THE INFLUENCE OF MARINE AVIATION ON THE DEVELOPMENT OF THE TENTATIVE LANDING OPERATIONS MANUAL

A thesis presented to the Faculty of the U.S. Army Command and General Staff College in partial fulfillment of the requirements for the degree

MASTER OF MILITARY ART AND SCIENCE
Military History

by

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Fort Leavenworth, Kansas
2013-01

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)*	**2. REPORT TYPE**	**3. DATES COVERED** *(From - To)*
14-06-2013	Master's Thesis	AUG 2012 – JUN 2013

4. TITLE AND SUBTITLE

The Influence of Marine Aviation on the Development of the Tentative Landing Operations Manual

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

Matthew T. Ritchie, Major, USMC

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
U.S. Army Command and General Staff College
ATTN: ATZL-SWD-GD
Fort Leavenworth, KS 66027-2301

8. PERFORMING ORG REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for Public Release; Distribution is Unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

Aviation was introduced in the Marine Corps in 1912 based on the belief that it would be a benefit to the Marines conducting advanced base operations. Advanced base operations was a concept developed by Admiral George Dewey. He believed that Marines could support Fleet operations throughout the Pacific by defending and seizing advanced logistical hubs. This concept fueled the Marine's early experiments with aviation. The experiences gained by Marine aviators in World War I and throughout the inter-war expeditionary deployments provided the lessons learned to turn vision into doctrine.

The *Tentative Landing Operations Manual* published in 1935 relied heavily on the use of aviation as an integral part of the seizure and defense of potential advanced bases. The development of this manual solidified the relationship between Marine aviation and ground forces and established combined air and assault force as the doctrinal approach for initial amphibious operations in the Pacific.

15. SUBJECT TERMS
Marine aviation, advanced base operations, tentative landing operations manual

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			**19b. PHONE NUMBER** *(include area code)*
(U)	(U)	(U)	(U)	107	

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std. Z39.18

MASTER OF MILITARY ART AND SCIENCE

THESIS APPROVAL PAGE

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

THE INFLUENCE OF MARINE AVIATION ON THE DEVELOPMENT OF THE TENTATIVE LANDING OPERATIONS MANUAL, by Major Matthew T. Ritchie, 107 pages.

Aviation was introduced in the Marine Corps in 1912 based on the belief that it would be a benefit to the Marines conducting advanced base operations. Advanced base operations was a concept developed by Admiral George Dewey. He believed that Marines could support Fleet operations throughout the Pacific by defending and seizing advanced logistical hubs. This concept fueled the Marine's early experiments with aviation. The experiences gained by Marine aviators in World War I and throughout the inter-war expeditionary deployments provided the lessons learned to turn vision into doctrine.

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ACKNOWLEDGMENTS

I wish to thank my wife, Meredith for all of her encouragement and support of me as I pursue my personal and professional goals. I would also like to thank my children Bennett, John Oliver, and Martha Grace for providing me with the inspiration to model life style of learning. Additionally, I would also like to thank Mr. Greg Cina and the staff of the U.S. Marine Corps Archives who have been instrumental in assisting me with my research.

TABLE OF CONTENTS

Page

ACRONYMS

FMF	Fleet Marine Force
FLEX	Fleet Landing Exercise
MAW	Marine Air Wing

ILLUSTRATIONS

Page

TABLES

Page

CHAPTER 1

ORIGINS OF MARINE AVIATION

In January 1937, the 1st and 2nd Marine Air Groups stationed in Quantico, Virginia and San Diego, California assembled eighty-three aircraft in support of what was then one of the largest amphibious landing exercises performed in the history of the U.S. military. This Fleet Landing Exercise (FLEX) was established to test the theories of amphibious operations against enemy held islands. The FLEX in 1937 was conducted at San Clemente, an island off the southern coast of California.[1] It was one of many FLEX's which Navy and Marines conducted dating back to 1914. The first FLEX was held at Culebra, Puerto Rico. At this initial exercise two inexperienced Marine aviators tested the ability of their rudimentary aircraft to provide support to Marines rehearsing beach landings.

In a little more than two decades the Marine Corps progressed from a handful of aviators flying unreliable aircraft that looked more like something the Wright brothers flew than a military aircraft. In the initial stages of aviation employment it was unclear whether or not aviation would have a lasting impact on the Marines. The early Marine aviators proposed many theories about the usefulness of aviation and sought to influence anyone who would listen. In a period spanning two decades Marine aviation went from being "side show" to an integral part of the Corps. The introduction of Marine aviation prior to World War I, its use during the war and throughout the interwar period laid the foundation for further inclusion of aviation in the force. The early Marine Corps

[1]Edward C. Johnson, *Marine Aviation: The Early Years 1912-1940*, ed. Graham A Cosmas (Washington, DC: Government Printing Office, 1977), 79.

experiences with aviation ultimately influenced the development of the *Tentative Landing Operations Manual* which laid out amphibious operational doctrine for the Marines.

The focus of research for this study will be the period leading up to World War I through the inter-war period. It will seek to investigate the genesis of the early beliefs about the usefulness of aviation in support of the advanced base force. The primary questions to be examined are: How did the Marine Corps integrate aviation units into its force structure and how were those aviation assets integrated with the ground units during World War I and the interwar period? What were the lessons learned from the first application of aviation with the Marine ground forces? Finally, how were the lessons learned implemented during the development of the *Tentative Landing Operations Manual 1935*?

Ultimately the answers to these questions will show the unique vision held by Marines about aviation. Since the inception of Marine aviation, the leaders of the Corps believed that its aviation assets existed first and foremost to support the Marines on the ground. This belief shaped the early development of Marine aviation and guided its experiences leading up to the development of innovative amphibious doctrine.

The Need for Aviation

The turn of the twentieth century marked the beginning of a prolonged season of technological discovery. The industrial age was in full swing and technological advancements were changing the world at an unprecedented rate. Steam powered ships became more capable than ever before, but were limited by the amount of fuel one could carry. Advanced bases were now needed in order to sustain modern merchant and military fleets throughout the world. In order for industrial nations to maintain incredible

production rates, access to natural resources was essential and the trade of the goods produced during this new age of industrialization required shipping lanes that traversed the entire globe. The increased economic competition brought on by the industrial revolution created a maritime environment not previously experienced. Nations were now forced to interact in a maritime environment. Competition for land rich with natural resources led to competition on the high seas which led aspiring nations to build large navies in order to protect economic interest abroad. These conditions caused several European nations, Japan, and the United States to establish bases throughout the world to serve as logistical hubs which linked together a worldwide network of maritime trade routes.

As a result of the industrial revolution the role of the United States Navy changed as did the role of its sister service under the Department of the Navy, the United States Marine Corps. The Navy was now required to have a global presence in order safeguard free trade in the emerging world economy. The increasing capabilities of Japan led to competition throughout the Pacific for logistical hubs to tie together trade routes. As early as 1900, military leaders began to anticipate a conflict with Japan over control of the Pacific. After the Russo-Japanese War American concern over Japan only increased. Senior leaders in the U.S. Navy believed that war with Japan was unavoidable.[2] This belief led to the development of a maritime military concept centered on a small force with a high state of readiness which could be forward deployed or rapidly transported via

[2]Allan R. Millett, "Assault from the Sea: The Development of Amphibious Warfare between the Wars, the American, British and Japanese Experiences," in *Military, Innovation in the Interwar Period,* eds. Murray Williamson and Allan R. Millett (New York: Cambridge University Press, 1996), 56.

naval ships in order to defend or recapture advanced naval bases. This concept became known as “advanced base operations.” In 1900 Admiral George Dewey first proposed that Marines would be best utilized to provide this rapid response force, stationed at home or abroad in anticipation of a naval campaign in Asiatic waters.[3] He anticipated that in order to conduct a naval campaign so far from the United States, bases of supply would have to be established in advance and defended in order to maintain the fleet. In a letter to the General Board of the Navy Department, Admiral Dewey also made it clear that this force should be a separate force from those already stationed aboard fighting vessels.[4] This proposal was the beginning of a significant change in mission for the Marine Corps and marked the start of an evolution of thought amongst the Corps’ leaders of how to properly equip the advanced base force with the necessary capabilities and force structure to accomplish this emerging mission.

One of the capabilities proposed as a benefit to this emerging mission was aviation. Shortly after the invention of the airplane, the U.S. military along with other militaries of industrialized countries saw the possibilities of the airplane for military application. The Marine Corps’ initial interest in aviation was closely linked to its new mission of advanced base operations in support of the US Naval Fleet.[5] Many believed that aircraft would be of use in this type of operation. In particular, Major General Commandant William P. Biddle saw that aviation could be a great benefit to the

[3]George Dewey, Admiral, U. S. Navy, Letter to General Board, October 23, 1900, Historical Amphibious Files, Box 9, File 206, Gray Marine Corps Research Center, Quantico, 1.

[4]Ibid.

[5]Johnson, 1.

advanced base force and subsequently assigned two officers to start aviation training in Annapolis, Maryland.[6]

Evidence from the Corps' initial experience later revealed that the Marines remained dedicated to this specified use for aviation. While other countries and services ventured into strategic bombing and the development of independent aviation services, the Marines stayed the course, employing aviation in order to support its amphibious ground forces. Like the other services, aviation in the Marine Corps expanded quickly. Throughout the early 1900s, the Marines experimented with different uses for aviation in support of the advanced base concept. Ultimately, the introduction of Marine aviation prior to World War I, its use during the war, and throughout the interwar period laid the foundation for further inclusion of aviation in the force. The early Marine Corps experiences with aviation influenced the development of the *Tentative Landing Operations Manual*.

In 1912, when the first Marine aviators were assigned to the Naval Aviation Training School, in Annapolis, Maryland, aviation was more of an experiment; there was no guarantee that it would prove to be a viable military capability.[7] As a result no permanent organizational or support structure was developed to oversee its development. Although there was a great deal of interest in aviation it was so revolutionary that few senior military leaders or even those attending flight school had any idea what its capabilities truly were, which made any attempt at organization a challenge. According to

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[6]Navy Department United States Marine Corps, *Annual Report of the Major General Commandant of the United States Marine Corps to the Secretary of the Navy, Fiscal Year 1912* (Washington, DC: Government Printing Office, 1912), 12.

[7]Johnson, 3.

Major Alfred Cunningham, the Corps' first aviator, "aviation was viewed as more of a crazy sport rather than anything useful."[8] Steps to organize aviation were initially slow, but small steps were taken in order to organize this new capability. The first step towards formal organization came in 1913. The Naval Appropriations Act for fiscal year 1914 placed Marine aviation as a part of the Navy's venture and limited the total number of Navy and Marine aviators to thirty. The decision to place Marine aviation under the Navy was made largely because of the small size of the Marine aviation contingent and the Corps' close relationship to the Navy. Although this act limited the number of personnel allocated for service as aviators in the Navy and the Marines, it was the first formal recognition of aviation as a specialty in both services.[9] With only a handful of officers and enlisted Marines available to be assigned for aviation duty, this action actually benefitted the Marines who could not afford to conduct this experiment without the funding, equipment, and facilities provided by the Navy. The interwoven relationship between the Navy and the Marine Corps continued to link the two during the development of the advanced based operations concept. Furthermore, the close relationship with naval aviation continued until World War I when Marine aviation conducted independent operations for the first time.[10]

Another challenge to the establishment of aviation unit organization within the Marine Corps was the size of the ground force itself. While the Marine Corps

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[8]Alfred A. Cunningham, Major, U. S. Marine Corps, "The Value of Aviation," *Marine Corps Gazette* 5, no. 3 (September 1920): 223.

[9]Johnson, 5.

[10]Ibid.

experimented with aviation by sending a handful of Marines to naval aviation training, its total force structure consisted of only about ten thousand Marines. Early recommendations made by Admiral Dewey provided the early framework for an advanced base force. He suggested that a permanent force of no less than four hundred Marines, with the appropriate number of officers to form battalion organization, should be formed for the purpose of an advanced force.[11] However, at the time, advanced base operations was still just a concept, not a formal mission, and the Marine Corps did not have the personnel strength to create a permanent standing advanced base force battalion without reducing its current commitments. Operational Marine units consisted of ships detachments and security companies who guarded naval instillations. There was no permanent command structure for operational units above the company level.

In 1912 half of the Corps' Marines were assigned to guard naval instillations in the United States, while the other half were assigned to serve on either ship security detachments or security guard forces for overseas naval instillations. In the event the Marine Corps needed to send out an expeditionary force it had to do so by pulling from its units guarding numerous naval instillations in the U.S.[12] In May 1912 the Commandant directed a provisional brigade of Marines be assembled for temporary tropical shore service. In doing so he decreased the security guard forces at U. S. instillations by half. This provisional brigade conducted landings in Nicaragua, Cuba, and Santo Domingo. By August 5, 1912 the provisional brigade returned to the U.S. and all of

[11]Dewey, General Board 1900, 2.

[12]Navy Department United States Marine Corps, *Annual Report of the Commandant, Fiscal Year 1912*, 5.

the Marines assigned to it were returned to permanent standing units.[13] The temporary manner in which the Marine Corps assembled larger command structures made it difficult to incorporate a completely new capability, such as aviation, into a fluid command structure. The lack of permanent command structure for an advanced base force combined with the lack of understanding of an emerging capability resulted in the absence of any organizational structure for Marine aviation. However, experiments conducted as early as 1914 started the discourse on how this new arm of the Marine Corps should be incorporated into the force.

The fleet exercise at Culebra in 1914, marked the first time that Marine aviators participated in a training exercise with an advanced base force. The exercise at Culebra was largely an experiment to validate the concepts of advanced base operations. After this exercise Lieutenant Bernard L. Smith made one of the first recommendations for the structure of a Marine aviation unit in support of the advanced base force. He recommended that an aviation unit should be established with five officers and about twenty enlisted mechanics and ground crewman along with two flying boats, an amphibian and one two-seater plane. However, when the temporarily assigned landing force departed back to its various locations in the U. S. like two years prior, there was no headquarters for the proposed aviation unit to operate under, thus, Smith's vision was not implemented.[14] Although this recommendation was not implemented, it did initiate the discussion of a permanent aviation organization. His recommendation served as the precursor to the Commandant's announcement at the end of 1916, when he established a

[13]Ibid., 10.

[14]Johnson, 7.

Marine Corps aviation company consisting of ten officers and forty men for service with the advanced base force. By February 1917 the 1st Marine Aviation Company was formed at the Navy Yard in Philadelphia, Pennsylvania.[15]

From its inception Marine aviators largely believed the purpose of aviation was to support the ground forces. The first aviators used this principle as a guide in developing the functions of Marine aviation. The role of supporting Marines on the ground was so essential to the makeup of Marine aviation that Major Alfred Cunningham later conveyed his opinion that only officers with thorough experience serving in infantry units should be considered for service as Marine aviators. He further concluded that "the only excuse for aviation with any service was to support the troops on the ground."[16] He also concluded that aviators should fly for a period of five years and then return to the infantry. He did not see flying as business that older men should conduct for a long duration.[17] Perhaps his reasoning for this was due to the unreliability of aircraft but it also gives evidence to the close linkage between ground forces and aviation in the Marine Corps. These thoughts from the origin of aviation translated themselves into the functions which aviators experimented with and eventually performed in support of the advanced base force.

Obviously, during the initial introduction of aviation few people had any knowledge as to how airplanes would practically benefit the ground force. Prior to World

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[15]Navy Department United States Marine Corps, *Annual Report of the Major General Commandant of the United States Marine Corps: to the Secretary of the Navy, Fiscal Year 1916* (Washington, DC: Government Printing Office, 1916), 13.

[16]Cunningham, "The Value of Aviation," 222.

[17]Ibid., 232.

War I, aviation functions were largely speculative. However, it did not take long before the benefit of aerial reconnaissance was realized. The airplane provided a vantage point few had ever utilized. Like all of the other services Marines viewed the primary mission of the early airplanes as intelligence collection. While conducting flight training the early Marine aviators experimented with spotting underwater objects from the air. While conducting these experiments Marine pilots began testing the ability to take photographs from the air as well as attempting rudimentary radio communications.[18] The initial experiments with radios were an effort to provide more timely intelligence, however the capability and size of early radios made this largely ineffective. The lack of capable radios made it necessary for Marines on the ground to carry air panels as late as the 1920s in order to communicate with aircraft. However, this early limitation with radio communication encouraged further development in the area of communications. In addition to taking pictures and experimenting with radios, Marine aviators also envisioned the possibility of employing munitions on hostile targets from the air.

Another discussion during the early development of Marine aviation was over the form of aircraft needed to perform the functions required by the Marines for support of advanced base operations. The first aviators largely piloted flying boats. The reason for utilizing flying boats was twofold. First, the Navy was very interested in flying boats, and the reliance of the Marines on the Navy for pilot training naturally channeled the early aviators into that platform. The second reason was based on the initial interest in aviation for support of advanced base operations. Advanced naval bases were obviously located on the water so once again water planes seemed like the logical choice. The Marines

[18]Johnson, 4.

piloting flying boats began to test the ability of aircraft to conduct anti-submarine patrols, artillery spotting and the ability to launch airplanes from catapults aboard ship. It was not long before some aircraft started operating from battleships. By 1916 Marines began training on land based aircraft as well. The Secretary of the Navy, Joseph Daniels, during that time believed that land based aircraft could also be useful for advanced base operations. In addition, land based airplanes allowed for joint ventures with the army and allowed the Navy and Marine Corps the opportunity to access another resource for aviation innovation.[19]

The quest of early aviators to discover and innovate the functions of Marine aviation was characterized by an insatiable desire to prove the worth of such an unknown capability. The unique perspective among the Marine Corps' early aviators through their extreme dedication to support the ground force led to the discovery of functions which were later realized and developed further as the capabilities of aircraft increased. The foundation for the functions of aviation in support of amphibious forces was established by these early pioneers in some of the first advanced base operations exercises. Those who followed refined and cultivated the ideas of the first generation of Marine aviators.

The first opportunity for Marine aviation to work with the advanced base force came only a little more than year after the first Marine aviator reported to naval flight instruction at Annapolis, Maryland. Many of the initial interactions between aviators and the temporarily organized advanced base force were disappointing. The early Marine aviators envisioned and advertised great capabilities; however, the unreliability of early aircraft often frustrated both the pilot and the ground forces. Many of the setbacks in the

[19]Johnson, 9.

initial interactions with aviation were related to the same struggles for initial organization. High-ranking officers as well as those in civilian government who controlled funding for the military doubted the military value of aviation and as a result failed to press aggressively for its development.[20]

Aviation was an unproven entity and until the new pilots could prove the worth of airplanes the funding to research and build more capable aircraft was difficult to obtain. Years later Major Cunningham expressed his initial frustrations that "early [aviation] organizations were seriously but unavoidably handicapped by the lack of suitable planes and not enough personnel to properly carry on the work of [maintaining the aircraft]."[21] Not only were high ranking officers and government officials questioning the usefulness of aircraft but junior officers did as well. However, in spite of the initial challenges in the perception of aviation, the first aviators used creative measures to answer the question of how aircraft would help the ground force to accomplish its mission. In an effort to increase interest in aviation, Marine aviators flew nearly any interested officer for orientation flights in order to demonstrate the benefit of aviation to the advanced base force. During the first exercise with the advanced base force in January 1914, First Lieutenants Bernard Smith and William McIlvain carried over 150 officers, to include the future Commandant of the Marine Corps, then Lieutenant Colonel John A Lejeune, who reportedly spent fourteen minutes in the air.[22] Both Smith and McIlvain continued to influence the development of Marine aviation leading up to the U.S.' involvement in the

[20]Johnson, 8.

[21]Cunningham, "The Value of Aviation," 226.

[22]Johnson, 4.

war in Europe. Lieutenant Smith would later accompany Lejeune to France and provide reports on the use of aviation.[23] Lieutenant McIlvain later assumed command of 1st Aviation Squadron which eventually became one of the squadrons sent to France to participate in World War I.[24]

During the 1914 fleet exercise off the coast of Culebra, the Marine aviation section consisted of a very humble means. The two officers, Smith and McIlvain, were accompanied by ten enlisted mechanics. Their equipment consisted of a flying boat and an amphibian aircraft. Although the makeup of the unit was modest, the Culebra exercise had an instrumental place in the development of Marine aviation. This was the first test of the advanced base force concept. The Marines were to occupy, fortify and hold the advanced base against an enemy attack and the still unproven aviators were there to take part. During the exercise Smith and McIlvain flew numerous scouting and reconnaissance missions in support of the advanced base force. While the fleet battleships conducted a bombardment of the island, the aircraft began proving their worth by circling over the battleships at five thousand feet, effectively outside of small arms range and high angle fire. It was a small but significant step in the right direction as the aviation element demonstrated the possibilities of advanced base defensive measures against surface ships. This demonstration led to the future experiments with aviation-delivered ordinance.

By the spring of the same year, pilots from the Marine aviation section of the naval flight school, which was now based in Pensacola, Florida, participated in the Mexican intervention at Tampico and Vera Cruz. Unfortunately, no Marine aviation

[23]Johnson, 8.

[24]Ibid., 15.

element was created and as a result none of the pilots flew in support of ground operations. They remained with the fleet at Tampico for the duration of the conflict.[25] Although this was likely a disappointment at the time, the fact that Marine aviation was present reveals that even on a small scale there was some impact on the thoughts of aviation as a part of the advanced base force. The Marine Corps' exposure to aviation at the Culebra fleet exercise had been a positive one, even if the ground forces didn't completely understand how to incorporate aviation.

In between supporting exercises and interventions in Mexico, early aviators experimented continuously in order to develop capabilities that would be useful in support of an advanced base force. However, the limited capabilities of early aircraft restricted the abilities of the pilots to test many of the theories of what aviation was believed to be capable of accomplishing. One of the more disastrous experiments was one of the initial tests on the concept of catapult launched aircraft from the deck of a ship. On November 8, 1916, First Lieutenant Cunningham attempted to take off from a catapult mounted on the USS *North Carolina*. Shortly after takeoff his plane overturned in the air and plunged into the water. Fortunately for Marine aviation, Cunningham survived. Although the initial experience for Cunningham was negative, there were other launches which were successful and even though catapult launchers on battleships never became the preferred method of launching aircraft, they did pave the way for future concepts, like the aircraft carrier. The ability to launch airplanes from ships would be instrumental in the Marine Corps' future amphibious doctrine.

[25]Johnson, 7-8.

Although Cunningham and the other Marine pilots suffered some early setbacks by 1916, a mere four years after the birth of Marine aviation, substantial improvements to aircraft became available. Apparently Marine aviators as well as the aviators from other services had done enough to display the merits of aviation. In addition overseas tensions were building and it appeared as though the United States was heading towards an unavoidable war in Europe. As a result more appropriations were given for a general increase in military personnel and equipment. The increased spending provided aviation with a much needed boost. While the early pilots gained experience with the employment of rudimentary aircraft, Marines began attending Army flight schools in order to learn how to fly land based planes. For the first time McIlvain and Cunningham flew land based aircraft with a fuselage and cockpit. The new aircraft also had a propeller on the front of the aircraft as opposed to the primitive pusher aircraft the Marines had grown accustomed to flying.[26] The increased capability of this type of aircraft provided the Marines with the increased capability needed to provide more reliable support to advanced base force.

Lieutenant Smith also experimented with air delivered ordinance in order to increase the ability of the Marines to engage surface targets from the air. He was not satisfied with only conducting reconnaissance. He, like the other Marine aviators, desired to effect enemy targets through armed reconnaissance. He proved to be a true innovator and pioneer in the development of aviation capabilities. Just prior to the start of World War I, in the summer of 1914, First Lieutenant Smith and his Navy counterpart Lieutenant V. D. Herbster conducted a significant experiment. Together the two aviators

[26]Johnson, 9.

conducted the first Navy live bombing test. The experiment was relatively small in scope. The pair dropped only four small bombs, but the data collected from this early experiment was instrumental in ordinance design, and the development of bombing sights as well as bomb release mechanisms.[27] Perhaps, even more significant were Smith's contributions just prior to the United States' involvement in World War I. From 1914 to 1917 Smith was assigned to the French embassy with the mission of collecting information on the use of aviation by the French, British and Germans on the battlefields in Europe. While in France he visited every major battle front and studied the use of aviation under many different combat conditions and flew a few missions with French air units.[28] He returned to the United States with a wealth of knowledge and provided the newly formed Marine aviation company with the necessary expertise to prepare the inexperienced unit with valuable lessons learned on the roles of aircraft serving in the war in France. Shortly after he returned, the Marine Aviation Company began preparations for what it hoped to be the first test of Marine aviation supporting the Corps' Expeditionary Brigade.

As with any new organization, the early experiences of Marine aviation were certainly challenging. However, the perseverance of the early pioneers of aviation created an initial link to the Marine ground forces. Although that link was arguably hard to see the seed of aviation supporting the advanced base force was planted. The permanent command structure which was established by the Commandant in 1916 displayed the

[27]Charles W. Boggs Jr, "Marine Aviation: Origin and Growth," *Marine Corps Gazette* 34, no. 11 (November 1950): 71.

[28]Johnson, 8.

Corps' initial position in regards to the viability of aviation as a long term benefit to the Marine Corps and the development of future amphibious doctrine. The early aviators were fairly accurate in projecting the future functions of Marine aviation as it related to supporting ground maneuver forces. The early experiences in the fleet exercises at Culebra and other independent aviation experiments revealed the incredible determination of the first Marine aviators to prove the worth of aviation to the ground forces. However, Marine aviation needed an opportunity outside of peacetime exercises and experiments to show its true capabilities as a benefit to the advanced base force. World War I would prove to be fertile ground which increased the worth of Marine aviation in the eyes of the Corps.

CHAPTER 2

WORLD WAR I

Uncertainty of the Role for Marine Aviation

By 1916 one of the most horrific wars in history had been raging in Europe for two years. For the first time technological advances of the Industrial Age were brought to bear forever changing the modern battlefield. Great Britain, France and Germany along with a few other European countries desperately tried to utilize new capabilities to break the stalemate of trench warfare in France. Aviation was one of many new innovations utilized to gain an advantage. The early experiences with aviation in World War I shaped the use of aviation in the next world war. When the US finally entered the war in 1916 there was a massive build up of military forces for all services. One of the key elements of the buildup in military force was the rapid increase of aviation.

Like all of the aviation elements for the other services, Marine aviation benefitted greatly from the surge in resources. However from 1916 until 1918 Marine Corps aviation struggled with personnel issues and mission creep from the Navy, both of which nearly kept Marine aviation out of World War I. Finally in October 1918 Marine aviation was finally poised to make a short but significant contribution to the war effort. Remarkably, the brief experience of Marine aviation in World War I proved the theories of many early Marine aviators and marked a starting point for the increased involvement of Marine aviation to support ground operations. The lessons learned in World War I aided in providing the initial framework from which the Marine Corps planned to support its ground forces and eventually its landing forces as it developed its amphibious doctrine.

Although President Woodrow Wilson expressed every desire to keep the United States out of the war in Europe, many military leaders including, Major General Commandant, George Barnett, believed that U.S. military involvement was inevitable. Based on this assumption, he sent Marine officers to France to observe the fighting in 1914 and 1915.[29] One of the officers he sent was Colonel General John A. Lejuene. Lejeune was one of the first officers to fly in one of the first Marine aircraft with First Lieutenants Bernard Smith and Roy McIlvain. In 1914 Colonel Lejeune traveled to France along with Lieutenant Smith. Although Lieutenant Smith was there to observe the use of aviation, Brigadier General Lejeune observed and reported on the use of machine guns, heavy artillery, and trucks, as well as aviation, in the fight raging in Europe. Little changed until 1916, the reports from both Lejeune and Smith provided the headquarters of the Marine Corps with a full appreciation of the importance of these new innovations being used in large scale conflict for the first time. These reports prepared the Marines Corps to increase its capabilities if given the opportunity for expansion.

Colonel Lejeune's early observations of the use of aviation in World War I combined with his experience commanding the 4th Marine Brigade and the Army's 2nd Infantry Division contributed to vision for the integration of Marine aviation with the ground forces. His foresight later proved to be instrumental in the development of the Corps' amphibious doctrine. After World War I, he would lead the Marine Corps to refine its mission and structure. His views produced revolutionary change and had a

[29]Allan R. Millett, *Semper Fidelis: The History of the United States Marine Corps*, rev. ed. (New York: The Free Press, 1991), 287.

profound impact on the integration and development of Marine aviation throughout the inter-war period.

As late as 1916 the Marine Corps was still focused on the formation of the "advanced base force." The relatively small size of the Corps made restructuring in order to form a permanent advanced base force virtually impossible. However, the looming threat of military involvement in the war in Europe served as a catalyst for Congress to allocate increased funding to expand all branches of the military. The Naval Appropriations Act of 1916 allowed the Marine Corps to increase its enlisted strength from 13,200 to 17,400. This increase, although not substantial when compared to its strength of 70,000 at the end of World War I, appeared to be aimed at forming a permanent advanced base force to support a naval campaign in an inevitable war against the Central Powers.[30] With the first sizable expansion of the Corps since the introduction of the advanced base concept by Admiral Dewey in 1900, the Marines would not let this opportunity for service expansion pass.[31]

The Naval Appropriations Act of 1916 not only increased the size of the Marine Corps but it provided three and one-half million dollars for naval aviation. It also established a separate naval flying corps. By the time the United States entered the war the government was zealous about the implementation of aviation in support of the war effort and flooded the Army and the Navy with more personnel and planes than either service could effectively organize until 1918.[32] The Marine Corps benefitted from both

[30]Johnson, 11.

[31]Dewey, General Board 1900, 1; Millett, *Semper Fidelis*, 288.

[32]Millett, *Semper Fidelis*, 308.

services' increase in aviation resources and began exploring the feasibility of both land and sea-planes to support Marine ground forces. The observations from 1914 through 1915 caused Marine Corps headquarters to realize that if the Marines were to have a role in the war in Europe and increase its chances for expansion it would have to prove its usefulness as a ground combat force. As a result the method by which Marine aviation could most effectively support the ground combat force had to adapt appropriately. However, for all of the benefit of the Appropriations Act of 1916, the formation of the naval flying corps presented a dilemma for the Marines Corps as it sought to deploy Marine aviation in support of Marine ground units. The Navy, which funded, trained, and resourced Marine aviation had a different view of how best to employ Marine aviators in the war in Europe. The U.S. Navy intended to use the Marine aviators in a naval aviation role not in support of ground elements.

For the first time since the formation of Marine aviation there appeared to a noticeable tension between the Navy and the Marines with regard to the role that Marine aviators. The Navy felt as though Marine aviators were an extension of the Navy's flying program and should therefore be used in roles supporting the Department of the Navy as a whole, not just the Marine ground forces. However, most senior Marine leaders believed that the role of Marine aircraft was to support the Marine ground forces regardless of the mission assigned. The divergence of the vision for aviation was largely due to the desire of Marines to play a role in the land war which eventually resulted in serving underneath the Army-led American Expeditionary Force.[33]

[33]Ibid., 290.

When the Naval Appropriations Act of 1916 was published the Marine Corps had only five officers and eighteen enlisted men assigned to aviation duty.[34] The increase in overall manpower for the Marines translated into increased allocation of personnel for aviation duty as well. However, with all of the money and resources being allocated to aviation, the Marines soon discovered that organizing the rapid increase of men and equipment for aviation would be much more difficult than expanding its ground forces. Training pilots and mechanics took more time than training the average infantryman and finding enlisted men and officers suitable to take on this technical specialty proved challenging. The first Marines to arrive in France with the 1st Army Division were the 5th Marine Regiment. The 5th Marines arrived in early 1917 while the 1st Marine Aviation Force did not arrive until late 1918, more than a year after the first ground elements arrived.

Based on the reports of Brigadier General Lejeune and Lieutenant Smith the Marine Corps began experimenting with the capabilities of more land-based organization, but it did not completely deviate from its original sea-plane based organization. Division over the utility of sea-planes or land-planes was not only resident in the Marine Corps but the Navy as well. The Marines were certainly biased toward supporting the Marine Brigade in France, but the Navy initiated an ambitious expansion program for the primary purpose of conducting anti-submarine warfare. The Marine Corps was effectively caught in the middle and thus chose to split its aviation company into two distinct units.[35] These

[34]Navy Department United States Marine Corps, *Annual Report of the Commandant, Fiscal Year 1916,* 13.

[35]Millett, *Semper Fidelis*, 308-309.

were the 1st Marine Aeronautic Company and the 1st Marine Aviation Squadron, (which would later form the nucleus of the 1st Marine Aviation Force). The role of the 1st Marine Aeronautic Company was to conduct anti-submarine warfare utilizing sea-planes while the 1st Marine Aviation Squadron was organized to employ land based bombers in support of the Marine Brigade. The 1st Marine Aeronautic Company was largely formed and possessed a relatively full complement of officers, enlisted men and equipment to perform its primary function. As a result it was the first Marine aviation unit to deploy in support of the World War I.[36]

The rapid expansion of Marine Corps aviation organization required careful coordination with both the Navy and the Army. As the Marines gained more clarity about how best to support its brigade in a land engagement new command structures were needed to provide control of emerging aircraft requirements. While the Marine Brigade, which was later named the 4th Marine Brigade, was being formed in France, Major General Barnett obtained approval from the Navy Department to form a second Marine air unit of land-planes to provide reconnaissance and artillery spotting for the Marine Brigade.[37] At the time the Navy had very few land-planes and the Marines had largely only trained on Navy seaplanes like the Curtiss R-6 and the HS-2L. After Major General Barnett obtained permission to stand up a new unit of land-planes, the task was to coordinate with the Army to obtain both land-planes as well as the training necessary to employ them effectively. The newly formed land aviation unit was designated the 1st Aviation Squadron and it was organized similarly to the Army aviation units of the time.

[36]Johnson, 13.

[37]Ibid., 11.

The Marines lacked the manpower to build the complete organization according to Army standards, but it shortly fielded eleven officers and 178 enlisted Marines which manned and maintained six fighter planes, six reconnaissance aircraft and four kite balloons for artillery observers.[38]

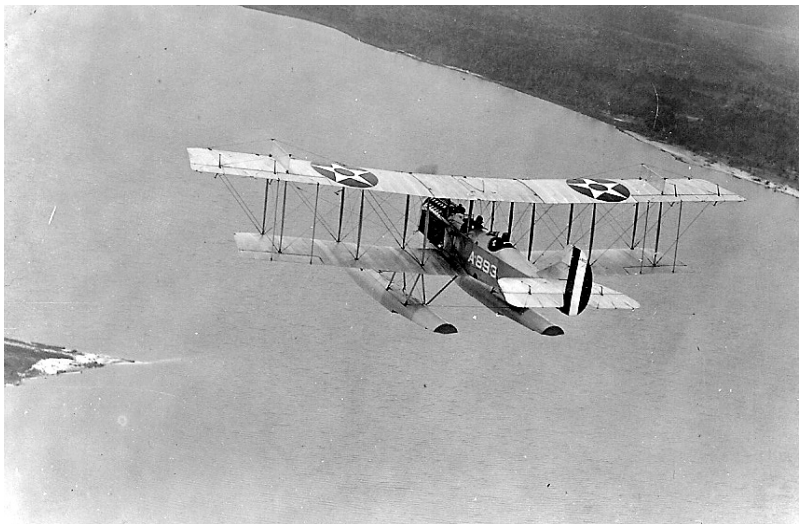

Figure 1. Curtiss R-6 Seaplane

Source: National Naval Aviation Museum, Pensacola, Photo of a Navy Curtiss R-6, BUNO A893, flying along a coast line, circa 1915-1918, http://collections.naval.aviation.museum/emuwebdoncoms/pages/doncoms/Display.php?irn=46841&QueryPage=%2Femuwebdoncoms%2Fpages%2Fcollections%2FQuery.php (accessed May 22, 2013).

[38]Johnson, 12.

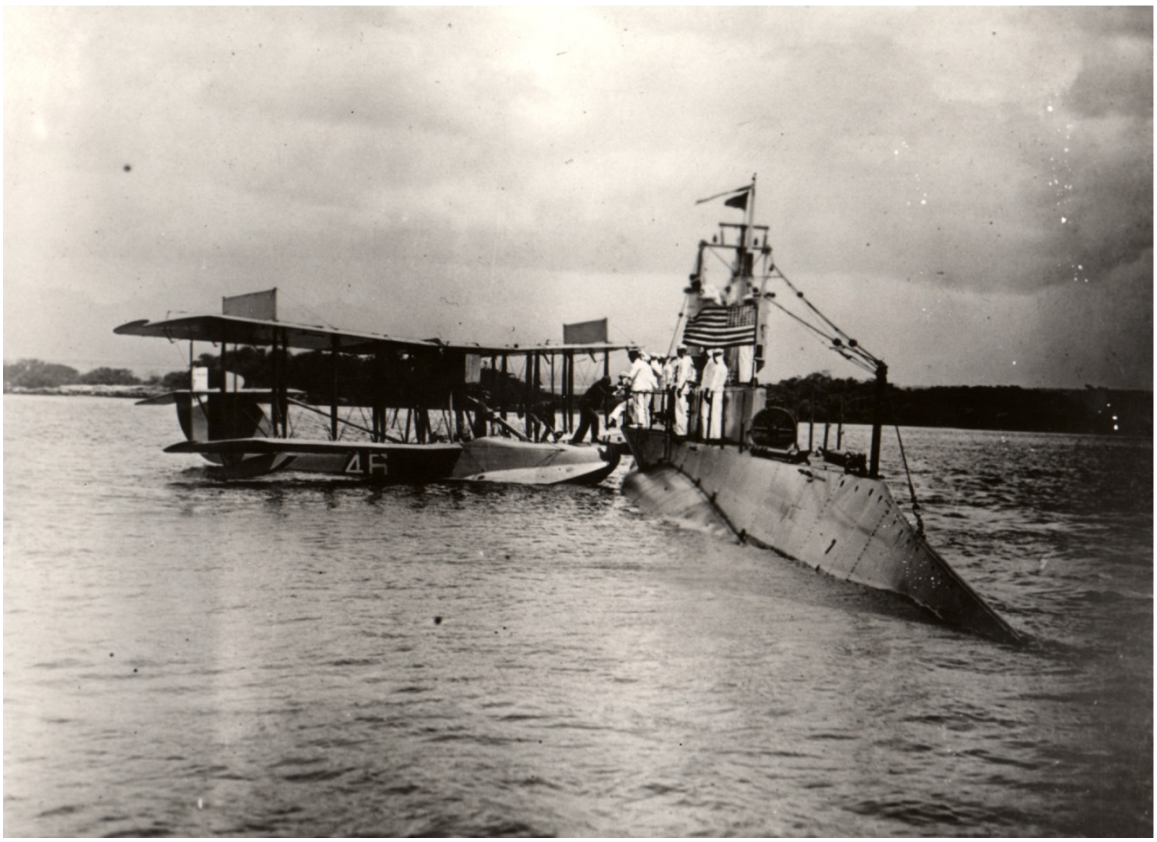

Figure 2. Curtiss HS-2l

Source: National Naval Aviation Museum, Pensacola, View of an HS-2L flying boat alongside a submarine at unidentified location, 1924, http://collections.naval.aviation.museum/emuwebdoncoms/pages/doncoms/Display.php?irn=4925&QueryPage=%2Femuwebdoncoms%2Fpages%2Fcollections%2FQuery.php (accessed May 22, 2013).

Although the Navy approved this new unit, this marked the initial departure from a purely naval-centered mission to a more army-centered model for aviation organization and employment. However, the new capabilities could arguably be used to also support the 4th Marine Brigade or an advanced base force, but the Marine Corps chose to focus more on the immediate reality of fighting in Europe as opposed to the concept of advanced base operations. Consequently, the pursuit of more land based aircraft eventually proved to be beneficial for supporting an advanced base force. Almost

immediately following World War I the Marine Corps took on several expeditionary missions which showed the versatility of land-planes.

While the 1st Aeronautic Company was prepared for its anti-submarine mission and the 1st Aviation Squadron trained on land base planes acquired from the Army, the Marine Corps stood up a third aviation unit. By direction from the Navy Department an additional Marine aviation company was to be organized consisting of 10 officers and 40 enlisted for duty with the advanced base force. It was also directed that the new aviation company would be trained in both land and seaplanes.[39] The new aviation company was first named the Aeronautic Detachment. The Aeronautic Detachment was commanded by Captain Roy S. Geiger. The Detachment was the first of many commands for Gieger. During his forty years of service in the Marine Corps he spent thirty of them as an aviator. He proved to be a true pioneer for Marine aviation serving as the head of Marine aviation from 1931-1935. His influence as an aviator was instrumental in developing aviation in support of advanced base force. During World War II he commanded the 1st Marine Air Wing (MAW) on Guadalcanal and by the end of the war was in command of the entire Fleet Marine Forces (FMF) Pacific.[40]

The Aeronautic Detachments' original strength was four officers and thirty-six enlisted, which brought it up to less than half strength. Most of the Marines who filled the ranks of the Aeronautic Detachment were pulled from the 1st Marine Aviation Squadron,

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[39]Navy Department United States Marine Corps, *Annual Report of the Commandant, Fiscal Year 1916*, 13.

[40]Roger Willock, Colonel U. S. Marine Corps Reserve, *Unaccustomed to Fear: A Biography of the Late General Roy S. Geiger USMC* (1968, repr. Quantico, VA: The Marine Corps Association, 1983).

the unit designated to support the 4th Marine Brigade in France further delaying the deployment of Marine aviation in support of the 4th Marine Brigade.[41] Although moving aviators and Marines from the 1st Marine Aviation Squadron inhibited Marine aviation's ability to support its own brigade it directed by the Navy Department showing more evidence of the growing division between the Navy and Marines in regards to aviation. However, increased organizational structure still benefitted the Marine Corps in the long term as it created more vacancies in the emerging unit organization which forced the commanders of the three Marine aviation units to recruit in mass using largely unorthodox methods to fill a force structure that had very little experience.

Not long after the organization of the Aeronautic Detachment Captain Cunningham received orders to form and command the 1st Marine Aviation Force. This unit would consolidate both the 1st Aviation Squadron commanded by Captain McIlvain and Captain Geiger's Aviation Detachment at an airfield in Miami.[42] Captain Geiger's detachment arrived first and established the original home for the 1st Marine Aviation Force. This new home was actually the Curtis Flying School, which was a civilian flight school located in Miami, Florida. This location provided excellent weather for flight training and the civilian instructors and students would later help bolster the number of pilots needed to fill out the table of organization for the 1st Marine Aviation Force. In a few short months McIlvain's 1st Aviation Squadron arrived, and became the second of four squadrons which made up the 1st Marine Aviation Force. By June 16, 1918, Cunningham organized a headquarters element and four squadrons. The Aeronautic

[41]Johnson, 15.

[42]Ibid.

Detachment commanded by Captain Geiger became Squadron A, and the 1st Aviation Squadron commanded by Captain McIlvain was renamed Squadron B.[43] At this point Squadrons A and B were the only two that possessed even a minimum number of personnel while Squadrons C and D had commanders but existed in name only. Figure 1 illustrates the challenges of establishing the early organizational structure for Marine aviation.

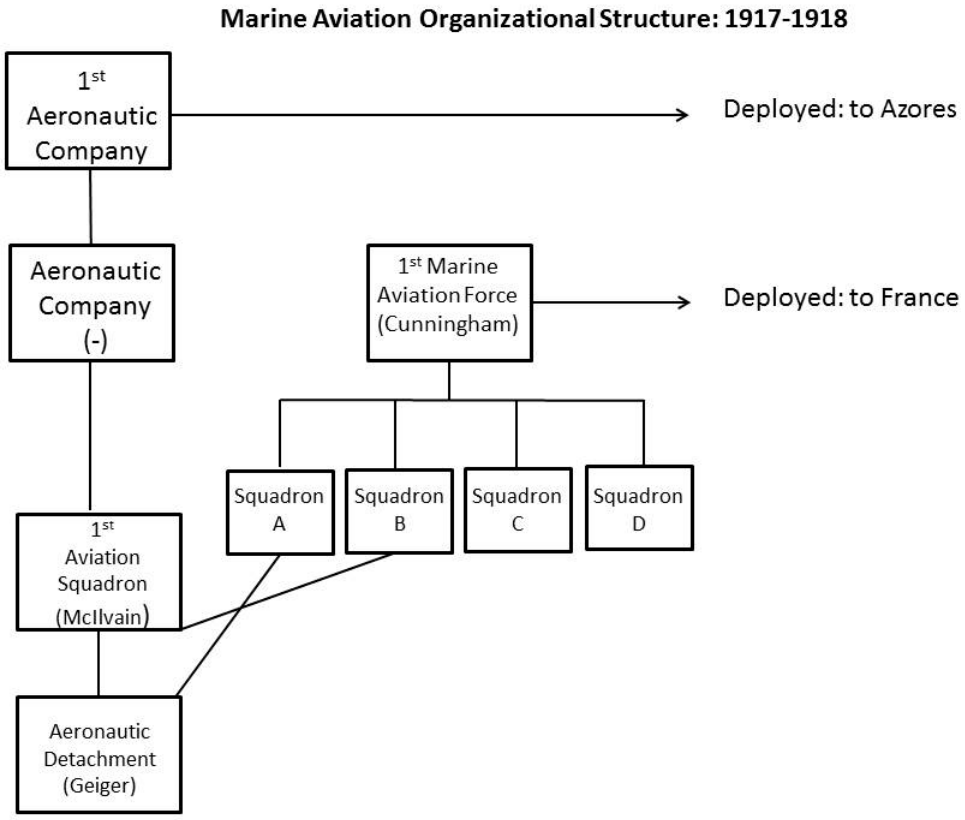

Figure 3. Marine Aviation Organizational Structure: 1917-1918

Source: Created by author.

[43]Ibid., 19.

Shortly after arriving Captain Cunningham and his two unit commanders initiated an aggressive recruiting campaign to fill the ranks of the four squadrons which would make up the 1st Marine Aviation Force. Geiger began by recruiting many of the civilian instructors to serve as aviators in the Marine Reserve and also requisitioned the civilian aircraft owned by the Curtis Flying School. In addition, he recruited some of the civilian students at the flying school promising direct commissions as Marine aviators to those who completed the pilot curriculum. In addition to Geiger's efforts, Captain Cunningham visited the officer's school in Quantico to solicit volunteers.[44] The creative efforts to obtain and train new aviators increased the personnel which were sorely needed to fill the largely hollow unit structure of the 1st Marine Aviation Force. Even with all of the new aviators obtained through recruitment in Quantico and the Curtiss Flying School there still were not nearly enough to fill out the organizational structure for four squadrons. In a desperate attempt to quickly man the rest of the squadrons, Captain Cunningham recruited naval aviators from other aviation instillations located in Florida. Most of the men recruited were naval reserve officers who were primarily concerned with going to France to participate in the war.[45] In addition the Marine Corps also invested in enlisted aviators. Enlisted Marines who met the qualifications were sent to the Massachusetts Institute of Technology to complete a ten week course and were designated as Marine aviators.[46]

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[44]Ibid., 17.

[45]Ibid., 19.

[46]Ibid., 20.

Perhaps the most incredible accomplishment of Marine aviation in World War I was the formation of two very different units and fielding enough pilots through every means necessary to send 135 Marine aviators and support personnel to France as a part of the 1st Marine Aviation Force less than eight months after receiving orders to form the unit. After the war newly promoted Major Cunningham took a strong stance on the qualifications of a Marine aviator. He very clearly stated that only officers with enough experience serving in infantry units should be considered for service as Marine aviators.[47] He also concluded that aviators should fly for a period of five years and then return to the infantry.[48] Perhaps that was a product of his early experience employing inexperienced aviators many of whom had little understanding of the Marine Corps in World War I. Or perhaps he was forced to compromise his standards in order to meet the mission of providing an aviation force to support the Marine Brigade.

The emergence of a permanent command structure in a relative short time period with the aim of supporting the 4th Marine Brigade revealed the commitment of the Marine Corps to incorporate aviation with the ground forces. World War I created the opportunity that the Marines needed to organize its aviation force and position it to be incorporated in the Marine Corps long term. The initial structure of Marine aviation reflected what appeared to be the three emerging missions of Marine aviation: to conduct missions in support of the Navy, such as anti-submarine warfare; to support the Marine expeditionary ground forces; and to support the advanced base force. Perhaps most interesting was the emergence of the anti-submarine mission which was contrary to the

[47]Cunningham, "The Value of Aviation," 222.

[48]Ibid.

stated purpose of Marine aviation. Anti-submarine warfare in World War I had very little to do with supporting the Marine ground element. However, at the time anti-submarine warfare was arguably tied to the mission of advanced base operations. It seemed improbable that the Marine Corps could employ its limited aviation in all three missions. Consequently, the experience of the 1st Aeronautic Company showed the ineffective use of scarce aviation resources while the 1st Marine Aviation Force displayed the opposite. The contrasting experience of these two aviation elements influenced the direction of Marine aviation and clarified its role for the future.

Once the U.S. committed to provide military forces to its allies in Europe, the Marine Corps began scrambling to define its role and to justify its recent service expansion as well as exploit the possibility for further expansion. As a result advanced base operations took a back seat to providing an expeditionary force. As the Marine Corps explored the possibilities for its aviation's involvement the default answer was to support the Marines on the ground. However, neither Major General Commandant Barnett nor Captain Cunningham predicted the negative opinions of the Navy and the Army toward the desire to deploy Marine aviation in support of the 4th Marine Brigade.[49] This eventually led to some debate between the services as well as debate internal to the Marine Corps as to what role its aviators would fill. With American Expeditionary Force in central France, and with very little naval action the need for an advanced base force did not exist. Therefore, Marine aviation's perceived primary role was not needed. The assumption was that Marine aviation would support its own brigade as it would have if there was an advanced base mission.

[49]Millett, *Semper Fidelis*, 309.

As the Marines prepared to deploy the 4th Marine Brigade to Europe the majority of Marine aviators transitioned to training on land based aircraft. The desire of the Commandant was to support the 4th Marine Brigade with the 1st Marine Aviation Force, and with Marines deploying to the Western Front in France there would be no way for sea-planes to support the Brigade from either coast of France. At the same time Marine pilots were training on more land based aircraft, Admiral William S Sims directed the Navy Department to focus the majority of its efforts on an ambitious anti-submarine mission. The Navy envisioned that its aviators, including the Marines, would be effective against German U-boats which were terrorizing sea lanes in the Northern Atlantic as well as in the North Sea.[50] At first the Corps' desired to train on land-based planes didn't seem too divergent from the Navy because the Navy was also debating which type of aircraft would be most effective in addressing the anti-submarine mission. Soon the debate between whether or not the Marines would support the Navy's mission or support its ground base forces began.

During the ongoing debate about how best to utilize the Marine aviation element Major General Commandant Barnett attempted to maintain positive relations with the Navy by requesting a second aviation unit in order to focus one on fulfilling what the Navy perceived as the Marine Corps commitment to the naval mission and one to support the Marine Brigade.[51] This was the reasoning behind splitting the already meager Aviation Company and creating 1st Aeronautic Company and the 1st Aviation Squadron. The 1st Aeronautic Company was to fill the role the Navy desired for Marine aviation

[50]Ibid.

[51]Ibid.

while the 1st Aviation Squadron would maintain the capability of what the Commandant viewed as the primary role of Marine aviation. Unfortunately the haste to justify the rapid expansion of the Corps meant sending the Marine Brigade with the Army as soon as possible, thus creating a significant gap between the deployment of 4th Marine Brigade and the 1st Marine Aviation Force. By the time Captain Cunningham finally went to France in order to determine where to best station the 1st Marine Aviation Force, he was not met with a very warm reception from the Army. The Army staff in Europe, which was already not excited about the role of the 4th Marine Brigade, informed Cunningham that if Marine aviation were to deploy to France it would be to run the airfield and nothing more.[52]

Upon realization that Army aviation did not want or need the help of the Marine Corps to support brigades under its command, Captain Cunningham became more concerned with ensuring that Marine aviation had a chance to prove its capabilities in combat rather than trying to fulfill the Commandant's primary mission of supporting Marines. After returning to the U.S., Captain Cunningham reported that if the Marines were to play any role in the war it would have to be with Navy. It appeared as though the Marine's only possibility to be a part of the war was to concede to the Navy's anti-submarine mission.[53] Determined to ensure that the 1st Marine Aviation Force participated in the war, Captain Cunningham returned with the belief that the Marine Corps should deploy the 1st Marine Aviation Force as a part of the Navy's twelve

[52]Millett, *Semper Fidelis*, 309; Cunningham, "The Value of Aviation," 223-224.

[53]Cunningham, "The Value of Aviation," 224.

squadron Northern Bombing Group.[54] He argued that the Naval Appropriations Act of 1916 allocated twenty percent of naval aviation to be composed of Marine aviation units and that Marine units must support Navy operations first and ground operations second.[55] Major General Commandant Barnett reluctantly agreed to the Navy General Board's plan, which meant that the Marines would participate in the Navy's air war and further perpetuate the belief that Marine air was the Navy's to use as it desired.[56] This relegation to Navy authority revealed the need for the Marine Corps to establish some sort of permanent command and control relationship to effectively link Marine aviation to its ground forces in order to ensure that Marine aircraft would be available to support Marines in the future.

At the beginning of the Marine aviation's involvement in World War I, both the 1st Marine Aeronautic Company and the 1st Marine Aviation Force were forced to conduct anti-submarine warfare. It appeared as though the primary function of Marine aviation had now become to support whatever mission the Navy deemed most important and the stated purpose for Marine aviation would be secondary to the Navy's bidding. However, initial misfortune through logistical mistakes left the Marines without any aircraft to fly. The aircraft that were originally intended for use by the 1st Marine Aviation Force were shipped to England instead of France.[57] It took a month to get the

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[54]Johnson, 15.

[55]Captain Alfred A. Cunningham, Testimony for the General Board, "Aviation," February 5, 1918, Cunningham File, Reference Section History and Military Division, Headquarters Marine Corps, 1974.

[56]Millett, *Semper Fidelis*, 309.

[57]Johnson, 20.

issue sorted out, but this oversight created an opportunity for the Marines to perform missions more in line with its stated purpose. By the time the 1st Marine Aviation Force had aircraft to fly; the Germans had evacuated the submarine bases located in the Belgium ports of Zeebrugge, Bruges and Ostend. The German evacuation alleviated the threat to British shipping lanes thus eliminating the Marine's previous assigned mission.[58] By virtue of the fact that the Navy Northern Bombing Group was under British command, the 1st Marine Aviation Force was able to provide general support aviation to the British and Belgian Armies.[59]

The initial lack of aircraft forged a relationship with a British Royal Air Force Squadron, the 218th, and quickly created an opportunity to fly in support of British and French ground forces. During the month of September 1918, while Captain Cunningham worked to get the Marines' aircraft from England to France, he arranged for the Marine pilots to fly bombing missions with the British squadrons.[60] The British pilots welcomed the opportunity to give the Marines a chance to contribute to the war effort and the Marines were just as eager to gain experience in the same aircraft that were being sent from England. The Marine aviators did not have a significant amount of experience on the new land base planes. The unit had only been together for six months and most of that time was spent making every effort just to fill the squadron with enough personnel to bring it up to full strength. One of the early pilots, 1st Lieutenant Ford O. Rogers, who earned a Navy Cross in World War I shared, "We had flown nothing but Jennies

[58]Ibid.

[59]Ibid., 22.

[60]Ibid, 21.

[trainers] We got one DH–4 and all of us in Miami got one flight in the first DH–4. Our gunnery training consisted of getting into the rear seat and using a Lewis gun, shooting the targets on the ground. None of us ever fired a fixed gun in our lives. None of us had ever dropped a bomb in our lives."[61] Rogers later went on to achieve the rank of Major General. In spite of a lack of training the Marines of the 1st Marine Aviation Force performed remarkably well, but more importantly the Marine aviators were not chasing German U-boats.

Figure 4. DH-4

Source: National Museum of the Air Force, Wright-Patterson AFB, "De Havilland," posted March 30, 2011, http://www.nationalmuseum.af.mil/photos/media_search.asp?q=DH-4&btnG.x=0&btnG.y=0 (accessed May 22, 2013).

[61]Ibid., 19.

As quickly as the mission of supporting Marines on the ground had died the potential to prove its worth in support of Marines on the ground had been revived. Although not able to support Marines, the 1st Marine Aviation Force now had the opportunity to test the capabilities that early Marine pilots envisioned as the functions of aviation in support of ground forces. The differing experiences between the 1st Aeronautic Company conducting anti-submarine operations in the Azores and those of the 1st Marine Aviation Force in France provided the justification for the continued use of aviation in support of ground forces for the foreseeable future. This contrast in experience re-established the priority of Marine aviation. It also linked the similarities of supporting ground forces in inland fighting to the functions needed to support an advanced base force.

The experience of the 1st Aeronautic Company could not have been more different than that of the 1st Marine Aviation Force in France. Unlike the 1st Marine Aviation Force the 1st Aeronautic Company flew single engine, single seat, sea-planes and maintained the Navy's anti-submarine mission throughout the war. The 1st Aeronautic Company was the first Marine aviation unit to deploy during the U.S.'s involvement in World War I. The Aeronautic Company deployed in January of 1918 with twelve officers and 133 enlisted to San Miguel Island in the Azores, eight months prior to the 1st Marine Aviation Force.[62] The Aeronautic Company remained in the Azores conducting local anti-submarine patrols until March 1919.[63] While stationed in the Azores the Marines flew daily missions, weather permitting, for the purpose of denying

[62]Ibid., 13.

[63]Millett, *Semper Fidelis*, 309.

enemy submarines access to supply convoy routes as well as to deny the sub-marines access to a safe port in the Azores.

There were several limiting factors to this mission. First, the range of early aircraft made it impossible to cover a distance more than seventy miles from the island.[64] Along with limited range, the limited duration of the patrols meant that for the majority of the day there was no observation around the area. Weather also made it difficult for the Marines to conduct regular patrols because not only did air conditions ground the aircraft but sea state also limited the ability to take off and land, an issue that did not affect land based aircraft. Perhaps the greatest limitation to the anti-submarine mission was the fact that a single pilot flying in a 70 mile radius of San Miguel for one to three hours a day with only unaided eyes to observe a semi-submerged object in the water was unlikely to spot his adversary. The technology needed to effectively observe submarines was not developed during World War I. All of these limitations combined to make a challenging and tedious mission almost futile. The 1st Aeronautic Company conducted anti-submarine patrols for more than a year and saw little more than local fishing boats, an occasional American sub-marine, American ships that came to resupply the outpost at San Miguel, and floating drums that became detached from anti-submarine nets.[65]

With more than a year deployed the only accomplishment the aviators of the 1st Aeronautic Company achieved was an increase in flight hours. As seemingly futile as the

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[64]Johnson, 14.

[65]War Diary: First Marine Aeronautic Company, June-July 1918, USMC Archives, Gray Marine Corps Research Center, Quantico, VA, lgdata.s3-website-us-east-1.amazon.com/docs/2215/44970/1st_Aeronautic_July_1918.pdf (accessed October 16, 2012), 6-62.

experience must have been it provided crucial lessons learned which were of great value to the future of Marine Corps aviation. The mission in the Azores showed the limited role that sea-planes could play in supporting Marines in an advanced base operations. Land based aircraft were not limited by sea state conditions and could be used both inland and near the coast, but sea-planes were limited to only operating from the water. Second, the amount of time and resources required to conduct anti-submarine operations was significant and in the Azores the Marines had little to gain by conducting this mission. One could argue that other than relaying the location of a submarine to a ship that is nearby at the time of observation, the Marines had little ability to do anything more than harass any submarine that might be spotted. Lastly, aviation utilized for defensive purposes in support of advanced base operations seemed to have little to no effect on enemy submarines. It was apparent that aviation in support of advanced base operations was a greater benefit in an offensive role than a defensive one.

While the 1st Aeronautic Company was deployed in the Azores the 1st Marine Aviation Force was consolidated in Miami and subsequently deployed to France. By the time the Marine aviators arrived in France there were only two months remaining before the announcement of the armistice. However, in those two months the 1st Marine Aviation Force gained a significant amount of experience and shaped the expectations of aviation in support of an expeditionary or advanced base force. On September 28, 1918, while flying with a British Squadron 1st Lieutenant Evrett S. Brewer and Gunnery Sergeant Harry B. Wersheiner recorded the first air to air engagement for the Marines. The tandem shot down a German fighter in a dog fight over Courtmarke, Belgium. The engagement revealed the potential to defend ground forces from enemy air craft that

possessed a significant threat to ground forces. By attacking enemy aviation before it arrived over ground forces Marine aviation could provide force protection to a force vulnerable to attack from the air.

Another significant first for Marines was the pioneering of aerial resupply. For two days in early October 1918, two Marine aircrews, still flying British aircraft, conducted the first resupply by airplane to a French infantry regiment which had been isolated by mud and subsequently surrounded by the Germans near the town of Stadenburg, Belgium. Captain Francis P. Mulcahy and Gunnery Sergeant Thomas L. McCullough, as well as Captain Robert S. Lytle and his observer Gunnery Sergeant Amil Wiman flew through heavy German fire to drop over 2,600 pounds of food and supplies to the isolated French.[66] In doing so Marine aviators displayed the ability to sustain a force without ground resupply routes. This development would later play a key role in expeditionary operations as well as other types of advanced base operations.

Finally on October 14, 1918, the 1st Marine Aviation Force possessed its own aircraft and flew its first mission as a Marine aviation unit. Captain Robert S. Lytle led the mission to cripple the German held railroad yards in Theilt, Belgium. The mission was conducted to degrade the German Army's ability to sustain its forces on the Western Front. Captain Lytle and four other Marine aviators dropped 2,218 pounds of bombs on the railroad yard.[67] These early bombing missions were indicative of one of the primary functions of Marine aviation to provide offensive fires in support of advanced base or expeditionary forces. Over the next month the Marines conducted a total of fourteen

[66]Johnson, 21; Cunningham, "The Value of Aviation," 226.

[67]Johnson, 24.

bombing raids on targets ranging from rail yards to supply dumbs and other enemy airfields.[68] Another lesson learned from the Marine aviation's early experience was the potential effectiveness of bombs on concentrations of enemy forces. After World War I Major Alfred Cunningham recounted that the Marine aviators destroyed a troop train, killing sixty officers and 300 men.[69] Although, this has never been confirmed, it does reveal the emergence of the belief that aircraft can cause immense damage on enemy formations with little loss to Marine forces, a capability that would be of great use to a light force conducting advanced base operations.

In two short months during World War I, the 1st Aviation Force pioneered the way for future use of aviation in support of advanced base operations. In stark contrast the 1st Marine Aeronautic Company showed the ineffectiveness of a sea plane force to provide any significant benefit to the advanced base force. The entire Marine aviation experience revealed the importance of Marine aviation units to provide a range of functions such as logistical support and offensive air support, more specifically bombing and air to air defense, while the 1st Aeronautic Company showed the futility of a Marine aviation unit assigned to perform a single specific task. Clearly the experience of the 1st Marine Aviation Force proved that what little aviation the Marine Corps had was best used to support ground forces rather than carry out the Navy's tasking. The advanced base force would have greater benefit from the use of its own aviation and that was truly a better advantage to the Navy.

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[68]Cunningham, "The Value of Aviation," 226.

[69]Ibid., 225.

The experience of the 1st Marine Aviation Force in World War I also serves as a catalyst for Major Cunningham, who was the defacto Marine aviation head, to align more with Major General Barnett's view on the role of Marine aviation. His views recorded in "The Value of Aviation" article published in September of 1920 in the *Marine Corps Gazette*, revealed his shift in opinion about the proper use for Marine aviation, which was likely due to experience and perhaps a desire to save face after testifying on behalf of the Navy's position to the Navy General Board in 1918.

Many things nearly went wrong for Marine aviation during World War I. Had it not been for the British Royal Air Force and the arrival of aircraft in mid-October 1918 the Marines might have missed the war in France altogether. However, instead the month of experience with the 218th Squadron and the month of flying Marine aircraft in support of British and French ground forces became the foundation for aviation support in the Marine Corps. Although Marine aviators made incredible strides demonstrating the usefulness of aviation in support of ground forces, the lack of a command and control structure connecting Marine aviation to Marine ground forces was a glaring deficiency. It became blindingly obvious that without a command structure which would integrate aviation with Marine ground units, Marine aviation would not be able to deploy in support of advanced base forces or expeditionary forces in future operations.

Essentially, the 4th Marine Brigade and the 1st Marine Aviation Force had completely different experiences during World War I and the issue internal to the Marines was that Marine aviation, to many Marines, was still relatively unproven. In 1920 Major Cunningham discussed the need for Marine aviators to still prove themselves to the ground based force. As important as World War I was to providing the foundation

of Marine aviation functions, the Corps would have to wait six more years to finally integrate Marine aviation with the Marines on the ground.

CHAPTER 3

INTER-WAR PERIOD

Amphibious Development and Aviation Integration

The United States' intervention which aided in turning the tide of World War I solidified the country as a major player on the stage of world affairs. Although World War I had served as an impetus for unprecedented growth of the Marine Corps and its aviation element it was a significant distraction from the advanced base operations concept which envisioned Marine aviators serving alongside their infantry brethren. The Corps had used nearly all of its resources in order to provide a significant contribution to the war effort. The 4th Marine Brigade performed effectively during the later stages of the war and built quite a reputation for the Corps. The Marine aviators also performed well, receiving twenty five decorations for bravery including two Medals of Honor in the short two and half months the 1st Marine Aviation Force was deployed to France.[70]

Unfortunately, Marine aviators who came home from France did not share the same publicity earned by the Marines of the 4th Brigade. The Marine aviator's experiences were much more closely linked to those of the British and French in northern France. As a result, the postwar Marine Corps ground forces and their aviator counterparts possessed little solidarity due to a lack of common battle field experiences between them.[71] However, during the inter-war period the new Commandant, Major General John A. Lejeune sought to align the Marine Corps with the Navy's War Plan

[70]Ibid., 226.

[71]Vernon E. MeGee, General U. S. Marine Corps, "The Evolution of Marine Aviation," *Marine Corps Gazette* 49, no. 8 (August 1965): 22.

Orange which focused his efforts on reorienting the Corps on future amphibious operations. His vision, heavily influenced by War Plan Orange and his experience in World War I, created an increased need for aviation and shaped the environment for the foundational integration of aviation with the first permanent standing expeditionary forces. This refined the role of aviation in support of amphibious operations.

The end of World War I resulted in a weakened position for the United States in the Pacific region. Japan entered the war and used the opportunity to increase its position in the Pacific by seizing the German held Micronesian Island chains, the Marshalls, the Carolines, and the Marianas. These three island chains lay on the main route between the U.S., China and the Philippines, where the U.S. had significant national interests. With its new island bases, Japanese naval forces combined with the use of island airfields posed a direct threat to the American logistic bases located on Guam, Midway and Wake Island and threatened to cut off the United States from its territory, the Philippines. This vulnerability in the Pacific gave the U.S. increased concern to the previous beliefs of Admiral Dewey about an inevitable war with Japan over interests in the Pacific.[72] Growing concern over Japan led the U.S. Navy to review its strategic responsibilities. The result was to develop a U.S. fleet which was "second to none" in order to curb British influence and deter the most likely enemy in the Pacific, Japan.[73]

By 1919 the U.S. Navy began developing several contingency plans to address the Navy's responsibilities in securing the strategic interests of the United States. Much of the planning centered on Japan, which was perceived to be the greatest threat to the

[72]Dewey, General Board 1900, 1.

[73]Millett, *Semper Fidelis*, 319.

United States. Early contingency planners agreed that the fleet would have to fight its way across the Pacific before it could relieve the Philippines and then defeat Japan by blocking all trade routes to the Japanese main islands. A campaign of this type would require forces to seize Japanese bases and defend U.S. advanced bases in order to establish and maintain support for U.S. Navy fleet operations.[74]

The Navy's operational plan for a possible war with Japan was named War Plan Orange and by 1920 Commandant George Barnett was warned by the Chief of Naval Operations, Robert E. Coontz, that War Plan Orange would determine all of the Navy's plans and programs for the future. Coontz recommended that the Marine Corps plan to provide a West Coast Expeditionary Force of six thousand to eight thousand men capable of conducting a campaign against the Marshall and Caroline Islands.[75] However, Commandant Barnett concluded that, based on the size of the Corps, which was only 14,849, there was not a sufficient number of Marines to dedicate personnel to advanced base operations and that the amphibious assault mission did not supersede the Corp's traditional peacetime functions. As a result of Barnett's position, by 1920 the advanced base force had virtually disappeared.[76] However, On June 20, 1920 Major General Lejeune was appointed as Commandant of the Marine Corps and the direction of the

[74]Ibid., 320.

[75]Ibid.

[76]Ibid., 322.

Marine Corps began to change in order to align itself with the Navy's plans for a war in the Pacific.[77]

The Navy's vision for a war with Japan in the Pacific turned out to be prophetically accurate. Even though the U.S. military was still compiling lessons learned about the use of aviation in World War I, it was apparent that in future wars aviation would play a key role. The Navy planners who developed War Plan Orange made several key assumptions about how the Japanese military would initiate a war with the United States. The Joint Board assumed that a war in the Pacific might begin with an air attack on Pearl Harbor followed by swift action of Japanese naval and army forces to overrun U.S. military instillations in the Philippines and Guam. The U.S. would have to respond by mobilizing nearly two million soldiers and sailors. In order to increase the response time, the Navy would have to position the Pacific fleet at Pearl Harbor, and then advanced across the Pacific by seizing advanced bases to sustain the fleet as it moved toward Japan. Finally, the Navy would engage and defeat the Japanese fleet and block all resources needed for the island nation to sustain its economy. If necessary the Navy would also mount an aerial offensive against industrial and military targets.[78]

By 1923, War Plan Orange outlined the requirements for success in a possible war with Japan. In order to defeat Japan the American military would have to: (1) regain and retain Manila Bay; (2) occupy or control all of the harbors associated with the Marshalls, Carolines and Marianas; (3) control the vital sea lines of communication for Japan;

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[77]John A. Lejeune, Major General, U. S. Marine Corps, *The Reminiscences of a Marine* (1930, repr., Quantico,VA: The Marine Corps Association, 1979), 460.

[78]Steven T. Ross, Department of Strategy Naval War College, *American War Plans 1919-1941* (New York: Garland Publishing, 1992), xi.

(4) conduct offensive sea and air operations against Japanese naval forces and economic life; and (5) conduct further actions as needed to compel Japanese submission.[79] Nearly all of the requirements involved the use of a ground force capable of conducting amphibious assaults. The need for a force capable of conducting amphibious operations was a significant gap in U.S. military capabilities at the time. The Marine Corps under the leadership of Major General Lejeune was all too eager to fill it.

At this time amphibious operations were not viewed favorably by most in the military, largely due to the overwhelming failure by the British at Gallipoli just a few years earlier. However, Lejeune believed that amphibious assault operations presented a real opportunity for the Marine Corps in fulfilling its traditional role of supporting the fleet, but with different methods. He proved his commitment to supporting the fleet in 1921 by assigning Major Holland M. Smith to the Navy War Plans Division and Colonel Ben H. Fuller to the planning staff at the Naval War College in order to participate in the Navy's ongoing development of War Plan Orange. The placement of these officers ensured that Marines were aligned to the Navy's strategic goals in the Pacific.[80] Major General Lejeune further aligned the Marine Corps to War Plan Orange by assigning his former adjutant of the 4th Brigade, Major Earl H. Ellis, to study the possible problems associated with a war with Japan.[81]

Prior to service in World War I Major "Pete" Ellis was assigned to the Naval War College from 1911 until 1913, first as a student followed by service as a faculty member.

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[79]Ibid., 5.

[80]Millett, *Semper Fidelis*, 325.

[81]Ibid.

During his time at the Naval War College he participated in the initial development of War Plan Orange which made him the ideal candidate to conduct the research which became the first tangible step for the Marine Corps' development of amphibious operations.[82] Ellis' study focused on base defense in the Pacific. He foresaw that a Pacific war would be determined first by base seizure followed by base defense. Ellis presumed that bases defended by the Japanese would be difficult to capture but urged the Marine Corps to begin preparations to conduct opposed landings and attacks on defended island bases as soon as possible.[83]

Ellis's detailed study of the Micronesian Islands led to several planning assumptions that the Marine Corps used in developing its future organizational structure. These assumptions also guided the prescribed functions of supporting arms, especially aviation. In a more detailed analysis, Ellis pointed out that the Japanese occupation of the Marshall, Caroline and Pelew Islands provided them with a series of bases capable of flanking any line of communications throughout the Pacific for 2,300 miles.[84] He also noted that the Japanese, by virtue of their geography as an island nation were forced to become very good at offensive ship-to-shore operations. Their success in conducting offensive ship-to-shore operations translated well in their ability to defend island bases

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[82]U. S. Marine Corps, 712H Operation Plan, *Advanced Base Operations in Micronesia 1921* (Washington, DC: Government Printing Office, 1992), v, vi.

[83]Millett, *Semper Fidelis,* 325.

[84]U. S. Marine Corps, *Advanced Base Operations,* 29.

given the fact that by the geographic position of the Japanese they would very likely have ample time to prepare defensive positions.[85]

Ellis' study combined with the assumptions of War Plan Orange changed the focus of advanced base operations from a defensively oriented mission into a more offensive operation. Although offensive amphibious actions appeared to be quite daunting Ellis believed that the success of amphibious operations would depend first on skilled ship-to-shore operations combined with overwhelming naval gunfire and aerial attacks.[86] Although the aviation of his time possessed only limited capability to provide aerial bombardment, Ellis envisioned that this would be necessary to augment naval bombardment as Marines came ashore on an opposed beach. On July 23, 1921 Major General Lejeune approved Ellis' study and ordered that the Marine Corps from that time forward use 712H Operation Plan, *Advanced Base Operations in Micronesia 1921*, as a guide for war planning, field exercises, equipment development and procurement, as well as officer education.[87] Lejeune's directive quickly permeated throughout the Corps and Marine aviators soon began to orient aircraft capabilities and tactics in order to make Marine aviation more relevant in support of the advanced base force which was subsequently reorganized by the Commandant into East and West Coast Expeditionary forces.

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[85]Ibid., 38.

[86]U. S. Marine Corps, *Advanced Base Operations*, 29; Millett, *Semper Fidelis*, 325-326.

[87]Millett, *Semper Fidelis*, 326.

When Major General Lejeune assumed the position of Commandant he determined to improve the Corps' standing with the members of Congress (which some believed his predecessor Commandant Barnett had degraded to some degree) in order to secure resources to build an effective expeditionary force.[88] One of his primary goals in obtaining more resources from Congress was to increase the Corps' aviation assets in order to effectively support the expeditionary force. In his autobiography, *Reminiscences of a Marine*, he stated "I fought constantly to maintain its [the Marine Corps'] organization, its functions and its semi-independent status; to prevent an undue reduction of its personnel; to secure sufficient appropriations to keep it in an efficient condition and to . . . retain its status as the Navy's expeditionary force in peace and in war; to build up Marine Corps aviation as a vitally important element of the expeditionary force."[89] His strong support of the usefulness of aviation to the establishment of the expeditionary force resulted in a number of reforms in the organization of Marine aviation.

Lejeune's reforms in the organization of Marine aviation started at the top with Headquarters Marine Corps. His efforts to incorporate aviation with the rest of the Corps started with the removal of Major Alfred Cunningham as the head of Marine aviation along with the placement of Lieutenant Colonel Thomas C. Turner, the new head of Marine aviation, under the Operations and Training Division.[90] This reorganization fostered a closer relationship between Marine aviation and the rest of the Corps. Unfortunately the connection between aviation and its ground counterparts didn't occur

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[88]Ibid., 322.

[89]Lejeune, *Reminiscences of a Marine*, 473-474.

[90]Millet, *Semper Fidelis*, 333.

immediately, but it laid the foundation for at least initial collaboration about training priorities and prevented Marine aviation from being disconnected from amphibious operational development.[91]

There are varying explanations related to Cunningham's removal. One explanation was that Cunningham was simply junior to Turner who had entered the Marine Corps prior to Cunningham and then requested flying duty with the Army Signal Corps and subsequently returned to the Corps after World War I.[92] While it is true that Turner outranked Cunningham, Cunningham was a huge proponent for naval aviation and his stance while being interviewed by the Navy Board about Marine aviators technically being part of the Navy's allocation of aviation more than likely burned bridges in the Marine Corps.[93] All though he changed his tune in the 1920s Major General Lejeune was more than likely looking for someone who fully embraced supporting the expeditionary force and Cunningham's track record aligned him more with the Navy's position.

During Lejeune's tenure as commandant, Lieutenant Colonel Turner served two tours as the head of the aviation section. His time was interrupted while he commanded the aviation squadron serving in China. His first assignment as head of Marine aviation was from 1921-1925. Upon his return from China in 1929, he continued to serve as head of aviation until his death in an accident in 1931. While Turner commanded Fighting Squadron Three in China, Major E. H. Brainard served as the head of the aviation section

[91]Johnson, 30.

[92]Ibid.

[93]Cunningham, Testimony for the General Board, 1-18.

from 1925-1929. Through the combined efforts of Brainard and Turner the Marine aviation force grew to over 100 pilots and 1,000 men making up twelve squadrons spread out between the east and west coast by the early 1930s.[94] This was a significant accomplishment given the resource-constrained environment of the post-World War I era.

Shortly after Lejeune integrated aviation at Headquarters Marine Corps he reorganized the entire Marine Corps, renaming the advanced base force located in Quantico as the East Coast Expeditionary Force. The change was certainly not in name only. For the first time Lejeune permanently structured an expeditionary unit with all of its supporting elements. The East Coast Expeditionary Force consisted of infantry of the 5th and 6th Regiments, the artillery of the 10th Regiment along with the aviation squadrons already located in Quantico. By 1921 the newly formed expeditionary force began conducting annual maneuvers, some of which were held in Gettysburg, Pennsylvania and were attended by politicians from Washington as well as representatives from the Army and Navy.[95] Lejeune was eager to show off the capabilities and structure of the expeditionary force which was a novelty at the time. This exposure granted the Marine Corps many opportunities during the interwar period to hone its skills as the government called on the services of this uniquely structured force to protect American interests in the Dominican Republic, Haiti, Nicaragua, and China. These experiences also served as justification to not decrease the already limited funding.

[94]Millett, *Semper Fidelis*, 333.

[95]Ibid., 323.

While establishing the East Coast Expeditionary Force Lejeune also approved an air table of organization which finally gave Marine aviation a standard organization rather than the primarily mission-based organization used during World War I. Under the new table of organization the aviation units on the east coast were collectively brought under command of the "wings." Each wing had two to four squadrons while each squadron would consist of two flights. The east coast wing had four squadrons. The 1st Squadron commanded flights A and B which were assigned to service in the Dominican Republic in support of the expeditionary brigade sent in 1919. The 2nd and 3d Squadrons made up of flights C, D, E, and F respectively were stationed in Quantico, while the 4th Squadron, flights G and H were based in Port au Prince, Haiti in support of the 1st Provisional Brigade. Finally the detachment from Parris Island, South Carolina was renamed flight L and directed to prepare to move to Guam.[96] Figure 2 portrays the organization instituted by Lejeune and shows the contrast between the initial attempt at aviation organization shown in figure 1.

[96]Johnson, 32.

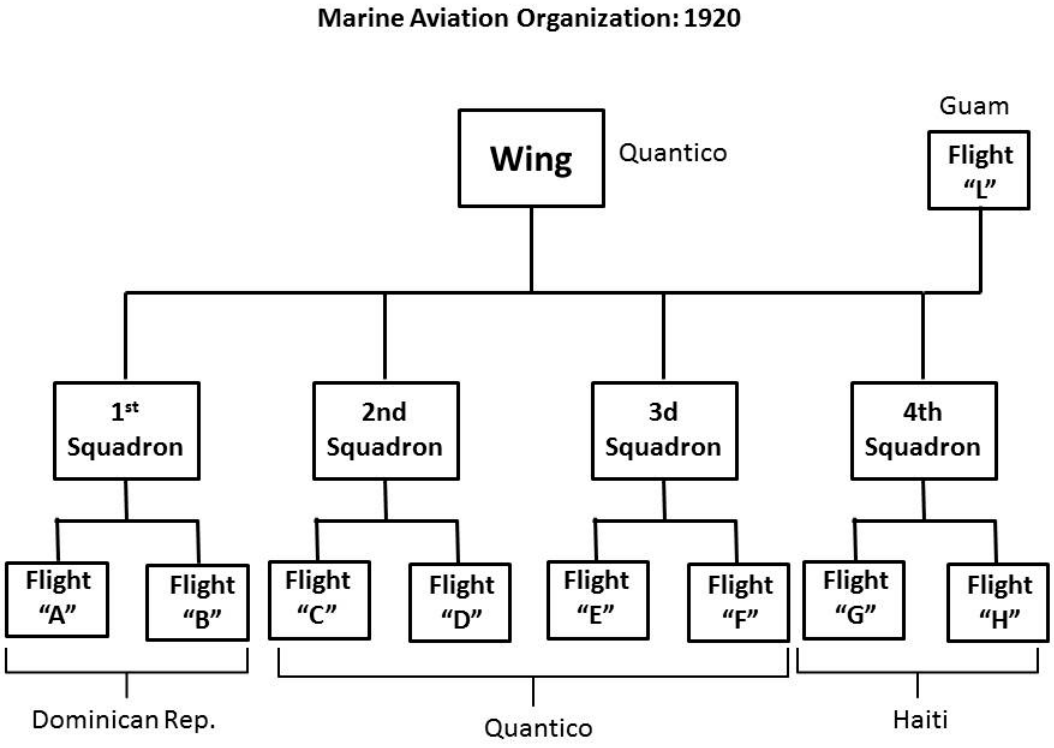

Figure 5. Marine Aviation Organization: 1920

Source: Created by author.

Throughout the 1920s Marine aviation underwent several minor changes to the original expeditionary force structure. In 1922 the aviation units in Quantico were re-designated as the 1st Aviation Group and the squadrons were reorganized from four squadrons into three specialized squadrons. One squadron consisted of observation aircraft, another consisted of fighter aircraft, and the last squadron was made up of kite balloons primarily used for reconnaissance and observation of artillery. The flights left over from the 4th Squadron were incorporated into the three new squadrons so the standard number of flights per squadron was increased from two to three. The flights

were renamed divisions in order to align to the naming convention of the Navy. However, shortages of personnel and equipment allowed most of the squadrons to only man one or two of the three divisions.[97] The logic behind maintaining three divisions per squadron was based on the need to expand rapidly in case of an emergency.[98] With the structure already in place Marine aviation could respond much more rapidly than it did in World War I, when the 4th Marine Brigade was able to deploy almost an entire year before the 1st Marine Aviation Force.

Under the structure introduced in 1922 a squadron actually consisted of one division of 75 enlisted men and ten officers who maintained and operated six active aircraft with three aircraft held in reserve. This small amount of men and equipment represented a third of the templated capacity for a fully formed squadron. For each squadron the manned division formed the nucleus around which reserves and newly trained pilots could fall in on in a time of war. A fully formed war time squadron would consist of eighteen active aircraft with nine reserves plus two additional aircraft for the headquarters and one transport.[99] This skeletal structure, although not desirable, represented a significant application of lessons learned by the Marine Corps challenging experience of trying to quickly mobilize for World War I. In an effort to make the

[97]Ibid., 32.

[98]Edwin H. Brainard, Major, U. S. Marine Corps, "Marine Aviation–A Lecture," *Marine Corps Gazette* 11, no. 3 (September 1926): 192.

[99]Ibid.

skeletal structure even more effective Major Brainard pushed to reinstate and expand the Marine aviation reserves.[100]

For all of the force structure put in place during the early 1920s Marine aviation still lacked sufficient ground force personnel to effectively run the newly built airfield in Quantico. In 1924 when the Marines withdrew from the Dominican Republic, many of the Marines from what used to be the 1st Squadron formed Service Squadron 1 which was attached to the 1st Aviation Group at Quantico. This appears to be the first squadron designated for the sole purpose of supporting the flying squadrons and it consisted of truck drivers, riggers, mechanics and other ground crew specialists not resident in the traditional flying squadrons.[101]

In 1924, four years after the establishment of the West Coast Expeditionary Force, Marine aviation finally joined its ranks. Portions of the 1st Squadron formerly stationed in the Dominican Republic went to Quantico to form Service Squadron 1. The rest of Observation Squadron I, as it was now known, boarded ships with their aircraft and sailed for San Diego. There it formed the base aviation element for the 2nd Aviation Group which was established in 1925. Once formed, the 2nd Aviation Group consisted of one observation squadron, one fighting squadron and one headquarters squadron.[102] Although the aviation assets dedicated to the West Coast Expeditionary Force were somewhat less than that of the East Coast Expeditionary Force, the foundational organization for

[100]Johnson, 31.

[101]Ibid., 32.

[102]Ibid., 35.

integration with the ground forces had finally taken shape throughout the entire Marine Corps.

While the organizational structure of Marine aviation was completely integrated with the East and West Coast Expeditionary Forces the command relationship still remained somewhat ambiguous. In August of 1926 Headquarters Marine Corps re-designated the 1st and 2nd Aviation Groups as Aircraft Squadrons East and West Coast Expeditionary Forces. The name change was only symbolic of the fact the aviation groups in both Quantico and San Diego were now under the direct supervision of the commanders of their respective expeditionary forces. After this the commander of either expeditionary force was now completely responsible for all training, administration and operations of not only the ground units but the aviation units as well.[103]

There were two aviation elements that were an exception to the East and West Coast aviation unit organization. The 4th Squadron which remained in Haiti throughout the 1920's was renamed Observation Squadron 2 and continued to support the 1st Provisional Brigade until its return in 1934.[104] Additionally, Scouting Squadron 1, formerly Flight L from Parris Island, South Carolina, remained in Guam until 1931.[105] The Marine aviation units which would deploy to China and Nicaragua later in the 1920s were drawn from the East and West Coast Expeditionary unit with whom they trained. The organizational structure implemented by Lejeune was based on his vision of how to

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[103]Ibid.

[104]Marine Corps Press Release, Extracts from the Report of the Major General Commandant for the Fiscal Year 1935, December 13, 1935, Marine Corps Archives, Gray Research Center, Quantico, Virginia, 1.

[105]Boggs, "Marine Aviation Origin and Growth," 74.

best fill the requirements put forth by War Plan Orange. His foundational view of the possibilities of aviation supporting the infantry shaped the entire foundation of Marine organizational structure and command relationships throughout the inter-war period and beyond. Without his vision and that of some of his key staff members like Major Ellis the organizational and command structure of Marine aviation in relation to the rest of the Corps might have looked very different.

While the Marine Corps reorganized for its potential role as an amphibious assault force, Lejeune sought to gain official designation for the emerging amphibious force requirement from the Joint Board of the Army and Navy. Major General Lejeune was a traditionalist in many ways and at the same time a visionary. The previous experience in World War I displayed the Army's opposition to allowing the Marines to deploy with its own supporting elements such as aviation and artillery. This lesson aided the Commandant in seeking formal recognition of the Corps' primary war time mission in an effort to justify its unique organization. He also wanted to ensure the proper employment of the Corps to support the Fleet as a semi-independent service not just a force provider for the Army.[106] In seeking out this recognition, he did not abandon the Corps' traditional missions, such as serving alongside the Army in a land war; or performing functions such as expeditionary deployments as needed in places like Central America, China and the Caribbean. However, he stressed that the wartime mission for the Marine Corps must be to accompany the Fleet for operations ashore in support of maritime objectives as the primary justification for the existence of the Marines.[107]

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[106]Lejeune *Reminiscences of a Marine*, 473-474.

[107]Millett, *Semper Fidelis*, 325.

Throughout the 1920s Lejeune encouraged the Navy Department to make the revision to the Joint Action of the Army and Navy document. He sought out a defined list of responsibilities of each of the armed services. He did not seek to change the Marine Corps' traditional responsibilities but stated that the Marines should be solely responsible for the initial seizure and immediate defense of advanced bases until relieved by the Army.[108] By 1927 the final version of the Joint Action of the Army and Navy was published and the Marines were officially tasked with responsibility to seize and defend advanced bases as needed for the essential prosecution of a naval campaign.[109]

The official recognition of the primary war time role of the Marine Corps came three years after the Corps had completely reorganized into the East and West Coast Expeditionary forces. Although Lejeune changed the organizational structure of the Corps primarily in response to the need for amphibious assault, the expeditionary force structure could be applied to a large variety of tasks. At the time of the official recognition from the Joint Board of the Army and Navy for the advanced base seizure mission the Marines were applying the new organizational structure with great effect in the Dominican Republic, Haiti, China, and Nicaragua. The successful application of the newly formed expeditionary forces likely influenced the Joint Board in recognizing the possibilities of successfully accomplishing the Marine Corps' advanced base function with its expeditionary forces.

During this formative period for the Marines, the influence of Major Ellis's study on amphibious operations in Micronesia began to shape the functions of Marine aviation

[108]Ibid.

[109]Ibid., 328.

which was still relatively primitive but developing rapidly. During the 1920s there was still very little evidence of any concrete formation of aviation doctrine as most Marines, including the aviators, had limited exposure to its tactical application in support of an amphibious landing force. In spite of this lack of exposure Ellis still outlined potential uses of aviation in support of amphibious operations. He stated in his study, *Advanced Base Operations in Micronesia 1921* that aerial support for amphibious operations should include reconnaissance of hostile defenses prior to landing, pursuit of enemy planes, and observation and strafing of enemy positions after Marines had been established on the beach. He believed that the observation of enemy counter-attack forces and the identification of machine gun positions would also be an essential benefit to the landing force during the initial fighting.[110] In addition, Ellis added that Marine aviation would be of great importance to help maintain the defense of the advanced base once it had been seized. It was his opinion that Marines flying land machines based on the island would be most effective and responsive to help maintain security for recently seized bases. He also urged that the Marines not rely on carrier based aviation due to the limited numbers of carriers and their perceived lack of dependability.

By 1926, only three years after *Advanced Base Operations in Micronesia 1921* was published, the influence of Ellis's study on Marine aviation became apparent. Major Brainard, the head of aviation at the time, delivered a lecture to student Marine officers on the rudimentary but current doctrine of Marine aviation. Brainard's lecture outlined three basic functions of aviation. The first mission of Marine aviators was to provide observation which included both spotting for artillery and aerial photography. The second

[110]U. S. Marine Corps, *Advanced Base Operations in Micronesia*, 45.

mission was to provide light bombardment on deeper targets presumably to attrite or deter enemy forces behind the front lines. The third mission was fighting aviation. At the time Brainard defined "fighting aviation" as air to air combat used to control the skies over Marine areas of operation, which would be of great benefit in preserving the force. Also included in fighting aviation was low altitude bombing and strafing of enemy ground troops.[111]

Major Brainard's lecture also showed the increasing link between Marine aviators and their infantry counterparts which arguably did not exist just six years prior. Brainard made it very clear that Marine aviation had no desire to be like the aviators in the Army Air Service who aspired to be separated from the rest of the Army and become an independent service. To the contrary, Brainard believed that "to obtain maximum results, aviation and the troops with which it operated with should be closely associated and know each other, as well as have a thorough knowledge of each other's work."[112]

Brainard also referred collectively to the Marine Corps training and war plans being focused on seizure of advanced base forces and that aviation assets would be effective in providing information, protection from air attack and assistance in holding the base after its seizure. At the time of the lecture it is apparent that close air support had not yet been implemented but the experience over the next few years would change the concept of support to the landing force. Furthermore, Brainard, like Ellis, warned

[111]Johnson, 35; Brainard, "Marine Aviation–A Lecture," 192.

[112]Brainard, "Marine Aviation–A Lecture," 192.

Marines not to depend on carrier based aviation from the Navy as the Navy would be too occupied with other issues and would be too busy to support the Marines directly.[113]

While the Marines were in the early stages of developing amphibious doctrine, a significant distraction arose. Almost immediately after returning from World War I the Marines began deploying brigades to turbulent areas in the Caribbean, Central America and China in order to protect American interests abroad. The first of these long term deployments came in February 1919 when the Corps sent an expeditionary brigade to the Dominican Republic and the 1st Provisional Brigade to Haiti. Along with these two brigades the Marine aviators gathered miscellaneous aircraft, personnel, and parts left over from the war and formed two aviation squadrons capable of deploying for the first time along with the infantry brigades.[114]

In the initial stages of integration overseas the Marine aviators had very humble means with which to support their infantry brethren. However, it was certainly a vital initial effort to integrate the two forces which to this point had operated autonomously. The 1st Aviation Squadron, as it became known after the reorganization of East Coast Expeditionary Force, deployed with six "Jennies" (JN-4s) in support of the expeditionary brigade and was commanded by Captain Walter E. McCaughty. Upon arrival in the Dominican Republic the squadron began operations out of San Pedro de Macrois. Shortly after the 1st Aviation Squadron began operations in the Dominican Republic, the 4th Squadron under the command of Captain Harvey B. Mims, established an airfield at Port au Prince Haiti in March of the same year. The 4th Squadron also consisted of six

[113]Ibid.

[114]MeGee, "Evolution of Marine Aviation," 23.

"Jennies" (JN-4s) but additionally brought six H5-2Ls. The 1st and the 4th Squadrons remained with their ground counterparts until the brigades redeployed from the Dominican Republic 1924 and Haiti in 1934.[115]

Figure 6. JN-4

Source: National Museum of the Air Force, Wright-Patterson AFB, "Signal Corps," posted February 4, 2013, http://www.nationalmuseum.af.mil/photos/media_search.asp?q=Jn-4&btnG.x=0&btnG.y=0 (accessed May 22, 2013).

The reality of the initial deployment of the 1st and 4th Squadrons was that their addition to the Marine Brigades was largely an afterthought. The aviators were only an ad hoc addition and were not initially truly integrated. The squadrons lacked clear guidance as to their mission in supporting the infantry and only provided a meager capability to say

[115]Johnson, 49-51.

the least. However, the opportunity to demonstrate the capability of Marine aircraft in support of Marine infantry was created and the Marine aviators took full advantage of it.[116] The majority of the missions flown by 1st and the 4th were quite routine. In both countries Marine aviators mostly assisted their ground counterparts with carrying supplies, mail, and passengers to remote outposts; as well as conducting aerial reconnaissance and mapping. On occasion the aviators provided air medical evacuation for Marines wounded while fighting rebel forces.[117]

Although the majority of services provided by the aircraft seem to be relatively routine, these routine capabilities had not previously existed. The aircraft simplified operations which would have been a significant drain on manpower just a year prior. Aviation made logistical support much easier and allowed the Marines to operate over a larger area. It did not eliminate the need for ground resupply but it connected Marines in far flung outpost in a manner that was not previously possible.[118]

While most of the missions for 1st and the 4th Squadrons were fairly benign in nature, there were some limited occasions in which Marine aviators displayed their usefulness to the infantry in combat situations. Although not decisive due to a lack of development in air-to-ground communication, Marine aviators did assist ground forces by bombing and strafing of local insurgent groups called “Cacos” in Haiti and “Bandits” in Santo Domingo. In addition to actively engaging the enemy Marine aircraft guided the

[116]Ibid., 49.

[117]Ibid., 53.

[118]MeGee, “Evolution of Marine Aviation,” 23.

Marines on the ground to the location of enemy formations.[119] Locating the enemy by air proved to be quite useful when a small number of Marines were responsible for large swaths of territory.

The significance of these early experiences between integrated aviation and ground forces did not lie with the tangible accomplishments of the Marine aviators, but rather with the rapport they established with the ground forces for the first time. Marine aviators and Marine infantry which had no common experience in World War I now had extended time in which they served with one another. The close association which was built by delivering passengers and mail and providing reconnaissance began to endear aviation to the ground forces. Marines quickly became accustomed to having aviation serving closely with them and it wasn't long before ground commanders could not foresee operating without their aviator counterparts. It was the relationship built in Dominican Republic and the early years in Haiti which would characterize the Corps from this point forward and lay the ground work for the cementing of the relationship in Nicaragua.[120]

For the Marines who remained in the U.S. conducting peace time training the integration was not achieved as quickly. The Marine Corps initially struggled with the integration of its newly formed Expeditionary Forces. The lack of shared experience led to independent planning largely due to a lack of familiarity between the two elements.[121] However, as lessons learned from the Dominican Republic and Haiti began to make their

[119]Johnson, 53.

[120]MeGee, "Evolution of Marine Aviation," 23.

[121]Ibid., 24.

way back to Quantico the two squadrons remaining there, the 2nd and the 3d, began integrating training which appeared to be influenced not only by emerging doctrine derived from *Advanced Base Operations in Micronesia: 1921* but from the experiences of the 1st and 4th Squadrons supporting Marines on the ground. The squadrons conducted annual bombing and machine gun exercises. The elements of the 1st Aviation Group in Quantico continued to practice artillery observation but more importantly, tested methods for air-ground communication and conducted significant amounts of aerial photography and mapping.[122]

In addition to the annual training and experimentation with air to ground communications, Lejeune implemented demonstrations of Marine Corps capabilities with a road march of the remaining East Coast Expeditionary Force from Quantico, Virginia to Gettysburg, Pennsylvania to conduct annual exercises. During this spectacular display of Marine capabilities in 1922, aircraft from the 1st Aviation Group, assigned to the East Coast Expeditionary Force, participated by carrying passengers and supplies to and from Gettysburg and maintained radio communications with the ground units during the march north. While in Gettysburg, the aircraft executed simulated attacks on targets assigned by the ground commander.[123] Although the communication between the ground and air was very rudimentary, it was quite advanced for its time and even though the simulated attacks could not even remotely be considered close air support, the interaction between aviation and the rest of the expeditionary force revealed a growing desire by the Marines to experiment with the capabilities of aircraft. These experiments at both home and

[122]Johnson, 42-47.

[123]Ibid., 47.

abroad would prove extremely influential in supporting the developing doctrine of amphibious operations, with aviation as a crucial player in its success or failure.

Perhaps one of the most important experiences of Marine aviation during the inter-war period was the experimentation with dive bombing. A few short months after establishing an airfield in Port au Prince a Lieutenant in the 4th Squadron identified the need for a more accurate method to effectively engage small groups of Cacos rebels. Lieutenant Lawson H. M. Sanderson began experimenting with the dive bombing technique. Prior to Sanderson's experiment the widely accepted method of bombing was done by the aviator positioned in the rear cockpit dropping a bomb by hand while viewing the target through a crude bombing sight. However, Sanderson oriented the plane into a forty five degree dive with the nose of the aircraft pointed at the target and released the bomb from the pilot's position at an altitude of 250 feet. His method took some time to be adopted but by the time the Marines were deployed to Nicaragua dive bombing became the standard technique used by the Marines. Although Sanderson did not use this technique in a close air support role he assisted in making it possible with the introduction of this new technique.[124]

Sanderson is credited with introducing dive bombing to the East Coast aviators by 1920 while the West Coast did not field the technique until 1923. In the 1920s the East and West Coast Expeditionary Forces might as well have been worlds apart. The West Coast Expeditionary Force was formed several years later and lacked the initial experience of those from Quantico deployed to the Dominican Republic and Haiti. However, in 1923 Major Ross Rowell was introduced to dive bombing while attending

[124]Ibid., 53.

and advanced aviation course taught by the Army. While attending the course he participated in dive bombing exercises directed by Major Lewis H. Brereton, an Army aviator. Major Rowell was impressed by the accuracy and immediately envisioned its use against small moving targets and believed that dive bombing would be of great use in guerilla warfare.[125]

After taking command of Observation Squadron 1 of the 2nd Aviation Group in San Diego, he further innovated the dive bombing technique by obtaining wing mounted bomb racks for the DH-4Bs from the army and began training his squadron on dive bombing. During air shows on the West Coast he demonstrated the technique for civilians and government officials. When the squadron deployed to Nicaragua they employed this new technique and equipment and achieved great results.[126]

With the significant experiments being conducted with air to ground communication and the implementation of dive bombing the little aviation element designated as Flight L from Parris Island, South Carolina which was sent to Guam could easily have been overlooked. However, the movement of Flight L to Guam marked the first involvement of Marine aviation in the Pacific. In 1921 this small aviation unit arrived in Sumay, Guam with only its aircraft. The Marines quickly set out to find a location for an airfield and proceeded to build an air field and a sea plane base to support the Navy's plan for expansion of naval bases in the Pacific. After building the base the Marines collected meteorological data until withdrawn in 1931. Although not very exciting, the weather data and air facilities that they built provided a significant

[125]Ibid.

[126]Ibid.

contribution to trans-Pacific aviation.[127] The humble beginnings of the Marine airfield later served as the Pan-American Airways Station and the Marine's quarters became the Pan-American Hotel. Essentially the Marines in Guam paved the way for passenger and cargo to fly from the west coast of the United States to the Philippines.

During the initial portion of the interwar period the Marine Corps under the leadership of Major General Lejeune, built the foundation for the future of amphibious operations. Although the East and West Coast Expeditionary Forces did not conduct amphibious operations during this time the experiences of aviation integrated with the ground forces built a familiarity which led to increased integration in Nicaragua. The lessons learned from the inter-war expeditionary deployments led to increased capabilities of aviation to support a smaller force. The experiences in Haiti and the Dominican Republic revealed the value of integrating Marine aviation to maximize the effectiveness of a smaller force.

[127]Ibid., 53.

CHAPTER 4

NICARAGUA

Aviation and Infantry United

The Marine Corps adapted rather quickly to the lessons learned from the Dominican Republic and Haiti. The flashes of aviation innovation developed in those locations led Marine aviators at home in Quantico, Virginia and in San Diego, California to continue developing tactics, techniques and procedures to more effectively support the ground element of the expeditionary forces. When the Marines were called upon to intervene in yet another unstable environment, Marine aviators were primed to exploit an opportunity to support the infantry in a rough and rugged environment. The conditions in Nicaragua, both geographically and militarily proved to be a unique recipe ideal for aviation support. The Marine aviators in Nicaragua displayed the ability to greatly enhance the combat effectiveness of a smaller force against an enemy with tactical and geographic advantages. This experience cemented the relationship between Marine aviation and the Marine Expeditionary Forces and served as a crucial influence in developing the *Tentative Landing Operations Manual.*

The success of Marine aviation in Nicaragua was enabled by a set of ideal conditions fostered by both the Marines and by unintended circumstances. In 1927 the Corps had been under the leadership of Major General Lejeune for more than seven years. As one of the first non-aviator officers to conduct an orientation flight in 1914, he became outspoken aviation enthusiast; he was convinced that aviation was of vital

importance to the success of the expeditionary forces.[128] His influence as an exceptional leader and visionary carried significant influence with many ground commanders. Therefore, if the Commandant was an aviation enthusiast others were bound to follow suit.[129]

Moreover, the recent experiences in the Dominican Republic, Haiti and China, led Marine aviators in Nicaragua to display an increased professional desire to support their infantry contemporaries. Additionally the ground force commanders from the Dominican Republic, Haiti and China developed a high opinion of the aviation units attached to the expeditionary brigades. When writing a letter to the Commandant in 1930 Major General Smedley Butler, Commander of the 3d Brigade stated: "I have always believed that had it not been for the splendidly efficient air force attached to the 3d Brigade in China, we would not have avoided bloodshed. The air force was of more value to me than a regiment."[130] Sentiments much like Major General Butler's were spreading throughout the Marine Corps. Opinions amongst influential senior leaders increased consideration for deliberate planning for aviation in support of the expeditionary brigades, such was the case with Nicaragua.

A third condition that paved the way for Marine aviator's success in Nicaragua was mountainous terrain covered with heavy vegetation. In addition, incredible amounts of rain which made dismounted operations against guerilla forces very difficult also increased the need for aviation. Although the Marines had the advantage of superior fire

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[128]Ibid., 4.

[129]Lejeune, *Reminiscences of a Marine*, 483.

[130]Boggs, "Marine-Aviation Origin and Growth," 74.

power, it was difficult to bring it to bear on an enemy that seemed nearly impossible to find. Also, the Marines did not possess adequate personnel to occupy large areas and therefore were forced to conduct long wearisome patrols trying to locate the enemy. Heavy rainfall combined with the mountainous terrain often made movement slow and tedious and limited the supplies Marines could carry. Marine aircraft became extremely valuable by aiding Marines on the ground with finding the enemy and saving countless hours of fruitless and tiring reconnaissance patrolling and delivering supplies to patrols and bases.[131]

Lastly, aircraft capabilities (or the lack thereof) made Marine aircraft ideal for providing the first recorded instance of close air support to troops on the ground. The aircraft the Marines possessed at the time flew low and relatively slow which made visual communication with the Marines on the ground much easier. Visual communication was absolutely essential since the Marines lacked any sort of radio communication with the ground forces. The slow moving aircraft combined with the absence of opposing aircraft, meant that Marine aviators could focus solely on supporting the ground forces without any thoughts of providing self defense from an enemy air threat. The combination of confidence from the ground commanders and a zeal to prove themselves a viable supporting arm made Marine aviation extremely effective in Nicaragua, further paving the way for aviation to increase its role as a decisive enabler.[132]

At the beginning of 1927 President Calvin Coolidge tasked the Marines to provide forces for deployment to Nicaragua in order to keep the country's government from being

[131]MeGee, "Evolution of Marine Aviation," 24.

[132]Millett, *Semper Fidelis*, 333.

overthrown by liberal military forces, which he believed were tied to Mexican communist.[133] Major General Lejeune sent the majority of the West Coast Expeditionary Brigade. By 1 February the majority the 5th Marine Regiment had arrived with additional support personnel. The total Marine force numbered about 2,000 and was designated the 2nd Expeditionary Brigade.[134] Among the additional support personnel was a six-plane observation squadron (VO-1M) commanded by the west coast dive bombing pioneer, Major Ross Rowell. The assigned mission for the observation squadron was to provide aerial reconnaissance of the hostile Liberal Armies.[135] Although the squadron provided aerial reconnaissance throughout the brigade's time in Nicaragua, the Marine aviators of VO-1M quickly showed that observation of enemy movements was one of several key capabilities the squadron could perform.

By the middle of May 1927 it appeared as though the situation in Nicaragua was well in hand. Both the Nicaraguan government and the Liberals were actively working out a peace agreement. With relative order seemingly restored the US allowed the Navy Department to reduce the size of the brigade in Nicaragua. By the summer of 1927 the 2nd Expeditionary Brigade shrunk from 3,300 to 1,500 Marines.[136] The decision of the politicians in Washington turned out to be a little premature. Unfortunately for the US and Nicaraguan President Adolpho Diaz, there was one rebel leader who refused to go quietly. Fortunately for the Marines, one unit that was not sent home was the small

[133]Ibid., 243.

[134]Ibid., 245.

[135]Ibid., 244.

[136]Ibid.

Marine aviation unit. Just a few years earlier, this small air contingent would have been expendable and not seen as much value added for all of the space and logistical support required, but after the experience in the Dominican Republic, Haiti and now the few short months in Nicaragua, Marine aviation began to be viewed a real force multiplier, an integral part of 2nd Expeditionary Brigade, rather than just a side show. The decision to keep the small aviation squadron turned out to be decisive as the situation in Nicaragua worsened.

As quickly as Nicaragua stabilized, chaos returned to the northern area of the country. Augusto Sandino, a rebel leader who was not a part of the Liberal Army began to build his own force. He gained popularity rapidly and soon proved to be a significant cause of destabilization in the country. Sandino and his men fought well. They gained some early victories in skirmishes over the Nicaraguan Army and disappeared back into the northern mountains. His early victories allowed Sandino to increase the size of his force as well as the arms and supplies needed to form a larger fighting units. By July 1927 the commander of the 2nd Expeditionary Brigade ordered the 5th Regiment to move into the northern territory and disarm all guerrillas in the area. The main rebel group in the area belonged to Sandino. Shortly after a small group of Marines and Nicaraguan National Guard (Guardias) arrived in Ocotal, Sandino boldly struck the first blow and initiated an sharp conflict between his forces and the Marines which lasted for five years.[137]

In Sandino's initial attack on the Marines garrisoned at Ocotal, he massed between five hundred and six hundred fighters against thirty eight Marines and forty nine

[137]Ibid., 247.

Guardias. The Marines and Guardias fought well and repulsed multiple assault waves. However, with the Marines still outnumbered and quickly running low on ammunition, food, and water Sandino and his men definitely had the upper hand. Two aviators flying above spotted the situation and subsequently flew back 125 miles to Managua to alert the squadron commander Major Rowell. Major Rowell quickly took full advantage of the situation and launched all six of his squadron's aircraft to support the besieged Marines. The dive bombing tactic he had trained his squadron on in San Diego proved to be very effective. The DH-4Bs and O2B-1s (O2B-1s were DH-4s with a welded medal fuselage) proved to be not only effective observation aircraft, but also suitable dive bombers. Rowell's squadron inflicted horrible casualties on Sandino's guerilla's (Sandinistas) and the tide of the battle was drastically changed in just a few moments.[138] The Sandinistas still standing quickly fled, seeking cover from the hail storm of fragmentary bombs and machine guns. This attack on July 16th became known as the first Marine air-ground combined action and was the birth of Marine close air support.[139]

Although unsuccessful in his first attack on the Marines and their Guardia counterparts, Sandino continued to hide out in his secluded mountain base "El Chipote." Here he continued to collect supplies and recruit guerrilla fighters. His audacity and boldness did not subside and his forces continued to attack smaller Marine patrol columns with some degree of success. The limited number of Marines attempted to find Sandino's mountain fortress for a month but could not. However, by November of 1927

[138]National Naval Aviation Museum, Pensacola, http://collections.naval.aviation.museum/emuwebdoncoms/pages/doncoms/Display.php?irn=47860&QueryPage=%2Femuwebdoncoms%2Fpages%2Fcollections%2FQuery.php (accessed May 22, 2013).

[139]Johnson, 57.

the observation squadron accomplished what the Marines on the ground had not. Major Rowell's squadron found "El Chipote" and initiated a bombing campaign immediately. The aviators had little effect on the Sandinastas as they had quickly adapted to the lessons learned on 16 July and built fortifications. However, the Marines of VO-1M caused significant damage to Sandino's supplies.[140] By locating the hidden base from the air Marine aviators saved countless hours of patrolling through harsh terrain and showed their worth as primary source of battlefield intelligence. More importantly Marine aviation showed the ability to cause an immediate effect on an enemy position once located.

Marine aviation again played a crucial role when the outnumbered Marines pursued Sandino in January of 1928. Once again Sandino proved to be a formidable opponent and gained the upper hand on a Marine patrol, causing significant casualties to the Marines. Most of the officers and non-commissioned officers in the patrol had been either killed or wounded and the remaining Marines established a hasty defense in the closest village. The patrol was unable to move due to the number of dead and wounded. While in contact with the Sandinistas the surrounded Marines were able to send a message back to the brigade headquarters in Managua. The Marines requested air support to disperse the Sandinistas as well as to evacuate the wounded. Landing on a make-shift runway 1st Lieutenant Christian F. Schilt made ten round trips over three days to the desperate Marines and delivered over 1,400 pounds of supplies and ammunition, and evacuated eighteen critically wounded Marines, all under heavy enemy fire. For is

[140]Millett, *Semper Fidelis*, 249.

bravery and selflessness he was later awarded the Medal of Honor.[141] Lieutenant Schilt's actions once again increased the value of aviation to the infantry on the ground. His actions proved to be essential to the survival of the surrounded, outnumbered, and outgunned Marines. His display of the unique capabilities of a well trained pilot laid the ground work for future uses of aviation. As the Corps began to take a more serious look at the ability of aircraft to support an opposed beach landing, where the attacking force is at a great disadvantage, Shilt's actions offered an example that aviation could provide a means to sustain Marines in the future.

Major Rowell's initial dive bombing close air support mission, the armed reconnaissance of "El Chipote" and Lieutenant Schilt's aerial logistics and casualty evacuation were just three of the most prominent examples of the uses aviation in Nicaragua. As the conflict continued the role of aviation increased drastically. The original six outdated DH-4B scout bombers expanded to a composite squadron of 26 aircraft with mixed capabilities, from bombers to transporters.[142] In 1932 the squadron in Nicaragua was flying non-stop supporting the far flung elements of the 2nd Expeditionary Brigade. The statistics shown in table 1, reveal that not only had the expeditionary force embraced aviation, the Marines on the ground in Nicaragua depended on aviation for survival.

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[141]Millett, *Semper Fidelis*, 247; Boggs, "Marine-Aviation Origin and Growth," 74; Christian F. Schilt, General U. S. Marine Corps, Flight Log 1927-1928 Nicaragua, Schilt Papers, Gray Research Center, Marine Corps University, Quantico.

[142]Millett, *Semper Fidelis*, 247.

Table 1. Summary of Air Activities: June 1931-1932	
Freight Transported	66,654 lbs.
Total flights	6,316
Total hours flown	7,193.7
Number of aerial contacts with bandits	9
Number of bullet holes in planes	19
Bombs dropped in contacts	98
Machine gun rounds fired on bandits	3,050

Source: Anonymous, "Marine Aviators in Nicaragua Furnish Proof of the Practicability of Aviation and Make Lasting Contributions to Its Development," *Leatherneck* 15, no 10 October 1932).

The experiences in Nicaragua more than any other campaign provided the Marine aviators and the Marine infantry with a unifying experience which the two had not previously shared. In the early days of conflict with Sandino, Marine aviation transformed from a capability that was helpful to a capability that Marines could not survive without. The relationship went beyond having an appreciation for aviation to becoming dependent on it for survival. Nicaragua emphasized for Marines the importance of aviation to provide close air support, reconnaissance and logistical resupply.[143]

The camaraderie built between Marine aviators and their infantry counterparts became essential as the Corps began developing the Tentative Landing Operations Manual. When restrictions were place on the Marines reducing the size of the force

[143]Ibid., 263.

deployed to Nicaragua, Marine aviation showed the ability to turn the tide of the battle as well as sustain the small contingents in remote outposts. On multiple occasions when the Marines were outnumbered and at a severe disadvantage, aviation turned the tide of the fight in favor of the Marines. Had it not been for aviation the Marine occupation of Nicaragua might have been a total failure. Marine aviation performed admirably during this time and far surpassed the expectations of many Marine commanders. Major General Lejeune described Marine Corps aviation's contribution during this period as "invaluable." He stated: "The pilots were both skillful and daring, and the planes gave splendid service."[144] The experience of Marine aviation in Nicaragua would prove to have far reaching impact on the development of amphibious doctrine and eventually World War II as well as every other conflict Marines were involved in the future.

[144]Lejeune, *Reminiscences of a Marine*, 460.

CHAPTER 5

AMPHIBIOUS DOCTRINE

Aviation Experience and the Tentative Landing Manual

In the early days of Marine aviation, when the Corps had only a handful of novice pilots it was difficult to foresee if aviation would have a lasting impact on the Marine Corps or if the Corps would even maintain its aviation element. At the outset of World War I, it was unclear what the Marines had gained from their investment in aviation. However, the brief but intense experience of Marine aviation supporting the British and French postured them to prove their worth immediately after returning from Europe. The expeditionary commitments during Lejeune's tenure as Commandant along with his vision for aviation supporting Marines on the ground paved the way for increased interaction between both aviation and infantry. As the Corps focused on outlining the mission of advanced base seizure and defense, it became clear that aviation was needed to fill a crucial role. The familiarity established between Marine ground forces and their aviator counterparts had a profound impact on the Corps reliance on aviation for support in amphibious operations. As a result, the lessons learned from World War I and throughout the intewar period culminated in the development of the aviation section of the Marine Corps Tentative Landing Operations Manual.

As the Marine Corps returned home from Nicaragua, China, and Haiti, it was soon greeted with the realities of the Great Depression. The national economic catastrophe led to further cuts in government spending. Once again the Marine Corps was on the chopping block and significant cuts were made to the already small force. This left the new Commandant, Major General Ben H. Fuller, with the dilemma of establishing a

priority for the Marine Corps that would both ensure its survival while maintaining its relevancy to the defense of the nation.[145] The Hoover administration's reduction in the end strength of the Marines as well as the other services set off a chain reaction. Larger services like the Army attempted to grab as much as possible to make up for cuts to their force. The Army pressed to have Marine aviation transferred to the Army Air Corps and to relegate the Marines to base defense rather than the expeditionary operations which they had performed most recently. The Navy's General Board shielded the Corps from the Army's challenge but pressed Major General Fuller to assign some priority to the Corps' myriad of missions.[146]

The Commandant's prioritization of Marine Corps missions set off a debate within the Corps as to what the primary role of the Marine Corps should be. Segments of the Marine Corps believed that the Corps should be a "small Army," capable of fulfilling all of the Army's mission but on a smaller scale. Others believed, as did the previous Commandant, Major General Lejeune, that the Corps existed primarily to support the Fleet's operations and that the Marines should focus on amphibious warfare in support of the Fleet.[147] Major General Fuller chose the latter and responded to the Navy General Board that the Marines Corps' primary duty must be to prepare for wartime amphibious operations to seize and defend advanced bases in support of the Fleet especially in a potential war with Japan in the Pacific. The Navy General Board, along with the Chief of Naval Operations, Admiral William Pratt, agreed and further urged the Commandant to

[145]Millett, *Semper Fidelis*, 329.

[146]Ibid.

[147]Johnson, 61.

focus his efforts on preparing the Corps' aviation and ground units for the task of advanced base seizure.[148]

The official designation of amphibious operations as the Marines' primary mission led General Fuller to build upon the reforms put in place by his predecessor, General Lejeune. He renamed the Expeditionary Forces the Fleet Marine Force (FMF). The term FMF was chosen because it more accurately reflected the priority of supporting the Fleet with advanced base seizure as well as defense.[149] In addition to re-designating the Expeditionary Forces, General Fuller expanded upon Major Ellis's *Advanced Based Operations in Micronesia* study. By 1933 he directed that the Corps develop amphibious doctrine in order to provide training guidance for the FMF. This directive was later named the *Tentative Landing Operations Manual*. The Tentative Manual was the central focus of the FMF until 1941 when the U. S. entered World War II.

The development of the *Tentative Landing Operations Manual* came at an opportune time for Marine aviation. When the Marines gathered at Quantico to begin the task of writing the manual, many of the officers present had accumulated several years of working side by side with Marine aviators. Unlike the buildup to World War I, Marine aviators were no longer strangers to their infantry brethren. Many of the pilots who had been instrumental in developing Marine aviation were present and contributed in guiding the cutting edge amphibious doctrine. One such aviator was Major Roy S. Geiger, who

[148]Ibid., 330.

[149]Ibid.

replaced Colonel Turner as the head of the aviation department after Turner's death in 1931.[150]

As with the replacement of Major Alfred Cunningham by Lieutenant Colonel Turner as the head of aviation after World War I, there was some debate over who was the most senior aviator in the Marine Corps at the time. Major Geiger was senior to Major Ross Rowell by experience. Geiger had already served as the senior squadron commander in the 1st Aviation Force during World War I and also commanded the 1st Aviation group in Haiti.[151] While Major Rowell was senior by date of rank he did not earn his wings until 1922. Rowell would not have been a bad selection. He eventually replaced Geiger in 1935. However, the Commandant's selection of Geiger over Rowell showed the value placed on experience over seniority. Geiger's experience as an aviator flying in both World War I and in Haiti provided a broader base which was needed to influence the development of amphibious doctrine. While serving as the head of aviation Geiger participated in several of the Tentative Landing Operations Manual conferences. In doing so he helped shape the doctrine which the pilots of the 1st Aviation Wing, which he commanded on Guadalcanal, would use to prepare for the first major engagement of World War II.[152]

Work on the *Tentative Landing Manual* began in 1933 at the Field Officers School in Quantico. Both instructors and students provided the majority of personnel tasked to write the Corps' future doctrine. Senior officers from Headquarters Marine

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[150]Ibid., 65-66.

[151]Willock, *Unaccustomed to Fear*, 106.

[152]Johnson, 66.

Corps as well as commanders from the FMF provided oversight. The document was completed in 1934 and published by the Department of the Navy in 1935. The purpose of the *Tentative Manual* was to identify the key steps in conducting an opposed beach landing. In addition, the manual was to outline the concepts of command and control, organization of the force, fire support needed, assault tactics as well as ship to shore movement and logistical support.[153]

One of the writers of the aviation chapter of the *Tentative Landing Manual* General Vernon Megee, then a 1st Lieutenant, summarized the role of Marine aviation in support of amphibious landings as a threefold approach.[154] He stated that: "Emphasis was given to the vital requirement of air superiority during the approach and ship to shore movement, to adequate and timely reconnaissance and the use of attack aviation as a substitute for artillery and naval gunfire."[155] The priorities of effort for aviation support were written in a logical progression to support the various phases of an amphibious operation. The outline in table 2 shows the various phases of an amphibious operation as defined by the *Tentative Landing Operations Manual* and the priorities of effort assigned to aviation during the associated phase.

[153]Ibid., 65-66.

[154]Ibid., 66.

[155]Megee, "Evolution of Marine Aviation," 25.

Table 2. Aerial Operations Outlined in the Tentative Landing Operations Manual

Phases of Amphibious Operations	**Aviation Priorities by Phase**
Aerial Operations Preliminary to Landing	Reconnaissance Photographic Reconnaissance Reduction of Hostile Defenses
Aerial Operations During Debarkation	Protection of the Transport Area Reconnaissance Offensive
Aerial Operations During Approach to the Beach	General Support Use of Smoke Laying of Smoke Screens Guide Planes Support when Ships' Gunfire Lifts Reconnaissance Air Spot
Aerial Operations During the Advanced Inland	Support at the Shore Line Support during the advance from the beach

Source: U. S. Marine Corps, *Tentative Landing Operations Manual 1935* (Washington, DC: Government Printing Office, 1935), 186-194.

Air superiority was considered "essential" to the success of any amphibious operation. Furthermore, the protection of the assault force during its ship to shore movement was believed to be vital to success. The only element which could effectively protect the assault force from enemy aircraft was aviation. The dependency on aircraft for this protection made aviation indispensable to any amphibious operation.[156] Although Marine aviators had very little experience with air to air fighting they could boast almost as much experience as any of the other services. During World War I, Marine aviators

[156]U. S. Marine Corps, *Tentative Landing Operations Manual 1935* (Washington, DC: Government Printing Office, 1935), 186.

displayed the ability to engage enemy aircraft and win.[157] Even though there was no recent experience with air-to-air combat, it was not completely foreign. The limited exposure to air to air combat in World War I gave Marine aviators an appreciation for facing a credible aviation force and increased their understanding of the need for air superiority in an amphibious operation.

Once air superiority was achieved, the *Tentative Manual* emphasized the need for fire superiority over enemy defenses as did the previous study, *Advanced Based Operations in Micronesia*, written by Major Pete Ellis. The writers realized the limitations of naval gunfire which would have to move parallel to the shore at relatively high speeds in order to avoid counter-battery fire. The ship's rate of movement would prevent Fleet's guns from firing closer than 1,500 meters away from the assault waves of Marines.[158] Additionally the flat trajectory of naval guns would make some targets in defilade problematic for the Navy's surface fires. With artillery unable to come ashore until a beach head was established, there would be a significant gap in fire support. Aviation would be the only element capable of supporting the assault force for a significant period of time. Aviation planners emphasized that this stage of the operation must be planned in such a way that the maximum number of aircraft would be available to neutralize strong points in the beach defenses.[159] Major Ellis's previous belief that aviation would be useful in an opposed beach landing became somewhat of an

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[157]Johnson, 21; Cunningham, "The Value of Aviation," 226.

[158]Millett, *Semper Fidelis*, 333.

[159]U. S. Marine Corps, *Tentative Landing Operations Manual*, 192.

understatement. The writers of the *Tentative Manual* arrived at the conclusion that aviation support would be more than useful, it would be essential.

Prior to Nicaragua, the fire support dilemma may have presented significant difficulties for the assault force, however, after the experience with close air support in Nicaragua this gap in fire support provided an opportunity for Marine aviation. Although assaulting an opposed beach was a relatively new problem for the Marine Corps, a lack of fire support was not. When the Marines were outnumbered and in untenable situations without artillery support in Nicaragua the aviators were there and provided close air support quickly turning the tide of the fight. The same problem existed with a beach landing and Marine aviation provided the means to fill that gap when no artillery from ships or land forces was available.

Another major difficulty in planning for amphibious operations was the potential lack of intelligence on the prepared island defenses that could have been built years in advance. Accurate intelligence was difficult enough to obtain in a war fought exclusively on land. Island defenses located thousands of miles away from the assault force made gathering accurate intelligence even more problematic. As with fire support, aviation was needed to provide seemingly the only method of accurate reconnaissance of enemy defensive positions. The belief that the primary use for air planes would be for reconnaissance was expressed in the earliest days of Marine aviation.[160] Marine aviators validated the usefulness of aerial reconnaissance in Nicaragua when they regularly identified enemy locations from the air, saving countless hours of tedious foot mobile patrols. This key capability was further increased by the fact that the vegetation in

[160]Johnson, 4.

Nicaragua was similar to the vegetation found on the island chains of Micronesia and Marine aviation had already shown it was more than capable of providing valuable intelligence in this type of terrain.

Perhaps Marine aviation's most valuable experience regarding reconnaissance during the inter-war period was lesser known than the development of dive bombing or close air support. While in Haiti and the Dominican Republic Marine aviation was tasked with using aerial photography to map out the entire coastline of both of the island nations. This skill developed over two decades was believed to be extremely valuable intelligence for the assault force. Detailed photographs assembled into mosaic maps combined with aerial reconnaissance of enemy defensive positions provided very accurate intelligence before the Marines went ashore. This information could become useful in planning routes to the beach objectives and could provide a detailed lay out of the enemy defenses.[161]

Although aviation doctrine put forth in the *Tentative Manual* was sound, Marine aviation lacked the ability to operate independently from the Navy. If they were to support an amphibious assault, Marine aviators would have to take off from the Fleet's aircraft carriers. The only option for Marine aviation to support amphibious operations was to rely on the Navy for carrier support. The Tentative Manual concluded that the ideal arrangement for Marine aviation was the assignment of a carrier or multiple carriers for the use of assault forces aviation assets. At the very least the aviators hoped for Marine aviation units to be assigned to a fleet carrier.[162] This proposed arrangement had

[161]U. S. Marine Corps, *Tentative Landing Operations Manual 1935,* 189.

[162]Ibid., 188.

some sticking points, the first of which was what would a carrier do after its Marine aviation assets went ashore to establish an airfield?

The *Tentative Manual* pointed out the fact that Marine aviation could not operate with the same autonomy it had enjoyed during the inter-war period. Marine aviation would have to re-establish its relationship with the Navy and the need for carrier support was not the only reason. The Marine Corps still relied on the Navy's Bureau of Aeronautics for funding and facilities. At the time the Marines had a fleet of aircraft that was rapidly becoming obsolete. In order to gain access to technological advancements as well as having any hope of receiving carrier support, a strong relationship needed to be reformed between Marine aviation and the Bureau of Aeronautics. Furthermore, if the Marines had plans of utilizing carriers to support amphibious operations they would need carrier experience. These factors led the Marine Corps to accept a secondary mission of providing squadrons for carrier operations.[163] To further reinforce the Corps' commitment to increased integration with the Fleet, Aircraft Two, the aviation element of the West Coast FMF, was placed under the command of the U. S. Fleet. This arrangement continued from 1935 and throughout the rest of the 1930s. By the end of this arrangement two thirds of the allotted Marine aviators served on board Navy carriers.[164]

Marine aviation's renewed relationship with the Navy made sense in light of the Corps' mission of amphibious assault. However, no one in the aviation section had any desire to relive the disappointing arrangements partially forced on Marine aviation by the Navy in World War I. The Corps had learned a valuable lesson when dealing with the

[163]Millett, *Semper Fidelis*, 334.

[164]Johnson, 68, 74.

Navy. The aviation chapter of the Tentative Manual attempted to more clearly define the roles of Navy and Marine aircraft. The Navy would be largely responsible for protecting the ships and helping to maintain air superiority during the debarkation of the assault force. During the approach to the beach the Navy would be primarily responsible for naval gun fire spotting. The Marines were to aid the Navy in its assigned task until Debarkation began at which point the Marines would focus on targets that were of an immediate threat to the assault force.[165] In 1939 the Navy General Board officially defined the missions for which Marine aviation must prepare. Its primary task was to support the FMF in landing operations with a secondary task of serving as replacement for carrier based naval aircraft.[166] This arrangement was less than ideal for the Marine Corps but it gave both the Marines and the Navy what each service wanted.

After the *Tentative Landing Operations Manual* was published, Marine aviation took part in every annual Fleet Landing Exercise from 1935 until the U.S. entered World War II. During the FLEXes Marine aviators tested and refined the principles of aviation support laid out in the aviation section. In every exercise the 1st and 2d Marine Air Groups, as they were then known, increased their level of involvement. By 1937 both Marine Air Groups joined together and provided 83 aircraft for the FLEX conducted off the coast of California at San Clemente Island. This accomplishment solidified the fact the Marine Corps aviation had finally fulfilled the early vision of supporting Marine ground forces in advanced base operations.

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[165]U. S. Marine Corps, *Tentative Landing Operations Manual*, 186-195.

[166]Johnson, 65.

Conclusion

The invention of the airplane truly changed the face of modern warfare. However for the Marine Corps it had a unique impact. From its earliest experiments with aviation the Marine Corps had a different purpose in mind for its aviation. Marine aviation was intended to support the Marines on the ground. As early as 1900 the need for advanced based operations in the Pacific was identified. Marines expressed varying levels of commitment to this mission. World War I and the expeditionary operations in the Caribbean and China may have appeared to be a distraction from the Corps primary purpose of supporting the fleet. However, these commitments served as catalysts for Marine aviation's growth. Without these experiences Marine aviation might not have possessed the body of seasoned aviators needed to develop the breakthrough concepts of action support for amphibious operations.

Although the first employment of Marine aviation was scattered and somewhat misguided it provided a foundation for the actual capabilities that had only been speculative prior to World War I. It enabled Marine aviators to narrow the scope of useful capabilities for advanced base operations. The World War I employment of Marine aviation's also gave the Marine Corps an example of what would happen if the roles of Marine aviators were not clearly defined to the Navy as well as to its own aviators.

The experiences of Marine aviators in the China, Haiti and the Dominican Republic are sometimes overshadowed by the operations in Nicaragua. However all of these expeditionary deployments contributed to the overall experience of Marine aviation. Marine aviators showed their commitment to the ground forces by developing innovative techniques, such as dive bombing, aerial reconnaissance and aerial medical

evacuation to support their infantry brethren. These innovations not only created camaraderie between the two elements but displayed capabilities that would be useful to the future development of amphibious doctrine.

The result of the experiences in World War I and the expeditionary operations during the interwar period was that Marine aviation had become fully ingrained in the makeup of the Corps. When the time finally came to focus on advanced base seizure and defense, aviation supporting ground operations had become the norm rather than the exception. The effect of the Marines' early experience with aviation was that amphibious doctrine was enhanced and the chances of a successful landing on an opposed beach significantly increased. The incorporation of aviation into amphibious doctrine balanced the equation for an assault force which would already be at a disadvantage. For Marine aviation the *Tentative Landing Operations Manual* represented the official recognition that it had become an inseparable part of the Marine Corps primary purpose and without aviation's capabilities success in any amphibious operation might be difficult to obtain.[167]

The FLEX's conducted after 1935, did not completely replicate the complexities of competing interests which accompanied the war in the Pacific. The use of Marine aviation in support of amphibious operations was almost completely dependent on the availability of aircraft carriers. In the early stages of the war there were not nearly enough carriers for the Navy, which was trying to defeat the Japanese Fleet, much less provide deck space for Marine aircraft. In the first amphibious offensive at Guadalcanal the Marines were rushed into the operation and Marine aviation was not able to arrive until several weeks later. Once the 1st MAW did arrive it endured many hardships but

[167]Ibid., 82.

eventually gained air superiority. The ground forces suffered greatly from Japanese air attacks and Naval bombardment until the 1st MAW finally took control of the skies. Unfortunately this experience validated the hard way the premise of the Tentative Landing Operations Manual that air superiority was essential.[168]

It was not until 1944 that the Navy made four escort carriers available to the Marines. These new carriers allowed the Marines to place eight squadrons in direct support of amphibious operations. With Marine aircraft aboard escort carriers, the landings at Iwo Jima enabled Marine aviation to be employed as it was envisioned in the *Tentative Landing Operations Manual*. The experience gained at Iwo Jima led to even further refinements to Marine aviation support which was sorely needed in the Okinawa landing. The *Tentative Landing Operations Manual* was not the perfect solution to the challenges presented by the Pacific theater in World War II, but it provided a starting point from which the Corps was able to adjust.[169]

[168]Millet, *Semper Fidelis*, 364-367.

[169]Ibid., 408-409.

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