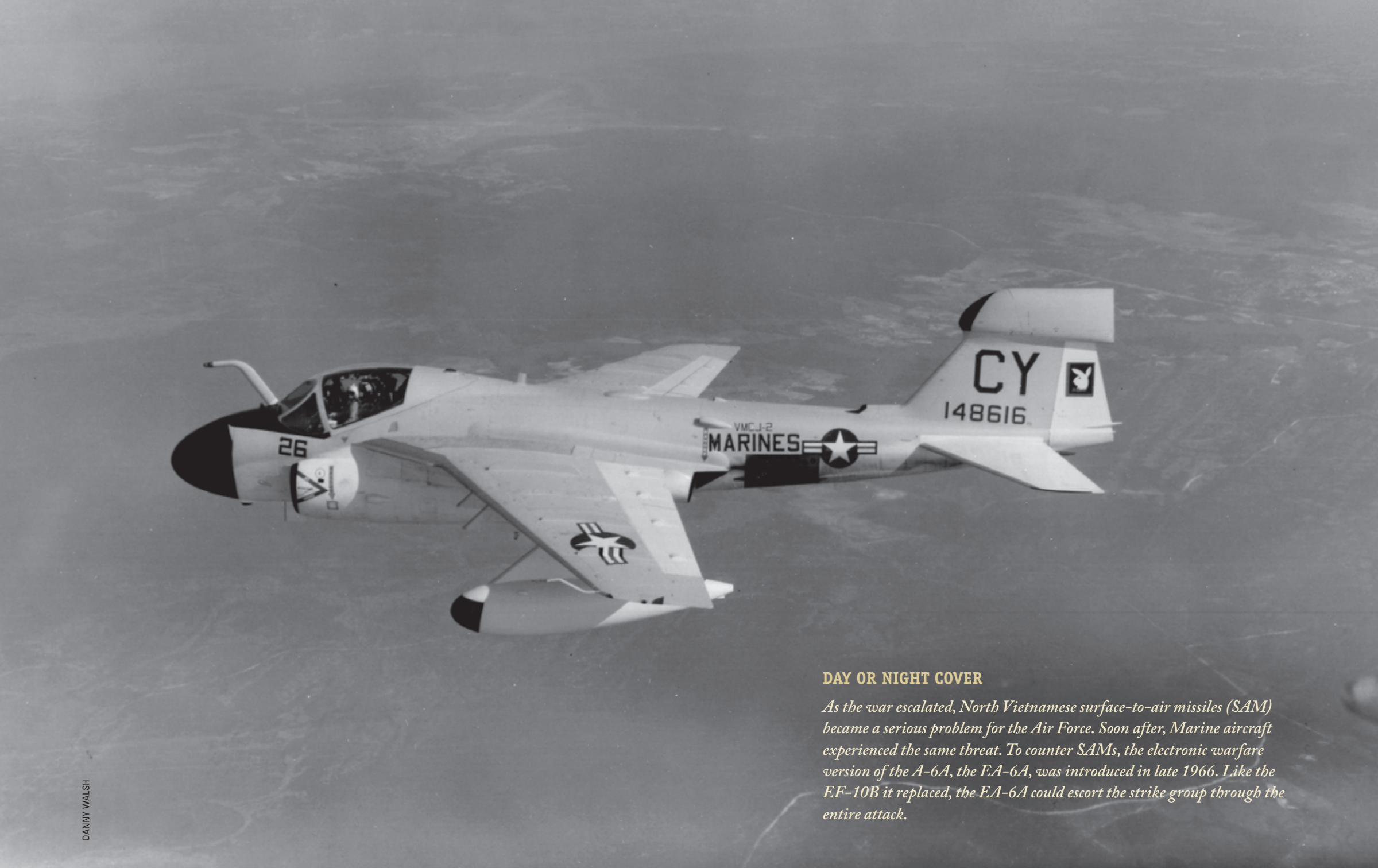
Exercise Clove Hitch III begins. The joint exercise includes more than 3,000 Marines from the 2d MAW and 2d MarDiv, and Navy, Army, and Air Force units.

APRIL 24–MAY 2, 1967

The initial stage of the Battle of Khe Sanh opens when the 3d Marines, supported by close air support and artillery, assault Hills 861 and 881 to seize them from an NVA regiment. The hills, which dominate the combat base, are critical to the defense of Khe Sanh.

JULY 2, 1967

Operation Buffalo begins when an enemy force attacks the 1st Battalion, 9th Marines. Intense fighting ensues, featuring helicopter assaults and aggressive close air support to prevent the NVA from seizing Quang Tri province.



DANNY WALSH

DAY OR NIGHT COVER

As the war escalated, North Vietnamese surface-to-air missiles (SAM) became a serious problem for the Air Force. Soon after, Marine aircraft experienced the same threat. To counter SAMs, the electronic warfare version of the A-6A, the EA-6A, was introduced in late 1966. Like the EF-10B it replaced, the EA-6A could escort the strike group through the entire attack.

AUGUST 19, 1967

Capt Stephen W. Pless of VMO-6, braves intense fire while driving off a force of Viet Cong that attempts to kill four U.S. soldiers stranded on a beach south of Chu Lai. He rescues the wounded soldiers and is later awarded the Medal of Honor.

AUGUST 28, 1967

About 150 NVA rocket and artillery rounds hit Dong Ha, home of HMM-361. Two UH-34Ds are destroyed and twenty-four others are damaged, which leads to replacement of the squadron.

DECEMBER 17, 1967

Flying an F-4D, as an Air Force exchange pilot with the 13th Tactical Fighter Squadron based in Udorn, Thailand, Capt Doyle D. Baker shoots down a MiG-17 over North Vietnam. This is the first Marine aerial victory in Vietnam.

MARINE CORPS HISTORY DIVISION

MAJOR

Stephen W. Pless

MEDAL OF HONOR RECIPIENT

"For conspicuous gallantry and intrepidity at the risk of his life above and beyond the call of duty while serving as a helicopter gunship pilot attached to VMO-6 in action against enemy forces near Quang Ngai, South Vietnam, on August 19, 1967. During an escort mission Major (then Captain) Pless monitored an emergency call that four American soldiers stranded on a nearby beach, were being overwhelmed by a large Viet Cong force. Major Pless flew to the scene and found thirty to fifty enemy soldiers in the open. Some of the enemy were bayoneting and beating the downed Americans. Major Pless displayed exceptional airmanship as he launched a devastating attack against the enemy force, killing or wounding many of the enemy and driving the remainder back into a treeline. His rocket and machine gun attacks were made at such low levels that the aircraft flew through the debris created by explosions from its rockets.

Seeing one of the wounded soldiers gesture for assistance, he maneuvered his helicopter into a position between the wounded men and the enemy, providing a shield which permitted his crew to retrieve the wounded.

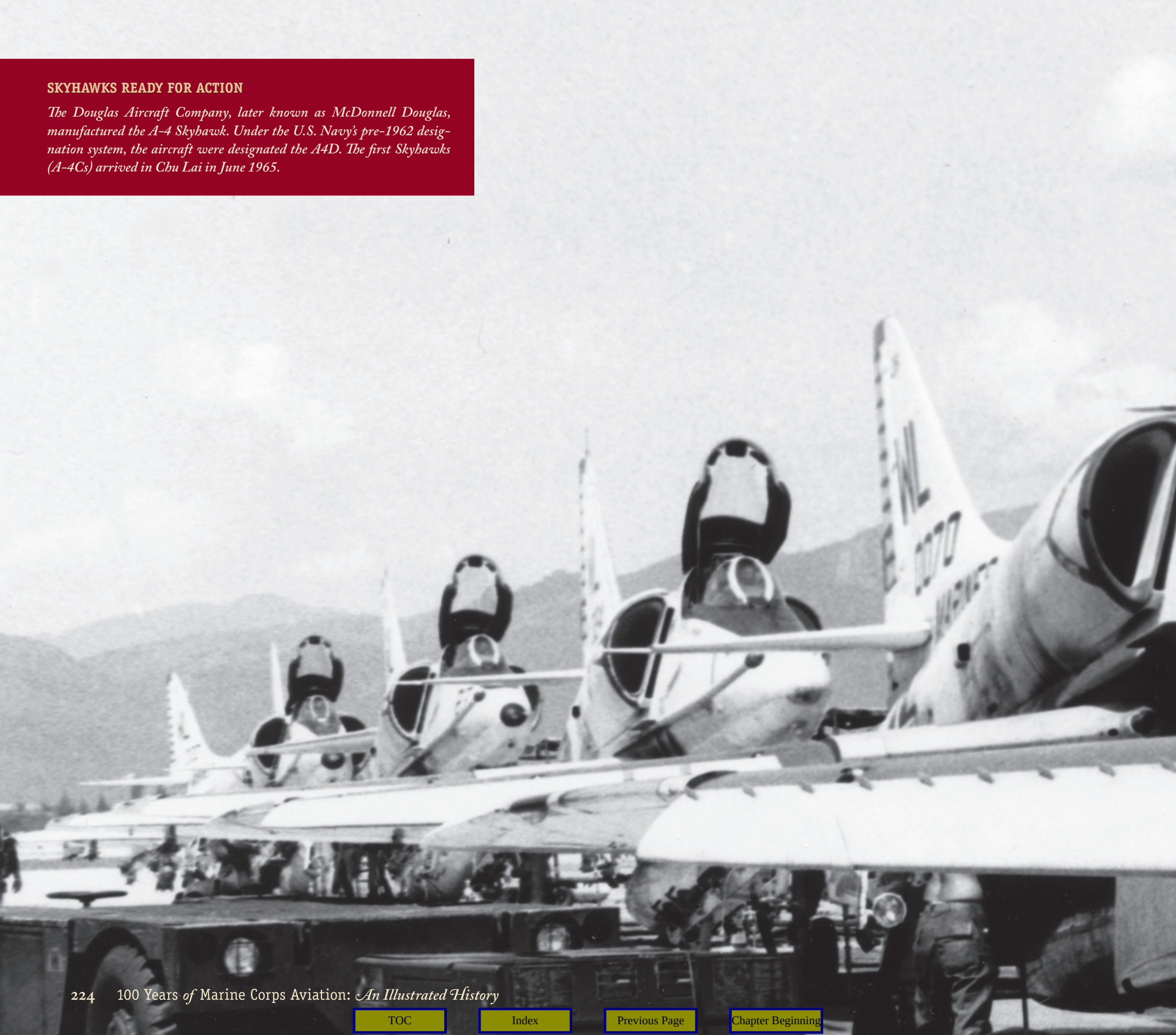
During the rescue the enemy directed intense fire at the helicopter and rushed the aircraft again and again, closing to within a few feet before being beaten back. When the wounded men were aboard, Major Pless maneuvered the helicopter out to sea. Before it became safely airborne, the overloaded aircraft settled four times into the water. Displaying superb airmanship, he finally got the helicopter aloft. Major Pless' extraordinary heroism coupled with his outstanding flying skill prevented the annihilation of the tiny force. His courageous actions reflect great credit upon himself and uphold the highest traditions of the Marine Corps and the United States Naval Service."

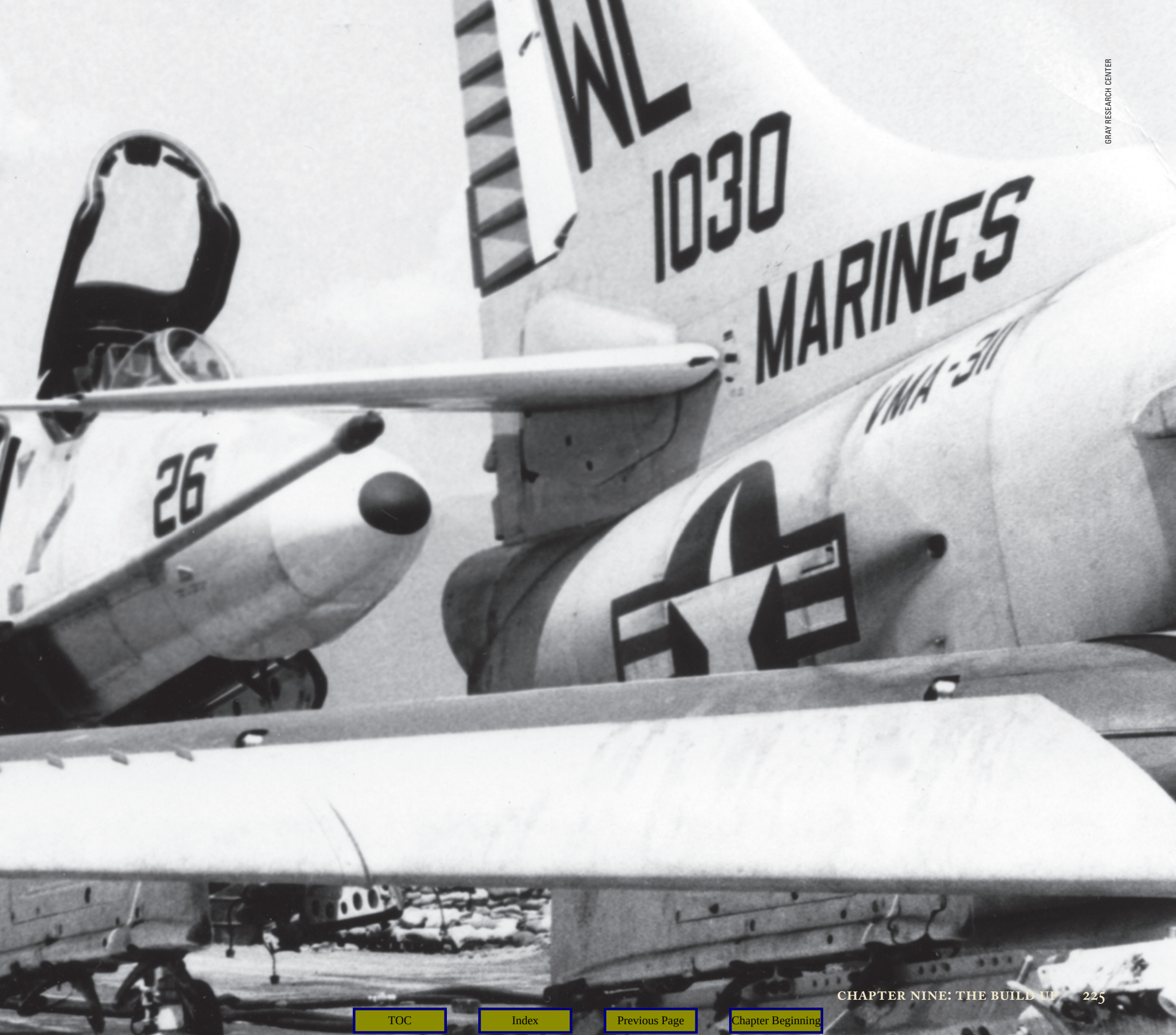
PLESS
VMO-6
AUGUST 19, 1967
VIETNAM

A. MICHAEL LEAHY

SKYHAWKS READY FOR ACTION

The Douglas Aircraft Company, later known as McDonnell Douglas, manufactured the A-4 Skyhawk. Under the U.S. Navy's pre-1962 designation system, the aircraft were designated the A4D. The first Skyhawks (A-4Cs) arrived in Chu Lai in June 1965.





GRAY RESEARCH CENTER

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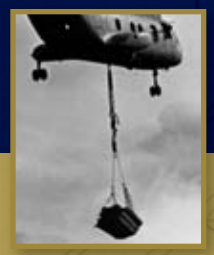


CHAPTER TEN
THE CHANGING FACE OF WAR

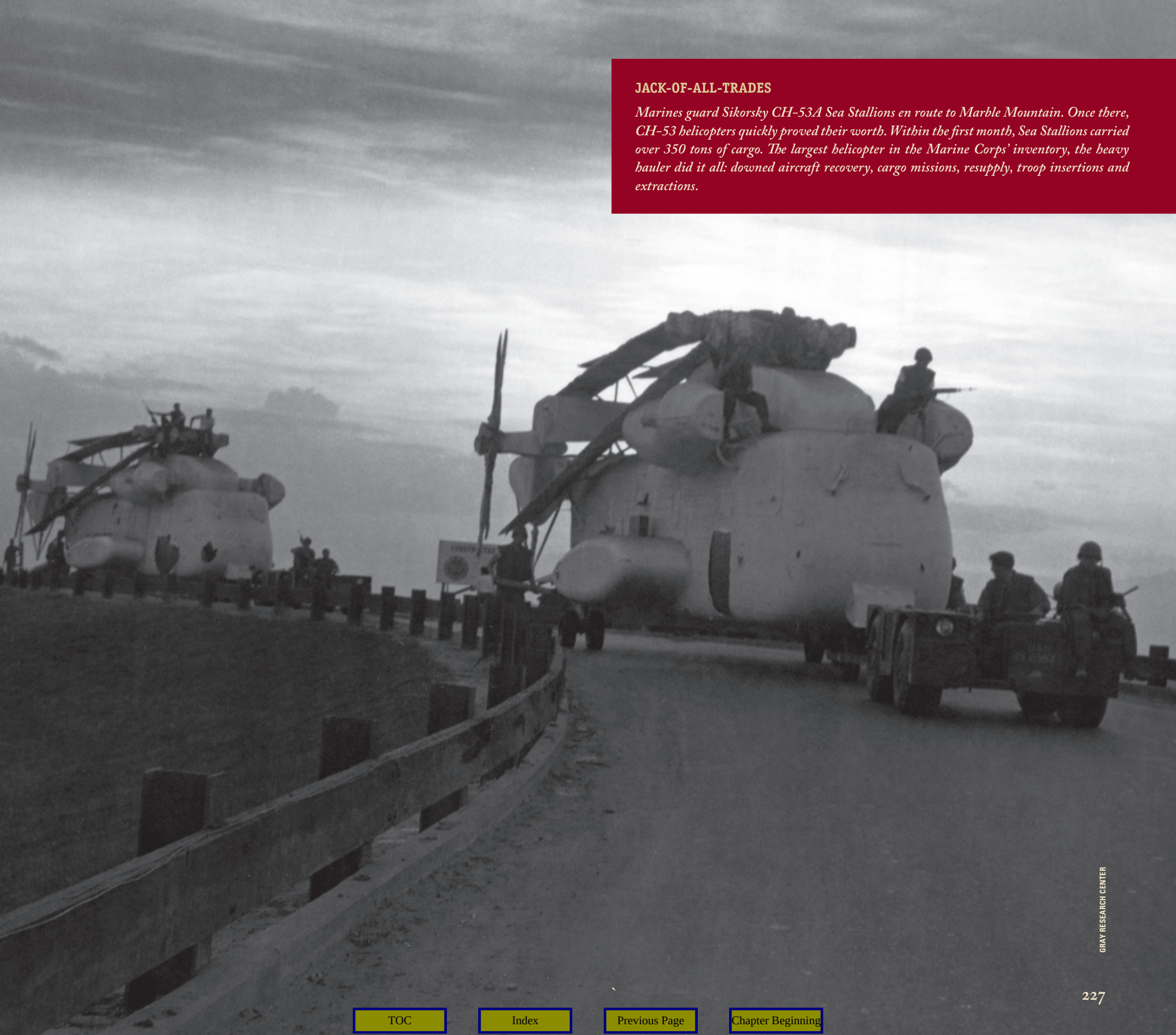
The early years of the Vietnam War were a combination of counterinsurgency operations against Viet Cong guerillas and small-unit actions against NVA regulars. This changed dramatically in February 1968, when the Viet Cong, backed by limited NVA forces, launched simultaneous attacks throughout South Vietnam during the Tet holiday cease-fire.

The Viet Cong expected the Tet Offensive to inspire a popular uprising, and they took the Americans and South Vietnamese by surprise. Despite several local victories, including the brief capture of the old imperial capital of Hue, Tet proved to be problematic for the communists. The Americans and South Vietnamese responded quickly, overwhelming Viet Cong combat forces and weakening their influence over the population of towns and hamlets.

In unison with the Tet Offensive, North Vietnamese forces probed American positions at the eastern end of the demilitarized zone. Late in 1967, the NVA began attacking U.S. combat bases around Khe Sanh, hoping to open a critical communications route to the south. Aware of these movements, III MAF reinforced Khe Sanh and prepared for an attack. The NVA began planning for a decisive action, a second Dien Bien Phu that would crush the Americans' will to fight and drive them out of South Vietnam. In January 1968, American patrols from Hill 881 South encountered a heavy concentration of NVA regulars. The ensuing fight signaled the beginning of the Battle of Khe Sanh.

Khe Sanh and its surrounding hill outposts were soon surrounded and brought under continual mortar, artillery, and rocket fire. As the intensity of this fire increased, the fixed-wing resupply of Khe Sanh became increasingly hazardous and the single runway unusable. A similar situation prevailed in the hills. The loss of helicopters became too great, leaving the outpost short of supplies, equipment, and reinforcements. Specialized, low-altitude container delivery system parachute drops and a technique called the low-altitude parachute extraction system allowed fixed-wing transports to deliver cargo along the runway without landing, but the problem of resupplying the hill outposts required a different approach.

That innovative solution came from Marine helicopter pilots, who would have to deliver the goods. They recommended the use of ten A-4s armed with bombs and rockets, two A-4s armed with smoke or CS pods, UH-1E gunships, and ten or twelve CH-46Ds carrying sling loads of supplies. Named the "Super Gaggle," this corollary to a fixed-wing Alpha strike would descend on an outlying hilltop base, prep the approaches with a storm of fire, and lay smoke or tear gas to pave the way for the following helos. The CH-46s would then, in rapid succession, swoop in, pause, and drop their sling loads of supplies. Under cover of the A-4s and UH-1Es, one helo would land to drop replacements and pick up medevacs. The Super Gaggle resupplied Hill 881 South and other positions throughout the siege without suffering a loss.



JACK-OF-ALL-TRADES

Marines guard Sikorsky CH-53A Sea Stallions en route to Marble Mountain. Once there, CH-53 helicopters quickly proved their worth. Within the first month, Sea Stallions carried over 350 tons of cargo. The largest helicopter in the Marine Corps' inventory, the heavy hauler did it all: downed aircraft recovery, cargo missions, resupply, troop insertions and extractions.

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With ground positions secured, Americans began the systematic destruction of the NVA surrounding Khe Sanh. This job fell primarily to tactical air power coordinated as Operation Niagara. Nearly every type of aircraft from B-52s to A-4s rained conventional bombs, napalm, white phosphorous, and rockets on the NVA around the clock. By April the mission had succeeded, driving surviving NVA away with losses estimated at 15,000 to 20,000 dead.

Tet was a setback for the Viet Cong, and Khe Sanh was a defeat for the NVA. Although neither success was immediately recognized at home, the two battles opened the way for ending America's presence in Vietnam.

The battles had led to a conflict between the Marine Corps and the Air Force over the control of tactical air and combat resupply in Vietnam. Notwithstanding the Corps' argument that the Air Force's "centralized control" system was unresponsive to the needs of a functioning Marine air-ground task force like III MAF, the Air Force view prevailed. The Air Force would control all Marine air assets except helicopters.

Against the background of the single manager controversy with the Air Force, the war against the Viet Cong and NVA raged on. Slowly and methodically the Marines, Korean Marines, and South Vietnamese forces gained the upper hand, continuously supported since the beginning by the fixed-wing and helicopter squadrons of the 1st MAW. In operation after operation, villages were liberated from Viet Cong terror and the NVA was defeated along the demilitarized zone. The American public may have perceived otherwise, but the United States was making progress.

Operation Dewey Canyon, crafted to interdict NVA base areas in the Da Krong Valley, South Vietnam, underscored the new reach of Marine forces inserted and supported exclusively by helicopters. Working under an umbrella of helicopters and fixed-wing aircraft when weather permitted (and sometimes when it didn't), the Marines captured NVA weapons and supplies, destroying their elaborate encampments. It was a constant struggle characterized by monsoon rains, fog, and

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impenetrable terrain. In the end, the Marines drove the NVA into Laos and delayed a planned NVA offensive for a year.

ON THE FLY

Helicopters from the 1st MAW, flying in support of 3d Marine Division, often created makeshift landing zones to resupply men and evacuate the wounded. Here, a CH-46 extracts a wounded Marine from the 9th Marine Regiment for transport to the closet medical facility during Operation Dewey Canyon.

At the same time, Marine A-6s and F-4s participated in Air Force interdiction operations along the Ho Chi Minh trail. New electronic-countermeasures-capable EA-6 aircraft supported strikes into North Vietnam, and A-4s continued to provide close air support for Marine ground units in need. Pilots and crew also developed and adopted new tactics and techniques to improve helicopter support in conjunction with ongoing combat operations.

The Marine tactical data system, capable of tracking 250 airborne targets, was the only control agency in Vietnam that could exchange threat and air traffic information with both the Navy and Air Force. Direct air support centers of the Marine air command and control system played a vital role in putting bombs on target and directing helicopters where needed. Air support radar teams ensured that bombs were on target, both at night and in foul weather. The effectiveness of Marine air in Vietnam was due in no small measure to these largely unseen Marines.

After all the blood, sweat, and tears invested in the war, Americans began to question the continued commitment of U.S. troops in Vietnam. In 1970, this led to introduction of the Vietnamization Program with the aim of transferring the responsibility for waging the war to South Vietnam and gradually drawing down American forces. In compliance, the first wing units left Vietnam for the U.S. and Japan in January and February 1971.

American backing of the Vietnamese Army and Marine units continued throughout the drawdown. Close air support and helicopter support never flagged, including during Operation Lam Son 719 into Laos in February 1971. Though largely a U.S. Army operation, 1st MAW fixed-wing aircraft and gunship helicopters provided continuous close air support while transport helicopters resupplied the South Vietnamese Army units. The operation failed, with the U.S. Army suffering heavy casualties among their aircrews and the loss and damage of hundreds of helicopters.

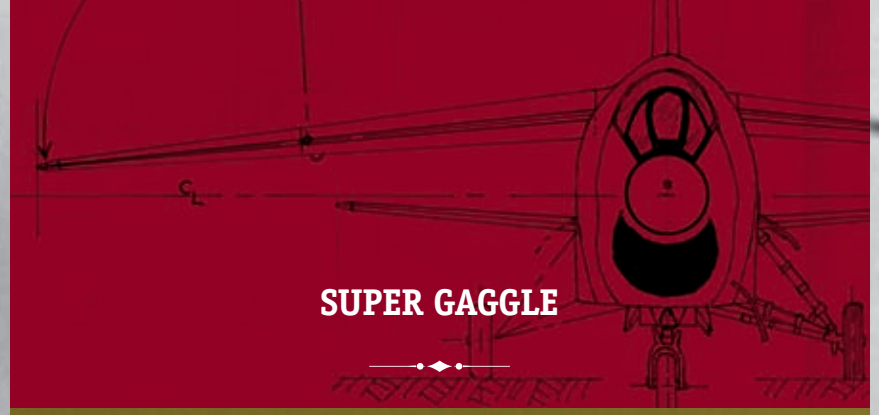
By June 1972 a mere handful of Marines remained in I Corps, and the end of the Vietnam War seemed to be in sight. Then in March and April, the NVA invaded South Vietnam through the demilitarized zone and Laos in an attempt to capture several key cities. This quickly led to the reintroduction of Marine aviation to support the hard-pressed South Vietnamese. The F-4 squadrons deployed to Da Nang and then to Nam Phong, Thailand. The A-4 squadrons were sent to Bien Hoa, near Saigon. In a mission led by Marine A-6s operating from off-shore carriers, the United States also responded by laying thousands of air-delivered sea mines at Haiphong and other critical harbors, rendering those ports unable to sustain the North's war machine.

After a series of on-again/off-again negotiations, the Linebacker II bombing campaign brought North Vietnam to its knees, and the signing of a peace accord. Two Marine helicopter squadrons were tasked to clear North Vietnam harbors of those same mines in Operation End Sweep. The operation ended in July 1973, and Marine involvement in Vietnam seemed once again to be at an end.

Then in January 1975, North Vietnam, sensing American's lack of will, launched a massive-scale invasion with the clear aim of seizing all of South Vietnam. In April 1975, Marine helicopter units, based aboard Task Force 76 ships, participated in Operations Eagle Pull and Frequent Wind. The former successfully evacuated personnel from the U.S. Embassy in Phnom Penh, Cambodia. In the latter, helicopter squadrons of the 9th MAB evacuated both Americans and South Vietnamese from the U.S. Embassy in Saigon.

Marine aviation entered the Vietnam War in a state of transition. It departed secure in the knowledge that the philosophy of direct air support best suited the needs of the Marine air-ground task force. Not only did Marine aviation validate the six functions, it demonstrated its ability to successfully manage and overcome interservice differences. Combat experience in Vietnam gave Marine aviators a vision of how to leverage technology to meet the needs of an uncertain future, much like their predecessors, Cunningham and Geiger.

CAPTAIN MULE HULMBERG



SUPER GAGGLE

With the Viet Cong targeting incoming helicopters near outposts and aircraft on the runway at Khe Sanh, Marines of 1st MAW formulated a plan to maintain the critical resupply rotation to Khe Sahn and Marine outposts operational by circumventing enemy positions.

Known as the Super Gaggle, the delivery method included aircraft and helicopters launched from different bases at timed intervals. The helicopters took off from either Dong Ha or Quang Tri, and the A-4 aircraft departed from one hundred miles to the south at Chu Lai. While the CH-46 helicopters were loaded with external cargo nets, A-4s prepared to take off.

Then, the A-4 (top right) aircraft began dropping explosives and napalm bombs over enemy positions. This was followed by tear gas to blind the enemy as armed UH-1Es (bottom right) escorted CH-46s (near right), carrying approximately 4,000-lb loads of supplies per delivery.

The first Super Gaggle was flown on February 24, 1968. The following month, the 1st MAW delivered approximately 80,000 pounds of cargo to the Marine outposts around Khe Sanh. Captain William H. Dabney, a Marine on Hill 881 South, commended the efforts of the pilots and aircrew who flew Super Gaggle missions "you could get in ten helicopter loads on the hill in one minute and get the birds the Hell [sic] out of there and into smoke where the NVA couldn't see to shoot."

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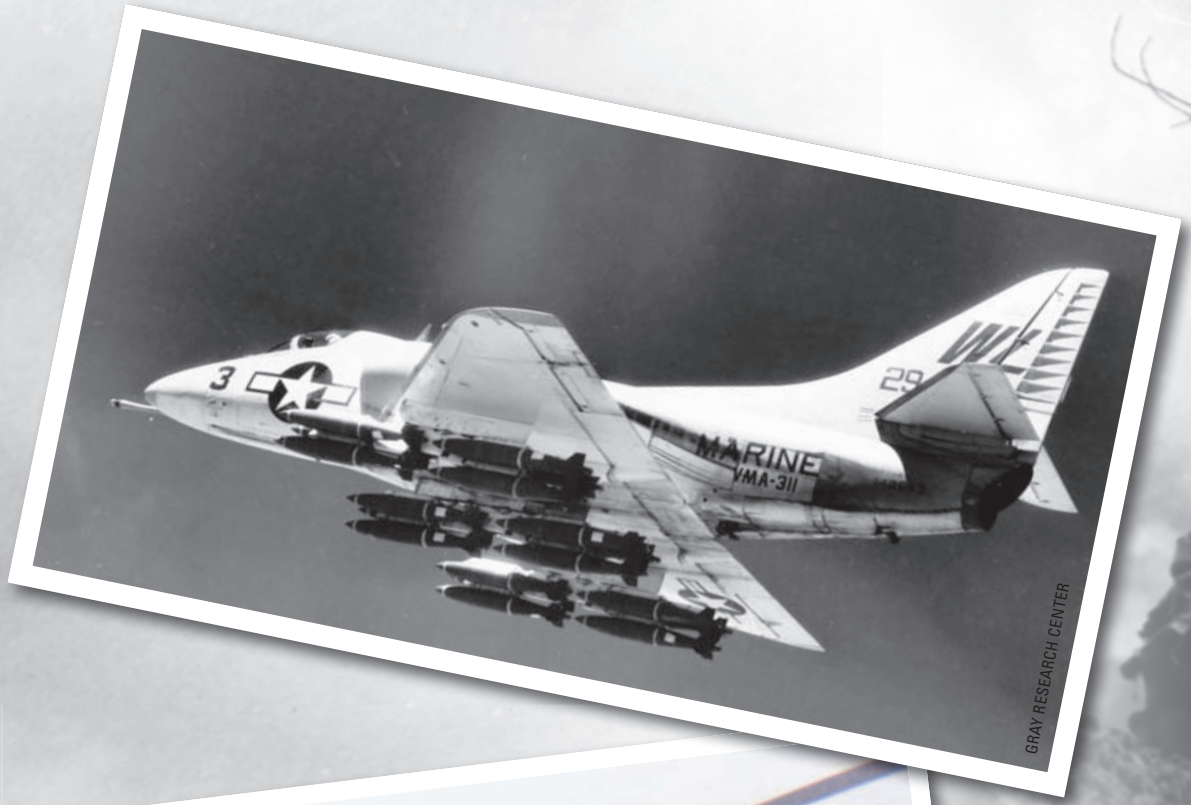

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ED ALEXANDER

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DELIVERING THE PUNCH

As Marines increasingly engaged the NVA in dispersed operations, the rapid delivery of ammunition and supplies became critical. Here, Sea Knight pilots and aircrew deliver ammunition to a fire support base west-southwest of Da Nang.

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1968

JANUARY 20, 1968

Marines participating in Operation Scotland make contact with a heavy concentration of NVA troops around Hill 881 South.

JANUARY 21–APRIL 8, 1968

Marine and Air Force control centers direct air strikes during Operation Niagara II with the goal of destroying the NVA forces besieging Khe Sanh.

FEBRUARY 10, 1968

CWO Henry Wildfang lands his burning C-130 at Khe Sanh after being hit by enemy fire. He removes the crippled plane from the runway so that incoming aircraft may land. He is awarded his fifth Distinguished Flying Cross for his actions.

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CLEAR SKIES AND AIR STRIKES

The change in the weather from February to March 1968 was like night and day. February air operations were limited to only five clear days, while March brought blue skies and sustained air strikes. As a result, Marine aircraft quickly filled the skies. One ground Marine remarked that the aircraft looked like vultures circling and ready to attack. This increased presence hampered NVA troop movement. Pictured here is a Phantom of VMFA-323 at Da Nang.

FEBRUARY 24, 1968

The Super Gaggle, a force of CH-46Ds, A-4s, and UH-1E gunships, working in coordination with artillery and mortars, successfully resupplies the hill outposts protecting Khe Sanh.

MARCH 10, 1968

The single manager concept for air operations is implemented and the Seventh Air Force assumes operational control of Marine tactical air operations in Vietnam.

JULY 1, 1968

In response to a shortage of 1,000 pilots, Headquarters Marine Corps proposes using the Army to train additional helicopter pilots and the Air Force to train fixed-wing pilots.

JULY 6, 1968

The first North American OV-10A Bronco arrives at Da Nang with VMO-2.

MARINE CORPS HISTORY DIVISION

PRIVATE FIRST CLASS

Raymond M. Clausen Jr.

MEDAL OF HONOR RECIPIENT

"For conspicuous gallantry and intrepidity at the risk of his life above and beyond the call of duty while serving with HMM-263, MAG-16, 1st MAW, during operations against enemy forces in South Vietnam on January 31, 1970. Participating in a helicopter rescue mission to extract elements of a platoon, which had inadvertently entered a minefield while attacking enemy positions, Private First Class Clausen skillfully guided the helicopter pilot to a landing in an area cleared by one of several mine explosions. With eleven Marines wounded, one dead, and the remaining eight Marines holding their positions for fear of detonating other mines, he quickly leaped from the helicopter and, in the face of enemy fire, moved across the extremely hazardous, mine-laden area to assist in carrying casualties to the waiting helicopter and in placing them aboard.

Despite the ever-present threat of further mine explosions, he continued his valiant efforts, leaving the comparatively safe area of the helicopter on six separate occasions to carry out his rescue efforts. On one occasion while he was carrying one of the wounded, another mine detonated, killing a corpsman and wounding three other men. Only when he was certain that all Marines were safely aboard did he signal the pilot to lift the helicopter. By his courageous, determined and inspiring efforts in the face of the utmost danger, Private First Class Clausen upheld the highest traditions of the Marine Corps and of the United States Naval Service."

CLAUSEN
HMM-263
VIETNAM
JANUARY 31, 1970

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Open All Night
MAINTENANCE

Faced with sustained air operations during the Vietnam War, Marine pilots flew their helicopters far more often than had been envisioned by peacetime planners. As a result, aircraft components wore out sooner than expected; however, no spares had been ordered and Congress had apportioned little money to increase supply orders.

By mid-1968, Marine leadership became alarmed by their inability to keep helicopters flying. The resupply rate for helicopter engine and airframe spares had hovered around seventy percent, cutting helicopter availability to twenty-five percent for CH-53 helicopters, thirty-three percent for CH-46 helicopters, and fifty percent for UH-1E helicopters. New Congressional budgets reluctantly allocated more money for spare parts, but the allotment did not completely resolve the issues, since many of the Huey's flight hours resulted from its conversion to an armed gunship. Marine UH-1Es had been built with many of the same weapons fixtures standardized in the Army's UH-1B gunships; however, the Corps had problems with the combat conversions.

Seen in this 1968 photo, VMO-2 maintenance crews at Marble Mountain work though the night on their UH-1Es and newly arrived OV-10 Broncos. To help alleviate the helicopter shortage, the fixed-wing, turboprop Broncos assumed many of the Hueys' observation duties, allowing the Hueys to then be assigned to new light helicopter squadrons.

1968

SEPTEMBER 1968
VMFA-334, flying F-4s, sets a new ordnance record within MAG-11 when the squadron delivers more than 800 tons of ordnance on enemy targets north and south of the DMZ.

OCTOBER 26, 1968
Maj David L. Althoff is named Marine aviator of the year for his actions in Vietnam. He was awarded three Silver Stars, three Distinguished Flying Crosses, and fifty Air Medals after flying 1,000 missions, rescuing numerous Marines.

JANUARY 22–MARCH 18, 1969
During Operation Dewey Canyon, 1st MAW helicopters move up the valley amidst monsoon rains to resupply the firebases and evacuate critically wounded Marines.

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MAY 6, 1969

III MAF begins its fifth year in Vietnam. It includes the 1st MAW; 1st and 3d MarDiv; Force Logistic Command; the USA's XXIV Corps; 23rd Infantry (Americal) Division; 101st Airborne Division; and the 1st Bde, 5th Infantry Division.

DECEMBER 1969

1st MAW A-6As, supported by flak suppression F-4s, continue night operations during Commando Bolt, the Air Force operation designed to interdict the Ho Chi Minh trail in Laos and Vietnam.

JANUARY–FEBRUARY 1970

MAG-12 and VMA-211 transfer to Iwakuni, Japan, becoming the first Marine aviation units to withdraw from Vietnam under President Richard M. Nixon's Vietnamization Program.

"READY ROOM"

Pilots at Cubi Point, Philippines, wait for their morning briefing. As the Vietnam War escalated, several fixed-wing squadrons were prepositioned to Cubi Point. By January 1972, Cubi Point squadrons, VMA-223 and VMFA-542 deployed to Da Nang.

DICK MUSER

1970

FEBRUARY 19, 1970 - AUGUST 24, 1972
MajGen Homer S. Hill
DEPUTY CHIEF OF STAFF (AIR)

MARCH 1970

The 1st MAW begins using CH-53Ds and CH-46Ds to lift Marines, South Vietnamese, and Korean Marines on heliborne-assault missions.

MAY 31, 1970

HMM-365, operating from the USS *Guam*, aids victims of a Peruvian earthquake that killed 10,000, injured 100,000, and left 1 million homeless. In the course of 800 sorties, the squadron evacuates 1,000 casualties and lifts 220 tons of relief supplies.

ED ALEXANDER

ED ALEXANDER

U.S. MARINE CORPS

NARROWING THE GAP

In 1962, the 1st MAW had three observation squadrons, each equipped with twelve helicopters. The demand for light helicopters increased throughout the war, and late in 1968, squadrons were reorganized to meet this need.

General Keith McCutcheon came up with a solution. Each observation squadron would have UH-1Es (above), and later AH-1 helicopters (left), for armed escort and OV-10As (center) for observation. Supply, however, could not meet demand. This was a temporary fix, and although this reorganization and increase helped, it could not fulfill long-term needs of the Marine Corps.

JUNE 7, 1970

The 1st MAW conducts the first CH-53D Thrashlight, named after the wing commander, MajGen William G. Thrash. The tactic combines the firepower of 12 CH-53Ds, carrying 8,000 pounds of napalm barrels slung underneath them, with bombing and strafing runs by jets and helicopter gunships to destroy enemy base areas.

DECEMBER 1970

VMA-311, flying A-4Es equipped with the laser target designator system and armed with 500-pound laser-guided bombs, conducts close air support missions. Air Force jets illuminate targets with laser beams, allowing the Marine planes to release their bombs out of range of most enemy anti-aircraft fire.

FEBRUARY 1971

The first AV-8A Harriers are delivered to the Marine Corps.

ONE SIZE DOES IT ALL

More than any other helicopter, the combat role of the CH-53 expanded during 1970-1971. Sea Stallions began transitioning from the "A" model to a much-improved, larger "D" model in March 1970. HMH-463 received the initial CH-53Ds and began performing a wide variety of heavy hauling duties.

As a Sea Stallion hovers (right), deck personnel attach straps to a jeep for further transfer. Performing its added duties required constant care and maintenance. The helicopter quickly earned the nickname "The Maintenance Monster." A maintainer (center) cleans the tail rotor of a CH-53. A Sea Stallion of HMH-463 (far right) lifts a water tank to an advanced fire support base.

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1971

FEBRUARY 8, 1971

In Lam Son Operation 719, 1st MAW A-4Es, A-6As, F-4Bs, and OV-10s fly missions in Laos while MASS-3 provides support. HMH-463 and HML-367 support the operation, coming under enemy fire.

MARCH 2, 1971

Marine AH-1J Sea Cobras fly their first combat mission.

APRIL 1971

The Marine Corps presence in I Corps is the following: the 3d MAB, MAG-11, and -16.

JUNE 22, 1971

The withdrawal of Marine aviation units from Vietnam is complete, except for a twenty-man detachment from MACS-4, which remains at the Marine Tactical Data Communications Center on Monkey Mountain.

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MARCH 30, 1972

North Vietnam invades South Vietnam in a renewed attempt to seize Quang Tri, Kontum, and An Loc.

MAY 9, 1972

VMA(AW)-224, flying off the USS *Coral Sea*, leads the Marine Corps' first mission to lay air-delivered sea mines in Haiphong Harbor in North Vietnam.

MAY 17, 1972

MAG-12, with VMA-211 and -311, deploys to Bien Hoa airbase, fifteen miles northeast of Saigon, to bolster South Vietnamese forces as they fight off the Easter Offensive.

JUNE 16, 1972

MAG-15 moves to Nam Phong, Thailand, the "Rose Garden," to form the basis of Task Force Delta.

AUGUST 25, 1972 - AUGUST 27, 1974
MajGen Edward S. Iris
DEPUTY CHIEF OF STAFF (AIR)

OPERATIONS
Troop Movement

While Marines continued to conduct operations, such as Operations Prairie I and II, with South Vietnamese forces, the call for aircraft configured in "specialized packages" increased. These packages typically included a variety of fixed-wing aircraft and a combination of UH-1E, CH-46, and CH-53 helicopters. With this matrix, Marine pilots and crew decreased response times, allowed for greater flexibility, and kept the enemy confused as to what to expect next.

When enemy ground activity increased in 1968, the role of troop transports and aircraft packages became critical. Before helicopters entered a landing zone, fixed-wing jet aircraft swooped in to unleash bombs and rockets, forcing the enemy to take cover. This gave gunships time to get into position and keep the enemy pinned down so that CH-46s or CH-53s could quickly deliver troops. Once there, Marines and South Vietnamese forces could commence patrol and sweeping operations. During 1968, Marine helicopters carried over 50,000 men and over 6,000 tons each of cargo a month. As the war expanded and the lines of communication were stretched, the CH-46 provided the bulk of troop transport and casualty evacuations.

MOVING THE MASSES

Carrying about twenty-five combat-equipped troops each trip, CH-46s often returned to landing zones eight or nine times, while Huey gunships sprayed the surrounding tree line with gunfire and rockets.

Reportedly, over 67,000 men were medically evacuated in 1968. The CH-46 provided most of the support. Just four years since the arrival of the "Phrog," combat-experienced CH-46 pilots had established their tactics and techniques for every mission. Phrog pilots and aircrew became the backbone of many key operations.

Advance fire support bases were typically supplied by CH-46s, which hauled Marines and cargo into newly established landing zones. The helicopter also took a leading role during Operation Dewey Canyon. Within a nine-day period, CH-46 helicopters inserted and extracted troops, delivered ammunition and rations, and evacuated casualties. Typically flying in bad weather, CH-46 pilots managed to move 78,000 pounds of material and over 1,000 troops. Pictured right are CH-46s evacuating Marines and South Vietnamese forces.

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OPERATION FREQUENT WIND

On April 28, 1975, President Gerald R. Ford gave the order to execute Operation Frequent Wind.

Initially, the United States anticipated evacuating approximately one hundred refugees; however, that number rapidly increased as refugees continued to arrive at ad hoc evacuation points. Marines evacuated 1,373 Americans and 5,595 foreign refugees.

During a nearly constant barrage of explosions, Marines (top and bottom) loaded American and Vietnamese civilians onto helicopters that brought them to waiting aircraft carriers. South Vietnamese refugees (center) walk across a U.S. Navy vessel to safety.

HMM-261 READY ROOM

HMM-261 READY ROOM

1972

SEPTEMBER 11, 1972

Maj Lee T. Lasseter and Capt John D. Cummings, flying an F-4J, shoot down a MiG-21. This is the first all-Marine MiG kill during the Vietnam War.

1973

The Total Force Concept is adopted across the DoD to ensure a more-capable force structure for a smaller defense budget. For the Marine Corps, the policy leads to a significant modernization program of its reserve components.

JANUARY 31, 1973

The last four of the Naval Aviator Pilots retire simultaneously: MGy/Sgts Joseph A. Conroy, Robert M. Lurie, Leslie T. Ericson, and Patrick J. O'Neill.

HMM-261 READY ROOM

FLYING LEATHERNECK MUSEUM

AN EXPANDED ROLE

The escalating war in Vietnam thrust the F-4 into a tactical environment, including air-to-air dogfights and an increased strike role, for which it was not originally designed. To this end, Navy, Marine Corps, and Air Force F-4s flew at altitudes similar to low-altitude bombers, delivering a wide array of ordnance. Their air-to-air kills totaled 107 enemy aircraft.

In March 1972, the NVA threatened to overrun most of the I Corps area, prompting the redeployment of Marine air squadrons. As part of MAG-15, two F-4 squadrons, VMFA-115 and -232, returned to Da Nang. Pictured here are two Phantom II aircraft of VMFA-232.

JULY 27, 1973

HMM-165, -463, and -164, working alongside Navy units, complete mine-clearing operations in North Vietnam, ending Operation End Sweep.

AUGUST 28, 1974 - JANUARY 19, 1975
BGen Philip D. Shutler
DEPUTY CHIEF OF STAFF (AIR)

JANUARY 20, 1975 - AUGUST 21, 1975
MajGen Victor A. Armstrong
DEPUTY CHIEF OF STAFF (AIR)

APRIL 12, 1975

Operation Eagle Pull begins. CH-53D helicopters of HMH-462 begin evacuating the U.S. Embassy in Phnom Penh, Cambodia. HMH-463 evacuates the Marine security force.

APRIL 29-30, 1975

Operation Frequent Wind begins. The 9th MAB, under the command of BGen Richard E. Carey, provides security and helicopter support for the evacuation of Saigon.

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149816
STATES MARINES

THE DELIVERY SERVICE

Besides aerial refueling and transporting of troops, four-engine turboprop KC-130 pilots often used a low-altitude parachute extraction system to deliver supplies. The pilot approached a predetermined area and opened the lower tail ramp doors and an electrically operated parachute deployed, pulling the pallet-mounted cargo out. Here, a KC-130 loads after a resupply mission

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THE MODERN ERA

BY DR. FRED H. ALLISON

After the Vietnam War, Marine leaders wasted little time in charting a course to maximize aviation's utility. Training was improved and aircraft and equipment identified that would best fit the Marine Corps' mission, with a roadmap to acquire them. Other factors drove change and shaped Marine aviation development.

The Marine Corps embraced maneuver warfare doctrine, which emphasized speed, surprise, and flexibility. The global strategic environment changed. The collapse of the Soviet Union and rise of Islamic extremism created world disorder and new threats emerged. Fiscal austerity forced Marine leaders to defend their aviation force in Washington's budgetary wars and maximize its efficiency. Marine aviation became a rapidly deployable, self-sustaining force that was efficient and tactically astute. One thing did not change. The focus and priority mission of Marine aviation remained one of supporting ground Marine operations. It was the prism through which training occurred, tactics, techniques and procedures developed, operations carried out, and equipment and aircraft acquired. As Marine aviation's centennial approached, the Marines' aviation force was modernized, made more expeditionary, and thoroughly integrated into its ground combat operations.

MAWTS-1, a graduate-level school of tactical flying created in 1978, was singularly important in standardizing Marine aviation. Select aviators from all communities attended bi-annual classes, and its graduates, Weapons and Tactics Instructors, returned to their squadrons bringing with them the latest in tactics and operational knowledge.

First rate equipment was acquired and aircraft fielded that facilitated air support in all its broad meanings. The Vietnam warhorse aircraft were retired and replaced with more capable aircraft or modernized versions of the same aircraft. In the case of the Bell Boeing MV-22 Osprey and the Lockheed Martin F-35 Lightning II, new aircraft were dramatic leaps forward technologically with a commensurate increase in capability. All procured aircraft fit the mantra of multi-mission capability, reliability, and expeditionary capability, so as to operate in any clime and place. While the number of aircraft remained about the same, the number of types were reduced, a process called "necking down." This saved money on maintenance, support equipment, training, and facilitated expeditionary operations.

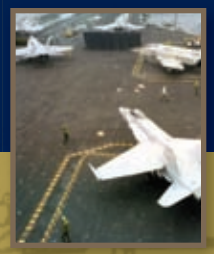
Changes were not confined to aircraft. The Marine aircraft wings' support squadrons and logistics squadrons were reorganized and equipped to deploy rapidly, and support aviation combat operations in austere and remote locations. Uniquely configured aviation logistics ships were outfitted to rapidly deploy and operate off shore as aviation maintenance facilities. The command and control system, the vital network that organizes

and directs the flow of Marine aircraft, received state of the art equipment. Its organization was streamlined to deploy rapidly and support either Marine operations independently or as part of a coalition force. The family was not forgotten. It was within Marine aviation that the family readiness program originated and its positive impact on morale and unit readiness revealed.

The Marine Corps implemented the transformational aviation and ordnance technologies that emerged in this period. Most significant were night vision equipment, precision weapons systems, electronic warfare, and unmanned aerial systems. Precision targeting systems such as the Litening II targeting pod, provided the means to gather intelligence and information on enemy activities, the strategic pivot in the wars on terrorism.

Marine aviation remained busy in the post-Vietnam period, even in years of peace. Squadrons deployed like clockwork to land bases in Okinawa and Japan, part of the national commitment to maintain security in the Western Pacific. Marine tactical jets served aboard U.S. Navy carriers that plied the world's oceans. Marine composite helicopter squadrons served with regularly deployed amphibious or expeditionary units strategically positioned around the globe to respond quickly to virtually any contingency. Marines provided relief after civil crises abroad and natural disasters at home. They plucked Americans from danger in far-off lands and kept the peace in nations afflicted with internecine warfare.

There was also combat. While the Soviet Union and Communist nations represented the obvious threat after Vietnam, the emergence of Islamic terrorism presented a new one. While Grenada, Lebanon, and Libya were small-scale combat operations, the Persian Gulf War and the Global War on Terror, later redesignated Overseas Contingency Operations, were large wars. They demanded virtually all of Marine aviation's resources and more. The Marine Reserve aviation was widely mobilized. The long war against terrorism carried out in Afghanistan, Iraq, the Horn of Africa, and other places, encompassed both conventional combat and counterinsurgencies. It required Marine aviation to conduct extremely long distance vertical envelopments, build bases in expeditionary conditions and operate deep inland for extended periods. It was a mixture of the old and new. Marine aviators often lived in near-combat conditions, displaced forward with maneuver battalions, and flew and fought in close proximity to their infantry brethren. Once airborne, however, aviators operated precision weapons systems that delivered death and destruction with pinpoint accuracy. Realistic and demanding training, capable aircraft and equipment, proven tactics and techniques and a good bit of traditional Marine can-do attitude allowed Marine aviation to carry out all missions with alacrity.



CHAPTER ELEVEN

REEVALUATION AND READINESS

After the Vietnam War, Marine leadership assessed its aviation programs with a view to improving the capability of the force to support the air-ground team. With new technology, aircraft, and command and control systems underway, planners requested feedback from the FMF aviation units. It was through these findings that leadership initiated a strategy to address readiness and created a long-lasting foundation for improvement.

Amid budgetary and political obstacles, Marine air was reorganized to meet the demands of advancing technology and evolving strategy. Looking to narrow the Marine Corps' fleet to fewer airframes that could perform more missions, Marine leadership also modified training policies. The activation of Marine Aviation Weapons and Tactics Squadron One (MAWTS-1) at Yuma, Arizona, in 1978, was the most significant. Its graduate-level aviation training program helped define and integrate the six functions of Marine aviation.

Training exercises centered on cooperative efforts, further enhancing air and ground integration. The combined arms exercises of the 1970s enhanced the capability of the air-ground task force and presented another opportunity for Marines to value the support of Marine air.

Another aspect of the training effort was learning to adapt to and plan for an increasingly urban setting for combat operations. To accomplish this, the Marine Corps sought to extend the reach of operations from amphibious ship decks and acquired new airframes that were capable of operating from improvised airfields.

Procurement of other advanced aircraft began after the Vietnam War. The process of acquiring a vertical/short take-off and landing aircraft began in 1968 when Colonel Thomas H. Miller Jr. and Lieutenant Colonel Bud Baker evaluated the British Harrier. After Marine officials were convinced of the Harrier's capabilities, the Department of Defense funded the Hawker Siddeley AV-8A in a special amendment to the budget plan for Fiscal Year 1970.

Both air-to-air and air-to-ground capable, the McDonnell Douglas F/A-18 Hornet gave the Marines a weapons system that could replace the A-4 Skyhawk, F-4 Phantom, and the A-6 Intruder. Originally committed to Grumman F-14 Tomcats with the Navy, the Marine Corps decided to drop the program after learning that the Navy would only fund air-to-air weapon capabilities for the Tomcat. The Corps selected the Hornet instead.

MAINTAINING IN PARADISE

Although primarily providing helicopter support for ground units at Marine Corps Air Station Kaneohe Bay, Hawaii, MAG-24 also supported fixed-wing deployments to the Western Pacific beginning in 1978. The F-4 Phantom II, like the one pictured here from VMFA-235, continued to serve as an active fighter aircraft, participating in exercises like Opportune Journey, Team Spirit, and Bear Hunt.

U.S. MARINE CORPS

Both the F/A-18 and the upgraded Harrier, the McDonnell Douglas AV-8B, addressed the anti-air warfare and offensive air support functions of Marine aviation. To maintain helicopter assault support assets, leadership also initiated an upgrade program for the CH-46D and CH-53A/D that became the CH-46E Sea Knight and CH-53E Super Stallion, respectively. While the CH-46E extended the service life of the transport helicopter, research began in the tilt-rotor concept, which eventually resulted in the acquisition of the Bell-Boeing MV-22 Osprey.

During this period of transition, three enlisted Marines were lost in 1980 during the attempt, named Operation Eagle Claw, to free hostages held at the U.S. Embassy in Iran. In the wake of the loss, the U.S. military reconsidered how to conduct joint operations. After a substantial funding increase from Congress, the Marine Corps, along with other services, improved inter-service operability and the readiness of the nation.

The 1980s were a relatively peaceful decade for the United States; however, the Marine Corps remained forward deployed and frequently responded to small-scale operations. Flying the UH-1, AH-1, CH-46, and CH-53 during Operation Urgent Fury, a 1983 rescue mission in Grenada, five Silver Stars and the Navy Cross were awarded to Marine aviators for their actions. At the same time, a devastating attack struck the Marines and French forces participating in a peacekeeping mission in Lebanon.

Marines in Lebanon operated under strict rules of engagement, severely limiting their ability to engage hostile forces. Against enemy fire, pilots flew non-combatant and medical evacuation missions in addition to their logistics flights. In February 1983, air and ground units operated in blizzard conditions, battled high winds, and entered Syrian-controlled territory to evacuate trapped Lebanese citizens.

By October 23, 1983, in response to twin attacks by suicide bombers on a Marine barracks at the airport, the mission suddenly shifted to medical evacuation. Under small arms fire, crews evacuated the wounded to the USS *Iwo Jima*. The attack claimed the lives of 241 American servicemen, including 220 Marines and Sailors, and 58 French paratroopers.

FLYING LEATHERNECK MUSEUM

QUICK RESPONSE

Ever ready, Marine air could immediately conduct transport, attack, reconnaissance, and anti-air warfare missions from amphibious assault ships, like the USS Belleau Wood, *seen here. The variety of missions required, as Lieutenant General Charles H. Pitman pointed out, "a quick turnaround, the ability to go out, strike, do the mission, come back, refuel, rearm, and go out again."*

Aviators continued to fly a wide variety of air operations, including the Iraqi-initiated tanker war against Iran in the Persian Gulf. Both Iranian and Iraqi forces mined the area and attacked the tankers, which were under American protection. The United States retaliated in Operation Praying Mantis after the USS *Samuel Roberts* hit an Iranian mine.

Marine aviation also performed numerous humanitarian operations and noncombatant evacuations around the world. Pilots supported the cleanup after an oil spill in Alaska and the recovery efforts following Hurricane Hugo in South Carolina. Internationally, aviators flew humanitarian operations from Somalia and Southwest Asia to Lebanon and Bangladesh.

On August 2, 1990, Iraqi forces invaded Kuwait and positioned their units along the Saudi Arabian border. Five days later, U.S. air and ground forces were ordered to Saudi Arabia with other Coalition forces as part of Operation Desert Shield. The three ships of Maritime Prepositioning Ship Squadron 2 arrived at the Port of Jubayl, Saudi Arabia, on August 12. The initial elements of the I MEF arrived in theater ready for combat. Building up manpower and equipment for months, Coalition forces were preparing to launch air strikes against Iraqi invaders in Kuwait.

Then on January 17, 1991, Operation Desert Storm began. The following month, Allied forces entered Kuwait to enforce United Nations resolutions, which mandated the withdrawal of Iraq from Kuwait. This marked the last major operation for the A-6 Intruder and the OV-10 Bronco. These aging veterans fulfilled the mission but were overshadowed by the performance of the F/A-18 Hornet. When the cease-fire was declared on February 28, 1991, the 3d MAW had flown more than 18,000 sorties with 13 different types of aircraft.

Pilots operated new airplanes around the world, including in United Nations operations, such as no-fly zone enforcement in Bosnia-Herzegovina. After years of transition, reevaluation, and preparation, readiness remained the most valuable attribute of the Marine expeditionary force.

MODERNIZING

THE STATE OF MARINE AVIATION

THE NECKDOWN STRATEGY

In the wake of the Vietnam War, Marine aviation's budget and mission came under fire. Battling the post-war drawdown and fiscal constraints, leadership quickly realized that to maintain readiness and advance maneuver warfare doctrine they needed to adapt the force structure with technology rather than continuing to purchase single-capability aircraft. The process, known as the "Neckdown Strategy," was visible by the 1980s and continues to this day.

Modernizing its aircraft, the Corps reinforced trademark Marine air specialties like close air support and assault support. During the Reagan years, Marine aviation benefited from increased defense spending. This allowed for upgrades, enhancing the mission set of existing aircraft while investing in the development of multi-mission platforms. In the midst of this modernization effort, the Marine Corps reaffirmed its expeditionary role by replacing the word amphibious with expeditionary in the Marine air-ground task force designation. This 1988 redesignation allowed the Marine Corps to increasingly refer back to its roots as an expeditionary force.

To efficiently modernize the force and maintain a high state of readiness in an expeditionary role, the Corps sought multi-mission aircraft to perform the six functions of Marine aviation: assault support, anti-air warfare, reconnaissance, offensive air support, electronic warfare, and control of aircraft and missiles. The sixth function of aviation, control of aircraft and missile functions, is not illustrated here; however, tactical air operations modules and joint capability centers were exponentially advanced during this period.

The neckdown process streamlined many single-mission, aging airframes into more capable, multi-mission aircraft. Marine aviation continues to procure, modify, and develop aircraft and air support elements, staying ahead of the threat and securing its role as an expeditionary force.

ASSAULT SUPPORT	ANTI-AIR WARFARE	RECONAISSANCE	OFFENSIVE AIR SUPPORT	ELECTRONIC WARFARE

Reserve, training, and adversary airframes are not represented. Some aircraft, which were transitioning into the Reserves, were also excluded for clarity.

MARINE AVIATION

1999

	UH-1N HUEY
CH-53A/D SEA STALLION CH-53E SUPER STALLION	CH-53D SEA STALLION CH-53E SUPER STALLION
	CH-46E SEA KNIGHT
CH-46E SEA KNIGHT	
	MV-22B OSPREY
	KC-130F/R HERCULES
F/A-18A/B HORNET	F/A-18C/D HORNET
OV-10D BRONCO	
A-4M SKYHAWK	
AV-8B HARRIER	AV-8B HARRIER
A-6E INTRUDER	
AH-1T SEACOBRA	AH-1W SUPERCOBRA
EA-6B PROWLER	EA-6B PROWLER

FATHER OF THE *Harrier*

THOMAS H. MILLER JR.

Thomas H. Miller Jr. enlisted in the U.S. Naval Reserve in June 1942. He became an aviation cadet, attended flight training at the Naval Air Station, Corpus Christi, Texas, and earned his wings in March 1943. During World War II, he transferred to the Marine Corps and served in the Pacific with VMO-155 (later VMF-155). Miller also participated in combat operations in Korea and served as Chief of Staff, III Marine Amphibious Force, during the Vietnam conflict.

Serving as a test pilot, Miller set a world speed record in 1960 in the F4H-1 Phantom II, for which he received the Distinguished Flying Cross (pictured here). In 1968, he became the first American to fly the AV-8A jump jet and soon became its leading advocate.

THE FLYING LEATHERNECK MUSEUM

1975

AUGUST 2, 1975

CMC Louis H. Wilson Jr. announces that twelve fighter/attack squadrons will continue operating F-4 Phantoms until they are replaced by the F/A-18 Hornet. The aircraft upgrade will begin in the early 1980s.

AUGUST 22, 1975 – JUNE 29, 1979
LtGen Thomas H. Miller Jr.
DEPUTY CHIEF OF STAFF (AIR)

FEBRUARY 17, 1977

The Marine Corps takes delivery of the EA-6B Prowler. Advanced electronic countermeasures capabilities allow the aircraft to identify, exploit, and counter enemy use of electronic warfare.

APRIL 12, 1977

The Marine Corps establishes an operational requirement for night-vision capability in transport helicopters.

U.S. MARINE CORPS

THE JUMP JET

During the acquisition process, Miller emphasized the AV-8A Harrier's ability to carry out the same mission as the A-4 Skyhawk. Although Colonel Miller and Commandant General Leonard F. Chapman Jr. Initiated the acquisition process in 1968, extensive inquiry and testing, budget battles, and slow production hampered the arrival of the Marine Corps' vertical/short take-off and landing aircraft.

JUNE 22, 1977

The new OV-10D Bronco, undergoing test and evaluation at Naval Air Training Command's Strike Aircraft Test Directorate, Patuxent River, MD, is equipped with forward-looking infrared radar, a night-vision sensor.

AUGUST 11, 1977

The first CH-46E Sea Knight with fiberglass rotor blades flies. Over 400 Sea Knights will be retrofitted with these more durable blades, which will make them less susceptible to corrosion and fatigue damage.

FEBRUARY 27, 1978

The contract for the CH-53E is awarded to Sikorsky Aircraft. This variant will give the Marine Corps twice the lift as the CH-53D.

JUNE 1, 1978

MAWTS-1 is established at Yuma, AZ.

FEBRUARY 23, 1979

Col Frank E. Petersen Jr. is promoted to brigadier general and becomes the first African-American Marine to attain flag rank.

MARINE ONE

President Gerald Ford practices his golf swing at the Marine One hangar at Andrews Air Force Base, Maryland, in January 1977. The mission of HMX-1 includes providing transport to the President, Vice President, members of the President's cabinet, foreign dignitaries, and the Commandant of the Marine Corps. Additionally, the more than 700 personnel of HMX-1 plan and execute operational testing and evaluation of helicopters and tilt-rotor technology.

GERALD R. FORD LIBRARY

1979

JULY 1, 1979

President Gerald R. Ford establishes HMX-1 as the sole source of helicopter support for the White House.

JULY 1, 1979 - JUNE 30, 1982
LtGen William J. White
DEPUTY CHIEF OF STAFF (AIR)

JANUARY 31, 1981

The program for enlisted naval aviators officially ends.

MARCH 5, 1982

HMH-465 unveils the first of fifteen CH-53E Super Stallion helicopters at MCAS Tustin, CA. The 53E can carry twice the payload of the 53D, lifting a sixteen-ton external payload.

GRAY RESEARCH CENTER

THEY DID SHOOT BACK

Under the continued threat of enemy fire—Marines in Beirut during the Lebanese Civil War operated under strict rules of engagement. The rules were so strict, in fact, that the Marines put a sign in front of the Company A, BLT 1/8 tent, declaring it "The Can't Shoot Back Saloon." Returning fire in self-defense was allowed by rules of engagement, however. Using every possible resource, the Marines worked to identify the origins of several attacks in August 1983. They employed visual sighting from the ground, aerial sighting by observers in a UH-1N (like the one pictured here) and AH-1Ts, and electronic imagery from radars.

JUNE 28, 1982

Marking the end of an era, the last C-117D Skytrain (previously the R4D) is retired at MCAS Iwakuni, Japan.

JUNE 24, 1983

The 32d MAU receives orders to evacuate American citizens and other designated foreign nationals from Juniyah, Lebanon, just north of Beirut.

JULY 1, 1982 - AUGUST 31, 1984
LtGen William H. Fitch
DEPUTY CHIEF OF STAFF (AIR)

OCTOBER 25-31, 1983

The AH-1T SeaCobra flies for the first time in combat during Operation Urgent Fury in Grenada and successfully destroys enemy targets with TOW missiles.

FEBRUARY 7-11, 1984

HMM-261 Sea Knights conduct noncombatant evacuation operations in Beirut following increasing violence. The squadron evacuates 787 Americans and foreign nationals.

GRENADA
Operation Urgent Fury

On October 21, 1983, following a coup spurred by Cuban communists in Grenada, the 22d Marine Amphibious Unit (MAU), commanded by Colonel James P. Faulkner, diverted from its original deployment to Beirut, Lebanon. Cubans, supplied and trained by the Soviets, began construction on an airfield at Pearls Airfield, Grenada. If completed, the airfield could have provided Soviet access to American shores in the midst of the Cold War. This provocative act compelled the U.S. to intervene.

Operation Urgent Fury began on October 25th. Lacking accurate maps, the joint force faced a tough mission. The goals of the combined forces unit included neutralizing the People's Revolutionary Army, evacuating American citizens, and restoring peace to Grenada.

RESCUE AT GRAND ANSE

Above is one of the two CH-46E helicopters that were damaged after colliding with palm trees during a rescue operation.

In the early hours of the operation, HMM-261 (Composite), commanded by Lieutenant Colonel Granville R. Amos, inserted Marines at Pearls Airfield and the city of Grenville. When Marine pilots approached the area, they saw that the selected landing zone was covered by trees and brush. From his Huey, Lieutenant Colonel Amos directed the group to land at a nearby horse-racing track. During the mission in Grenada, CH-46E Sea Knights transported Marines, AH-1T Cobras provided fire support, and CH-53 Sea Stallions moved heavy weapons and jeeps. Marine helicopters also provided invaluable medical evacuation, pictured right.

Attempting to also seize Point Salines airport, Army Rangers landed at Point Salines, carried by Air Force C-130s. Marines on the ground provided supporting fire for the embattled Army force at the airfield. The Cobras arrived, eliminating small arms fire originating from a Cuban camp.

Two other Cobras targeted the enemy headquarters at Fort Frederick, near Point Salines. During the following action, conducted under constant enemy fire, Marine Cobra and Sea Knight pilots performed admirably. When one of the Cobras was downed by enemy fire, his wingman, supported by a CH-46, swooped in for the rescue. Five Silver Stars were awarded to Captains Timothy B. Howard and John P. Giguere, Major Melvin W. DeMars Jr., Gunnery Sergeant Kelley M. Neigdigh, and First Lieutenant Jeffrey R. Scharver. Captain Jeb F. Seagle was awarded the Navy Cross.

By November 2, after evacuating hundreds of American citizens and foreign nationals and silencing most of the resistance in Grenada, the 22d MAU departed for its mission in Lebanon.

U.S. MARINE CORPS

CHANGING OF THE GUARD

Flying F/A-18 Hornets, Marine pilots of VMFA-314 participate in an exercise with RF-4B Phantom IIs of VMFP-3 in 1984, pictured here. From the USS Coral Sea, *VMFA-314 Hornets flew surface-to-air missile suppression over Libya during Operation El Dorado Canyon in April 1986. VMFP-3 continued to serve as the "Eyes of the Corps" until 1990, when the squadron was deactivated.*

COLONEL TODD KEMPER

1984

JULY 30, 1984

The first fully loaded maritime prepositioning ship squadron deploys with combat equipment and thirty days of supplies for a 16,500-man Marine amphibious brigade.

SEPTEMBER 1, 1984 - APRIL 29, 1988

LtGen Keith A. Smith

DEPUTY CHIEF OF STAFF (AIR)

JANUARY 30, 1985

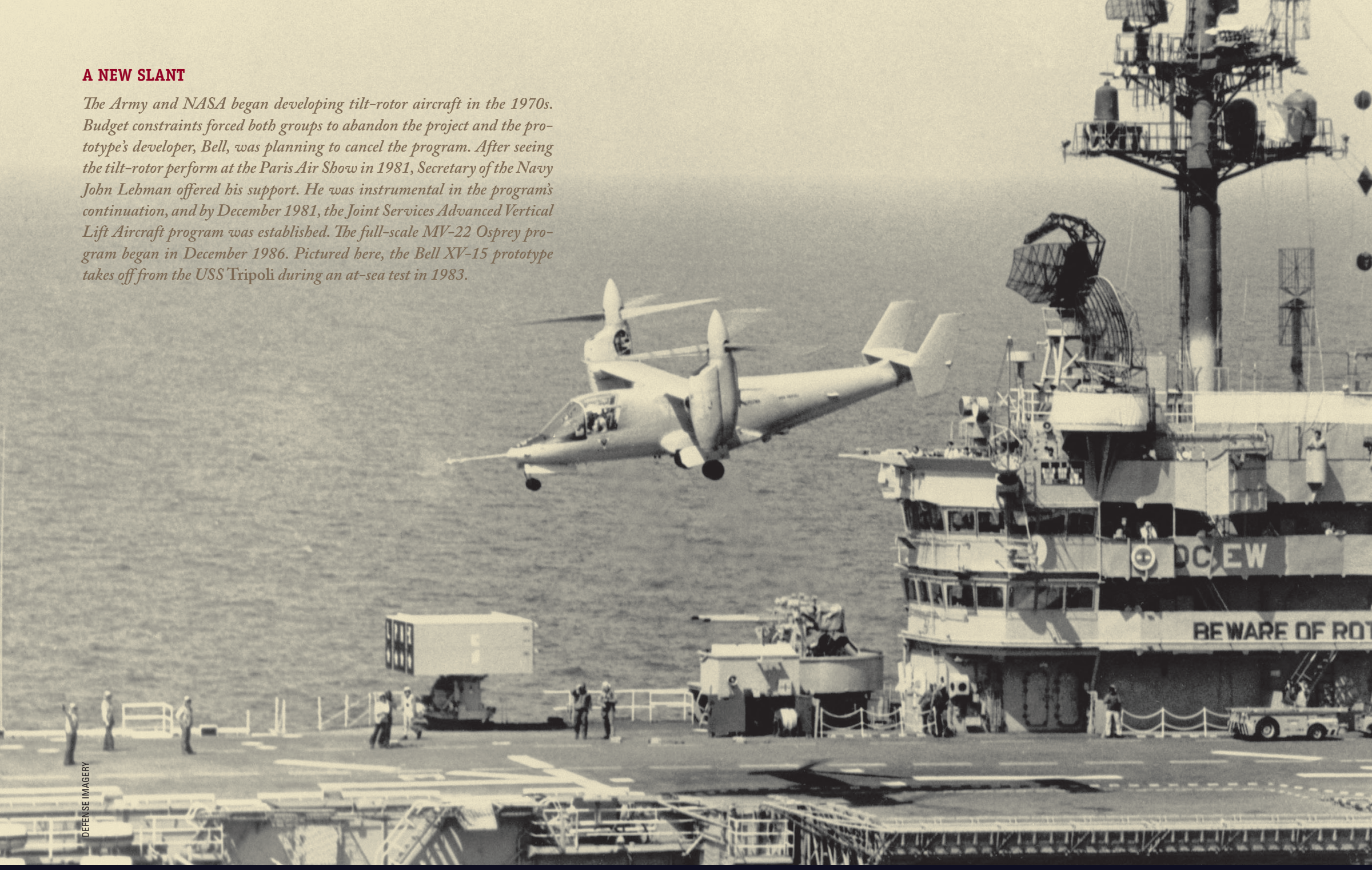
VMA-331 becomes the first operational Marine squadron to fly the AV-8B Harrier II.

MARCH 27, 1986

The Marine Corps receives its first Bell Textron AH-1W SuperCobra attack helicopter.

A NEW SLANT

The Army and NASA began developing tilt-rotor aircraft in the 1970s. Budget constraints forced both groups to abandon the project and the prototype's developer, Bell, was planning to cancel the program. After seeing the tilt-rotor perform at the Paris Air Show in 1981, Secretary of the Navy John Lehman offered his support. He was instrumental in the program's continuation, and by December 1981, the Joint Services Advanced Vertical Lift Aircraft program was established. The full-scale MV-22 Osprey program began in December 1986. Pictured here, the Bell XV-15 prototype takes off from the USS Tripoli *during an at-sea test in 1983.*



DEFENSE IMAGERY

APRIL 15, 1986

VMFA-323 and -314 Hornets fly surface-to-air missile suppression and combat air patrol missions in support of Operation El Dorado Canyon in Libya, marking the first time that F/A-18s participate in combat operations.

APRIL 17, 1988

An aviation logistics support ship, SS *Wright*, a roll-on/roll-off cargo container ship, supports the aviation combat element near Puerto Rico during its first operational test and evaluation.

APRIL 18, 1988

In Operation Praying Mantis, HMLA-167(Rein), the aviation combat element of Contingency MAGTF-88, responds to Iranian mine-laying in the Persian Gulf. The Marine Corps and the Navy lead a strike on the Iranian oil platform, *Sassan*.

APRIL 30, 1988 – AUGUST 1, 1990
LtGen Charles H. Pitman
DEPUTY CHIEF OF STAFF (AIR)

MAY 23, 1988

Textron rolls out the V-22 Osprey. The tilt-rotor aircraft will replace the aging fleet of CH-46s.

Standardizing Advanced Tactical Training

MARINE AVIATION WEAPONS & TACTICS SQUADRON 1

Since the 1950s, Marine training and readiness programs have sought ways to improve the quality of instruction for the Marine air-ground team. However, the early training efforts were typically limited to the squadron level or conducted by training units on opposite coasts.

The two Marine air weapons units, Marine Air Weapons Training Unit Atlantic and Pacific, satisfied training needs through the mid-1970s. But, as Marine aviation acquired additional and improved aircraft and equipment, training stagnated. Despite common training guidelines, squadrons did not train as a cohesive whole. These initiatives not only suffered from a lack of cohesion and scope, but also lacked dedicated aircraft, standardized procedures, air control support, and personnel assignment policies.

Aware of the deficit, in July 1974 the Commandant of the Marine Corps directed aviation to conduct a readiness study. The Deputy Chief of Staff for Aviation, Brigadier General Phillip D. Shutler, added another dimension to the study. For each problem revealed during the study, a corresponding solution was developed. Twenty-one projects were formalized addressing issues from practice ordnance shortages to high personnel turnover to the lack of centralized training. Project 19 identified the main problems of Marine aviation training after the Vietnam War.

MARINE AIR WEAPONS TRAINING UNITS (MAWTU)

The two MAWTU's have provided outstanding service to the Marine Corps for a number of years. However, with the ever-increasing requirement for technical weapon training excellence demanded by contemporary air warfare, it is necessary to re-examine the MAWTU mission for present and future adequacy. This is a long range project that is intended to ensure that the future needs of the Marine Corps will be met in aviation weapon training. Possibilities are consolidation, use of MAWTU's in ORI/TRE/COMPEX situations, tactical ECM training and establishment of a squadron weapon training officer course.

Marine Aviation Readiness Study
May 1975

The recommendation resulted in the organization of the Marine Weapons and Tactics Program, established in July 1976. The continued contributions of representatives of FMF Pacific and FMF Atlantic led to the consolidation of the two MAWTUs and Marine Aviation Weapons and Tactics Squadron One (MAWTS-1) was activated at Marine Corps Air Station, Yuma, Arizona, on July 1, 1978.

In the new concept, officers attend biannual, six-week long Weapons and Tactics Instructor (WTI) courses at MAWTS-1, enhancing the relationship between the ground and air Marines, and improving Marine air specialties like close air support and assault support. The training squadron provides post-graduate training only. Graduate WTIs return to their units to teach at the squadron level. This system, which is still in use, constantly improves pilot and support personnel skills. Prior to the establishment of a weapons and tactics training squadron, the training was conducted by various services at multiple locations. Today it is at one location. The current effectiveness of Marine aviation is a direct result of the successful training efforts of MAWTS-1.

MAWTS-1's creation ushered in a more coherent training program, which features the attack, fighter, helicopter, transport, photo, electronic warfare, and air control communities, as well as ground Marines. The specialized nature of MAWTS-1 training has elevated aviation combat readiness to unprecedented levels, as evidenced by its performance in every conflict since Operation Desert Shield.

U.S. MARINE CORPS

MODERNIZATION AND TRAINING

During a MAWTS-1 exercise circa 1995, Harriers of VMA-211 fly near Yuma, Arizona, firing Zuni rockets at ground objectives.

DESERT SHIELD

THE BUILDUP

When Operation Desert Shield began on August 7, 1990, it was the largest military buildup since World War II. During the preparations, the Marine Corps used maritime prepositioning ships, based at strategic locations around the world and equipped to fully support a Marine expeditionary brigade. The decreased response time allowed personnel and equipment to rapidly deploy to Southwest Asia.

Air assets included Vietnam era aircraft, A-6E Intruders and OV-10A/D Broncos. Newer aircraft and weapons included the F/A-18 Hornets and Hellfire missiles. AH-1 Cobras launched Hellfire missiles and proved effective against tanks during the Gulf War.

U.S. NAVY

1989

NOVEMBER 8, 1989

A KC-130 from VMGR-452 airlifts eight whooping cranes from Andrews Air Force Base, Washington, DC, to Baraboo, WI, as part of an effort to preserve the endangered species.

NOVEMBER 13, 1989

The Marine Corps completes the transition from F-4 Phantoms to F/A-18 Hornets in the active service squadrons.

JULY 18, 1990

Helicopters of MAGTF 4-90 and HMM-164(C) provide emergency relief and participate in search and rescue missions following an earthquake in the Philippines.

AUGUST 5, 1990

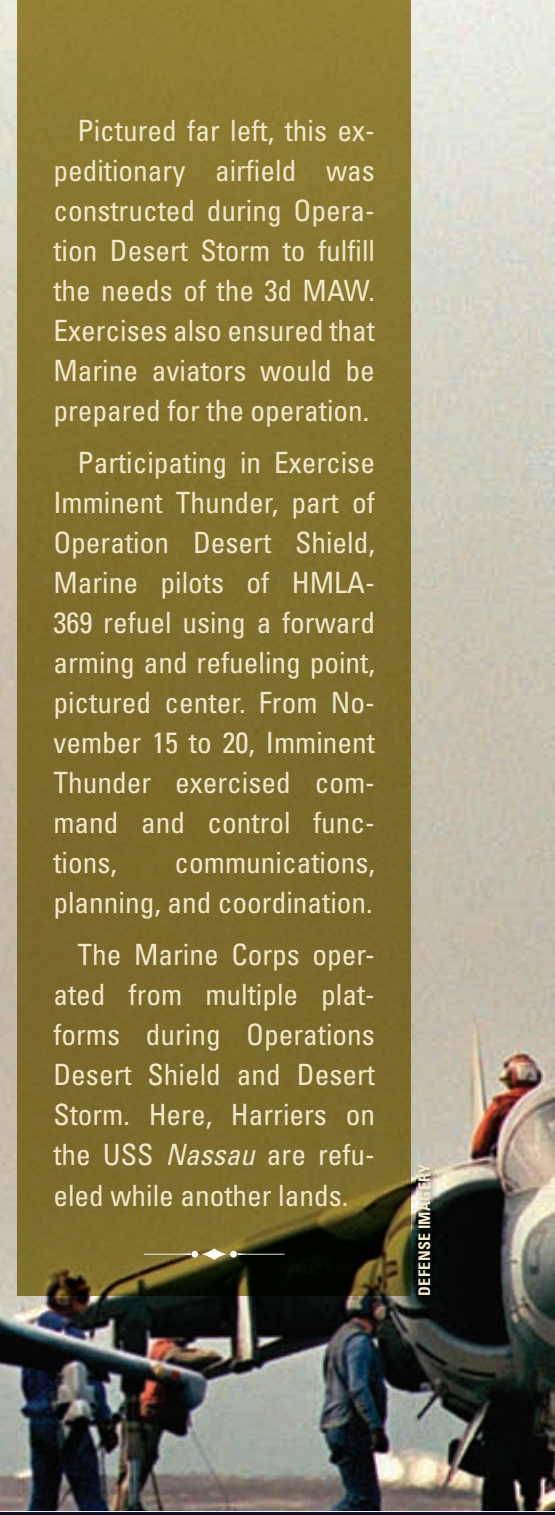
During Operation Sharp Edge, Sea Knights, Hueys, Cobras, and Harriers provide support. HMM-261(C) CH-53 Sea Stallions begin evacuating 2,609 Americans and other foreign nationals in the midst of civil war in Monrovia, Liberia.

GRAY RESEARCH CENTER

Pictured far left, this expeditionary airfield was constructed during Operation Desert Storm to fulfill the needs of the 3d MAW. Exercises also ensured that Marine aviators would be prepared for the operation.

Participating in Exercise Imminent Thunder, part of Operation Desert Shield, Marine pilots of HMLA-369 refuel using a forward arming and refueling point, pictured center. From November 15 to 20, Imminent Thunder exercised command and control functions, communications, planning, and coordination.

The Marine Corps operated from multiple platforms during Operations Desert Shield and Desert Storm. Here, Harriers on the USS *Nassau* are refueled while another lands.



DEFENSE IMAGERY

AUGUST 17, 1990 – JUNE 30, 1993
LtGen Duane A. Wills
DEPUTY CHIEF OF STAFF (AIR)

AUGUST 20, 1990

VMA-311 is the first tactical fixed-wing squadron to arrive in theater as a part of Operation Desert Shield. The squadron will provide close and deep air support, supply electronics intelligence, and operate as a forward air controller airborne.

JANUARY 5, 1991

HMH-461 Super Stallions evacuate 281 people from the U.S. Embassy at Mogadishu, Somalia. HMM-265, -365, HMLA-269, and VMGR-252, -452 provide additional support.

JANUARY 18, 1991

The F/A-18D Hornet operates as fast-forward air controller during Operation Desert Storm.

FEBRUARY 15, 1991

HMLA-369 launches the first Hellfire missile in combat using the Night Eagle Laser System.

Operation Desert Storm
MAKING IT HAPPEN

Among the first Desert Shield units to deploy, the 7th MEB, using a combination of airlift and maritime prepositioning ships, established combat and logistic bases in Saudi Arabia. On completion of the buildup, the 3d MAW included three air groups. MAG-70 existed for four days as an organization of units in transit, and would become I MEF's aviation combat element.

On the first day of Operation Desert Storm, Marine pilots flew 144 combat sorties of the more than 18,000 they flew during the campaign. Marine air was prepared to conduct sustained air strikes in Iraq or Kuwait as required. EA-6B Prowlers supported artillery and provided cover to forces fighting along the border.

The use of 3d MAW assets was planned in stages. The initial phases included air strikes on staging areas, airbases, and warehouses. Next came the daily assignments based on air tasking orders from the previous day, followed by electronic countermeasure missions.

In the opening phase of the war, Marine aviation began offensive air strikes at 4:00 am on January 17, 1991. Launching from Sheikh Isa Airbase and Bahrain International Airport, forty-eight aircraft, in tandem with twenty Allied aircraft, bombed Iraqi airfields and missile facilities. MAG-13 aircraft with AV-8B Harrier IIs and OV-10A Broncos flew air strikes against targets in southern Kuwait. Marine aircraft continued an aggressive, constant operational pace throughout the month of January.

On February 24, MAG-16 and -26 helicopters led the way in supporting the ground war. Aircraft included CH-46 Sea Knights, AH-1W Cobras, and CH-53 Sea Stallions. The F/A-18A/C/D Hornets of MAG-11 and AV-8B Harrier IIs of MAG-13 conducted numerous fixed-wing sorties. The 3d MAW supported the I MEF attack into Kuwait by conducting air strikes throughout the two divisional zones of action, concentrating on artillery and armor in the vicinity of Al Jahra and Kuwait International Airport.

Among those flying in the attack was Lieutenant Colonel Michael M. Kurth, the commanding officer of HMLA-369. For ten hours on February 26, Kurth in his UH-1 Huey continuously shuttled AH-1 Cobras under high-voltage wires, heavy oil smoke, and enemy fire to their targets. For his actions, he was awarded the Navy Cross.

During Operation Desert Storm, the Marine Corps also employed the Pioneer remotely piloted vehicle (RPV) for aerial reconnaissance. In one of the first known instances of an RPV capturing personnel, Iraqi soldiers surrendered, waving white cloths at the Marine unmanned aircraft as it flew overhead. By February 27, airborne forward air controllers reported white flags flying everywhere between Kuwait City and Basrah.

GRAY RESEARCH CENTER

GRAY RESEARCH CENTER

GRAY RESEARCH CENTER

SENDING A MESSAGE

A Marine Huey (left) patrols above the Kuwait International Airport.

3d MAW Marines (center) hold a Kuwaiti flag in front of a captured Iraqi Bell 214 Super Transport helicopter.

The "Death Angels" of VMFA-235 (bottom) send Saddam Hussein a message during Desert Storm.

GRAY RESEARCH CENTER

U.S. MARINE CORPS

JAMMING AND SUPPRESSING

To perform the electronic warfare and photo reconnaissance functions of Marine aviation, the Marine Corps operated the EA-6A Intruder and RF-4B Phantom. As these functions became increasingly critical, the EA-6B Prowler entered the active service. The EA-6B is a four-seat, twin-engine, all-weather electronic countermeasures aircraft, featuring the ALQ-99 pod mounted jamming system, the USQ-113 communications jamming system, and high-speed anti-radiation missile (HARM)weapon system.

DEFENSE IMAGERY

1991

FEBRUARY 25, 1991

The 3d MAW flies more than 460 sorties, destroying 52 tanks, 9 armored personnel carriers, 6 artillery tubes, and additional enemy targets.

APRIL 7, 1991

In Operation Provide Comfort, HMM-264 delivers supplies for half a million Kurdish refugees in southern Turkey.

MAY 22, 1991

The House Armed Services Committee votes to allow women to fly combat missions in the Marine Corps, Navy, and Air Force. The measure is included in an amendment to the 1992 defense budget.

MARCH 1–11, 1992

Marines from the 22d MEU(SOC) participate in Exercise Eager Mace in Kuwait, testing the aviation combat element of HMM-362 and ground elements.

FLYING LEATHERNECK MUSEUM

EARTH, SKY, & ADVERSARIES

To match the demands of technological advancements for the Hornet, an equally advanced simulator was developed. Introduced in the 1980s, this Marine Corps simulator offered a 360-degree realistic, computer-generated projection of earth, sky, and adversaries.

Capable of integrated training with another pilot or instructor, the trainer mirrors the cockpit of the F/A-18. It also allows for a one-on-one mode and cooperative mode with fellow pilots against adversary aircraft.

AUGUST 27, 1992

Persian Gulf allies enforce the ban on Iraqi planes flying south of the 32nd parallel in Operation Southern Watch. Marine Harriers from the USS *Tarawa* support the operation.

SEPTEMBER 16, 1992

The Tarawa Amphibious Ready Group deploys to the coast of Somalia in Operation Provide Relief. HMM-161(Rein) remains on alert to protect relief teams and lift Pakistani peacekeeping troops into Mogadishu.

DECEMBER 9, 1992

Operation Restore Hope begins. Millions of television viewers watch HMM-164(Rein) provide support to ground forces in Somalia.

JULY 1, 1993 – JULY 14, 1994
LtGen Richard D. Hearney
DEPUTY CHIEF OF STAFF (AIR)

APRIL 11, 1994

Two F/A-18 Hornets from VMFA-251 engage Bosnian Serb forces outside of Gorazde, Bosnia, as part of the NATO peacekeeping effort.

HELP FROM ABOVE

After the 1991 cyclone in Bangladesh, Marine and Navy aviators flew 969 sorties and distributed 700 tons of food. Medical and construction supplies were also delivered by air during Operation Sea Angel.

CH-46 Sea Knights and CH-53 Sea Stallions from MAG-50 served as the aviation combat element of the Contingency MAGTF 2-91 and supported the humanitarian mission. The task force, which also included U.S. Army, Air Force, and Navy aviators, was awarded the Joint Meritorious Unit Award.

U.S. MARINE CORPS

1994

APRIL 12, 1994

The 11th MEU(SOC) evacuates 230 civilians, including 142 Americans, from Rwanda as a part of Operation Distant Runner, in the wake of the Rwandan government's systematic genocide of its people.

JULY 16, 1994 – JULY 21, 1996
LtGen Harold W. Blot
DEPUTY CHIEF OF STAFF (AIR)

FEBRUARY 28, 1995

Marines and Sailors from the USS *Belleau Wood* conduct amphibious landings in Mogadishu to establish a rear guard security perimeter in support of United Shield, the operation to ensure the safe and orderly withdrawal of forces from Somalia.

APRIL 21, 1995

The first female Marine aviator, 1stLt Sarah Deal, receives her Wings of Gold. After completing the training syllabus for the CH-53E, she is assigned to HMH-466.

AID AND ESCORT

As UH-1 Hueys flew supporting missions over Somalia during the humanitarian mission (top left), Operation Restore Hope, KC-130s delivered humanitarian aid (bottom left). The delivery of food and water, however, was not a simple mission. The tankers refueled the attack helicopters that escorted the KC-130s, which were under constant threat of enemy fire. Additionally, CH-53D Sea Stallions delivered fuel, emergency supplies, and provided troop and oversized-cargo lift after arriving in Bale Dogle, Somalia.

U.S. MARINE CORPS

U.S. MARINE CORPS

DEFENSE IMAGERY

JUNE 8, 1995

CH-53 Sea Stallions, AH-1W Cobras, and AV-8B Harriers aboard the USS *Kearsarge* participate in the rescue of Capt Scott O'Grady, USAF, after his plane is shot down over Bosnia.

AUGUST 30, 1995

VMFA(AW)-533 and -312 participate in NATO-directed air strikes against military targets as a part of Operation Deliberate Force, in an effort to weaken the Serbian government's control over Bosnians.

APRIL 1996

The 22d MEU evacuates 2,329 civilians from the American Embassy in Liberia to safety in the neighboring Republic of Sierra Leone.

MAY 20, 1996

Elements of the 22d MEU, operating from the USS *Guam*, fly to Bangui, Central African Republic, to evacuate American civilians and safeguard the American embassy.

JUNE 5, 1996

The 1st RPV platoon begins its support of the NATO-led Operation Joint Endeavor in Bosnia-Herzegovina. The platoon is re-designated Unmanned Aerial Vehicle Squadron 1 (VMU-1) on June 15.

Flying in Support of NATO
BOSNIA

In July 1993, VMFA(AW)-533 arrived at Aviano Air Base in Italy, to begin operating as part of a NATO force in Operation Deny Flight. The squadron flew F/A-18D Hornets on daily patrols in the no-fly zones over Bosnia and Herzegovina (formerly part of Yugoslavia). VMFA(AW)-332 and -224 of MAG-31 soon followed with VMFA-251 at Aviano.

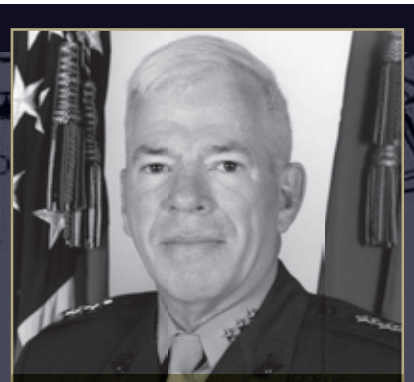
On November 21, 1994, VMFA(AW)-332 operated alongside nearly thirty aircraft from eight Italian air bases in the air strikes against Ubdina Air Base, Croatia. During the strikes, VMFA(AW)-332 launched the first HARMs against surface-to-air missile sites. Before long, Hornet squadrons were joined by VMAQ Prowlers. These aircraft provided electronic countermeasures and quickly proved invaluable to Marine aircraft operating in the area.

The following year, on June 8, HMM-263(Rein) retrieved downed Air Force pilot Captain Scott O'Grady. The rescue mission included three CH-53Es, three AH-1Ws, and four AV-8Bs. Additional support was provided by F/A-18s and Navy EA-6Bs.

The Bosnian situation continued to escalate and the NATO-led force began air strikes as part of Operation Deliberate Force. Starting on August 30, 1997, Hornets flew not only from Aviano Air Base, but from the USS *America* and USS *Theodore Roosevelt* as well. Here, during Operation Joint Endeavor, Marines load an AIM-9 Sidewinder, a short range air-to-air infrared-seeking missile, on a VMFA-224 Hornet at Aviano Air Base.

U.S. MARINE CORPS

1996



JULY 22, 1996 – JUNE 28, 1998
LtGen Terrence R. Dake
DEPUTY CHIEF OF STAFF (AIR)

MARCH 13, 1997
The 26th MEU arrives in Tirana, Albania, as a part of Operation Silver Wake and evacuates approximately 900 U.S. citizens and foreign nationals following civil unrest.

MAY 29, 1997
During Operation Noble Obelisk, Marine Corps CH-53E Super Stallions from the USS *Kearsarge* conduct a noncombatant evacuation of civilians following a military coup in Sierra Leone.

FEBRUARY 27, 1998
Following flooding, VMGR-352 Hercules tankers fly more than two million pounds of food and supplies to Kenya, East Africa, as a part of Operation Noble Response.

SOUTHERN WATCH

Coalition aircraft flew surveillance and enforced a no-fly zone in Iraq below the 32nd parallel beginning in 1992. Pictured here in 1998, a Marine F/A-18 continues the mission.

JUNE 6, 1998

Following a border dispute between Eritrean and Ethiopian forces, two KC-130 Hercules tankers, assigned to the 11th MEU(SOC), evacuate 172 American citizens and nationals from Asmara, Eritrea, to Amman, Jordan.

JUNE 28, 1998 – AUGUST 2, 2001
LtGen Frederick McCorkle
DEPUTY COMMANDANT FOR AVIATION

FROM WHISKEY TO ZULU

Designed for close air support, armed escort, and visual reconnaissance, the AH-1W SuperCobra entered service in the 1980s and continues to prove its utility. As part of the H-1 Upgrade program initiated in the mid '90s, the modernized Bell AH-1Z "Zulu" Viper retains the expansive attack capabilities of its "Whiskey" predecessor, but will feature a four-bladed configuration and an improved night targeting system.

TED CARLSON

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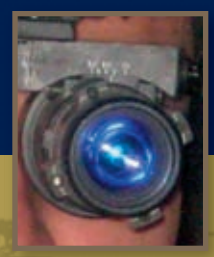
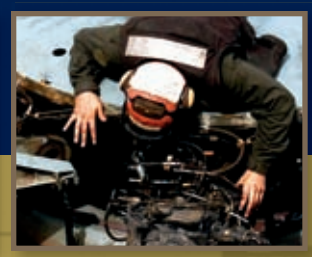
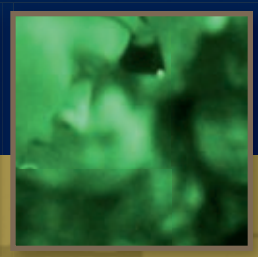




CHAPTER TWELVE
REALIZING THE DREAM

After years of preparation, the late 1990s brought the legacy of innovation to the forefront of Marine aviation. The initial transition to multi-mission capable aircraft began in the 1970s. Marine leadership cautioned that airframe downsizing was not budget driven, but carefully planned to promote greater flexibility and interoperability of airframes. Future air operations would focus on striking quicker with fewer airframes to maintain a smaller logistics footprint.

Lieutenant General Michael A. Hough recalled, "The ultimate goal is operational flexibility and sustaining (once we get there). No more going there, search for four days and then dive and hide. We need to be capable to be land-based expeditionary and sea based. Marine equipment was tailor-made to survive at sea or in the dirt. Newer aircraft needed a longer operational reach, larger fuel capacity, and an increased capability to operate from austere sites, aircraft carriers, or amphibious ships."

Marines continued to operate AV-8B Harriers and F/A-18 Hornets. Both aircraft had their instrumentation and weapon systems upgraded, remaining at the heart of the close air support mission; however, Marine leadership looked to replace the two airframes by the end of the century.

By the early 2000s, the Bell-Boeing MV-22 Osprey, Bell AH-1W SuperCobra, and AH-1Z Viper, and Lockheed Martin KC-130J were also being evaluated.

For the Marine Corps, this transition was not just about airframe upgrades. It also encompassed computer and infrared technology upgrades, including but not limited to stand-off weaponry that could deliver armament with unparalleled accuracy. Perhaps the best example of this emergent technology is the Litening II targeting pod. Introduced in 2001, and initially used on Harriers, the Litening II was acquired as a weapons imaging tool to provide real-time intelligence to Marines on the ground by transferring video feeds from aircraft in flight. This allowed military commanders to have access to a stream of imagery from deep within the conflict. They then could authorize airstrikes in response to developing situations. Eventually the F/A-18 Hornet and the EA-6B Prowler received the Litening II upgrade as well.

Marines deployed to two sustained oversea missions in 2001 to Afghanistan and in 2003 to Iraq. Within each mission, Marine aviation maintained command and control systems, and established complex and comprehensive airspace plans to provide aviation support services to Marines on two fronts. Marine pilots also participated in the rescue of prisoner of war, Army Private First Class Jessica D. Lynch.

TRAIN HOW WE FIGHT

Marines and Sailors getting ready to board an MV-22 of VMM-365 for a training exercise at Marine Corps Air Ground Combat Center Twentynine Palms, California. Air and ground units train amidst austere operating environments in a simulated urban combat environment.

U.S. MARINE CORPS

By 2005, Marine aviation again heralded change with technological advancements. The MV-22 began supporting Marines on the ground, including expeditionary units, prompting modification to aircraft-capable ships. The following year, CH-46 helicopter squadrons began transitioning to MV-22 tiltrotor squadrons.

After Hurricane Katrina devastated large areas of the Gulf Coast from Florida to Texas in 2005, Marine helicopters provided critical support to the relief efforts, particularly in the New Orleans area. As part of prolonging the life span of the CH-46 fleet, lightweight composite armor, pilot and co-pilot crashworthy seats, upgraded engines, avionics, and structural improvements not only strengthened and improved the overall aircraft, but also reduced its weight by some seven hundred pounds—new life into old helicopters.

After more than thirty years, a new Huey, the UH-1Y Venom, arrived. It made its combat debut with HMLA-367 in Afghanistan. Although the UH-1N performed well, the UH-1Y expands the envelope for Marine Expeditionary Brigade-Afghanistan, has greater commonality of parts, and is a true force-multiplier.

As modern warfare brought new challenges, Marine air increasingly relied on forward operating bases to launch aircraft. Marine wing support squadrons, laying AM-2 matting, rapidly transformed strips of dirt into operational airfields. In 2006, Marine aviation achieved its highest operational pace since Vietnam, flying more than 120,000 combat hours in Iraq and Afghanistan. This fast-operating tempo prompted changes to both aviation doctrine and equipment.

"Since September 11, 2001, we have done so while supporting routine deployment cycles and transforming the force. Today is no different. Critical self-examination, balanced by a 'right capability,' can be delivered to the right place at the right time enabling the decision maker to efficiently and effectively engage the enemy. Regardless of the asymmetric threats we face, our unvarying mission remains to be the MAGTFs aviation force in readiness across the full spectrum of combat operations. My pride in the accomplishments of Marine aviation, past and present,

LOCKHEED MARTIN

MARINE STYLE

The Lockheed Martin F-35B is the first-ever supersonic stealth fighter with short takeoff/vertical landing capability. It is designed to replace the Marine Corps F/A-18 Hornets, AV-8B Harriers and EA-6B Prowlers. It will deploy from small ships and austere bases near front-line combat zones. With advanced stealth capability, it can penetrate and neutralize the world's most advanced air-defense systems.

is only exceeded by my confidence that we are poised to meet our future challenges." -LtGen George J. Trautman III

Previously, there was a constant cycle of developing new aircraft to replace older, obsolescent types. However, after Vietnam, and certainly by the turn of the twenty-first century, requirements and financial considerations slowed this continuous turnover. The Marine Corps' greatest development program involved the complete revision and upgrade of its fleet of stalwart helicopters to tiltrotor aircraft. The highly anticipated MV-22 Osprey tiltrotor made its first combat deployment during Operation Iraqi Freedom.

In 2007, the MV-22 debuted in combat in Iraq, flying approximately 3,000 sorties, totaling 5,200 hours within the year. As of December 2010, nine Marine squadrons, including a training squadron and a test-and-evaluation squadron, fly the Osprey. The Osprey has capabilities that no other Marine Corps' support helicopter has, including a wider combat radius; it can fly greater distances than the CH-46 to deliver troops or cargo.

Additionally, the development of the aero scout mission created a unique strength, with helicopter squadrons devising their own tactics and logistics, including the tactical bulk fuel dispensing system.

The Marine Corps' unmanned aerial vehicles (UAV) have enhanced the net-enabled battlespace, creating a new awareness to Marines in the air and on the ground.

As Marine aviation again looks toward the future, new aircraft will bring about advances on the battlefield. The F-35B Lightning II Joint Strike Fighter, will operate in the same austere conditions as the AV-8 Harrier, but carry more bombs and loiter overhead longer than the F/A-18 Hornet, and expand the electronic warfare platform beyond the EA-6B Prowler's reach. The F-35 is slated to replace the F/A-18, the AV-8B, and the EA-6B, an indication of technology and tactics operating in harmony and how capabilities are used innovatively and intellectually to provide enhanced support to Marines on the ground.

FROM AIR STRIKES TO DISASTER RELIEF

On April 15, 1999, Harriers (right) from the 24th MEU launched from the USS *Nassau* and participated in NATO-led air strikes in Kosovo, during Operation Allied Force. Supported by air operations, Marines (top, far right) served as the security force near Fier, Albania. Illustrating the flexibility of Marine aviation, upon completion of the Kosovo operations, CH-46s from the 24th MEU (bottom, far right) transitioned to an earthquake relief effort in Turkey.

U.S. NAVY

U.S. MARINE CORPS

U.S. MARINE CORPS

1999

APRIL 15, 1999

Elements from MAG-29, including AV-8B Harriers and CH-46 Sea Knights, aboard the USS *Nassau*, conduct air strikes in Kosovo in support of Operation Allied Force. This marks the Harrier's first combat operations since Operation Desert Storm.

MAY 14, 1999

ACMC Gen Terrance R. Dake accepts the Marine Corps' first Bell-Boeing MV-22 Osprey.

MAY 24, 1999

Elements from MAG-31, including VMFA(AW)-332 and -533, deploy to Taszar, Hungary, and begin flying combat missions in support of Operation Allied Force.

AUGUST 19, 1999

The 26th MEU(SOC) embarks on the USS *Kearsarge* and deploys to Istanbul, Turkey. The unit participates in earthquake relief efforts, Operation Avid Response, including rescuing survivors, providing medical care, and distributing supplies.

U.S. MARINE CORPS

AIRBORNE RECONNAISSANCE

In the years following Gulf War I, several Marine F/A-18Ds were outfitted with an advanced tactical aerial reconnaissance system (ATARS). These aircraft flew some of the most important pre-war missions before OIF over southern Iraq.

OCTOBER 15, 1999

The 22d MEU participates in Exercise Bright Star 99/00 in Egypt, the largest U.S. Central Command exercise outside of the Persian Gulf.

NOVEMBER 22, 1999

Marines receive the Cessna UC-35D Encore, the first of seven planned to replace the CT-39 Sabreliner. Encore crews will fly search and rescue support for the Coast Guard and local authorities, conduct medical evacuations, and give additional logistical support.

MARCH 23, 2000

The 24th MEU participates in Exercise Dynamic Response 2000 in Macedonia and Kosovo. The exercise tests NATO's ability to reinforce Allied forces in Kosovo and includes units from the United States, Argentina, the Netherlands, Poland, and Romania.

NOVEMBER 10, 2000

Maj Art Tomassetti is the first Marine to fly the prototype Lockheed Martin Joint Strike Fighter X-35A. His flight at NAS Patuxent River, MD, occurs on the 225th birthday of the Marine Corps.

APRIL 2001

VMFA(AW)-533 deploys to Kadena AFB, Okinawa, to become the first MEU(SOC) F/A-18 Hornet squadron.

KC-130 REFUELER

For over forty-six years, the KC-130 Hercules operated behind the scenes as a multi-function, multi-mission aircraft. Aside from providing fuel to both fixed- and rotary-wing aircraft, the 4,500-cubic foot cargo compartment can hold the equivalent of three armored personnel carriers, ninety-four equipped troops, or sixty-four paratroops, and can deliver them worldwide. A KC-130 refuels two AV-8Bs.

U.S. MARINE CORPS

2001

APRIL 9-11, 2001

The 11th MEU provides civic and humanitarian aid to East Timor. Marines and Sailors give medical and dental care and transport supplies and resources, while assisting with construction projects.

JULY 13, 2001

1stLt Vernice Armour earns her wings, becoming the first African-American female aviator in the Marine Corps. In March 2003, she will fly a SuperCobra with HMLA-169 during the invasion of Iraq.

AUGUST 2, 2001 – SEPTEMBER 10, 2002
LtGen William L. Nyland
DEPUTY COMMANDANT FOR AVIATION

SEPTEMBER 7, 2001

VMGRT-253 at MCAS Cherry Point receives the first three KC-130Js. All seventy-nine Marine KC-130 F/R/Ts are slated to be replaced with KC-130Js.

U.S. MARINE CORPS

KEEPING THE WORKHORSE FLYING

Since its arrival in 1966, the CH-53 Sea Stallion continuously reaffirms its role as the "workhorse" of Marine aviation and remains essential to the Marine Corps' assault, heavy-lift capability. Pictured here is a CH-53D. In 2000, the Marine Corps established an operational readiness and safety program that enhanced maintenance and will extend the service life of CH-53E inventory until 2025.

SEPTEMBER 12, 2001

Marine aviators conduct air patrols over the United States. Hornets of VMFA-321 patrol Washington, DC, allowing Washington Air National Guard crews to rest. The guard resumes air patrols the next day.

OCTOBER 7, 2001

Operation Enduring Freedom begins when U.S. forces conduct air strikes against Taliban and al-Qaeda forces in Afghanistan.

FWD

OCTOBER 18, 2001

Marine pilots fly their first air strikes in Operation Enduring Freedom. Hornets of VMFA-251 launch from the USS *Theodore Roosevelt*, flying several bombing missions and destroying a bridge vital to Taliban operations.

OCTOBER 24, 2001

Two CH-53 Super Stallions from the 15th MEU(SOC) participate in a tactical recovery of aircraft and personnel (TRAP), salvaging a U.S. Army UH-60 Black Hawk that had crashed in Pakistan during a raid on a Taliban compound.

NOVEMBER 3, 2001

AV-8B Harriers of the 15th MEU aboard the USS *Peleliu* launch the first Harrier strikes against Taliban and al-Qaeda command and control targets in southern Afghanistan.

U.S. MARINE CORPS

U.S. MARINE CORPS

20/40 IN THE FIGHT

Following on experiences in Desert Storm, when aircrews had limited experience with night vision goggles, the Corps expanded training at the Night Imaging and Threat Evaluation Lab. Training now includes blowing dust, low ambient lighting, differing terrain, and urban environments. Night vision goggles can improve vision to 20/40 (above).

2001

NOVEMBER 22–24, 2001

The 26th MEU aboard the USS *Bataan* arrives in the Arabian Sea. The 26th MEU joins the 15th MEU, which brings the total number of Marines on standby in the area to more than 4,000.

NOVEMBER 25, 2001

Operating from the USS *Peleliu* in the North Arabian Sea, aircraft from the 15th and 26th MEU fly a Marine assault force 428 miles inland to secure Afghanistan. The unit lands the first Marines in the region.

NOVEMBER 26, 2001

Joint surveillance target attack radar system-equipped aircraft detect Taliban vehicles along the northwest perimeter. Marine AH-1W SuperCobras and VF-102 F-14B Tomcats break up and destroy the convoy.

U.S. MARINE CORPS

DOWNTOWN

Marine pilots of HMLA-367 "Scarface" stand with their UH-1N in front of the Victory Arch in Baghdad, Iraq.

DECEMBER 4, 2001

Elements of the 26th MEU land in Afghanistan to reinforce the 15th MEU at Camp Rhino. Marines from the 26th MEU's Combined Anti-Armor Team and Light Armored Reconnaissance bring with them valuable weaponry and combat vehicles.

DECEMBER 7, 2001

The Marine Corps accepts its first AN/AAQ-28 Litening II targeting pod, which will allow AV-8B aircraft to autonomously deliver precision-guided munitions.

DECEMBER 7, 2001

The 15th MEU(SOC), carrying out Operation Swift Freedom, enforce a roadblock near the Taliban-controlled city of Kandahar. A firefight erupts when a convoy attempts to run the roadblock. Marines call for air support to destroy the targets.

DECEMBER 13–14, 2001

Elements of the 26th MEU task force and an antiarmor team link up with Army Special Forces to advance on the airport at Kandahar. Marine AV-8Bs and AH-1Ws, supported by coalition aircraft, provide air support. CH-53Es bring reinforcements, enabling the Marines to establish an FOB.

Operations In Afghanistan

FARTHER & FASTER

Initially, Marine expeditionary units were designed to operate within 200 miles of coastlines; however, in 2001, Marine pilots flew an amphibious assault force over 400 miles inland to secure the coalition's first strategic foothold in Afghanistan.

During OEF, the U.S. military presence begins when small Special Forces and intelligence agents operate with the Northern Alliance. Then on October 19, 2001, Army Rangers raid targets in and around Kandahar, Afghanistan. The Army controls the airstrip until the Marine Corps establishes a base there in November 2001.

As part of Task Force 58, Marine CH-53 (top right) and AH-1W helicopters of the 15th MEU launch from the USS *Peleliu*, flying an assault force 428 miles from the ship in the North Arabian Sea to Afghanistan. Camp Rhino (bottom right) becomes the U.S forces' first firm foothold in Afghanistan.

This is acquisition by the Marines makes the ground war in Afghanistan possible. The airstrip is located is fifty miles southwest of Kandahar. The 15th MEU performs combat operations of a limited scope.

The Marines and coalition forces later moved north to Kandahar International Airport, securing a new forward operating base. With the move, the Marines and coalition forces were able to continue with new missions and build a prison camp that housed numerous Taliban and Al-Qaeda fighters.

Eight Marine CH-46Es from HMM-163, four CH-53Es from HMH-465, three UH-1Ns, and four AH-1Ws from HMLA-169 were deployed there, composing HMM-163(Rein). More UH-1N and AH-1W helicopters joined the mission from the 26th MEU. Facility life rough, there were no showers or wash facilities, no mess hall, and no water; all water was flown in. Troops were accomodated in large open warehouse buildings on the cement floor of the warehouse or the dirt outside. Aircraft only operated at night and no lights were permitted after dark.

The 26th MEU and coalition forces move from Rhino to capture Kandahar International Airport mid-December 2001. Following the capture of the airport, Camp Rhino becomes redundant, therefore, the airport becomes the main coalition base in southern Afghanistan, and the Marines transfer control to the Army's 101st Airborne. The 26th MEU returns to Navy ships in the Arabian seas. Any Marine forces who were based at Rhino relocate to Kandahar by December 25, 2001. Prisoners who have been kept at the airport are transferred to prisons outside Afghanistan.

Approximately 1,000 Marines from the 15th and 26th MEUs, and 300 soldiers from the 101st Airborne Division, operate from Kandahar in January 2002. FOB Rhino was discontinued on January 1, 2002 as coalition forces drive Taliban forces out of their strongholds. Newer and more secure FOB's became apparent.

U.S. MARINE CORPS

U.S. MARINE CORPS

U.S. MARINE CORPS

U.S. MARINE CORPS

ENHANCED AIR SUPPORT

As the second war in Iraq began, the USS *Bataan* and *Bonhomme Richard*, were designated as Harrier carriers. On March 19, 2003, Harriers launched from the USS *Bataan* in support of Operation Iraqi Freedom. Pilots flew sustained operations from amphibious ships and forward operating bases, providing rapid air support to Marines on the ground (near and far right).

Harrier pilots (center) used Litening II targeting pods with both forward-looking infrared and a charge-coupled device camera. The aircraft's pod laser designates targets at greater distances. The video taken during the flight was beneficial, because it identified and located potential targets for intelligence personnel.

U.S. MARINE CORPS

2002

FEBRUARY 8, 2002

The 26th MEU(SOC) extends the operational reach of a deployed amphibious force by conducting combat operations deep into northern Afghanistan.

FEBRUARY 14, 2002

The first members of HMH-772 arrive at MCAS New River and begin pre-deployment training with the 24th MEU. The reserve squadron will help ease the increased demand for heavy-lift helicopters in Operation Enduring Freedom.

APRIL 15, 2002

VMFA(AW)-121 Hornets arrive in Kyrgyzstan, initiating naval aviation fighter operations from that country. Marines and the USAF 376th Air Expeditionary Wing integrate and begin air strikes over Afghanistan.

JULY 5, 2002

AV-8B Harrier pilots assigned to HMM-261 fly their first combat mission over Afghanistan as part of the 22d MEU. The pilots conduct a reconnaissance mission.

U.S. MARINE CORPS

U.S. MARINE CORPS

AUGUST 2002

The Marine Corps begins a study to determine whether to remanufacture the CH-53E fleet, modernize key components, buy new, or perform a combination of all three to keep the helicopters flying until 2025.

OCTOBER 3, 2002 - NOVEMBER 2, 2005
LtGen Michael A. Hough
DEPUTY COMMANDANT FOR AVIATION

OCTOBER 28, 2002

The 24th MEU sails through the Suez Canal on the way to Djibouti as the hunt for al-Qaeda moves into the Horn of Africa region. Approximately 700 to 800 Marines deploy to Djibouti to prepare for any contingency in the region.

NOVEMBER 14, 2002

An AV-8B Harrier from VMA-513 joins an Air Force A-10 Thunderbolt attack jet and engages enemy forces near a U.S. special-operations base outside of Lwara, Afghanistan. This is the second attack that night.

NOVEMBER 16, 2002

The 3d MAW (Fwd) Command Post, commanded by MajGen James F. Amos, arrives in Kuwait.

PROVIDING DIRECT SUPPORT

Major Christopher M. Kennedy:

"The 3d MAW dropped more than 3.8 million pounds of ordnance, decimating numerous Iraqi units, the 11th, 14th, 18th, and 51st Infantry Divisions; the 6th, and 10th Armored Divisions; the Baghdad Republican Guard Division; and the Al Nida Republican Guard Division."

U.S. MARINE CORPS

2003

JANUARY 11, 2003

Reservists from the 4th MAW, 4th Force Service Support Group, and 4th Marine Division activate and deploy to Djibouti in support of Combined Joint Task Force-Horn of Africa. The task force seeks to disrupt and defeat terrorism in and around the region.

MARCH 5, 2003

The 26th MEU deploys to the eastern Mediterranean Sea with a heftier-than-usual aviation combat element, including six SuperCobras and six Super Stallions (four is typical).

MARCH 20, 2003

Operation Iraqi Freedom begins when U.S. forces invade Iraq.

APRIL 1, 2003

Marines of HMM-165, comprising the CH-46 contingent of Task Force 20, assist in the rescue of Army Private First Class Jessica D. Lynch.

Operation Iraqi Freedom
PROVIDING DIRECT AIR SUPPORT

In the fall of 2002, elements of 3d MAW (Fwd) led by Major General James F. Amos began deploying to Kuwait in preparation for combat operations in Iraq. During Operation Iraqi Freedom, the wing supported I Marine Expeditionary Force and Coalition forces.

In contrast to Desert Storm, Marine aviation was well-positioned for air-ground operations in Iraq. Because of its proximity to Marine units, 3d MAW aircraft were often called upon to support ground forces, since the Iraqi Army used artillery to fire conventional ordnance. To counteract the Iraqi Army, Major General James N. Mattis insisted that the 1st Marine Division become the most air-centric division in the history of the Marine Corps, allowing aircraft to locate and target enemy artillery units while protecting the division's eastern flank as it moved toward Baghdad.

To provide aviation fire power, five squadrons of MAG-11, as part of 3d MAW, employed aircraft in direct supporting roles of ground troops. Each of the three F/A-18D squadrons supported a regiment during the first thirty-six hours of combat. This allowed aviation to successfully communicate with the ground force and conduct a flexible and highly effective air campaign.

APRIL 3, 2003
Marine Harriers participate in an air strike on a Taliban camp north of Spin Bolak, Afghanistan.

APRIL 8, 2003
As I MEF moves deeper into Iraq, Harriers from VMA-542 land at the abandoned Iraqi airfield, An Numaniyah. These Harriers are the first Marine Corps tactical aircraft to touch down on Iraqi soil.

AUGUST 14, 2003
The 26th MEU(SOC) launches from the USS *Iwo Jima* to support peacekeeping and relief efforts in Monrovia, Liberia. They insert Marines, Navy SEALs, and explosive ordnance disposal personnel at Roberts International Airport to secure the area.

AUGUST 28, 2003
VMX-22 is activated at MCAS New River. The squadron will perform operational testing and evaluation of the MV-22 Osprey and future tiltrotor-related systems.

SEPTEMBER 21, 2003
MWSS-273 arrives to take over security for Combined Joint Task Force-Horn of Africa from the Air Force Security Forces Squadron. MWSS-273 protects the helicopters, cargo aircraft, equipment, and transient aircraft.

The Common Link
UNMANNED AERIAL VEHICLES

In June 1984, Detachment T, Target Acquisition Battery, 10th Marine Regiment, 2d Marine Division, Fleet Marine Forces Atlantic, became the first remotely piloted vehicle (RPV) unit in the Marine Corps and the U.S. Armed Forces. The unit was later redesignated the 1st Remotely Piloted Vehicle Platoon (1st RPV), Headquarters Battalion, 2d Marine Division. The 1st RPV trained on the Mastiff, an unmanned aerial vehicle (UAV) manufactured by Tadiran Electronic Industries.

Seeing a growing use for UAVs, the Marine Corps activated the 1st RPV Company at Twentynine Palms, quickly followed by the 3d RPV Company. The 2d RPV Company trained on the Pioneer system, and in March 1990, Advanced Pioneer Option II was tested aboard the USS *Nassau*.

The RPV squadrons deployed in support of Operations Desert Shield and Desert Storm in the first combat tests of the Pioneer. The 1st company flew 169 sorties for 568 flight hours, the 2d RPV flew 69 sorties for 226 flight hours, and the 3d RPV flew 239 sorties for 695 flight hours.

After the Gulf War, RPV companies were redesignated as Marine Unmanned Aerial Vehicle Squadrons (VMU) and assigned to the aircraft wings. They were used in Bosnia-Herzegovina, and on the home front, supporting drug interdiction and immigration enforcement operations at U.S. borders.

As Operation Iraqi Freedom began, VMU-1 supported the 1st Marine Division, flying the Pioneer over Baghdad and operating from various air bases. It was quickly determined that one Pioneer sortie per Marine expeditionary force was not adequate to answer future demands, so UAV squadrons transitioned to the RQ-7B Shadow in 2007 (right), a system that can operate three Shadow systems simultaneously.

Since the beginning of Operation Enduring Freedom, UAVs have flown over 40,000 flight hours and that number continues to grow daily. Mission control conducted via the network-enabled Pioneer system, which downlinks information to the tactical radio, ground control system, and networked chat rooms on secure mobile tactical terminals.

VMU-2 flew the last Pioneer in a combat mission on October 9, 2007, and all squadrons transitioned to the Shadow the following year. In 2008, VMU-3 was established at Twentynine Palms, and deployed to Iraq and Afghanistan soon after, proving the functionality and growing necessity for UAVs in combat.

To meet this ever-increasing need, Marine unmanned aerial system operators and maintainers are trained at the U.S. Army Aviation Warfighting

U.S. MARINE CORPS

SCAN EAGLE UAV

1stLt Nick Mannweiler demonstrates the compactness and portability of a Scan Eagle UAV, during a visit to Forward Operating Base Sahl Sinjar, Iraq, on October 22, 2009. During Operation Iraqi Freedom, the Scan Eagle provided intelligence, surveillance and reconnaissance capability to the Marines of Multinational Forces–West in Iraq's Al Anbar province and Sahl Sinjar in Ninewah province.

CAPTAIN NICK MANNWEILER

Center and MAWTS-1. Prior to training, UAV operators, like all aviators, must meet Federal Aviation Administration medical certification requirements. Currently, the Marine Corps is the only service that allows enlisted personnel, "flying sergeants," to pilot UAVs.

UAVs are still an emerging technology; however, Marines in Afghanistan are benefiting, daily, from their current capabilities. They are easily deployable, can stay airborne for up to twelve hours, and allow for distributed operations in combat. VMU squadrons are frequently assigned as detachments for direct support. Once embedded with the supporting unit, these Marines respond to the priority of the effort, allotting real-time intelligence [imagery], enhancing battlespace awareness, and providing dedicated support to commanders. As a forward-deployed force fusing tactics and advancing technology Marines in the air and on the ground will continue to expand the employment of UAVs.

AN UMBRELLA OF AIR SUPPORT

With forward air controllers on the ground (near and far right), two Hornets of VMFA(AW)-224 (center) sit on the flight line ready for action at Al Asad Air Base, Iraq.

On April 3, 2003, Marine aircraft provided air support as ground Marines drove into Baghdad. The troops received an umbrella of close air support that included fixed-wing jets from several air carrier wings, a dedicated F/A-18D Hornet squadron, and helicopters from the 3d MAW. Marine UH-1 Hueys and AH-1 Cobras provided significant close air support.

Hornet and Harrier squadrons of MAG-11 and -13 flew more than 4,000 close air support and air interdiction sorties during the advance.

U.S. MARINE CORPS

2004

FEBRUARY 20, 2004

Hovercraft and helicopters unload hundreds of Iraq-bound Marines into Kuwait. I MEF sends advance troops for on-the-spot lessons from the departing Army's 82nd Airborne Division and lay the groundwork for the rest of the unit set to arrive a few weeks later.

APRIL 5, 2004

The first combat operations of Fallujah begin. Marines integrate air support in urban combat.

APRIL 26–28, 2004

After insurgents fire upon Marines in Fallujuah and Najah, a firefight erupts. In response, Marines call for air support to destroy strongholds.

OCTOBER 14, 2004

Marines launch air and ground attacks against an insurgent stronghold in Fallujah after peace talks are suspended.

U.S. MARINE CORPS

U.S. MARINE CORPS

NOVEMBER 8, 2004

The largest military operation since the opening days of Operation Iraqi Freedom begins just after sunset as thousands of U.S. and Iraqi troops push into Fallujah.

NOVEMBER 14, 2004

Marines and Iraqi security forces overrun the last center of rebel resistance in the southernmost section of the embattled Iraqi city of Fallujah. U.S. Forces discover an underground bunker and steel-reenforced tunnels connecting several houses filled with weapons, medical supplies, and bunk beds.

JANUARY 20, 2005

The 3d Battalion, 4th Marines, including over 700 Marines and Sailors, deploys in support of Operation Iraqi Freedom. This marks the first infantry battalion to serve three combat tours in Iraq.

HOME AND ABROAD

Known best for being the "first to fight," Marine aircrews are also among the first to launch in support of noncombatant evacuations, peacekeeping missions, or humanitarian operations.

Marine aircrews evacuate foreign citizens for medical care (pictured in Iraq, near left), fly air support during peacekeeping missions (center), and lift victims in New Orleans (far right) to safety after Hurricane Katrina.

U.S. MARINE CORPS

2005

FEBRUARY 16, 2005

For the first time in its history, MWHS-2 deploys not only as an entire unit, but also to a combat zone. The unit deploys with the 2d MAW.

MARCH 7, 2005

The 3d MAW completes the longest deployment in its history as it heads home after thirteen months in Iraq.

JULY 7, 2005

Marines and Iraqi forces launch the sixth offensive against insurgent strongholds in the volatile Iraqi Al Anbar province since May. Operation Scimitar begins with raids in the village of Zaidan, approximately twenty miles southeast of Fallujah, and at least twenty-two suspected insurgents are detained.

U.S. MARINE CORPS

U.S. MARINE CORPS

LIEUTENANT COLONEL THOMAS H. CAMPBELL

AUGUST 26, 2005

Marines begin several precision air strikes against al-Qaeda positions in the western Iraqi province of Al Anbar. This continues until September 1.

AUGUST 29, 2005

HMH-464, -461(-)(Rein), -365(-), and -772(-) support Joint Task Force Katrina. They land in a parking lot near the New Orleans Convention Center to deliver food and water, and continue operations from the New Orleans Airport.

NOVEMBER 3, 2005 – MARCH 10, 2007
LtGen John G. Castellaw
DEPUTY COMMANDANT FOR AVIATION

NOVEMBER 11, 2005

VMA-214 Harrier IIs, carrying joint direct attack munitions (advanced bombs that use global positioning and satellites), launch from the USS *Peleliu* as part of a pre-deployment training exercise. These munitions will help minimize collateral damage on the ground.

Marine Expeditionary Units
THE ACE OF THE MAGTF

Initially, Marines deployed on amphibious assault helicopter carriers. During the 1970s and 80s, Marine amphibious units assisted in everything from evacuating citizens in Lebanon to neutralizing forces in Grenada.

In 1983, in response to a directive from the Deputy Secretary of Defense, the Marine Corps began evaluating its ability to operate as a special operations force. By 1985, Marine Corps enhanced its special operations capability within the Fleet Marine Force. The new emphasis focused on rapidly deployable Marine expeditionary units (MEU) that could respond to low intensity conflicts or general war.

The MEU comprised four distinct elements: ground, aviation, logistics and command. The ACE typically includes four types of helicopters, CH-46, CH-53, UH-1 and AH-1. Aircraft, employed with ground and logistics, give the Marines distinct tactical advantages. When operating with the Maritime Amphibious Ready Group, the ACE comprises four to six AV-8 Harriers, adding fixed-wing strike capability.

While operating with the MEU, Marine pilots also stand ready as a forward-deployed response contingent for any crisis and "to provide a window of opportunity for decisive action." This secures Marine aviation's role as inherently naval while also extending the reach of firepower during expeditionary operations and support to Marines on the ground. Here, as part of the 31st MEU in 2007, a CH-46 helicopter of HMM-265 prepares to land on the USS *Essex*.

2005

DECEMBER 13, 2005
The initial upgrades to accommodate MV-22 aircraft on carriers begin with the USS *Kearsarge*. The aircraft is envisioned as an integral asset during carrier operations.

DECEMBER 26, 2005
Marines with HMM-261 deploy to Al Asad Air Base in Iraq as the aviation combat element of the 22d MEU.

FEBRUARY 5, 2006
The 3d MAW takes operational control of air operations from the 2d MAW in western Iraq.

FEBRUARY 17, 2006
The Marine Corps completes developmental testing of the H-1 Upgrades Program. The program will replace UH-1Ns with UH-1Ys and AH-1Ws with AH-1Zs.

U.S. MARINE CORPS

MARCH 3, 2006

VMM-263, the first operational MV-22 Osprey squadron, activates at MCAS New River.

SEPTEMBER 21, 2006

AV-8B Harriers of the 24th MEU end a short but productive stint in support of Operation Enduring Freedom. Marines serving with HMM-365 fly 136 combat missions over Afghanistan in just 13 days, dropping a total of 17 precision-guided bombs.

JANUARY 24, 2007

HMM-262 assumes responsibilities of the assault transportation mission for Multi-National Forces-West in Iraq. It is the first combat deployment for the squadron since Vietnam.

MARCH 21, 2007

Maj William D. Chesarek Jr. is awarded the British Distinguished Flying Cross at Buckingham Palace, London, by Queen Elizabeth II. Major Chesarek served as an exchange officer with the British 847 Naval Air Squadron in Iraq.

JUNE 4, 2007

VMGR-152 receives the KC-130J Hercules at MCAS Futenma, Okinawa, replacing the KC-130F, which after forty-six years is the oldest aircraft in the inventory.

INCREASING SURVIVAL

Since Vietnam, CH-46 aircrews have conducted casualty evacuation missions. Today, Marines operate as casualty evacuation teams, saving lives and maintaining a ninety-nine percent survival rate. Here, aircrew of HMM-165 rush towards a CH-46E helicopter during a medical evacuation.

U.S. MARINE CORPS

2007

JULY 5, 2007 – JANUARY 31, 2011
LtGen George J. Trautman III
DEPUTY COMMANDANT FOR AVIATION

JULY 27, 2007

Two F/A-18D Hornets from VMFA(AW)-121, operating from Al Asad Air Base, Iraq, destroy two terrorist vehicles using the GBU-51/B laser-guided bomb with the BLU-126/B low collateral damage explosive. This marks the first time that naval aircraft drop BLU-126/B, which is designed to allow tactical aircraft to employ precision strike weapons that limit unintended damage.

SEPTEMBER 17, 2007

VMM-263 becomes the first combat squadron to deploy with MV-22 Osprey aircraft. The first Ospreys land in Iraq in early October.

U.S. MARINE CORPS

ON GRASSY PLAINS

Early Marine UH-1E Hueys were converted to gunships during Vietnam. Maintaining that tradition, this UH-1N lifts off in Iraq. While performing both command and control, the Huey can also fly assault support missions with ease.

SEPTEMBER 30, 2007

Marines with VMFA-232, who deployed with the USS *Nimitz* for seven months, return home to California. The squadron logged approximately 2,400 flight hours and participated in both Operation Iraqi Freedom and Operation Enduring Freedom.

OCTOBER 22 – NOVEMBER 3, 2007

Marines evacuate more than forty aircraft threatened by wildfires from MCAS Miramar. Pilots from Camp Pendleton and Miramar, flying CH-46Es and CH-53Es helicopters, and a UH-1N from NAS Fallon, NV, assist.

JANUARY 2008

VMAQ-1 is the first squadron to deploy with the Litening AT pod, providing pilots the ability to detect, acquire, track, and identify targets.

IT DOESN'T HAPPEN BY ITSELF

Expeditionary operations require agility and flexibility to support Marines, deliver supplies, and equip forward arming refueling points (center, bottom).

Marines (near and far right) from a wing support squadron install AM-2 matting in preparation for the rapid deployment of a variety of fixed- and rotary-wing aircraft. Each airframe has specific requirements for landing zones.

To meet logistical and maintenance demands, Marines deploy with a variety of materials and equipment designed to transform rugged landscapes, build suitable airfields, and maintain aircraft. Maintenance Marines (center, top) of VMFA(AW)-121 work on the tail of a Hornet.

U.S. MARINE CORPS

U.S. MARINE CORPS

U.S. MARINE CORPS

2008

MARCH 17, 2008

Marines with the 24th MEU begin arriving in southern Afghanistan for a scheduled seven-month deployment in support of Operation Enduring Freedom. The unit is based in Kandahar Province, the Taliban's former power base.

NOVEMBER 7, 2008

The Naval Air Systems Command announces delivery of the laser Joint Direct Attack Munition. Hornets, Super Hornets, and Harrier IIs use the system to provide laser guidance for moving and fixed targets.

JANUARY 27, 2009

3d MAW completes its fifth and final Operation Iraqi Freedom deployment as the ACE for Multi-National Forces-West, in which more than 13,000 service members operated over 200 aircraft in support of I MEF in Iraq.

MARCH 2009

MAG-40 is reactivated under 2d MAW. By May, MAG-40 deploys as the ACE of the 2d MEB in Afghanistan.

CAPTAIN NICK MANNWEILER

AUGUST 9, 2009

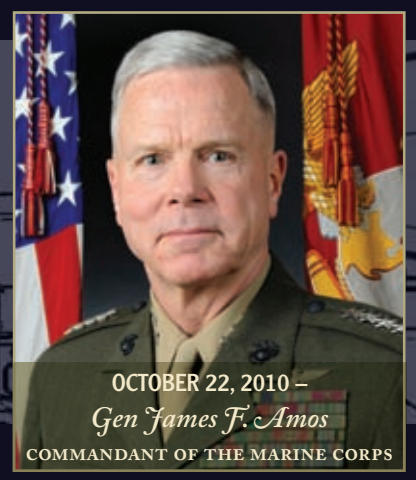
MWSS-371 begins constructing a 4,300-foot runway at FOB Dwyer, Afghanistan, using more than 4,000 pieces of AM-2 matting. Each twelve-foot bundle weighs 6,000 pounds.

JANUARY 15, 2010

The 22d MEU deploys to Haiti aboard the USS *Bataan* to assist in earthquake relief efforts. Aircraft support resupply missions, evacuation, and provide transport and insertion efforts during the initial response.

OCTOBER 22, 2010

Gen James F. Amos becomes the first aviator to serve as Commandant of the Marine Corps.



OCTOBER 22, 2010 –
Gen James F. Amos
COMMANDANT OF THE MARINE CORPS

JANUARY 31, 2011 –
LtGen Terry G. Robling
DEPUTY COMMANDANT FOR AVIATION

MAG-40
Camp Leatherneck

The activation of MAG-40 illustrates how Marines, already engaged in sustained combat operations in Afghanistan, used rapid integration deployments to respond to real-time threats. The group was activated in 2009, to conduct a counter-insurgency mission while simultaneously constructing an infrastructure for follow-on operations.

On March 6, MAG-40 activated with 150 Marines from four aircraft groups of 2d MAW. Just forty-three days after its formation, these Marines deployed, began airfield construction, and established a command and control network. The deployment of MAG-40 illustrated the speed and cohesion of aviation components. While this approach seems cutting edge, this concept is nothing new for Marines. In the 1950s, the First Marine Provisional Brigade, an air-ground team that included the 5th Marines and MAG-33, was activated. Within a month, the brigade fought against the North Korean Army.

Similarly, during the first month of MAG-40's deployment, the initial elements of MAG-40, including MWSS-40, HMLA-169, and MWSS-371 arrived in Afghanistan, beginning construction on the airfield at Camp Bastion. Thirteen days after the arrival of MAG-40's command element at Bastion, on May 5, ten AV-8Bs arrived and began flying offensive operations. At the same time, MWSS-371 completed the first 500 linear feet of AM-2 matting, allowing greater support of aircraft, and additional aircraft to operate from the camp, expanding air support operations in Afghanistan.

May concluded with MAG-40 completing a transfer of authority with SPMAGTF-A and all rotary-wing units located at Bastion Airfield. Then, the group planned for the Helmand River Valley offensive by transferring Marines and equipment to FOB Dwyer. On July 2, the 2d MEB and MAG-40 began offensive operations in Operation Khanjari, which was the largest operation in Afghanistan since the invasion in 2001. This operation included an insertion of over 400 Marines by MAG-40 aircraft.

By July 4, approximately two million square feet AM-2 matting was laid at Bastion. HMLA-169 Det A arrived from Iraq on July 15, bringing the light attack helicopter squadron up to full strength. HMLA-169 established a six-aircraft detachment at FOB Dwyer for quicker response with troops in contact. At the end of July, the advance party of HMH-463 arrived and began turnover with HMH-362. It was during this time that HMH-362 and HMLA-169 also arrived in Kandahar.

In August, MAG-40 units supported Operation Eastern Resolve, clearing Taliban positions, and supporting the national elections by transporting ballot boxes and voting supplies. During the following months, the group inserted troops and conducted raids around Afghanistan.

In January, a sixteen-aircraft squadron participated in the Marjeh peninsula operation, transporting troops and providing close air support. While MAG-40 maintained a high state of readiness, the 3d MAW (Fwd) arrived in March 2009 and was fully in place by April 1, 2009. The last elements of the group returned to the United States on April 16, 2010. During a one-year period in Afghanistan, MAG-40 aircraft flew approximately 38,000-flight hours.

The achievements of the group highlight every aspect of aviation and its supporting elements. MAG-40 deployed with speed, cohesion, and intelligence, showcasing the benefits of an integrated air-ground-logistics team.

U.S. MARINE CORPS

U.S. NAVY

A LEGACY OF INNOVATION

Today, Marine aviators continue to build on a legacy of innovation, addressing current needs while also preparing for future wars. Marine aviation will maintain its inherently naval character as a forward-deployed force with streamlined equipment and a steadfast commitment to verticality.

While a Marine patrols the perimeter, an Osprey carrying Secretary of the Navy Ray Mabus approaches a forward operating base in Afghanistan.

EPILOGUE

LIEUTENANT GENERAL GEORGE J. TRAUTMAN III, USMC (RET)

Deputy Commandant for Aviation

JULY 5, 2007 – JANUARY 31, 2011

Those of us who love Marines and their flying machines have been blessed with a legacy of achievement that Alfred Cunningham and his fellow aviation pioneers could never have envisioned. From their first tentative attempts to leave the earth via powered flight, Marine aviators and maintainers have always ensured that their comrades in arms enjoy the finest air support the world has ever seen. Professionally and spiritually inseparable from their ground brethren, aviation Marines epitomize the axiom that "every Marine is a rifleman." It is, in fact, one of the Corps' greatest strengths. With its forward thinking and closely integrated Aviation Combat Element, the Marine Corps has sustained a record of operational excellence that is unsurpassed in the annals of warfighting history.

The same innovative spirit, bravery, and dedication to duty that has marked the first centennial of Marine aviation will undoubtedly continue when the torch is passed to a new generation. As the next century unfolds, the state of Marine aviation has never been better. The tactical innovations that have been honed during combat operations in Iraq and Afghanistan over the past decade provide clear evidence of the health of the Corps. Whether operating from ships at sea, major air facilities ashore, or expeditionary bases in austere locations around the globe, the Aviation Combat Element has proven its mettle in every clime and place. If the past is prelude, then the future of Marine aviation shines more brightly than ever before.

New aircraft like the MV-22 Osprey, UH-1Y Venom, and AH-1Z Viper have already been proven in combat, but the Marine Corps has barely scratched the surface in exploiting these incredible new platforms to their fullest advantage. Ospreys are changing the way we think about time and space on the modern battlefield. Providing more than twice the range and speed of conventional rotary wing aircraft like the CH-46, the MV-22 will give future commanders options that they have never before even considered. Amazingly, the Osprey is now regarded as the safest and most survivable assault support aircraft in existence. The persistence of the Marine Corps visionaries who made its tilt-rotor technology a reality will be vindicated with lives saved and missions accomplished on future battlefields. With Venom and Viper, the Corps now possesses the most versatile and deadly utility and attack helicopter fleet in the world. These aircraft are 84 percent identical, and that fact alone makes them an instant game changer for a service that must deploy aboard ships and to austere expeditionary locations on short notice. With significantly reduced logistical and training requirements, these two aircraft are ideally suited for future operating environments where access and the need for distributed operations will almost certainly prevail.

In the future, proven work horses like the KC-130 Hercules and the CH-53 Super Stallion will undoubtedly continue to provide the glue that holds the Marine Air Ground Task Force together. The KC-130 is among the most capable aircraft in Marine aviation history. It provides highly responsive aerial refueling, cargo distribution, passenger transport, rapid ground refueling and aerial delivery to the force. The recent introduction of "Harvest HAWK," a modular roll-on, roll-off surveillance package that delivers precise fires from the KC-130J, is indicative of the innovative spirit Marines will carry into the next century. Combined with the anticipated arrival of the CH-53K later this decade, the Corps is postured to excel in one

of the most important elements of success on the battlefield—the logistical support of Marines on the ground. Merging the raw lifting power of the KC-130 and CH-53 with the unsurpassed prowess of embedded aviation ground support will give the Marine Corps the ability to out-maneuver its enemies in combat and to excel in humanitarian and disaster relief operations whenever and wherever they are called.

Marine aviation has always set the gold standard for close air support to Marines on the ground, and that will never change. From the application of electronic warfare, to the creative use of sensor technology and unmanned aerial vehicles, to the total assimilation of the air command and control system, Marine aviation is designed from the ground up to support the integration of fire and maneuver in direct support of the ground commander's mission. Soon, the AV-8 Harrier, F/A-18 Hornet, and EA-6 Prowler will be replaced with the F-35 Lightning II Joint Strike Fighter, and the level of air support to ground forces will increase exponentially. The Marines who pioneered short takeoff and landing capability with the AV-8 are among the most forward thinking aviators who ever lived. Their prescient vision of highly responsive and readily available close air support will be fully realized when the F-35B enters the Marine Corps inventory. This low observable, supersonic "flying sensor" represents an astonishing leap in capability beyond the aircraft it is replacing, and its arrival will complete the transition of Marine aviation from one century to the next.

The F-35 and V-22 are just two of the technological advancements that no one would have predicted at the mid-point of Marine aviation's first one hundred years. Similarly, it is impossible to forecast where the next century will take us. Clearly, our dependencies on distributed capabilities, precision, and information exchange will continue to grow. This will lead us to machine-to-machine information transfers that will enhance the targeting and intelligence processes, reduce fratricide, and increase lethality. Unmanned aircraft systems will also continue to evolve, perhaps leading to autonomous aircraft controlled by on-board computers that can mimic human cognitive reasoning. Cooperative multi-ship technologies that allow manned/unmanned teaming already exist, and their proliferation will increase survivability and operational effectiveness far beyond anything we have seen to date. On-board diagnostics will improve aircraft safety and reliability to unsurpassed levels, and supply chains will be meticulously managed from manufacturer to flight line. Ultimately, the situational awareness of every member of the air-ground team will become the key to success in the future fight—and we are on the cusp of achieving exactly that.

Although the exponential proliferation of new technologies is inevitable, it's not the equipment that will make Marine aviation successful on the future battlefield—it's the Marines. Their imaginations, ideas, and creativity will lead to innovative employment of the tools they are given. That's true of every piece of equipment in use today, and it will remain that way in the future. Marine aviation's legacy of accomplishment is due in large part to the way Marines approach every problem—as an integrated air-ground-logistics team. The Corps lives and breathes this ethos every day. No other service can compare to the degree of innovation and agility the Marine Corps has enjoyed since the day that its first aviator, Alfred Cunningham, took to the sky—and the next 100 years will be no different.

IF THE PAST IS PRELUDE, *then the future of Marine aviation shines more brightly than ever before.*

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FIRST 100 MARINE AVIATORS

Aviators with two designation numbers transferred from the Navy to the Marine Corps, receiving a second number from the Marines.

The lower number is used to establish precedence. Numbers with fractions resulted from several aviators erroneously being given the same designation number. Also, dates of designation should not be confused with dates of precedence, which are reflected by naval aviator numbers and are often much earlier than designation dates.

	NAME	DATE	NAVAL AVIATOR NO.
1.	Alfred Austell Cunningham	Sep 17, 1915	5
2.	Bernard Lewis Smith	Jul 1, 1914	6
3.	William Maitland McIlvain	Mar 10, 1915	12
4.	Francis Thomas Evans	Mar 9, 1916	26
5.	Roy Stanley Geiger	Jun 9, 1917	49
6.	David Lukens Shoemaker Brewster	Jul 5, 1917	55
7.	Edmund Gillette Chamberlain	Oct 9, 1917	96 ½ & 768
8.	Russell Alger Presley	Nov 9, 1917	100 ¾ & 769
9.	Doyle Bradford	Nov 5, 1917	111 ½
10.	Clifford Lawrence Webster	Nov 5, 1917	112 ½
11.	Arthur Houston Wright	Dec 6, 1917	148 & 803
12.	Herman Alexander Peterson	Nov 2, 1917	163 ½
13.	George McCully Laughlin III	Dec 12, 1917	165 & 790
14.	Charles Burton Ames	Dec 21, 1917	193
15.	John Howard Weaver	Jan 21, 1918	251 & 794
16.	Alvin Lochinvar Prichard	Jan 21, 1918	279
17.	George Conan Willman	Jan 22, 1918	299 & 795
18.	Herbert Dalzell Elvidge	Mar 12, 1918	424
19.	Hazen Curtis Pratt	Mar 8, 1918	426
20.	Sidney E. Clark	Mar 8, 1918	442 & 800
21.	Fredrick Commodore Schley	Mar 8, 1918	443 & 801
22.	Charles Alfred Needham	Mar 14, 1918	444
23.	John Bartow Bates	Mar 25, 1918	449
24.	Ralph Talbot	Apr 10, 1918	456
25.	Thomas Carrington Comstock	Mar 26, 1918	473 & 789
26.	Francis Osborne Clarkson	Mar 28, 1918	474 & 788
27.	Guy Mowrey Williamson	Mar 25, 1918	477
28.	Grover Cleveland Alder	Mar 25, 1918	479
29.	Edward Kenealy	Mar 23, 1918	480
30.	Donald Newell Whiting	Apr 1, 1918	503
31.	Howard Albert Strong	Apr 2, 1918	505
32.	John Parke McMurran	Apr 1, 1918	508 & 791
33.	James Kendrick Noble	Apr 1, 1918	510 & 792
34.	Vincent Case Young	Apr 1, 1918	519
35.	Province Law Pogue	Jun 19, 1918	522 & 782
36.	Duncan Hugh Cameron	Mar 26, 1918	527 & 787
37.	George Fred Donovan	Mar 26, 1918	532 & 798
38.	William Herbert Derbyshire	Feb 28, 1918	533 & 770
39.	Frederick Brock Davy	Feb 28, 1918	534 & 771
40.	Douglas Bennett Roben	Mar 14, 1918	535 & 774
41.	Arthur Hallett Page Jr.	Mar 14, 1918	536 & 775
42.	Gove Compton	Mar 14, 1918	537 & 773
43.	Thomas James Butler	Apr 10, 1918	541 & 786
44.	Thomas Rodney Shearer	Apr 4, 1918	559
45.	Ford Ovid Rogers	Apr 14, 1918	560
46.	Homer Carter Bennett	Apr 11, 1918	562 & 797
47.	John Edmond Powell	Apr 4, 1918	563
48.	William Morrison Barr	Apr 8, 1918	567 & 799
49.	Harry Eldridge Stovall	Apr 11, 1918	568
50.	Harvey Byrd Mims	Dec 4, 1917	576

	NAME	DATE	NAVAL AVIATOR NO.
51.	Winfield Scott Shannon	Apr 17, 1918	583
52.	Everett Robert Brewer	Apr 17, 1918	585
53.	John George Estill Kipp	Apr 17, 1918	586
54.	Frederick Louis Kolb	Apr 17, 1918	587
55.	George Franklin Kremm	Apr 17, 1918	588
56.	Jesse Arthur Nelson	Apr 17, 1918	589
57.	Herman Judson Jesse	Apr 17, 1918	590
58.	William Webster Head	Apr 17, 1918	591
59.	Gustav Henry Kaemmerling	Apr 17, 1918	592
60.	Jesse Floyd Dunlap	Apr 17, 1918	593
61.	Trevor George Williams	Apr 17, 1918	594
62.	Clyde Noble Bates	Apr 17, 1918	595
63.	Melville Edward Ingalls Sullivan	Apr 17, 1918	596
64.	Francis Patrick Mulcahy	Apr 17, 1918	597
65.	Benjamin Louis Harper	Apr 17, 1918	598
66.	Walter Harold Batts	Apr 17, 1918	599
67.	Henry Teasdale Young	Apr 17, 1918	600
68.	Karl Schmolsmire Day	Apr 17, 1918	601
69.	Fred Sevier Robillard	Apr 17, 1918	602
70.	Melchior Borner Trelfall	Apr 17, 1918	603
71.	Harold Cornell Major	Apr 17, 1918	604
72.	Robert Sidney Lytle	Apr 17, 1918	605
73.	Thomas Caldwell Turner	Mar 14, 1918	772
74.	Kenneth Brown Collings	Mar 26, 1918	776
75.	Donald Buford Cowles	Apr 4, 1918	777
76.	Maco Stewart Jr.	Apr 4, 1918	778
77.	Henry Sidney Ehret Jr.	Apr 6, 1918	779
78.	Raymond Joseph Kirwan	Apr 8, 1918	780
79.	Frank Nelms Jr.	Jun 19, 1918	781
80.	Harvey Chester Norman	May 23, 1918	783
81.	Delmar Leighton	May 23, 1918	784
82.	John Thomas Brecton	Apr 11, 1918	785
83.	William Wheelwright Torrey	Mar 22, 1918	793
84.	Joseph White Austin	Mar 23, 1918	796
85.	Bunn Gradon Barnwell	May 28, 1918	804
86.	Walter Josephs Willoughby	Jun 19, 1918	805
87.	Chester Julius Peters	Jun 19, 1918	806
88.	Roswell Emory Davis	Jun 19, 1918	807
89.	Horace Wilbur Leeper	Jun 25, 1918	808
90.	Byron Brazil Freeland	Jun 25, 1918	809
91.	Robert James Paisley	Jun 19, 1918	810
92.	Charles Thomas Holloway II	Jul 1, 1918	811
93.	Frank Henry Fleer	Jul 2, 1918	812
94.	Maurice Kingsley Heartfield	Jul 2, 1918	813
95.	Robert James Archibald	Jul 8, 1918	814
96.	Arthur Judson Sherman	Jul 8, 1918	815
97.	Philip William Blood	Jul 8, 1918	816
98.	Albert Aloysius Kuhlen	Jun 28, 1918	817
99.	Earl Francis War	Jun 30, 1918	818
100.	August Koerbling	Jul 1, 1918	819

OFFICERS IN CHARGE

The ranks designated were the highest rank attained during their term in office.

OFFICER IN CHARGE, AVIATION

Maj Alfred A. Cunningham	Nov 17, 1919—Dec 12, 1920
LtCol Thomas C. Turner	Dec 13, 1920—Mar 2, 1925
Maj Edward H. Brainard	Mar 3, 1925—May 9, 1929
Col Thomas C. Turner	May 10, 1929—Oct 28, 1931
Maj Roy S. Geiger	Nov 6, 1931—May 29, 1935
Col Ross E. Rowell	May 30, 1935—Apr 1, 1936

DIRECTOR OF AVIATION

Col Ross E. Rowell	Apr 1, 1936—Mar 10, 1939
BGen Ralph J. Mitchell	Mar 11, 1939—Mar 29, 1943
MajGen Roy S. Geiger	May 13, 1943—Oct 15, 1943
BGen Louis E. Woods	Oct 15, 1943—Jul 17, 1944
MajGen Field Harris	Jul 18, 1944—Feb 24, 1948
MajGen William J. Wallace	Feb 24, 1948—Sep 1, 1950
BGen Clayton C. Jerome	Sep 1, 1950—Apr 1, 1952
LtGen William O. Brice	Apr 1, 1952—Jul 31, 1955
LtGen Christian F. Schilt	Aug 1, 1955—Mar 31, 1957
LtGen Verne J. McCaul	Apr 1, 1957—Dec 2, 1957
MajGen Samuel S. Jack	Jan 14, 1958—Feb 20, 1958
MajGen John C. Munn	Feb 21, 1958—Dec 14, 1959
MajGen Arthur F. Binney	Dec 15, 1959—Sep 10, 1961
Col Keith B. McCutcheon	Sep 11, 1961—Feb 17, 1962
Col Marion E. Carl	Feb 18, 1962—Apr 25, 1962

DEPUTY CHIEF OF STAFF (AIR)

Col Marion E. Carl	Apr 25, 1962—Jul 4, 1962
BGen Norman J. Anderson	Jul 5, 1962—Oct 20, 1963
MajGen Louis B. Robertshaw	Oct 21, 1963—Jun 15, 1966
MajGen Keith B. McCutcheon	Jun 15, 1966—Feb 18, 1970
MajGen Homer S. Hill	Feb 19, 1970—Aug 24, 1972
MajGen Edward S. Fris	Aug 25, 1972—Aug 27, 1974
BGen Philip D. Shutler	Aug 28, 1974—Jan 19, 1975
MajGen Victor A. Armstrong	Jan 20, 1975—Aug 21, 1975
LtGen Thomas H. Miller Jr.	Aug 22, 1975—Jun 29, 1979
LtGen William J. White	Jul 1, 1979—Jun 30, 1982
LtGen William H. Fitch	Jul 1, 1982—Aug 31, 1984
LtGen Keith A. Smith	Sep 1, 1984—Apr 29, 1988
LtGen Charles H. Pitman	Apr 30, 1988—Aug 1, 1990
LtGen Duane A. Wills	Aug 17, 1990—Jun 30, 1993
LtGen Richard D. Hearney	Jul 1, 1993—Jul 14, 1994
LtGen Harold W. Blot	Jul 15, 1994—Jul 21, 1996
LtGen Terrence R. Dake	Jul 22, 1996—Jun 28, 1998

DEPUTY COMMANDANT FOR AVIATION

LtGen Frederick McCorkle	Jun 28, 1998—Aug 2, 2001
LtGen William L. Nyland	Aug 2, 2001—Sep 10, 2002
LtGen Michael A. Hough	Oct 3, 2002—Nov 2, 2005
LtGen John G. Castellaw	Nov 3, 2005—Mar 10, 2007
LtGen George J. Trautman III	Jul 5, 2007—Jan 31, 2011
LtGen Terry G. Robling	Jan 31, 2011—Present

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APPENDIX C

MEDAL OF HONOR RECIPIENTS

The Medal of Honor is the highest military decoration for bravery that can be bestowed upon a member of the U.S. Armed Forces.

It is awarded for, "Conspicuous gallantry and intrepidity at the risk of life, above and beyond the call of duty, while engaged in an action against any enemy of the United States."

Since the inception of the award, sixteen Marines serving with aviation units have been awarded the Medal of Honor. Of this number, fourteen Marines were aviators, one was an aerial flight gunner and observer, and one Marine was a helicopter crew chief. A breakdown of the sixteen Medals of Honor by conflict shows that two Marines received the award for heroism in Nicaragua; eleven Marines received the award during World War II; and two Marines received the Medal of Honor during the Vietnam War. Five of the sixteen Marines were posthumous recipients of the award. Three Marines died in the specific action for which they were awarded the Medal of Honor.

1. **2dLt Ralph Talbot***
   Squadron C,
   First Marine Aviation Force
   France and Belgium
   Oct 8, 1918 & Oct 14, 1918

2. **GySgt Robert G. Robinson**
   Squadron C,
   First Marine Aviation Force
   France and Belgium
   Oct 8, 1918 & Oct 14, 1918

3. **1stLt Christian F. Schilt**
   VO-7M
   Quilali, Nicaragua
   Jan 6, 1928 – Jan 8, 1928

4. **Capt Henry T. Elrod***
   VMF-211
   Wake Island
   Dec 8, 1941 – Dec 23, 1941

5. **LtCol Harold W. Bauer***
   VMF-212
   Guadalcanal
   May 10, 1942 – Nov 14, 1942

6. **Capt Richard E. Fleming***
   VMSB-241
   Midway
   Jun 4, 1942 – Jun 5, 1942

7. **Maj Robert E. Galer**
   VMF-224
   Guadalcanal
   Aug 1942 – Sep 1942

8. **Maj John L. Smith**
   VMF-223
   Guadalcanal
   Aug 1942 – Sep 1942

9. **Capt Joseph J. Foss**
   VMF-121
   Guadalcanal
   Oct 9, 1942 – Nov 19, 1943 and
   Jan 15, 1943 – Jan 23, 1943

10. **1stLt Jefferson J. DeBlanc**
    VMF-112
    Kolombangara Island,
    Solomon Islands
    Jan 31, 1943

11. **1stLt James E. Swett**
    VMF-221
    Solomon Islands
    Apr 7, 1943

12. **1stLt Kenneth A. Walsh**
    VMF-124
    Vella Lavella, Solomon Islands
    Aug 15, 1943 & Aug 30, 1943

13. **Maj Gregory Boyington**
    VMF-214
    Central Solomons
    Sep 12, 1943 – Jan 3, 1944

14. **1stLt Robert M. Hanson***
    VMF-215
    Bougainville and New Britain Island
    Nov 1, 1943 & Jan 24, 1944

15. **Capt Stephen W. Pless**
    VMO-6
    Vietnam
    Aug 19, 1967

16. **PFC Raymond M. Clausen**
    HMM-263
    Vietnam
    Jan 31, 1970

* Awarded posthumously

AVIATOR OF THE YEAR

NAME	YEAR
LtCol John H. Glenn Jr.	1962
Col Michael R. Yunck	1963
LtCol Thomas J. Ross	1964
Capt Raymond R. Powell	1965
LtCol Charles H. Ludden	1966
Maj Vincent J. Guinee Jr.	1967
Maj David L. Althoff	1968
LtCol Paul W. Niesen	1969
Capt John J. Barrett	1970
Maj David G. Vest	1971
Maj Lee T. Lasseter	1972
Maj Howard L. DeCastro	1973
LtCol Michael P. Sullivan	1974
LtCol James L. Bolton	1975
Maj R. H. Brinkley	1976
Col Harvey D. Bradshaw	1977
Col Walter R. Ledbetter	1978
Maj Mike D. Ryan	1979
Maj T. David Seder	1980
LtCol Alfred J. Allega	1981
Maj Bruce B. Knutson Jr.	1982
LtCol William G. Barnes Jr.	1983
Col Laurence R. Medlin	1984
Capt Michael C. Albo	1985
Maj Ivan M. Behel	1986
LtCol Stephen D. Haley	1987
LtCol Larry D. Outlaw	1988
LtCol Robert J. Garner	1989
LtCol John G. Castellaw	1990
LtCol Michael M. Kurth	1991
LtCol Daniel A. Driscoll Jr.	1992
Capt Mark A. Dungan	1993
LtCol Martin D. Peatross	1994
LtCol Wallace G. Duncan Jr.	1995
Capt Robert J. Charette Jr.	1996
Maj John R. Parker	1997
Capt Kevin J. Wolfe	1998
Maj Michael L. Lawrence	1999
LtCol Andrew W. O'Donnell Jr.	2000
LtCol Steven W. Busby	2001
Capt Jay M. Holtermann	2002
Capt Scott D. Schoeman	2003
Capt Matthew C. Shortal	2004
Capt Gregory J. Pawson	2005
Maj Ricardo Martinez	2006
Maj Carlton W. Hasle	2007
Capt William G. Heiken	2008
Maj Scott W. Wadle	2009
Capt Henry J. Hortenstine	2010

Established in 1962 by the Marine Corps Aviation Association, the Alfred A. Cunningham Award honors the Marine aviator of the year.

The trophy associated with the award is presented, "In recognition of the most outstanding contribution made to Marine aviation, whether in combat, research and development, weapons employment or to overall Marine aviation, by an individual in Marine aviation."

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APPENDIX E

ACES

Originating during World War I, the term "ace" denotes a military aviator who is credited with shooting down five enemy aircraft.

The Marine Corps did not have any "aces" during World War I, but documented over 120 aces at the conclusion of World War II. The U.S. military used fractions to credit pilots with a shared kill.

	NAME	KILLS	UNIT
1.	Maj Gregory Boyington	28	AVG, VMF-214
2.	Capt Joseph J. Foss	26	VMF-121
3.	1stLt Robert M. Hanson	25	VMF-214
4.	2dLt Kenneth A. Walsh	21	VMF-124
5.	Capt Donald N. Aldrich	20	VMF-215
6.	Capt John L. Smith	19	VMF-223
7.	Capt Marion E. Carl	18.5	VMF-223
8.	1stLt Wilbur J. Thomas	18.5	VMF-213
9.	1stLt James E. Swett	15.5	VMF-221
10.	Capt Harold L. Spears	15	VMF-215
11.	1stLt Edward O. Shaw	14.5	VMF-213
12.	Capt Archie G. Donahue	14	VMF-112
13.	1stLt Philip C. DeLong	13.166	VMF-212
14.	Maj Robert E. Galer	13	VMF-224
15.	2dLt William P. Marontate	13	VMF-121
16.	2dLt Kenneth D. Frazier	12.5	VMF-223
17.	1stLt John F. Bolt Jr.	12	VMF-214
18.	Capt James N. Cupp	12	VMF-213
19.	1stLt Harold E. Segal	12	VMF-221
20.	Capt William N. Snider	11.5	VMF-221
21.	LtCol Harold W. Bauer	11	VMF-212
22.	Maj Donald H. Sapp	10	VMF-222
23.	1stLt Jack E. Conger	10	VMF-212
24.	Capt Loren D. Everton	10	VMF-212
25.	Capt Herbert H. Long	10	VMF-121
26.	2dLt Thomas H. Mann Jr.	9	VMF-121
27.	1stLt Jefferson J. DeBlanc	9	VMF-112
28.	1stLt Christopher L. Magee	9	VMF-214
29.	1stLt Franklin C. Thomas Jr.	9	VMF-112
30.	2dLt Edmund F. Overend	9	AVG, VMF-224
31.	1stLt Gregory. K. Loesch	8.5	VMF-121
32.	1stLt John L. Morgan Jr.	8.5	VMF-213
33.	1stLt William N. Case	8	VMF-214
34.	Capt Fred E. Gutt	8	VMF-223
35.	1stLt Edwin J. Hernan Jr.	8	VMF-215
36.	2dLt George L. Hollowell	8	VMF-224
37.	2dLt Charles M. Kunz	8	VMF-224
38.	Maj Nathan T. Post Jr.	8	VMF-221
39.	1stLt Robert Wade	8	VMF-323
40.	Capt Arthur T. Warner	8	VMF-215
41.	Maj Donald K. Yost	8	VMF-121
42.	Maj John F. Dobbin	7.5	VMF-224
43.	2dLt Joseph L. Narr	7	VMF-121

	NAME	KILLS	UNIT
44.	2dLt William P. Brown Jr.	7	VMF-311
45.	2dLt Dean Caswell	7	VMF-221
46.	Capt William E. Crowe	7	VMF-124
47.	MG Henry B. Hamilton	7	VMF-212
48.	2dLt Alvin J. Jensen	7	VMF-214
49.	1stLt Robert W. McClurg	7	VMF-214
50.	1stLt Jeremiah J. O'Keefe	7	VMF-323
51.	Maj Robert G. Owens Jr.	7	VMF-215
52.	Maj Joseph H. Reinburg	7	VMF-121
53.	1stLt John W. Ruhsam	7	VMF-323
54.	2dLt Gerard M. H. Williams	7	VMF-215
55.	2dLt Dewey F. Durnford	6.833	VMF-323
56.	1stLt Paul A. Mullen	6.5	VMF-122
57.	2dLt Roger A. Haberman	6.5	VMF-121
58.	1stLt Joseph V. Dillard	6.33	VMF-323
59.	1stLt Francis A. Terrill	6.083	VMF-323
60.	1stLt Arthur R. Conant	6	VMF-215
61.	2dLt Eugene A. Trowbridge	6	VMF-223
62.	Maj George C. Axtell	6	VMF-323
63.	Capt Robert Baird	6	VMF(N)-533
64.	1stLt Creighton Chandler	6	VMF-215
65.	1stLt Eugene Dillow	6	VMF-221
66.	Maj Jefferson D. Dorroh	6	VMF-323
67.	1stLt Frank C. Drury	6	VMF-212
68.	1stLt Howard J. Finn	6	VMF-124
69.	1stLt Don H. Fisher	6	VMF-214
70.	Maj Robert B. Fraser	6	VMF-112
71.	1stLt Sheldon O. Hall	6	VMF-213
72.	1stLt John C. Hundley	6	VMF-211
73.	2dLt Charles D. Jones	6	VMF-222
74.	1stLt John McManus	6	VMF-212
75.	1stLt James G. Percy	6	VMF-112
76.	Capt Francis E. Pierce Jr.	6	VMF-212
77.	2dLt Zenneth A. Pond	6	VMF-223
78.	Capt Perry L. Shuman	6	VMF-121
79.	1stLt Robert F. Stout	6	VMF-212, VMF-224
80.	Capt Herbert J. Valentine	6	VMF-312
81.	1stLt Milton N. Vedder	6	VMF-213
82.	Maj Herman Hansen Jr.	5.5	VMF-122
83.	1stLt William L. Hood Jr.	5.5	VMF-323
84.	Capt Floyd C. Kirkpatrick	5.5	VMF-441
85.	Capt Joseph P. Lynch	5.5	VMF-112, VMF-155, VMF-224

	NAME	KILLS	UNIT
86.	1stLt John B. Maas Jr.	5.5	VMF-112, VMF-322
87.	Maj Frederick R. Payne Jr.	5.5	VMF-212
88.	Maj Julius W. Ireland	5.333	VMF-211
89.	Capt Wallace E. Sigler	5.333	VMF-112, VMF-124
90.	Maj Hugh M. Elwood	5.166	VMF-212
91.	2dLt Stuart C. Alley Jr.	5	VMF-323
92.	1stLt John W. Andre	5	VMF(N)-541
93.	Capt Robert M. Baker	5	VMF-121
94.	Capt Donald L. Balch	5	VMF-221
95.	1stLt Frank B. Baldwin	5	VMF-221
96.	Capt Oscar M. Bate Jr.	5	
97.	Capt Richard L. Braun	5	VMF-215
98.	Capt William A. Carlton	5	VMF-212
99.	Maj Leonard K. Davis	5	VMF-121
100.	2dLt Cecil J. Doyle	5	VMF-121
101.	2dLt Charles W. Drake	5	VMF-323
102.	1stLt William Farrell	5	VMF-312
103.	Maj Paul J. Fontana	5	VMF-112
104.	Maj Kenneth M. Ford	5	VMF-121
105.	2dLt William B. Freeman	5	VMF-121
106.	1stLt Albert E. Hacking Jr.	5	VMF-221
107.	2dLt Charles Kendrick	5	VMF-223
108.	1stLt Henry A. McCartney	5	VMF-251, VMF-121
109.	1stLt Selva E. McGinty	5	VMF-441
110.	1stLt Edwin L. Olander	5	VMF-214
111.	Capt Donald C. Owen	5	VMF-212, VMF-112
112.	2dLt Hyde Phillips	5	VMF-223
113.	2dLt Jack Pittman Jr.	5	VMF-221
114.	Capt Robert B. Porter	5	VMF-121
115.	Maj George H. Poske	5	VMF-212, VMF-215
116.	Capt Ernest A. Powell	5	VMF-122
117.	1stLt Hartwell V. Scarborough Jr.	5	VMF-214
118.	1stLt Robert B. See	5	VMF-321
119.	1stLt Stanley T. Synar	5	VMF-112
120.	Maj Gregory J. Weissenberger	5	VMF-213
121.	1stLt Albert P. Wells	5	VMF-323
122.	Maj Michael R. Yunck	5	VMF-311

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APPENDIX F

AVIATION GENERALS

The following Marine Corps aviation general officers fulfilled great distinction by achieving four-star rank.

Included among their ranks are one Medal of Honor recipient (Schilt), along with thirteen Assistant Commandants of the Marine Corps. The following listing provides the date that he received his "wings" and was designated a naval aviator. Two general officers, General William L. Nyland and General James E. Cartwright were designated naval flight officers, and the latter eventually became a naval aviator. Naval flight officers are not pilots per se, but may perform many of the duties of a co-pilot. They are considered line officers and are eligible for command in Marine aviation.

Roy S. Geiger
Jun 9, 1917

Christian F. Schilt
Jun 5, 1919

William O. Brice
Aug 1, 1924

Vernon E. Megee
Feb 1932

Keith B. McCutcheon
Jul 15, 1940

Thomas H. Miller Jr.
Mar 24, 1943

Earl E. Anderson
Oct 22, 1943

John K. Davis
Jul 2, 1954

Thomas R. Morgan
Aug 6, 1954

Joseph J. Went
Sep 24, 1954

John R. Dailey
Jul 1958

Richard D. Hearney
Jun 1964

Terrence R. Dake
Jan 25, 1968

Michael J. Williams
Feb 11, 1969

William L. Nyland
Sep 1969

Robert Magnus
Dec 23, 1970

James F. Amos
Nov 22, 1971

James E. Cartwright
Apr 1973

GRAY EAGLES

NAME	YEARS
LtGen Richard C. Mangrum	October 1, 1965 – June 30, 1967
CWO-4 Henry Wildfang	August 31, 1977 – May 31, 1978
MajGen Frank C. Lang	May 31, 1978 – June 30, 1978
LtGen Thomas H. Miller Jr.	June 30, 1978 – June 28, 1979
LtGen Andrew W. O'Donnell	October 31, 1979 – June 26, 1981
LtGen Frank E. Petersen Jr.	August 21, 1987 – June 15, 1988
LtGen Robert Magnus	December 1, 2004 – July 16, 2008
Gen James F. Amos	February 10, 2008 –

Established in 1961 by the U.S. Navy, the Gray Eagle Award honors active duty naval aviators holding the earliest designation date.

The trophy associated with the award features a silver eagle landing on the Navy's first carrier, the USS *Langley*. The inscription on the trophy reads:

"The Venerable Order of the Gray Eagle. The Most Ancient Naval Aviator on Active Duty. In recognition of a clear eye, a stout heart, a steady hand, and a daring defiance of gravity and the law of averages."

Several Marine aviators have been presented the Gray Eagle Award.

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APPENDIX H

SILVER HAWKS

Established in 1972 by the Marine Corps Aviation Association, the Silver Hawk Award honors the active duty Marine aviator or Marine naval flight officer holding the earliest designation date.

NAME	YEAR
MajGen Norman J. Anderson	1972
MajGen Arthur H. Adams	1973
MajGen Arthur H. Adams	1974
CWO-4 Henry Wildfang	1975
CWO-4 Henry Wildfang	1976
CWO-4 Henry Wildfang	1977
CWO-4 Henry Wildfang	1978
MajGen Frank C. Lang	1978
LtGen Thomas H. Miller Jr.	1979
LtGen Andrew W. O'Donnell	1980
LtGen William J. White	1981
MajGen Leo J. LeBlanc Jr.	1982
MajGen Leo J. LeBlanc Jr.	1983
MajGen Leo J. LeBlanc Jr.	1984
MajGen Frank E. Petersen Jr.	1985
LtGen Frank E. Petersen Jr.	1986
LtGen Frank E. Petersen Jr.	1987
LtGen John I. Hudson	1988
Gen Joseph J. Went	1989
LtGen John I. Hudson	1989
MajGen Michael P. Sullivan	1990
LtGen Royal N. Moore Jr.	1991
MajGen Michael P. Sullivan	1991
Gen John R. Dailey	1992
MajGen Richard L. Phillips	1993
MajGen Clyde L. Vermilyea	1993
MajGen Richard L. Phillips	1994
LtGen Harold W. Blot	1995
Gen Richard D. Hearney	1996
LtGen Jefferson Davis Howell Jr.	1997
LtGen Terrence R. Dake	1998
Gen Terrence R. Dake	1999
MajGen Thomas A. Braaten	2000
LtGen Frederick McCorkle	2001
LtGen Michael P. DeLong	2002
Gen William L. Nyland	2003
Gen William L. Nyland	2004
Gen William L. Nyland	2005
LtGen Jack W. Bergman	2006
LtGen Jack W. Bergman	2007
Gen James F. Amos	2008
Gen James F. Amos	2009
Gen James F. Amos	2010

ASTRONAUTS

Marines must meet numerous eligibility requirements before being considered for duty with the National Aeronautical and Space Administration (NASA).

After the Marine Corps selection board chooses the best qualified applicants, the Commandant of the Marine Corps forwards their applications to NASA. While on duty with NASA, pilots are based at the Lyndon B. Johnson Space Center in Houston, Texas, for a five year tour with possible one-year extensions. Marines continue to receive their active duty pay, benefits, and leave. Upon completion of duty with NASA, Marine aviators return to assignments within the Marine Corps.

PROJECT MERCURY

LtCol John H. Glenn Jr.

On February 20, 1962, Col Glenn was one of the original seven astronauts and was the first American to make an orbital flight around the Earth. He was awarded the Space Medal of Honor for his service. He also flew aboard the Space Shuttle Discovery in 1998.

PROJECT MERCURY/GEMINI/APOLLO

LtCol L. Gordon Cooper, USAF (Prior USMC service)

PROJECT GEMINI/APOLLO

Maj Clifton C. Williams

APOLLO

Maj R. Walter Cunningham
Maj Jack R. Lousma
LtCol Gerald P. Carr

APOLLO/SPACE SHUTTLE PROGRAM

Vance D. Brand (Civilian with prior USMC service)
Fred W. Haise Jr. (Civilian with prior USMC service)

SPACE SHUTTLE PROGRAM

Col Robert F. Overmyer
Story Musgrave, MD (Civilian with prior USMC service)
Norman E. Thurgard, MD (Civilian with prior USMC service)
LtCol David C. Hilmers
Col James F. Buchli
Col Bryan D. O'Connor
Col Charles F. Bolden Jr.
Col Robert D. Cabana
Col Robert C. Springer
LtCol Kenneth D. Cameron
Capt Andrew M. Allen
Col Christopher J. Loria
Col Terrence W. Wilcutt
LtCol Carlos I. Noriega
Col Frederick W. Sturckow
Col Charles O. Hobaugh
Joseph M. Acaba (Civilian with prior USMC service)
Col George D. Zamka
LtCol Douglas G. Hurley
Maj Randolph J. Bresnik

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ACRONYMS

AAF	Army Air Forces
ACE	aviation combat element
AirFMFPac	Aircraft, Fleet Marine Force, Pacific
AIRSOL	Aircraft Solomons
(AW)	all weather
BLT	brigade landing team
Bde	brigade
C	Composite
CAS	close air support
CASD	Marine carrier air service detachment
CMC	Commandant of the Marine Corps
CNO	Chief of Naval operations
CO	commanding officer
CS	counter-strike
CVE	escort aircraft carrier
DCA	deputy commandant for aviation
DCS (Air)	deputy chief of staff (air)
DMZ	demilitarized zone
DOD	Department of Defense
ECM	electronic countermeasures
FMF	Fleet Marine Force
FMFPac	Fleet Marine Force Pacific
FOB	forward operating base
FSSG	force services support group
GCE	ground combat element
HARM	high speed, anti-radiation missile
HAWK	home all-the-way killer missile
HMLA	Marine light attack helicopter squadron
HMM	Marine medium helicopter squadron
HMH	Heavy Marine helicopter squadron
HMR	Marine helicopter transport squadron
HMRL	Marine light helicopter transport squadron
HMX-1	Marine helicopter squadron one
HQMC	Headquarters, Marine Corps
JCS	joint chiefs of staff
JFC	joint force commander
JSF	joint strike fighter
JTF	joint task force
(L)	light
LAAM	light antiaircraft missile
MAB	Marine amphibious brigade
MABS	Marine air base squadron
MACCS	Marine air command and control system
MACG	Marine air control group
MACS	Marine air control squadron
MAF	Marine amphibious force
MAG	Marine air group
MAGTF	Marine Air-Ground Task Force
MarDiv	Marine division
MASS	Marine air support squadron
MATCS	Marine air traffic control squadron
MAU	Marine amphibious unit
MAW	Marine aircraft wing
MAWTS	Marine aviation weapons and tactics squadron
MCAS	Marine Corps Air Station
MEB	Marine expeditionary brigade
MEF	Marine expeditionary force
MEU	Marine expeditionary unit
MPS	Maritime Prepositioning Ship
MTACS	Marine tactical air control squadron
MWCH	Marine wing control squadron
MWHS	Marine wing headquarters squadron
MWSG	Marine wing support group
MWSS	Marine wing support squadron
(N)	night
NAS	Naval Air Station
NATO	North Atlantic Treaty Organization
NVA	North Vietnamese Army
OEF	Operation Enduring Freedom
OIF	Operation Iraqi Freedom
RAF	Royal Air Force (United Kingdom)
Rein	reinforced
RLT	regimental landing team
RPV	remotely piloted vehicle
SAM	surface-to-air missile
SecNav	Secretary of the Navy
SOC	special operations capable
SPMAGTF	Special Purpose Marine Air-Ground Task Force
TF	task force
Transpac	Trans Pacific
TOW	tube-launched, optically-tracked, wire-guided missile
UAV	unmanned aerial vehicle
USA	United States Army
USN	United States Navy
VMA	Marine attack squadron
VMAQ	Marine tactical electronic warfare squadron
VMB	Marine bombing squadron
VMD	Marine photographic squadron
VMF	Marine fighter squadron
VMFA	Marine fighter attack squadron
VMFP	Marine tactical reconnaissance squadron
VMGR	Marine aerial refueler transport squadron
VMGRT	Marine aerial refueler transport training squadron
VMJ	Marine reconnaissance squadron
VMM	Marine tiltrotor squadron
VMO	Marine observation squadron
VMR	Marine transport squadron
VMS	Marine scouting squadron
VMSB	Marine scout bombing squadron
VMTB	Marine torpedo bombing squadron
VMU	Marine unmanned aerial vehicle squadron
XO	executive officer

ATTRIBUTIONS

ILLUSTRATIONS, IMAGES, AND ARTIFACTS

ALL GRAPHICAL ELEMENTS AND BACKGROUNDS ARE THE ARTISTIC INTERPRETATION OF LAURIE SCHMIDT.
ALL PHOTOGRAPHS OF THE DIRECTORS OF MARINE AVIATION ARE FROM THE MARINE CORPS HISTORY DIVISION.

CHAPTER ONE: Aircraft Blueprint, MSgt Geimenhardt; Thumbnail 1: USS *North Carolina Deck Log*, Naval History and Heritage Command; Thumbnail 2: Cunningham's Hydroplane License from Aero Club of America, Gray Research Center; Thumbnail 3: Excerpt from Cunningham's Scrapbook, Gray Research Center. Timeline Photos: Enlisted Personnel, Gray Research Center; MajGenCmdt William Phillips Biddle, Marine Corps History Division; Jacob Makohin, National Museum of the Marine Corps; 1stLt Bernard L. Smith, Gray Research Center

CHAPTER TWO: Aircraft Blueprint, MSgt Geimenhardt; Thumbnail 1: Enlisted Men Pulling The Prop, National Museum of the Marine Corps; Thumbnail 2: First Marine Aviation Force Insignia, Maj John M. Elliott; Thumbnail 3: Old Tent Hangers, Gray Research Center. Timeline Photos: Assembling Aircraft in the Azores, National Museum of the Marine Corps

CHAPTER THREE: Aircraft Blueprint, MSgt Geimenhardt; Thumbnail 1: The Ace of Spades, The Flying Leatherneck Museum; Thumbnail 2: USS *Sirius*, U.S. Marine Corps; Thumbnail 3: The Marine Takes First, U.S. Marine Corps. Timeline Photos: Mechanics School, The Flying Leatherneck Museum

CHAPTER FOUR: Aircraft Blueprint, MSgt Geimenhardt; Thumbnail 1: Insignia from Marine Scouting Squadron Fourteen, Maj John M. Elliott; Thumbnail 2: USS *Lexington*, Maj John M. Elliott; Thumbnail 3: Airmail Stamps, Maj John M. Elliott. Timeline Photos: Maintenance at Ologonapo, The Flying Leatherneck Museum; Letter from Curtis, The Flying Leatherneck Museum

CHAPTER FIVE: Aircraft Blueprint, MSgt Geimenhardt; Thumbnail 1: Dauntlesses, Maj John M. Elliott; Thumbnail 2: Glider Pilots, U.S. Marine Corps; Thumbnail 3: Geiger Aircraft One, U.S. Marine Corps

CHAPTER SIX: Aircraft Blueprint, MSgt Geimenhardt; Thumbnail 1: VMD-154, U.S. Marine Corps; Thumbnail 2: Corsair, Maj John M. Elliott; Thumbnail 3: Gunnery School, Naval Aviation Museum

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