

**U. S. MARINE CORPS AVIATION IN THE SECOND WORLD WAR:
ITS EFFECTIVENESS IN SUPPORT OF THE PACIFIC FLEET**

**L'AVIATION DU CORPS DES MARINES DES ÉTATS-UNIS PENDANT LA
SECONDE GUERRE MONDIALE: SON EFFICACITÉ EN SOUTIEN À LA FLOTTE
DU PACIFIQUE**

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of the Royal Military College of Canada

by

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Dedication

To Elena

My love and my best friend

For her encouragement, support, and patience

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Any errors of fact, analysis, and style are entirely my own.

Abstract

This dissertation investigated the effectiveness of US Marine Corps aviation in support of the US Pacific Fleet in the Second World War. The historical investigation used one fighting squadron, VMF-221, as a case study. This squadron participated in three actions that revealed aspects of marine aviation's effectiveness in support of the fleet. The squadron's experience in 1942 demonstrated that rapid wartime expansion and the concurrent requirement to defend advanced island bases left marine aviation unready to face the Japanese Combined Fleet at the Battle of Midway. In 1943, the squadron fought effectively, but the Solomons campaign tested the fleet's ability to keep aircraft flying from remote airstrips in harsh, tropical climates at the end of a long transoceanic supply chain. Aboard an aircraft carrier in 1945, the squadron benefited from the carrier's mobility and self-contained logistics, but the experience demonstrated the vulnerability of aircraft carriers and their air groups to suicide attacks.

Résumé

Cette thèse examine l'efficacité de l'aviation du Corps des Marines des États-Unis à l'appui de la flotte américaine du Pacifique pendant la Seconde Guerre mondiale. À cette fin l'escadron de combat VMF-221 est pris comme étude de cas. Cet escadron a participé à trois actions qui ont révélé des aspects de l'efficacité de l'aviation maritime en appui à la flotte. L'expérience de l'escadron en 1942 a démontré que l'expansion rapide en temps de guerre et la nécessité simultanée de défendre des bases insulaires avancées ont laissé l'aviation maritime mal préparée à affronter la flotte combinée japonaise à la bataille de Midway. En 1943, l'escadron a combattu efficacement mais la campagne des Îles Salomon a mis à l'épreuve la capacité de la flotte à maintenir les avions en vol à partir de pistes d'atterrissage éloignées dans des climats tropicaux rigoureux à la fin d'une longue chaîne d'approvisionnement transocéanique. À bord d'un porte-avions en 1945, l'escadron

bénéficiait de la mobilité et du support logistique autonome du porte-avions. Cependant, l'expérience a aussi démontré la vulnérabilité des porte-avions et de leurs groupes aériens aux attaques suicides.

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Glossary of aviation, military, and naval terms¹

abort: the premature termination of a flight.

air superiority: That degree of control of the air by one force that permits the conduct of its operations at a given time and place without prohibitive interference from air and missile threats.

attach: the placement of units or personnel in an organization where such placement is relatively temporary.

bandit: an enemy aircraft.

bogey: an unidentified aircraft.

combat air patrol: an aircraft patrol provided over an objective area, the force protected, the critical area of a combat zone, or in an air defense area, for the purpose of intercepting and destroying hostile aircraft before they reach their targets.

fighter escort: an offensive counterair operation providing dedicated protection sorties by air-to-air capable fighters in support of other offensive air and air support missions over enemy territory, or in a defensive counterair role to protect high value airborne assets.

fighter sweep: an offensive mission by fighter aircraft to seek out and destroy enemy aircraft or targets of opportunity in a designated area.

Fleet Marine Force: a balanced force of marine land, air, and service elements which is an integral part of a fleet and has the responsibility to man, train, and equip the marine operating force.

ground loop: a sharp uncontrollable turn made by an aircraft on the ground and usually caused by an unbalanced drag (as from a wingtip touching the ground).

¹¹ Office of the Chairman of the Joint Chiefs of Staff, *DOD Dictionary of Military and Associated Terms*, (Washington DC: The Joint Staff, 2018); *The Merriam-Webster Dictionary* (United States: Merriam-Webster, Incorporated, 2023), retrieved from www.merriam-webster.com; Chief of Naval Operations, Commandant of the Coast Guard, and Commandant of the Marine Corps, *Advantage at Sea: Prevailing with Integrated All-Domain Naval Power* (Washington, DC: Department of the Navy, December 2020), 27; Capability Developments Integration Directorate, *Handbook: Special Operations Joint Task Force* (Fort Bragg, NC: United States Army Special Operations Command), 45.

mission kill: damage that prevents the target from completing its designated mission, however, not to the extent that it is non-repairable.

Sea control: The condition in which one has freedom of action to use the sea for one's own purposes in specified areas and for specified periods of time and, where necessary, to deny or limit its use to the enemy. Sea control includes the airspace above the surface and the water volume and sea floor below.

stall: the condition of an aircraft in which excessive angle of attack causes disruption of airflow with attendant loss of lift.

strafe: to rake (ground troops, an airfield, etc.) with fire at close range and especially with machine-gun fire from low-flying aircraft.

strike: an attack to damage or destroy an objective or a capability.

spin: an aerial maneuver or flight condition consisting of a combination of roll and yaw with the longitudinal axis of the airplane inclined steeply downward.

snap-roll: an airplane maneuver in which a rapid full revolution is completed about the plane's longitudinal axis while an approximately level line of flight is maintained.

task force: a component of a fleet organized by the commander of a task fleet or higher authority for the accomplishment of a specific task or tasks.

task group: a component of a naval task force organized by the commander of a task force or higher authority.

Introduction and thesis

In 2018, the new Commandant of the U.S. Marine Corps, General David Berger, reminded his marines that, “During World War II, we as a Service, clearly understood that Marines operated in support of the Navy’s sea control mission.”² In his 2018 *Planning Guidance*, he dramatically changed his service’s role. Rather than conducting amphibious assaults, responding to crises, and fighting small wars, the Fleet Marine Force will fight as an integral part of the fleet to gain and maintain air superiority and sea control. Rather than primarily supporting the ground combat element of the landing force, marine aviation will defend the fleet from air attack and strike with the fleet against enemy vessels and targets ashore.³

By “sea control,” General Berger was referring to a naval concept that describes a condition in which a fleet can use the sea for its purposes while preventing the enemy from using it. “Air superiority” describes a similar condition which permits one combatant to conduct operations without interference from enemy aircraft. As sea control necessarily requires control of the sky above, air superiority is usually a prerequisite to achieving sea control.⁴

Marine aviation fulfilled a similar combat role during the Second World War. Its doctrinal mission then was to support the landing force through close air support.⁵ However, marine squadrons flew in support of the fleet at sea at least five times as much as they flew in support of landing forces ashore. Ninety-eight marine squadrons deployed to the Pacific during the Second World War. These squadrons spent an aggregate of 1150 months supporting the fleet, but just 232 months supporting landing forces. Marine aviation supported the fleet, protecting ships and

² General David Berger, USMC. “Commandant's Planning Guidance” (U.S. Marine Corps, 2018), 4.

³ Berger, “Commandant's Planning Guidance” (2018), 2.

⁴ CJCS, *Dictionary of Military and Associated Terms*, 15; CNO, CCG, and CMC, *Advantage at Sea*, 27.

⁵ Robert Sherrod, *History of Marine Corps Aviation in World War II* (San Rafael, CA: Presidio Press, 1980 [1952]), 31-32.

advanced naval bases, and striking enemy vessels.⁶ As marine aviation returns to fight in support of the fleet, a deeper understanding of its operational effectiveness in that role during the Second World War may prove informative.

Purpose, research question, and thesis

The purpose of this dissertation is not to examine why marine aviation supported the fleet instead of the landing forces, but to examine how effective marine aviation was in that role. This study investigates the effectiveness of U.S. Marine Corps aviation in support of the U.S. Pacific Fleet during the Second World War. The central research questions are, how well did marine aviation support the fleet? And what factors contributed to its effectiveness?

This dissertation argues that marine aviation achieved mixed success supporting the Pacific Fleet in the Second World War, particularly in the first year of the war. The determining factors of its effectiveness included the numbers and types of marine aircraft; doctrine and tactics; the proficiency of aviators and support marines; logistics (including strategic lift, supply, and maintenance); intelligence; command and control; time; and Japanese capabilities. The relative importance of individual factors waxed and waned as the war progressed.

Contribution and importance

These are valid research questions because the answers are relevant in the 21st century. As the Marine Corps redesigns its force to support the fleet, understanding how marine aviation fulfilled a similar role in the Second World War may help shape this effort. These questions will also significantly contribute to existing knowledge in the field of military history. This study constitutes a

⁶ Lieutenant Colonel Peter F. Owen, USMC (Retired), "The Marine Corps' Air War Over the Pacific," *Naval History* February 2023, retrieved from <https://www.usni.org/magazines/naval-history-magazine/2023/february/marine-corps-air-war-over-pacific>.

significant contribution to the furthering of existing knowledge about marine aviation in the Second World War. Thus far, scholarship in this area has emphasized efforts to develop close air support. Battle narratives have emphasized the accomplishments and valor of aviators but have not critically analyzed the effectiveness of their squadrons. The relationship between marine aviation and the Pacific Fleet remain largely unaddressed. This research reveals both notable achievements and troubling shortcomings. These insights provide us with a better understanding of the Pacific campaign and marine aviation's role in the Second World War.

The Problem

In the Second World War, Marine aviation primarily served as a land-based component of fleet aviation, fighting for air superiority and striking Japanese ships and bases to help the U.S. Pacific Fleet achieve sea control. To meet the needs of the fleet, marine aviation had to overcome numerous operational and organizational challenges.

First, supporting the fleet in this way was not its mission. On the eve of the attack on Pearl Harbor, the mission of marine aviation was, foremost, to support the Fleet Marine Force in landing operations and, secondly, to provide replacement squadrons for carrier-based aviation.⁷ Aviation's first job during a landing was to gain air superiority. Throughout the operation, aviation was to protect troops, ships, and aircraft from air attacks, attack defenders on the ground, conduct reconnaissance, and spot for artillery and naval gunfire.⁸ The secondary mission to serve as a fleet air reserve constrained the Marine Corps to accept the same aircraft flown by navy carrier squadrons.

⁷ U.S. Marine Corps, *Marine Corps Aviation General* (Washington: United States Government Printing Office, 1940), 3.

⁸ United States Navy, *Landing Operations Doctrine, 1938 (F.T.P. 167)* (Washington: Office of Naval Operations, Division of Fleet Training, 1938), 151-158.

Moreover, marine aviation expanded from thirteen squadrons on the eve of Pearl Harbor to 153 squadrons during the war. Marine aviation personnel expanded at a similar rate, from 3057 Marines at the end of 1941 to a peak strength of 125,162 at the beginning of 1945.⁹ In order to train its new personnel, many experienced aviators had to be retained as cadre for the new squadrons. As most available combat aircraft had to be forward deployed during the first six months of the war, many marine cockpits were filled with inexperienced aviators. These green pilots were then placed into aerial combat against seasoned Japanese pilots.

These superior Japanese pilots initially enjoyed superior fighter aircraft. The Imperial Japanese Navy flew the A6M2 Zero, which outclassed marine F2A Buffalo and F4F Wildcat fighters in speed and maneuverability. Until marine squadrons received F4U Corsairs in 1943, they had to improvise and adapt to achieve air superiority with their inferior fighters.

Marine squadrons operated from austere bases in contested areas, vast distances from supply sources in the United States. Islands from which marine squadrons operated lacked infrastructure and presented hostile, austere environments. Such conditions challenged marine squadrons to keep aircraft and aircrew combat ready.

Marine squadrons began to deploy aboard carriers in December 1944. While it was easier for mechanics to maintain aircraft and for aircrew to stay healthy at sea than on tropical bases, marine aviators had to learn to launch and land from carriers. As the corps had suspended carrier qualification due to wartime exigencies, marine carrier qualification was hurried and hazardous. Because carriers provided the fleet with a mobile strike platform and the Pacific Fleet's control of the Western Pacific enabled the fleet to maneuver freely, carrier-based squadrons faced a far higher tempo of combat operations than many marine squadrons had previously seen.

⁹ Sherrod, *Marine Aviation*, 33, 435, 450-477.

The purpose of deploying marine fighting squadrons aboard carriers was to increase the fighter protection of the fleet to fend off Japanese suicide plane attacks. As the Pacific Fleet operated closer to Japan, the Japanese sortied greater numbers of such attacks. The number of incoming suicide planes strained the ability of marine fighter pilots to protect their carriers.

How and how well marine aviation overcame these challenges and supported the Pacific Fleet's battle for air superiority and sea control are the subject of this study.

Scope

Allan R. Millett and Williamson Murray offered a helpful definition of military effectiveness in their seminal trilogy, *Military Effectiveness*:

Military effectiveness is the process by which armed forces convert resources into fighting power. A fully effective military is one that derives maximum combat power from the resources physically and politically available. Effectiveness thus incorporates some notion of efficiency. Combat power is the ability to destroy the enemy while limiting the damage that he can inflict in return. The precise amount of necessary damage depends on the goals of the war and the physical characteristics of armed forces committed to its prosecution.¹⁰

Millet and Murray further explained that methods such as operational analysis can provide valid but only partial evaluations. A true examination of military effectiveness must consider the hierarchy of actions that an organization must harmonize and also the multitude of simultaneous tasks it must accomplish. Such tasks include “manpower procurement, planning, training, logistics, intelligence, and technical adaptation as well as combat.”¹¹

By the end of the war, marine aviation included over 125,000 marines and 132 squadrons.¹² Evaluating the simultaneous tasks described by Millett and Murray at every echelon and across this massive organization would have proven unfeasible. Instead, Marine Fighting Squadron 221 (VMF-

¹⁰ Allan R. Millet and Williamson Murray, *Military Effectiveness*, vol. 1 (New York: Cambridge University Press, 2010), 2-3.

¹¹ Ibid.

¹² Sherrod, *Marine Aviation*, 434-435.

221) serves as the lens through which the research focuses and examines marine aviation. This squadron participated in some of the most significant actions of the war in multiple roles and with different aircraft. The squadron's actions at Midway enabled an examination of marine aviation's role in defense of an advanced base. The squadron's actions in the Solomons enable an examination of the role marine aviation played helping the fleet achieve sea control. From USS *Bunker Hill*, the squadron served as a component of a carrier aircraft group. These three cases thereby are representative of the roles marine aviation fulfilled during the Pacific War and offer a comprehensive evaluation of the hypothesis.

This study does not pursue several tempting lines of investigation. It does not examine the corps' development of close air support during this period. That topic has been exhaustively researched, most notably by Dr. Fred Allison.¹³ This study avoids contrasting VMF-221's performance and effectiveness with that of the army air force, navy, and New Zealand fighter squadrons that fought in the same air campaigns. While pursuing such a line of inquiry could reveal interesting points of comparison, time and space demand that this study retain its focus on this single marine squadron.

Likewise, this study does not attempt to evaluate the merits of marine aviation's existence within the greater context of American force structure during the Second World War. That is, the study does not attempt to ask whether the United States would have been better served by dispensing with marine aviation entirely, channeling its men and materiel and assigning its tasks to the army air forces and naval aviation. While such an argument may be of keen interest to historians and military professionals of a parochial bent, it is beyond the scope of this study.

¹³ Fred Allison, "The Black Sheep Squadron: A case study in U.S. Marine Corps' innovations in close air support," Texas Tech doctoral dissertation, 2003, retrieved from <https://ttu-ir.tdl.org/handle/2346/18434?show=full>.

Research methodology

VMF-221 serves as an excellent representative of marine aviation during the Pacific War. The squadron affords a window into the status of marine aviation when Pearl Harbor was attacked. At Midway in June 1942, the squadron defended the atoll from the Japanese attack. In 1943, the squadron participated in the long aerial battle of attrition in the Solomons. In 1945, the squadron deployed aboard USS *Bunker Hill*, striking targets ashore and protecting the fleet from suicide aircraft. The squadron flew all three of the Marine Corps' principal fighter aircraft.¹⁴

A limitation of using a fighting squadron as the focus of the research is that the important roles of torpedo and dive-bombers would not be considered if the research focused too narrowly on VMF-221. To address these other aircraft, the research considers the technical and tactical factors specific to dive and torpedo bombers in the context of their operations alongside VMF-221. For example, in the analysis of marine aviation at Midway, the research examines the operational effectiveness of VMSB-241's dive and torpedo bombers as well as VMF-221's fighters.

An important analytical step is establishing criteria through which to evaluate the squadron's effectiveness. Assessing whether the squadron accomplished its assigned tasks in each case is an important criterion, but insufficient. Whether the squadron's operations accomplished their purpose and the fleet commander's concept are also essential. Likewise, measures of performance, such as counting enemy aircraft destroyed, are insufficient. The evaluation also considers measures of effectiveness, such as how such performance contributed to outcomes such as air superiority, sea control, and air strikes.

The following research methodology illustrates how such measures of effectiveness are evaluated for each of the cases. First, the research identifies the U.S. fleet commander's concept for the operation. For example, in many of VMF-221's operations in the Solomons, the fleet

¹⁴ Sherrod, *Marine Corps Aviation in WWII*, 462-463.

commander sought to gain and maintain air superiority and sea control to facilitate air strikes against enemy bases and vessels.

Having established the fleet commander's concept, the research then identifies VMF-221's task and purpose for that operation. An important aspect of this step is establishing how accomplishing the squadron's task and purpose was intended to support the fleet commander's concept. For example, VMF-221's task might have been to conduct fighter sweeps over a particular target; the purpose of the fighter sweeps might then be to destroy enemy fighter aircraft. This would support the fleet commander's concept by destroying enough enemy fighter aircraft that the fleet would establish local air superiority over the target.

To measure the squadron's effectiveness, this study borrows from current U.S. military doctrine. To assess combat effectiveness, the U.S. armed forces utilize "measures of performance" and "measures of effectiveness." The U.S. Joint Staff defines these terms as follows:

Measure of Effectiveness: A criterion used to assess changes in system behavior, capability, or operational environment that is tied to measuring the attainment of an end state, achievement of an objective, or creation of an effect.

Measure of Performance: A criterion used to assess friendly actions that is tied to measuring task accomplishment.¹⁵

A measure of effectiveness should assess whether a unit is doing the right things. Is the unit accomplishing the purpose of the operation? A measure of performance should assess whether a unit is doing things right. Is the unit completing the task it was assigned?¹⁶

Measuring the squadron's effectiveness and performance enables the research to identify and evaluate contributing factors. In some cases, cause-and-effect may be clearly established. If a

¹⁵ United States Joint Staff J-7, *Joint and Coalition Warfighting, Commander's Handbook for Assessment Planning and Execution*, Version 1.0 (Suffolk, Virginia: U.S. Joint Staff, 9 September 2011), I-6.

¹⁶ J-7, *Commander's Handbook for Assessment Planning and Execution*, III-5.

squadron has X mission capable aircraft, but aircrew sickness has limited the number of healthy pilots to X-5, a cause and effect relationship between aircrew sickness and sorties generated can be established. In other cases, cause and effect may not be as clear. VMF-221's severe losses at Midway were likely caused by many factors, including inferior friendly aircraft performance, relatively inexperienced friendly aircrew, and overwhelming enemy numbers.

This study considers the following contributing factors to squadron performance and effectiveness. First, the numbers and types of marine aircraft employed by the squadron provide an initial gauge of the squadron's combat power. Doctrine, including tactics, techniques, and procedures, is an important contributing factor to the study of VMF-221's effectiveness because it provides a baseline that describes how the Marine Corps intended squadrons like VMF-221 to be employed.¹⁷

It is important to distinguish between doctrinal tactics and the actual tactics employed. While the modern U.S. military distinguishes between tactics ("the employment and ordered arrangement of forces in relation to each other"), techniques ("non-prescriptive ways or methods used to perform missions, functions, or tasks"), and procedures ("standard, detailed steps that prescribe how to perform specific tasks"), this study uses tactics as an umbrella for all these terms. Understanding the actual tactics employed enables this study to determine their impact on VMF-221's effectiveness.¹⁸

How proficient the squadron was in its tactics depended heavily on training and experience. Experience can be estimated by quantifying flight hours. However, such estimates must be informed

¹⁷ Chairman of the Joint Chiefs of Staff, "Joint Doctrine Development System," CJCSI 5120.02E, 6 November 2020, GL-3. This explanation is adapted from the U.S. Chairman of the Joint Chiefs of Staff's definition for joint doctrine: "Fundamental principles that guide the employment of United States military forces in coordinated action toward a common objective and may include terms, tactics, techniques, and procedures."

¹⁸ CJCS, *Dictionary of Terms*, 189, 231, and 234.

by scrutinizing what the pilot was doing during those hours aloft. A pilot who spent many hours flying a different aircraft or mastering skills unrelated to combat may still be unprepared.

Personnel matters contribute substantially to combat effectiveness. Fortunately for this study, VMF-221 submitted monthly muster rolls that detail personnel on hand, losses, and replacements. These records enable the research to quantify experience and classify casualties.

A recurring theme in the study was the importance of time, particularly the amount of time the squadron had to prepare for combat. Often the squadron as an organization had abundant time to train, but personnel turbulence and logistical limitations impinged on the squadron's ability to use that time efficiently.

Classifying casualties can help assess the impact of environmental factors on the squadron's effectiveness. The austere conditions VMF-221's marines faced during 1943 challenged their ability to fly and maintain their aircraft. Geography and weather complicated aviation operations in complex ways, impacting everything from navigation and target identification to logistics. Operating from unpaved island airstrips took its own toll on the aircraft. Billeting in primitive conditions exacerbated illness and fatigue.

Squadrons depended heavily on command and control. No matter how many aircraft the squadron could sortie and how well the squadron's pilots flew, the squadron depended on higher echelons to assign it the right task and send it to the right place at the right time.

Lastly, this study must consider Japanese capabilities and actions. The number and type of Japanese aircraft, their capabilities and limitations, the quality of their pilots, and their strategy and tactics all contributed to the squadron's achievements and failures.

Evaluating every relevant factor in each of the three cases is essential to thoroughly assessing the foundations of the squadron's effectiveness. Focusing on a single squadron across three cases enables the research to proceed in depth, examining factors in detail. Rather than burdening the

research agenda with an unachievable list of criteria, this approach balances the narrow focus of the research with a thorough investigation of each case.

Before drawing out measures of performance, measures of effectiveness, and contributing factors, the squadron's actions needed to be examined and placed in the context of larger operations. A considerable portion of the study is therefore devoted to chronicling VMF-221's operations, particularly its combat actions. Establishing what the squadron did with accuracy was an essential precursor to assessing the squadron's effectiveness. Fortunately for the research, a sufficient body of primary sources enabled the reconstruction of the squadron's combat operations.

Primary sources

Unsurprisingly, the records of the U.S. Navy and Marine Corps held by the National Archives proved indispensable to this study. The World War II Action and Operations Reports in the Records of the Office of the Chief of Naval Operations were particularly helpful. These included monthly war diaries for VMF-221 and its higher echelons that summarized daily operations and significant events. This collection also included aircraft action reports prepared from pilot debriefings that provided exceptional eyewitness details. Records in this group are identified by their National Archives Identifier (NAID).¹⁹

Occasional gaps exist in these monthly war diaries, but most missing records were located in the National Archives' RG 127, Records of the United States Marine Corps in its collections of Aircraft Action Reports and Aviation Aircraft Wings, Groups, and Squadrons Unit War Diaries and Unit Histories.²⁰ This records group also contains correspondence and reports of naval and marine

¹⁹ RG 38 Entry A1 UD 351, Records of the Office of the Chief of Naval Operations, World War II Action and Operations Reports, National Archives College Park, College Park, MD. Hereafter RG 38 A1 UD 351 or RG 38 and NAID number.

²⁰ RG 127 A1 237-A Aircraft Action Reports, 3/1/1942-7/1/1946; 1052 Aviation Squadron Unit War Diaries and Unit Histories, 1941-1949; 1053 Aviation Aircraft Wings Unit War Diaries and Unit Histories, 1941-1949; and 1054 Aviation

commands that provide illuminating perspectives on marine aviation.²¹ Additionally, the U.S. Marine Corps Muster Rolls, 1798-1958 from this records group enable a detailed examination of the personnel assigned to VMF-221.²² Records in this group are identified by Records Group number, Entry Group number, Series Title, Location, and Container.

The Historical Amphibious Files held by the History Division at Marine Corps University in Quantico, Virginia include documents that provided insight into the role of marine aviation in naval strategy during the interwar period. Additional details about doctrine for marine aviation in this collection are revealed within the records of lectures given at Marine Corps schools.²³ The History Division's records also include valuable insight into key leaders and aviators in its Oral History, Personal Papers, and Reference Collections.

The reports of the United States Strategic Bombing Survey regarding Pacific aviation operations provide detailed evaluations of the effectiveness of American air efforts. These reports also provided insight into Japanese actions and perspectives on American air operations.²⁴

Several first-hand accounts provided illuminating details. Of note, *Fighting Falcons: The Saga of Marine Fighter Squadron 221* includes multiple eyewitness accounts by members of the squadron. Colonel Dean Caswell, one of the squadron's wartime pilots, compiled this privately published

Aircraft Groups Unit War Diaries and Unit Histories, 1941-1949; all at National Archives College Park, College Park, MD. Hereafter RG 127 A1 237-A, 1052, 1053, and 1054 respectively.

²¹ RG 127 A1 1016 Records of Aviation Commands and Units, 1942-1947; 1023 Records of Aviation Commands and Units, 1942-1947; 237-A 1st Marine Air Wing-Aircraft Action Reports 1944-1947; 237-G Correspondence and Reports of Marine Aviation Units; and 237-H Second Marine Air Wing Correspondence 1940-1946. Hereafter RG 127 A1 1023, 237-A, 237-G, and 237-H respectively.

²² RG 127 Muster Rolls and Personnel Diaries, 1/1941 - 12/1980, retrieved from ancestry.com, hereafter unit, muster roll, month, year.

²³ History Division, U.S. Marine Corps, Personal Papers Collection, Lectures, Quantico, Virginia.

²⁴ United States Strategic Bombing Survey (USSBS), Aircraft Division, *The Japanese Aircraft Industry* (Washington: U.S. Government Printing Office, May 1947); USSBS, Military Analysis Division *Air Campaigns of the Pacific War* (Washington: U.S. Government Printing Office, July 1947); USSBS, Naval Analysis Division, *The Allied Campaign Against Rabaul* (Washington: U.S. Government Printing Office, 1 September 1946), and *The Campaigns of the Pacific War* (Washington: U.S. Government Printing Office, 1946).

history.²⁵ Caswell also wrote a combat history of the squadron's final deployment, *Kamikaze Madness and Marine Fighter Pilots: A True Story of a Fighting Ship and its Marine Fighter Pilots*, and gave two enlightening interviews in his later years.²⁶ The autobiography of Maj. Gen. Marion Carl, who flew with VMF-221 at Midway, provided excellent eyewitness observations.²⁷ Historian Eric Hammel interviewed Colonel James Swett, USMC (retired), a highly decorated member of the squadron.²⁸ The family of Colonel Edwin S. Roberts, USMC (Retired), provided a copy of the diary Roberts kept while in command of VMF-221 aboard *Bunker Hill*.

Eyewitness accounts by marines who served in other squadrons filled in details on the selection and training of marine aviators. Notable among these are Colonel John Howard McEniry's *A Marine Dive-bomber Pilot at Guadalcanal*, Colonel Jefferson J. DeBlanc's *The Guadalcanal Air War: Col. Jefferson DeBlanc's Story*, Colonel R. Bruce Porter and Eric Hammel's *Ace! A Marine Night-Fighter Pilot in World War II*, and First Lieutenant Charles C. Winnia's *The Diary of a Corsair Pilot in the Solomons, 1943*.²⁹

²⁵ Colonel Dean Caswell, USMC (Ret), *Fighting Falcons: The Saga of Marine Fighter Squadron 221* (Austin, TX: VMF 221 Foundation, 2004).

²⁶ Colonel Dean Caswell, USMC (Ret), *Kamikaze Madness and Marine Fighter Pilots: A True Story of a Fighting Ship and its Marine Fighter Pilots* (Austin, TX: Colonel Dean Caswell USMC (Ret), 2017); Lieutenant Colonel Mitch "Taco" Bell, *Tall Tales with Taco*, S2E58, "Col Dean Caswell, the last WW2 USMC F4U Corsair Ace Alive," interview conducted 12 November 2021, retrieved from <https://www.facebook.com/TuesTallTales/videos/247501664110351/>; Colonel Dean Caswell, USMC (retired) Interview, 2016 Gathering of Eagles, retrieved from <https://goefoundation.org/eagles/caswell-dean/#:~:text=Colonel%20Dean%20Caswell%20is%20a,of%20the%20assault%20on%20Okinawa.>

²⁷ Major General Marion Carl, US Marine Corps (Retired), with Barrett Tillman, *Pushing the Envelope: The Career of Fighter Ace and Test Pilot Marion Carl* (Annapolis: Naval Institute Press, 2014).

²⁸ Hammel, Eric M. "James E. Swett Oral History Interview," Parts 1 and 2. *The American Fighter Aces Association Oral Interviews*. Seattle: The Museum of Flight, circa 1980-1990. Audio and transcript retrieved from <https://digitalcollections.museumofflight.org/items/show/38146>.

²⁹ Colonel John Howard McEniry, USMC (Retired) *A Marine Dive-bomber Pilot at Guadalcanal* (Tuscaloosa, AL: University of Alabama Press, 1987); Colonel Jefferson J. DeBlanc, USMC (Ret), *The Guadalcanal Air War: Col. Jefferson DeBlanc's Story* (Gretna, LA: Pelican Publishing, 2008); Colonel R. Bruce Porter, USMC (Retired), with Eric Hammel, *Ace! A Marine Night-Fighter Pilot in World War II* (Pacifica, CA: Pacifica Press, 1985); First Lieutenant Charles C. Winnia, USMC, *The Diary of a Corsair Pilot in the Solomons, 1943*, edited & annotated by C.S. Richardson (Scuttlebutt and Small Chow [no date]). Retrieved 12 Dec 2023 from <https://www.rcgroups.com/forums/showatt.php?attachmentid=1635585>.

Structure

This study proceeds chronologically. It first examines VMF-221 and marine aviation prior to the war. It establishes a pre-conflict baseline of potential contributing factors: numbers and types of marine aircraft; doctrine and tactics; training and experience; geography; logistics; intelligence; and command and control.

The first case study measures the effectiveness of marine aviation at the 1942 Battle of Midway, where marine performance appears to have been disastrous. By examining marine aviation in the context of this decisive U.S. naval victory, the study achieves a nuanced evaluation of its effectiveness.

The second case study examines VMF-221's operations in the Solomon Islands in 1943. From March to November, the squadron flew sustained combat operations over three combat tours in forward areas. Squadrons like VMF-221 battled for air superiority and sea control to enable amphibious assaults and to erode Japanese naval and air strength. VMF-221's operations throughout 1943 are well documented and provide a wealth of measurable indicators of performance and effectiveness.

The third case study investigates the squadron's experience aboard an aircraft carrier in the final year of the war. VMF-221 spent 1944 retraining at an air station in Southern California. Toward the end of that year, the squadron's aviators qualified for carrier operations, a novel employment of a marine squadron. From February to May, VMF-221 flew an intense tempo of combat missions from USS *Bunker Hill* that ended when the ship suffered a fiery suicide plane attack. This period affords an opportunity to measure the performance and effectiveness of a marine squadron directly supporting a naval task force at sea.

The study ends with a summary of findings. The study then concludes by identifying some implications about the overall effectiveness of marine aviation in support of the Pacific Fleet in the Second World War.

Historiography

The purpose of this historiography is to provide a comprehensive review of relevant published literature. It evaluates the current body of military history, noting the scope of important works and their principal arguments. The historiography concludes by characterizing the gaps in existing scholarship and showing how an analysis of primary and secondary sources can help fill those gaps and answer the research questions.

Published literature

A review of the existing literature reveals that this topic has not been deeply examined nor has it been researched in this way. Official histories published by the U.S. Army, Marine Corps, and Navy have covered campaigns and specific units, but do not attempt to evaluate operational effectiveness. Robert Sherrod's *History of Marine Corps Aviation in World War II*, published in 1952, still stands as an indispensable work on marine aviation in the Second World War. Sherrod provided an excellent factual narrative, but he never intended his work to be a critical assessment.³⁰

Several scholars have examined the development of America's Pacific war plans in the interwar period and the Marine Corps' preparations to support those plans. However, most works only lightly touch on the role of marine aviation. The exception is Lieutenant Colonel Edward C. Johnson's *Marine Corps Aviation: The Early Years, 1912-1940*. Johnson reveals exceptional insights

³⁰ Sherrod, *Marine Aviation*.

into the organizational difficulties the corps dealt with as marines tried to figure out how to employ aviation and develop their aviation capabilities.³¹

The five-volume *History of U.S. Marine Corps Operations in World War II* synthesized operational orders, records, and reports into a highly readable narrative. These official histories insightfully analyzed marine aviation in the context of Marine Corps and joint operations throughout the Pacific War.³² The official Marine Corps history of the corps' operations at the Battle of Midway, Lieutenant Colonel Robert D. Heinl Jr., USMC's *Marines at Midway*, provides an excellent chronicle of marine aviation activity before and during the battle, though the author relied heavily on reports that over counted the achievements of marine aviation.³³

Captain Samuel E. Morison's *History of United States Naval Operations in World War II* offers a well-researched account that makes thorough use of official naval records. Though Morison's narrative occasionally champions the navy's achievements while denigrating army, army air force, and allied units and commanders, the series provided superb strategic context and insight into operations.³⁴

³¹ Lieutenant Colonel Edward C. Johnson, USMC *Marine Corps Aviation: The Early Years, 1912-1940* (Washington: History and Museums Division, Headquarters, U.S. Marine Corps, 1977).

³² Henry I. Shaw, Verle E. Ludwig, Frank O. Hough, *History of U.S. Marine Corps Operations in World War II: Pearl Harbor to Guadalcanal*, vol. 1 (Washington, DC: Historical Branch, G-3 Division, Headquarters, U.S. Marine Corps, 1958); Henry I. Shaw and Major Douglas T. Kane, USMC, *History of U.S. Marine Corps Operations in World War II: Isolation of Rabaul*, vol. 2 (Washington, DC: Historical Branch, G-3 Division, Headquarters, U.S. Marine Corps, 1958); Shaw, Ludwig, and Hough, *History of U.S. Marine Corps Operations in World War II: Central Pacific Drive*, vol. 3 (Washington, DC: Historical Branch, G-3 Division, Headquarters, U.S. Marine Corps, 1958); George W. Garand and Truman R. Strobridge, *Western Pacific Operations: History of U.S. Marine Corps Operations in World War II*, vol. 4 (Washington, DC: Historical Branch, G-3 Division, Headquarters, U.S. Marine Corps, 1971); and Benis M. Frank, and Henry I. Shaw Jr., *Victory and Occupation: U.S. Marine Corps Operations in World War II*, vol. 5 (Washington, DC: Historical Branch, G-3 Division, Headquarters, U.S. Marine Corps, 1968).

³³ Lieutenant Colonel Robert D. Heinl Jr., USMC, *Marines in World War II - Marines at Midway* (Washington, DC: Historical Section, Division of Public Information, Headquarters, U.S. Marine Corps, 1948).

³⁴ Samuel Eliot Morison, *History of United States Naval Operations in World War II*, vol. 4: *Coral Sea, Midway, and Submarine Actions: May 1942 – August 1942* (Boston: Little, Brown, and Company, 1964 [1949]); Morison, *History of United States Naval Operations in World War II*, vol. 6: *Breaking the Bismarcks Barrier, 22 July 1942-1 May 1944* (Boston: Little, Brown, and Company, 1950); and *History of United States Naval Operations in World War II*, vol. 14: *Victory in the Pacific, 1945* (Boston: Little, Brown, and Company, 1960).

As marine aviation was a component of naval aviation during the Second World War, the U.S. Navy's histories of naval aviation provided essential organizational information. Albert R. Buchanan's *The Navy's Air War: A Mission Completed*, included enlightening details about the selection and training of marine air and ground crew.³⁵ *Naval Aviation in the Pacific War*, a report prepared by the Chief of Naval Operations, provided a summary of naval aviation operations and placed its accomplishments in the larger context of the struggle for control of the Pacific Ocean.³⁶

Of the U.S. Army's outstanding series of official histories of the Second World War, two proved immeasurably helpful to this study. John Miller's *Cartwheel – The Reduction of Rabaul* and Lieutenant Colonel Roy Appleman's *Okinawa: The Last Battle* offered exceptional insight into the strategic background and operations during the Solomons and Okinawa campaigns.³⁷ Likewise, the fourth volume in the official history of the army air forces in the war edited by Wesley Frank Craven, *The Pacific, Guadalcanal to Saipan, August 1942 to July 1944* enabled quick fact checking of army air force operations in the Solomons.³⁸

In addition to their *Military Effectiveness* trilogy, Millett and Murray superbly chronicled the interwar development of American amphibious doctrine and close air support in *Military Innovation in the Interwar Period*, a topic Millett had first examined in his 1980 history of the Marine Corps, *Semper Fidelis: The History of the United States Marine Corps*. Both works explain why and how the Marine Corps sharply focused its aviation on supporting its landing forces. Millett's earlier work pays

³⁵ Albert R. Buchanan, *The Navy's Air War: A Mission Completed* (London: Harper & Brothers, 1946).

³⁶ Chief of Naval Operations, *Naval Aviation in the Pacific War* (Washington: U.S. Navy, 1947).

³⁷ John Miller's *Cartwheel - The Reduction of Rabaul* (Washington, DC: Center of Military History, U.S. Army, 2015); Lieutenant Colonel Roy Edgar Appleman, US Army Reserve, *Okinawa: The Last Battle* (Washington, DC: Center of Military History, U.S. Army, 2000).

³⁸ Wesley Frank Craven (ed.), *The Army Air Forces in World War II, Volume 4: The Pacific, Guadalcanal to Saipan, August 1942 to July 1944* (Washington, DC: Office of Air Force History, 1983 [1948]).

particular attention to the bureaucratic obstacles the corps faced attempting to get its squadrons into the war.³⁹

Critical operational histories of the Marine Corps in the Second World War have focused on the effectiveness of its amphibious capabilities, but not on marine aviation. Jeter A. Isely and Philip A. Crowl gave the development of amphibious warfare a particularly thorough examination in their 1951 work, *The U.S. Marines and Amphibious Warfare: Its Theory, And Its Practice in The Pacific*. However, their discussion of marine aviation was limited to the challenges associated with close air support.⁴⁰ Chris Hemler's recent work, *Delivering Destruction: American Firepower and the Amphibious Assault from Tarawa to Iwo Jima* studied the American implementation of land, sea, and air firepower during amphibious operations, but not the role of marine aviation in support of the fleet.⁴¹ Related dissertations have examined the development of marine aviation before, during, and after the Second World War, but have focused on its role as a supporting arm of the landing force during an amphibious operation and not as a combat multiplier for the fleet at sea.⁴² Michael Kern's excellent

³⁹ Allan R. Millet and Williamson Murray, *Military Innovation in the Interwar Period* (Cambridge University Press, 1998); Allan R. Millet, *Semper Fidelis: The History of the United States Marine Corps* (New York: Macmillan Publishing Company, 1980).

⁴⁰ Jeter A. Isely and Philip A. Crowl, *The U. S. Marines and Amphibious Warfare: Its Theory, And Its Practice in The Pacific* (London: Princeton University Press, 2015 [1951]).

⁴¹ Christopher Kyle Hemler, *Delivering Destruction: American Firepower and Amphibious Assault from Tarawa to Iwo Jima* (Annapolis: Naval Institute Press, 2023).

⁴² Allison, "The Black Sheep Squadron," Timothy L. Clubb, "CACTUS air power at Guadalcanal," Fort Leavenworth, KS: Master of Military Art and Science Theses, 1996; Gabriel L. Diana, "Vision, education and experimentation: Marine Corps organizational behavior and innovation during the Interwar period," U.S. Army Command and General Staff College thesis, 2013, retrieved from <https://cgsc.contentdm.oclc.org/digital/collection/p4013coll2/id/3010>; David G. Dotterer, "Development of fire support coordination for amphibious operations between World Wars I and II," U.S. Army Command and General Staff College thesis, 2008, retrieved from <https://cgsc.contentdm.oclc.org/digital/collection/p4013coll2/id/1531>; James A. Ginther, "Keith Barr McCutcheon and the Integration of Aviation into the Marine Corps," Ph.D. diss., Texas Tech University, 1999, retrieved from <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.861.903&rep=rep1&type=pdf>; Brian S. McFadden, "Marine close air support in World War II," U.S. Army Command and General Staff College thesis, 1999, retrieved from <https://cgsc.contentdm.oclc.org/digital/collection/p4013coll2/id/640>; Major David S. Peterson, USMC, "Marine Corps Aviation Transformation Between the World Wars: A Study of the Evolution of Marine Aviation and the Marine Air Ground Team Concept Under the Leadership of General Roy S. Geiger," Marine Corps University, Command and Staff College thesis, 2005, retrieved from https://usmc.primo.exlibrisgroup.com/view/delivery/01USMCU_INST/1248567560005241; Matthew T. Ritchie, "Influence of marine aviation on the development of the tentative landing operations manual," U.S. Army Command and General Staff College thesis, 2013, retrieved from <https://cgsc.contentdm.oclc.org/digital/collection/p4013coll2/id/3004>.

thesis on a navy fighting squadron evaluated similar contributing factors, but did not cover the same scope and depth of this study of a marine squadron.⁴³ Master Sergeant Jeff Dacus superbly chronicled the exploits of another marine fighting squadron in *The Fighting Corsairs: The Men of Marine Fighting Squadron 215 in the Pacific during WWII*; however, Dacus' historical narrative is not intended as a critical analysis of the squadron's effectiveness.⁴⁴

Investigating the enemy side of tactical engagements proved difficult, but several works provided insights into Japanese strategy and operations. Paul S. Dull, who served as a Japanese linguist during the war, chronicled Japanese naval operations in *A Battle History of the Imperial Japanese Navy (1941-1945)*.⁴⁵ David C. Evans' collection of first-hand accounts, *The Japanese Navy in World War II in the Words of Former Japanese Naval Officers*, included informative perspectives on Midway and the suicide attacks at the end of the war.⁴⁶ Evans subsequent collaboration with Mark R. Peattie, *Kaigun: Strategy, Tactics, and Technology in the Imperial Japanese Navy, 1887-1941* included superb analysis of the reasons for the decline of Japanese naval air power over the course of the war.⁴⁷

Ronald H. Spector's critical analysis of the Pacific War, *Eagle Against the Sun*, established the strategic background for the operations in which VMF-221 participated.⁴⁸ Likewise, Edwin P. Hoyt's study in command of Admiral Chester Nimitz and his admirals, *How They Won the War in the Pacific*, provided illuminating details about key planning conferences and strategic decisions.⁴⁹

⁴³ Michael Elliot Kern, "Striking Eagles: Doctrine, Training, and Fighting Squadron Five at War in the Pacific," master's dissertation, George Washington University, 2011, retrieved 12 Dec 2023 from <https://www.proquest.com/openview/d2a0597d2a77659c5a24bc220fc811d8/1?pq-origsite=gscholar&cbl=18750>.

⁴⁴ Master Sergeant Jeff Dacus, USMCR (Retired), *The Fighting Corsairs: The Men of Marine Fighting Squadron 215 in the Pacific during WWII* (Lanham, MD: The Rowman and Littlefield Publishing Group, Inc., 2020).

⁴⁵ Paul S. Dull, *A Battle History of the Imperial Japanese Navy (1941-1945)* (Annapolis: Naval Institute Press, 1978).

⁴⁶ David C. Evans, *The Japanese Navy in World War II in the Words of Former Japanese Naval Officers* (Annapolis: Naval Institute Press, 1986 [1969]).

⁴⁷ David C. Evans and Mark R. Peattie, *Kaigun: Strategy, Tactics, and Technology in the Imperial Japanese Navy, 1887-1941* (Annapolis: Naval Institute Press, 2012).

⁴⁸ Ronald H. Spector, *Eagle Against the Sun* (New York: The Free Press, 1985).

⁴⁹ Edwin P. Hoyt, *How They Won the War in the Pacific: Nimitz and His Admirals* (Guilford, CT: Morris Book Publishing, LLC, 2002 [1970]).

Jonathan Parshall and Anthony Tully's *Shattered Sword: The Untold Story of the Battle of Midway* is a critical analysis of the Imperial Japanese Navy's strategy and operations during the battle. By leveraging recent scholarship of Japanese archives and through a detailed examination of Japanese air group records, the authors debunked many accepted myths about the battle. Their scrutiny of Japanese deck cycles alone stands as an outstanding piece of operational analysis. Parshall and Tully's work is singularly helpful in its enumeration of Japanese craft losses, marine strikes against Japanese ships, air-to-air combat between marine and Japanese aircraft, and the impact these events had on the course of the action.⁵⁰ Craig L. Symonds' *The Battle of Midway* offered an excellent analysis of the battle that capitalized on the great scholarship on the topic over the past eight decades, but space limited Symonds from examining marine aviation operations too deeply.⁵¹

John B. Lundstrom's *The First Team: Pacific Naval Air Combat from Pearl Harbor to Midway* is an outstanding example of operational analysis as well as a compelling historical narrative. Lundstrom examined the development of US Navy fighting squadrons during the first six months of the Pacific War. His investigation into fighter combat tactics in doctrine and practice is exemplary, bolstered by interviews with fifty-six veterans. Lundstrom provides particularly helpful comparisons between the F2A Buffalo, the F4F Wildcat, and the A6M Zero.⁵² Likewise, his details and contrasts the training of naval pilots in both the American and Japanese navies.⁵³ His work does not directly address marine aviation or the marine fighting squadron at the center of this study, and his research focuses on navy pilots. He does not address whether marine squadrons followed the same doctrine or were aware of the development of fighter tactics in navy squadrons.⁵⁴ Lundstrom's sequel, *The First Team*

⁵⁰ Jonathan Parshall and Anthony Tully, *Shattered Sword: The Untold Story of the Battle of Midway* (Washington, D.C.: Potomac Books, 2005), xviii.

⁵¹ Craig L. Symonds, *The Battle of Midway* (New York: Oxford University Press, USA, 2011).

⁵² John B. Lundstrom, *The First Team: Pacific Naval Air Combat from Pearl Harbor to Midway* (Annapolis: Naval Institute Press, 2013), 11-15.

⁵³ Lundstrom, *The First Team*, 451-457.

⁵⁴ Lundstrom, *The First Team*, 26, 27, 32, 35, 41-44, 47, 336-337.

and the Guadalcanal Campaign continues the operational narrative. Lundstrom devotes more space to chronicle marine fighter operations here than he did in his first work. As VMF-221 did not arrive in the South Pacific until February 1943, its operations are outside the scope of this work.⁵⁵

Outside the official histories, published works that examine the 1943 Solomons campaign in the extended period after the Americans secured Guadalcanal are scarce. This is particularly true of the role of aviation in this campaign. Aviation historian Michael Claringbould has taken great strides to remedy that deficit with his series on air combat in the South Pacific. Claringbould has leveraged Japanese archives to provide a highly detailed and balanced examination of aviation in this theater. This study relied on his work, *Operation I-Go: Yamamoto's Last Offensive—New Guinea and the Solomons April 1943*, for insights into Japanese aviation operations.⁵⁶ Aside from Claringbould, this study relied principally on the aforementioned official histories and primary sources to examine the role of marine aviation in the Solomons.

There are several published works that proved helpful to the study of VMF-221's final combat deployment aboard USS *Bunker Hill* in 1945. Condon's *Corsairs and Flattops* proved exceptionally insightful, as Condon examined the challenges marine aviators faced as they shifted from land-based to carrier-borne operations.⁵⁷ In *Rain of Steel: Mitscher's Task Force 58 Ugaki's Thunder Gods and the Kamikaze War Off Okinawa*, Stephen L. Moore offers an exceptionally insightful critical analysis of the larger campaign in which *Bunker Hill* and VMF-221 operated.⁵⁸ Maxwell Taylor Kennedy's *Danger's Hour: The Story of the USS Bunker Hill and the Kamikaze Pilot Who Crippled Her* provides a well-researched narrative focused on the Japanese suicide attack that struck *Bunker Hill*.

⁵⁵ John P. Lundstrom, *The First Team and the Guadalcanal Campaign: Naval Fighter Combat from August to November 1942* (Annapolis: Naval Institute Press, 2013).

⁵⁶ Michael Claringbould, *Operation I-Go: Yamamoto's Last Offensive—New Guinea and the Solomons April 1943* (Kent Town, South Australia: Avonmore Books, 2020), 14.

⁵⁷ Major General John P. Condon, USMC (Retired), *Corsairs and Flattops* (Annapolis: Naval Institute Press, 1998).

⁵⁸ Stephen L. Moore, *Rain of Steel: Mitscher's Task Force 58 Ugaki's Thunder Gods and the Kamikaze War Off Okinawa*, (Annapolis: Naval Institute Press, 2020).

Kennedy interviewed eyewitnesses and leveraged archival documents in a compelling narrative that juxtaposes *Bunker Hill's* story with that of the Japanese suicide attackers. However, Kennedy's text is riddled with so many careless errors that his work requires caution.⁵⁹

Finally, the capabilities and limitations of marine aircraft constitute a crucial aspect of this study. Barrett Tillman's works, *Wildcat: The F4F in World War II* and *Corsair: The F4U in World War II and Korea* provide indispensable insight into these aircraft.⁶⁰ While no similar work exists on the F2A Buffalo, Jim Maas's brief work for hobbyists on this aircraft supplied sufficient detail.⁶¹

These sources provide ample information and analysis to tackle the central research questions. While these works nibbled about the edge of this topic, none tackled it directly. By synthesizing the information available and interpreting it in each of the case studies, the research is able to demonstrate why marine aviation achieved mixed success in the Pacific and how different factors contributed to its operational effectiveness.

Style notes

This work adheres to *The Chicago Manual of Style, 16th Edition*.⁶² It eschews the annoying tendency popular among military writers in the United States to imbecilically capitalize nouns at random. U.S. Marines particularly will bristle at the author's refusal to capitalize "marine."

The work uses standard distances vice metric, except where descriptions of ordnance, such as 20mm guns, are concerned. Miles are statute miles, not nautical miles, and speeds for aircraft are

⁵⁹ Maxwell Taylor Kennedy, *Danger's Hour: The Story of the USS Bunker Hill and the Kamikaze Pilot Who Crippled Her* (New York: Simon & Schuster, 2009), 74. Examples of obvious errors include referring to VMF-221 as VMF-214, misidentifying VMF-221 pilots as members of VMF-241, misidentifying James Swett as the squadron commander, and misidentifying Swett's rank.

⁶⁰ Barrett Tillman, *Corsair: The F4U in World War II and Korea* (Annapolis: Naval Institute Press, 2002), and *Wildcat: The F4F in World War II* (Annapolis: Naval Institute Press, 2001).

⁶¹ Jim Maas, *F2A Buffalo in Action*, illustrated by Peter Manley (Carrollton, TX: Squadron/Signal Publications, 1987).

⁶² University of Chicago Press Staff (ed.), *The Chicago Manual of Style, 16th Edition* (Chicago: University of Chicago Press, 2010).

expressed in statute miles per hour, not nautical miles per hour. Time is depicted in the twelve hour clock. All times are local to the event. Place names are those used by the U.S. armed forces during the Second World War. For example, Taiwan is referred to as Formosa.

Japanese names are presented in the Western style, with surnames last. Wherever possible Japanese ranks and terms are expressed as their American equivalents.

Case One: Midway, 1942

Chapter 1: VMF-221 and Marine Aviation Prior to WWII

VMF-221 July – December 1941

The Marine Corps organized VMF-221 on 11 July 1941 in accordance with a series of naval expansion policies directed by President Franklin D. Roosevelt and authorized by Congress in 1940.⁶³ In mid-1939, the Marine Corps end strength totaled 19,432 marines.⁶⁴ Marine aviation comprised just 1,408 of this total. These marines served primarily in the two aircraft groups of the Fleet Marine Force, one in Quantico, Virginia and the other at Naval Air Station, North Island near San Diego, California. Each group consisted of four aircraft squadrons: one observation, one fighting, one bombing, and one utility.⁶⁵

In May 1940, as Germany's armed forces overran Europe, Roosevelt ordered the Pacific Fleet forward from San Diego to the naval base at Pearl Harbor. The purpose of this move was to deter Japan from taking advantage of the crisis by moving against British and Dutch possessions in the western Pacific.⁶⁶ The Pacific marine aircraft group, Marine Aircraft Group 21 (MAG-21), deployed with the fleet to Ewa Field on Oahu.⁶⁷

The U.S. government continued this naval expansion following the Pacific Fleet's deployment. The Naval Expansion Act of 14 June 1940 authorized a naval aviation force of 4,500 aircraft. A month later, Congress more than tripled that authorization to 15,000 aircraft.⁶⁸ In

⁶³ RG 127 A1 1052 Box 30, VMF-221 unit history. Hereafter VMF-221 unit history.

⁶⁴ Shaw et al, *Pearl Harbor to Guadalcanal*, 47.

⁶⁵ Johnson, *Marine Aviation: The Early Years*, 68, 72.

⁶⁶ Ronald H. Spector, *Eagle Against the Sun* (New York: The Free Press, 1985), 1.

⁶⁷ Sherrod, *History of Marine Corps Aviation in World War II*, 33.

⁶⁸ Naval Expansion Act, 19 July 1940, *United States Statutes at Large, 1939-41*, vol. 54, Part 1, 394-96, 779-80 (Washington, DC: Government Printing Office, 1941), published online 4 Dec 2017 at <https://www.history.navy.mil/browse-by-topic/wars-conflicts-and-operations/world-war-ii/1941/prelude/naval-expansion-act-19-july-1940.html>.

October 1940, Roosevelt authorized the Secretary of the Navy, William F. Knox, to call up the Marine Corps Reserve.⁶⁹

Marine aviation expanded to thirteen active squadrons and 204 aircraft. VMF-221 was one of four new squadrons established during this expansion and one of just four marine fighting squadrons in December 1941.⁷⁰ In July 1941, the Marine Corps transferred seven officers and fifty-one enlisted marines from MAG-21 in Hawaii to form the new squadron at North Island. By 7 December 1941, the squadron had grown to twenty officers and 127 enlisted marines and operated fourteen F2A-3 Buffalo fighter aircraft and a single North American Aviation SNJ-3 Texan scout trainer aircraft.⁷¹ The squadron included twenty-one pilots: all the officers were naval aviators, and one master technical sergeant was designated a naval aviation pilot.⁷²

Second Lieutenant Marion Carl recalled the period from July to November as “an uncommonly pleasant assignment.” The squadron’s pilots trained in section tactics and air-to-air combat. The two-seater SNJ-3 trainer enabled the pilots to practice instrument flying with the cockpit shrouded under a canvas hood while an unshrouded pilot acted as an instructor and safety pilot. During the fall the squadron received a single F4F-3 Wildcat; some pilots qualified in it before it was reassigned to a navy squadron. In anticipation of deploying aboard an aircraft carrier, the marines practiced carrier landings ashore and observed naval aviators launch and recover aboard the aircraft carrier USS *Saratoga* (CV-3) at sea. However, the marines did not have an opportunity to qualify aboard the carrier before she departed for an overhaul at the navy yard in Puget Sound, Washington in October.⁷³

⁶⁹ United States Marine Corps, *The Marine Corps Reserve: A History* (Washington, D.C.: United States Marine Corps, 1966), 59.

⁷⁰ Sherrod, *Marine Aviation*, 33.

⁷¹ RG 127 A1 1052 Box 29 VMF-221 war diary, November 1941-March 1942.

⁷² VMF-221 muster roll, Jan 1942.

⁷³ Carl, *Pushing the Envelope*, 18-19; William T. Larkins, *U.S. Marine Corps Aircraft 1914-1959* (New York: Orion Books, 1988 [1959, 1961]), 92; RG 38 NAID 77686449 USS *Saratoga* war history, 1.

As the Marine Corps wrestled with rapid expansion during the first two years of the war, it rotated commanders and aviators in and out of its squadrons at an astonishing rate. Between July 1941 and June 1945, fifteen different officers would command VMF-221 for an average of merely three months each.⁷⁴ Major William G. Manley commanded VMF-221 for its first three months, until the Marine Corps abruptly ordered him to Europe to learn about developments in aerial warfare. Major Verne J. McCaul took command on 6 October. McCaul retained command until 19 April 1942, when he became the executive officer of the marine aircraft group on Midway.⁷⁵

As McCaul commanded the squadron for over six months, he had a key role in developing VMF-221. He appears to have been a good commander and a disciplinarian. He was popular with his marines and looked out for their welfare. However, McCaul was not a natural fighter pilot, according to Lieutenant Carl. Carl recalled an incident during this period at North Island when one of the inexperienced second lieutenants defeated McCaul in air-to-air combat, which happened frequently. “(McCaul) came back in and he was so mad at himself. I remember him taking his gloves off and throwing them on the deck and saying, ‘I’ll be a son of a bitch. There’s only two ways to turn and I invariably pick the wrong way.’”⁷⁶

The squadron’s flight officer suffered no such handicap. In Carl’s words, Captain Harold W. Bauer enjoyed a reputation as the “reigning top dog.” A standout athlete at the U.S. Naval Academy, Bauer earned his wings in February 1936. He was an experienced, gifted, and aggressive fighter pilot and a demanding, no-nonsense leader.⁷⁷ Carl had run afoul of Bauer when they both flew with

⁷⁴ Sherrod, *Marine Aviation*, 463.

⁷⁵ VMF-221 unit history, 2; VMF-221 muster roll April 1942; University of Maryland Special Collections, Collection 0193-MDHC, Gordon W. Prange papers, Series 7, The Battle of Midway: "Miracle at Midway," Box 2, Folder 9.0, Box 3, Folder 3.0, LtGen. Verne J. McCaul, USMC (Ret.), interview by Robert Barde, 1 June 1966, 1.

⁷⁶ Major General Marion Carl, U.S. Marine Corps (Retired), interview with Benis M. Frank and Major Gary W. Parker, USMC, 1973 and 1978 (Washington, DC. Oral History Collection, History Division, United States Marine Corps, Quantico Virginia), 117; Carl, *Pushing the Envelope*, 18-19.

⁷⁷ Kent B. Brown DMD, “Lt. Col. Harold William ‘Indian Joe’ Bauer - Marine Corps Ace at Guadalcanal,” *Acepilots.com*, Dec. 2002, updated July 5, 2011; “Harold W. Bauer, USMC,” National Medal of Honor Museum (2022), retrieved from <https://mohmuseum.org/joebauermoh/>.

VMF-1 in Quantico. A couple of weeks after Carl joined VMF-221, Bauer told Carl, "OK. It's you and I today." Carl strapped in tightly and determined not to lose the duel. His twisting turns wore the skin off his tailbone. At one point, he found himself in a dangerous inverted spin at low altitude but recovered with a half snap-roll and battled on. On the ground at North Island, Bauer conceded a draw. Years later Carl recalled, "He had a little more respect for me than he had had before."⁷⁸

On 30 November, the squadron received orders to embark aboard *Saratoga* a week later and sail to Hawaii to join MAG-21. The marines scrambled to prepare their aircraft and equipment. By Sunday morning, 7 December, the marines had staged their aircraft and equipment on the pier at North Island. As *Saratoga* completed mooring, her loudspeaker announced the Japanese had attacked Pearl Harbor. The sailors and marines jumped into action, completing the planned twenty-four hour embarkation of aircraft in just fourteen hours. On 8 December, *Saratoga* and VMF-221 sailed for Pearl Harbor.⁷⁹

U.S. naval strategy and doctrine in 1941

VMF-221 was sailing into a war that American planners had been preparing for throughout the interwar period. By 1934, the navy had settled on a step-by-step drive across the central Pacific that would culminate in a decisive fleet engagement with the Imperial Japanese Navy.⁸⁰ The Marine Corps would seize and defend advanced bases to enable the fleet to sustain and maintain its ships and base aircraft.⁸¹ Both the role the Marine Corps would fulfill in this plan and the corps' recent actions in the Caribbean and Central America shaped the doctrinal employment of marine aviation.

⁷⁸ Carl interview, Frank and Parker, 89; Carl, *Pushing the Envelope*, 18.

⁷⁹ RG 127 A1 1052 VMF-221 unit history 3; VMF-221 muster roll, Apr 1942; *Saratoga* war history 2; Bauer, "War Diary."

⁸⁰ Edward S. Miller, *War Plan Orange: The U.S. Strategy to Defeat Japan, 1897-1945* (Annapolis: Naval Institute Press, 1991), 269-271.

⁸¹ Millett, *Semper Fidelis*, 328.

As early as 1919, Major Alfred A. Cunningham had testified before Congress that, “The only excuse for aviation in any service is its usefulness in assisting the troops on the ground.”⁸² This had not been the role of marine aviation in the First World War. Rather than directly supporting ground forces, the First Marine Aviation Force had struck targets such as railyards in the German rear, while the 1st Marine Aeronautic Company had flown anti-submarine patrols around the Azores. Chastened by this experience, marine aviation pioneers toiled hard to realize a ground support role. As early as 1919, marine aircraft were supporting the corps’ expeditions to Hispaniola in the Caribbean. Marine biplanes supported marines and constabulary forces on the ground, delivering mail, passengers, and supplies, conducting reconnaissance, and occasionally strafing and bombing insurgents. In 1927 and 1928, two squadrons in Nicaragua supported marines fighting the Sandinistas with bombing and strafing attacks, reconnaissance, aerial resupply, and casualty evacuation. By 1934, when the last squadron left Haiti, marine aviators had achieved some success at dive-bombing enemy positions in support of marine infantry on the ground. Marine planners like Lieutenant Colonel Earl H. Ellis had considered the role and organization of aviation in amphibious operations as early as 1921. By the late 1930s, naval strategy and marine doctrine agreed that the role of marine aviation in a war with Japan would be to support the landing force in its seizure and defense of advanced bases. Marine aviators had evaluated techniques in fleet exercises throughout the 1930s and captured their lessons in the *Tentative Landing Operations Manual* in 1935.⁸³

According to the Navy’s *Landing Operations Doctrine*, which replaced the *Tentative Landing Operations Manual* in 1938, aviation’s first task was to gain and maintain air superiority. This it would achieve through a combination of fighter protection and strikes against enemy airfields and air defenses. Throughout the amphibious assault, aviation would attack ground defenses, spot for naval

⁸² Major Alfred A. Cunningham, USMC, “Value of Aviation to the Marine Corps,” *Marine Corps Gazette*, September 1920, 222.

⁸³ Johnson, *Marine Aviation: The Early Years*, 13-25, 53, 55-57, 65; Miller, *War Plan Orange*, 184, 191, 194-202.

gunfire and artillery, protect troops, ships, and aircraft from enemy air attack, and conduct reconnaissance.⁸⁴

By 1940, Marine Corps doctrine explicitly established this ground support role. A marine aviation publication stated,

Mission of Marine Corps Aviation. - The primary mission assigned to Marine Corps Aviation is to support the Fleet Marine Force in landing operations, and to support other troop activities in the field. Secondly, Marine Corps Aviation serves as replacement squadrons for Naval carrier-based aircraft.⁸⁵

How naval doctrine conceived both Navy and Marine aviation would “support the Fleet Marine Force in landing operations” requires explanation. Throughout the 1930s, the need for island-based aircraft to support the fleet’s Pacific offensive became increasingly evident to naval planners, but they struggled to reconcile the limited range of land-based aircraft and the fleet’s limited number of aircraft carriers.⁸⁶ The challenge of transporting landing force (marine) aircraft to the objective and getting them ashore confounded planners. In 1937, the commanding officer of the marine aircraft group at Quantico underscored this problem in a letter to the commander of the U.S. fleet’s Aircraft Battle Force:

It has been apparent for a long time to some of us that Marine Corps Aviation cannot perform its primary mission, that of furnishing air support in the capture of a hostile base, under most conditions, unless we are prepared to operate from carriers.⁸⁷

But until the U.S. commissioned far more aircraft carriers, only navy squadrons would fly from them. Marine squadrons could not join the battle until aviation could be established ashore.

⁸⁴ USN, *F.T.P. 167*, 151-158.

⁸⁵ USMC, *Aviation General*, 3.

⁸⁶ Miller, *War Plan Orange*, 184, 191, 194-202.

⁸⁷ Marine Corps Personal Papers Collection, Roy S. Geiger Collection (COLL/2349), Geiger to Vice Admiral F. J. Horne, 26 March 1937, cited by Peterson in “Marine Corps Aviation Transformation Between the World Wars” (2005).

In late 1940, the U.S. faced a probable war with both Germany and Japan. The Chief of Naval Operations shelved War Plan Orange. Army and navy planners developed Joint Plan Rainbow Five in 1941. Under Rainbow Five, the U.S. would accept the loss of the western Pacific and fight a defensive war in the Pacific until the Allies had mobilized sufficient power to take the offensive.⁸⁸ Marine squadrons operating from U.S. occupied islands would have a key role in the Pacific Fleet's defensive strategy.

Organization

How marine squadrons fit into the Pacific Fleet's organization requires some explanation. Since its inception in 1912, marine aviation has been both a subordinate element of the Marine Corps and a component of naval aviation. Reconciling this division has often vexed the Department of the Navy and marine and navy commanders.

In 1941, the Department of the Navy's Bureau of Aeronautics administered most aspects of navy and marine aviation. While the Commandant of the Marine Corps retained authority over personnel assignments, the Bureau of Aeronautics made recommendations on aviation assignments and training for marine aviation and procured, managed, and maintained aircraft, equipment, and supplies.⁸⁹ The Chief of Naval Operations – not the Commandant of the Marine Corps – determined the number and type of marine squadrons.⁹⁰ In other words, the navy determined the type, quantity, and organization of marine aircraft, provided their materiel support, trained their aviators and ground personnel, and had a substantial voice in who flew for the Marine Corps.

⁸⁸ Miller, *War Plan Orange*, 269-271.

⁸⁹ Navy Department General Order Number 65, 10 August 1921, cited in Bureau of Aeronautics, vol. 20, *Marine Corps Aviation* (Washington, DC: Department of the Navy, 1957), 2. Hereafter volumes in this series cited as BuAir, title, volume.

⁹⁰ BuAir, *Marine Aviation*, 10-11.

In the fleet, marine aviation served within the Fleet Marine Force. However, on the eve of war, the degree of control retained by the Fleet Marine Force commander over marine squadrons was murky. The Atlantic and Pacific Fleet Marine Forces were subordinate commands of their respective fleets. In July 1941, VMF-221 and the other squadrons of MAG-21 were administratively attached to Fleet Marine Force Pacific, but Vice Admiral William F. Halsey, the Commander, Aircraft, Battle Force, Pacific Fleet, directed their tactical training and exercised operational control of the squadrons in Hawaii. Maintenance was similarly divided between naval air stations and marine aircraft groups. At air stations such as North Island, marine squadrons depended on navy air base detachments for overhaul of aircraft and engines. The headquarters and service squadrons at each marine aircraft group provided similar support at temporary fields. Maintenance of engines and airframes and services such as fuel, supply, and ammunition were centralized within the group's headquarters and service squadron.⁹¹

The squadron provided the basic tactical and administrative unit of marine aviation. Marine squadrons had eighteen aircraft in 1941. Fighters operated in two divisions of three sections each or three divisions of two sections each. Each section consisted of three aircraft. As described in a lecture given by Major Frank D. Weir at Marine Corps Schools in 1941, a fighting squadron organized into three divisions could maintain a continuous air patrol or alert, with one division aloft and two on the ground in rotation. The ground side of the squadron was organized into sections that specialized in different aspects of aircraft operations and service. The senior enlisted marine, a master technical sergeant, filled the billet of leading chief and oversaw aircraft maintenance. The squadron's first sergeant, junior in rank to the leading chief, oversaw personnel and administration. An engineering and check crew section performed the most technically difficult aircraft

⁹¹ Marine Corps Personal Papers Collection, Lectures, Collection 3983, Box 10, Marine Corps Schools, 1940-41, Folder 23, Major F. D. Weir, "The Organization of Aviation Units," 1941; Johnson, *Marine Aviation: The Early Years*, 72; Sherrod, *Marine Aviation*, 33; Shaw et al., *Pearl Harbor to Guadalcanal*, 68.

maintenance. Plane captains performed routine maintenance, fueled the aircraft, performed pre-flight inspections, and started the engines when an aircraft had to takeoff at short notice. An ordnance section maintained the machine-guns and loaded ammunition and bombs. A radio shop maintained communications equipment. Other specialists packed parachutes and refilled oxygen systems. A surprisingly large number of marines, perhaps ten percent of the ground crew, served as cooks and messmen.⁹²

Aircraft

The Brewster F2A Buffalo was the U.S. Navy's first monoplane fighter. Because Brewster struggled with production, the Bureau of Aeronautics curtailed acquisition of the F2A in early 1941. As the navy re-equipped its squadrons with Grumman F4F Wildcats, it reallocated the F2As to marine and training squadrons, which were a lower priority. When VMF-221 embarked *Saratoga*, the squadron brought fourteen F2A-3 fighters aboard. The F2A-3 was heavier than the F2A-2. It carried more fuel, ammunition, and armor. As a result, several of the F2A-3's key performance characteristics were worse than those of the F2A-2 it replaced: its top speed was 321 mph, its rate of climb at sea level was 2440 feet per minute, and its service ceiling was 32,600 feet. The F2A-3 was armed with four .50 caliber machine-guns and could carry two 100-pound bombs.⁹³

⁹² Weir, "Organization of Aviation Units" (1941); Marine Corps History Division, Manuscript Collection, James L. Neefus Papers, Collection 2376, Box 1, "CO VMF-221 to CO MAG-22," 7 May 1942; Michael Silan, interview by John Eliot, 25 July 2008, El Toro Marine Corps Air Station Oral History Project, Center for Oral and Public History, California State University, Fullerton, CA, 5.

⁹³ Maas, *F2A Buffalo*, 37; VMF-221 unit history, 4, 37.



Figure 1. Brewster F2A-3 Buffalo (Naval History and Heritage Command Photo NH 97540)

In October 1941 VMF-221 had a single F4F-3. Fighter pilots appreciated the F4F-3's stability as a gun platform. Unlike later variants, the F4F-3 did not have folding wings, which enabled aircraft carriers to use deck space more efficiently. The pilot had to retract the F4F-3's landing gear manually, a cumbersome and distracting feature.⁹⁴



Figure 2. F4F-3 Wildcats of VMF-211 (NARA Photograph 127-V-29309)

⁹⁴ Barrett Tillman, *The Wildcat in World War II* (Annapolis: Naval Institute Press, 2001), 11-14.

As aviation historian John B. Lundstrom has pointed out, on paper the F2A-3 and the F4F-3 performed similarly. Table 1.1 compares key characteristics.

Table 1.1. F2A-3 and F4F-3 performance

Aircraft	Top speed (mph)	Minutes to 10,000 feet	Minutes to 20,000 feet	.50 caliber machine-guns	Rounds of ammunition	Seconds firing to empty	100 lbs. bombs
F2A-3	321	4.6	10.2	4	325	16.25	2
F4F-3	329	4.6	10.3	4	475	23.75	2

Source: Lundstrom, *The First Team*, 11-15.

Both aircraft provided the pilot with armored protection, which traded speed and maneuverability for ruggedness and survivability. In 1941, both aircraft were equipped with obsolescent, telescopic gunsights that provided too narrow of a field of view and impaired the pilot's ability to achieve deflection gunnery shots.⁹⁵

The aircraft were similar, but not equal. According to Marion Carl, who flew both aircraft in VMF-221 as a lieutenant and became a test pilot after the war, the F4F-3 edged out the F2A-3 in its survivability and in its stability in aggressive maneuvers.

A lot of people put down the Buffalo. I don't think that the (F4F Wildcat) was any more maneuverable or any faster than the Buffalo, but it was a much more solid airplane and that's about the only thing that I could give it. The F4F was the more solid airplane, and it would take a heck of a lot more punishment and it was a little bit more stable. The Buffalo was a little tricky to fly under certain circumstances.⁹⁶

At the end of 1941, VMF-221 and USS *Lexington's* (CV-2) squadron, VF-2, were the only operational fighting squadrons that still flew the F2A-3.⁹⁷

⁹⁵ Lundstrom, *The First Team*, 467-468; Tillman, *Wildcat*, 15-17; Maas, *F2A Buffalo*, 37-41.

⁹⁶ Carl interview, Frank and Parker, 97.

⁹⁷ Larkins, *U.S. Navy and Marine Corps Aircraft*, 92.

That *Lexington's* fighting squadron still flew F2A-3s while some marine squadrons flew the F4F might imply marine squadrons were on an equal priority with navy squadrons for cutting edge aircraft. But VMF-211 was headed to Wake Island, sure to be attacked early on when war broke out. VF-2 would receive its F4Fs long before VMF-221 would. VMSB-231 on Midway would still be flying SB2U Vindicators long after all the carrier scout and bombing squadrons had transitioned to the superior SBD Dauntless. When the Commander of the Aircraft Battle Force allocated aircraft, the newest and best of these went aboard the carriers.

Marine and navy fighting aviation doctrine and tactics, 1941

Two primary source documents from 1941 articulate how the Marine Corps and the navy expected their fighting squadrons to fight. One of the corps' aviation pioneers, Major William J. Wallace, lectured officers at Marine Corps Schools at Quantico on "Fighting Aviation." Wallace's lecture, which was informed by the ongoing air battle over Britain, provides exceptional insight into the expectations the Marine Corps held for its fighting squadrons.⁹⁸ An order issued by the commander of the navy's Aircraft Battle Force in March 1941, *USF-74, Current Tactical Orders and Doctrine U.S. Fleet Aircraft*, vol. 1, *Carrier Aircraft*, detailed how the navy directed its carrier-based squadrons to fight. Though the order does not explicitly address marine squadrons, the Commander, Aircraft Battle Force, Pacific Fleet directed the tactical training of marine squadrons. *USF-74* therefore offers the closest evidence of a tactical directive to marine fighting squadrons.⁹⁹

According to Wallace, "the mission of fighting aviation is to deny enemy aviation freedom of action, by destruction, threat of destruction or by attrition in air combat." Wallace emphasized that

⁹⁸ Marine Corps Personal Papers Collection, Lectures, Collection 3983, Box 10, Marine Corps Schools, 1940-41, Folder 20, Major William J. Wallace, "Fighting Aviation."

⁹⁹ Commander Aircraft Battle Force, *USF-74, Current Tactical Orders and Doctrine U.S. Fleet Aircraft*, vol. 1, *Carrier Aircraft*. (Pearl Harbor, T.H.: United States Pacific Fleet, March 1941).

“action is always offensive,” as the objective was to destroy hostile aircraft. Wallace explicitly stressed three principles: “surprise, maneuver, and hold offensive action,” and implicitly added a fourth principle, mass.¹⁰⁰

To accomplish that objective--destroying hostile aircraft in flight--fighting aviation was employed in mass, not in individual sorties reminiscent of the First World War. To achieve that mass, fighting aviation was coordinated by radio and organized into three-plane sections, with two sections per division, and three divisions to an eighteen-plane squadron. Though in 1941 marine aircraft groups were composites of fighting, bombing, scouting, and observation squadrons, marine aviators sought to imitate the Royal Air Force and consolidate several fighting squadrons into a fighting group. Such massed fighting aviation units would echelon in depth and altitude – by divisions within a squadron, and by squadrons within a group, extending fighter protection to the largest area possible.¹⁰¹

A commander could assign fighting aviation one of two missions: general support (offensive) and special support (defensive). General support included attacking hostile aircraft to prevent them from attacking the friendly force and denying the enemy freedom of action. In general support, Wallace lectured, “The fighters are ‘on the prowl,’ looking for trouble, and usually finding it.” In contrast, special support meant defending specific air, sea, or ground operations, such as escorting a bombing mission.¹⁰²

Since landing force operations would take place on small islands, Wallace preferred general support to special support as general support allowed the fighters greater freedom of action. A typical mission would read, “FMF aviation will provide general fighter support over the transport and beach areas.” Special support was preferable when the enemy held a substantial advantage in

¹⁰⁰ Wallace, “Fighting Aviation,” 3, 5.

¹⁰¹ Wallace, “Fighting Aviation,” 4-5.

¹⁰² Wallace, “Fighting Aviation,” 6-7.

fighter strength. Special support curtailed the offensive power of fighting aviation. According to Wallace, fighters in special support “must wait for trouble to find them.” Wallace concluded, “The rule, then, for the employment of fighter units should be – general support wherever and whenever possible.”¹⁰³

In both missions, fighting aviation operated in some combination of three different methods that the Royal Air Force employed in the defense of London. The air patrol consisted of a screen of small two- or three-plane patrols to limit hostile air observation of the friendly force. Air patrols were considered wasteful; they consumed an eighteen-plane squadron to maintain a six-plane screen that was too weak to intercept a large bomber formation. The second method, air alert, concentrated six fighters together above a geographic point or a naval task force, awaiting intercept directions. Air alert consumed the same degree of fighting strength as an air patrol—an eighteen-plane squadron to maintain a six-plane air alert. The preferred method, ground alert, retained fighting aircraft ready to launch on the airstrip. This method concentrated all eighteen fighters for intercept but depended on an early warning system that could detect attackers sixty miles away to give the fighters time to reach an altitude above the attackers and intercept them.¹⁰⁴

In a section devoted to naval and amphibious operations, Wallace discounted the naval tactic of strafing hostile vessels to suppress enemy air defenses. Instead, Wallace insisted, “In naval warfare, no less than in land warfare, the proper employment of fighters is in the air against the hostile aviation.” If fighting aviation could not accomplish its purpose, “there will be no landing” and secondary missions such as ground attack would be “suicidal” for the fighters.¹⁰⁵

In a section regarding defense of advanced bases, Wallace suggested a combination of air patrol, air alert, and ground alert. The earlier the warning, and the more likely it was to detect hostile

¹⁰³ Wallace, “Fighting Aviation,” 8.

¹⁰⁴ Wallace, “Fighting Aviation,” 8-9.

¹⁰⁵ Wallace, “Fighting Aviation,” 11-12.

aircraft, the greater fraction of fighting strength the commander could assign to ground alert.¹⁰⁶ In a key point, Wallace included this pronouncement:

Seldom will there be enough fighting units available to permit their employment as protective escorts for bombing missions directed at hostile naval objectives. The proper place for the defending fighters is at home, prepared to repel any aerial boarders that might happen along.¹⁰⁷

Fighting aviation was distinguished from attack aviation, which the Marine Corps defined as “...that class of striking force aviation that is organized, equipped, and trained primarily to destroy light material objectives and personnel by the use of light bombs, chemicals, and machine-gun fire.”¹⁰⁸

Marine attack pilots employed three bombing methods. High altitude bombing sacrificed accuracy but kept the aircraft beyond the range of some antiaircraft weapons. Glide bombing was more accurate and easier to master but presented a simpler targeting solution to anti-aircraft gunners. Dive bombing enabled the pilot to bomb accurately while presenting a nearly impossible target to gunners on the ground. In a dive-bombing attack, the pilot started at a high altitude of around 11,000 feet and dove towards the target at an angle of seventy degrees from horizontal – close to perpendicular – before releasing the bomb at around 1,500 feet. Anti-aircraft gunners employing fuses set to explode at a predetermined altitude found it nearly impossible to hit a dive bomber as it plunged towards the target. However, dive-bombing required considerable training.¹⁰⁹

¹⁰⁶ Wallace, “Fighting Aviation,” 9-10.

¹⁰⁷ Wallace, “Fighting Aviation,” 12.

¹⁰⁸ Major F. D. Weir, USMC, “Attack Aviation,” Records of the Archives Branch of the U. S. Marine Corps Personal Papers Collection, Lectures, Collection 3983, Box 10, Marine Corps Schools, 1941-1942, Folder 2, 1.

¹⁰⁹ Weir, “Attack Aviation,” 8; Johnson, *Marine Aviation* (1977), 58; McEniry, *Dive-bomber Pilot*, 21-22; National Naval Aviation Museum, “SB2U Vindicator,” retrieved 12 Dec 2023 from <https://www.history.navy.mil/content/history/museums/nam/explore/collections/aircraft/s/sb2u-vindicator.html>.

While acknowledging that the Marine Corps had employed fighters in an attack role in its small wars of the 1920s and 1930s, Wallace noted that such missions had never been flown in the presence of hostile aviation. Notwithstanding the priority the Marine Corps placed on supporting its landing force, its fighting aviation doctrine discouraged commanders from using fighters against ground targets “except in extreme emergency against highly important objectives.”¹¹⁰

While dismissing the popular belief that fighting aviation required better pilots than other types of aviation, Wallace did note that fighter pilots required more training, particularly in gunnery. These aviators had to be quick thinkers who could remain sharp in thinner air at high altitude and withstand the physiological demands of rapid changes in altitude and maneuvers. As it took a year to train a fighter pilot, Wallace argued that such aviators should not be squandered on missions for which their aircraft and skills were poorly suited.¹¹¹

Wallace’s lecture described how marine fighters would meet the enemy, but not what they would do once combat was joined. A chapter of *USF-74* titled “Tactical Instructions and Doctrine for Fighting Squadrons” filled that gap. Rather than attempting to prescribe tactical methods for every situation a fighting squadron may face, *USF-74* emphasized the importance of applying basic principles and teamwork.

The tactical situations which may confront the fighting squadron are so numerous and varied that definite tactical rules of procedure cannot be set down to cover them.

Drilled in fundamental principles of aerial combat, the pilots trained to think and act as a unit, a properly indoctrinated fighting squadron should meet any tactical situation without any commands from the leader other than the signal for going into action.¹¹²

¹¹⁰ Wallace, “Fighting Aviation,” 13.

¹¹¹ Wallace, “Fighting Aviation,” 4.

¹¹² *USF-74*, Section 2-301, 106.

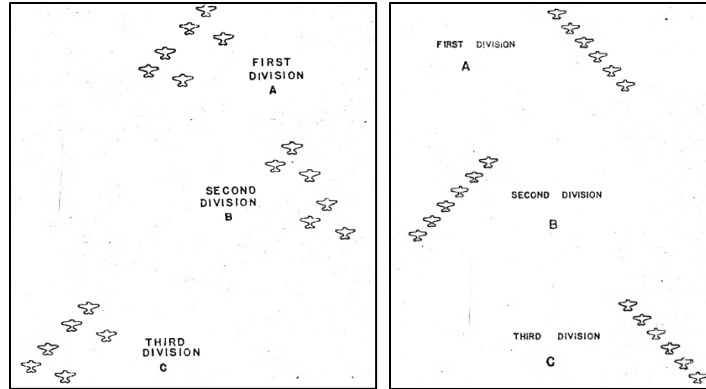
USF-74 identified two principles of aerial engagement: superiority of fire power and superiority of position. To achieve these, *USF-74* emphasized a number of tactics. Fighters should use speed, the sun, and clouds to achieve surprise. Fighters should constantly seek an altitude advantage to enable them to select when and how to engage. Fighters were discouraged from individual dogfights, as concentration in the initial attack and regrouping after enabled the squadron to fight as a team. Once spotted, they should attack immediately. The initial attack should concentrate against the enemy leaders. Rather than holding fire until getting close to the enemy, *USF-74* advocated firing at the earliest possible moment. If the enemy formation maneuvered to maximize its defensive firepower, the attacking squadron could split its attack into three divisions so that at least one division could exploit the blind spots of the enemy aircraft.¹¹³

Defensive principles emphasized preventing surprise, retaining an altitude advantage, concentration, attacking enemy lead aircraft, and protecting friendly blind spots. If attacked from above, the fighters should turn toward the attacker, placing the defender under the nose of the attacker and out of view, forcing the attacker to roll inverted to maintain visual contact and disrupting the attack. If friendly fighters were nearby, the defender could lead the attacker into the guns of friendlies.¹¹⁴

USF-74 advocated three six-plane divisions for air-to-air combat. While cruising, the divisions would echelon in either of the formations depicted in Figures 3A and 3B.

¹¹³ *USF-74*, Section 2-303, 106-107.

¹¹⁴ *USF-74*, Section 2-303, 107-108.



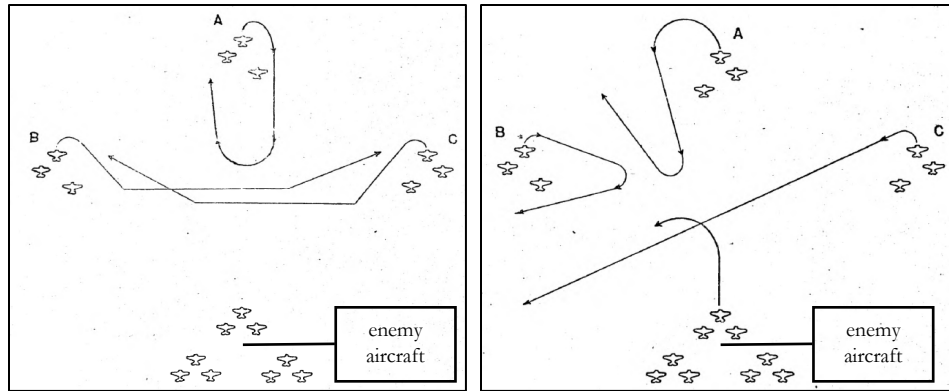
Figures 3A and 3B. “A-B-C Disposition of the Squadron Organized as Three Six Plane Divisions”

(Figures 1-64 and 1-65 in *USF-74*, 111-112)

When the division attacked, sections spread out, with the section in the best position initiating the attack. The remaining sections would be positioned to exploit enemy evasive maneuvers or, if the defending formation stayed on course, follow the lead section in rapid succession. Aircraft within a section attacked one after the other in column. Upon completing a diving run, the section used the speed of the dive to climb, regain altitude, and begin another attack. In an ideal attack, sections continued the chain of attacks, diving, attacking, recovering, regrouping, and reattacking.¹¹⁵

In Figure 4A below, three sections of three fighters each attack an enemy formation from the front and both sides. Each section makes a gunnery attack and then repositions for a repeat attack. In Figure 4B, the enemy formation attempts an evasive maneuver, Section B maneuvers to the enemy’s front, Section A to its starboard, and section C to its port. The sections are then in a position to continue their attack runs as depicted in Figure 4A.

¹¹⁵ *USF-74*, Section 2-309, 113-114.



Figures 4A and 4B: Coordinated attack on an enemy formation by three three-plane sections

(Figures 1-66 and 1-67 in *USF-74*, 117-118)

USF-74 repeatedly admonished fighter pilots to maintain unit cohesion as long as possible and regain it as soon as possible. It explicitly discouraged dogfighting, or “individual melees.”¹¹⁶ When a fighter did attack a lone enemy fighter, *USF-74* directed the attacker to use surprise and then dive to a position on the tail of the enemy and fire at very close range. “The firing position should then be tenaciously held until the opponent is shot down. The altitude advantage should not be relinquished until the attacker is sure of gaining the firing position.”¹¹⁷ On the receiving end of such an attack, *USF-74* prescribed heading directly beneath the attacker and climbing. After passing underneath the attacker, the friendly aircraft would scissor toward and away from the attacker until reaching the same altitude, and then maneuvering to an advantage in altitude or position.¹¹⁸

USF-74 provided fighter pilots with additional instructions for escort missions, protecting service vessels, attacking surface vessels, and anti-submarine patrols. It established a thorough doctrine that directed how fighting squadrons would fight. It appears to helpfully balance standardized procedures with flexibility. However, its instructions on fighter-vs-fighter combat appear to have assumed that friendly and enemy fighters would be evenly matched.

¹¹⁶ *USF-74*, Sections 2-303, 2-309, 106, 113-114.

¹¹⁷ *USF-74*, Section 2-310, 114.

¹¹⁸ *USF-74*, Sections 2-317, 119.

USF-74 did not delve into the technical aspects of aerial gunnery. In addition to learning to attack from directly astern of an adversary, navy and marine fighter pilots learned a difficult technique known as deflection gunnery. Deflection gunnery required the attacker to maneuver to the rear quarter or side of the target aircraft and then lead the target sufficiently so that the bullets intersected the path of the target. How much to lead the target – the deflection part of gunnery – was a function of the attacker’s speed, the target’s speed, and the angle of attack. Setting up such a deflection shot required the attacking pilot to execute a precise combination of turns and rolls, which varied considerably depending on whether the attack began from the side, front, or rear, the speed differential between the aircraft, and the altitude difference. Mastering deflection gunnery required considerable practice. Aviation historian John Lundstrom has asserted that deflection gunnery tactics were unique to U.S. naval fighting aviation in the Second World War among the Allies, and that the only other air force that trained its fighter pilots in this tactic was the Imperial Japanese Navy – the principal adversary of U.S. Navy and Marine Corps aviators.¹¹⁹



Figures 5A and 5B. Approach methods using deflection gunnery. Side approaches are highlighted in light grey in Figure 5B; front and rear approaches are subdued in dark grey. (Naval Air Operational Training Command, *Fundamental Fixed Gunnery Approaches*, 2 min 41 sec, 5 min 56 sec)

¹¹⁹ Naval Air Operational Training Command, *Fundamental Fixed Gunnery Approaches* MN-84b, (Los Angeles: Walt Disney Productions, 1943, digital version by Periscope Film LLC, 2018), retrieved from <https://youtu.be/kRVFQs2XYy4>; Lundstrom, *The First Team*, 458-468.

Though extremely difficult to master, deflection gunnery afforded exceptional advantages. Deflection gunnery enabled the attacker to begin an attack from almost any position relative to the target. Since the attacker could choose from a number of attack methods, the attacker could select an approach that would mask his fighter from defensive guns in the rear or side of the target. And since the attacker would finish the attack by diving underneath the target, the attacker could use the additional speed gained in the dive to climb and set up another attack.¹²⁰

Manning and training marine aviators

To execute this doctrine, the naval services had to obtain aspiring pilots and train them to fly. Though the Navy Department had ramped up its recruiting and training before Pearl Harbor, it was struggling to meet the demand for aviators.

Nearly all the aviators who flew in VMF-221 during the Second World War were regular or reserve marine officers. Between the world wars, the Marine Corps procured regular officers almost exclusively from the Naval Academy, the noncommissioned officer ranks, and ROTC units. Regular officers served as ground officers for several years before applying for flight training. While the Marine Corps obtained reserve officers from several sources, including the Platoon Leaders Class that began in 1935, the corps acquired its reserve aviators exclusively through the marine aviation cadet program.¹²¹ In this program, an applicant first enlisted as a private first class in the reserve. The reservist did not attend basic training at one of the corps' recruit depots but reported to one of several naval air stations. During a fifteen-day period of active duty, the reservist learned basic flying skills and soloed. The program's intent was to evaluate candidates and eliminate unsuitable ones; those who passed were offered appointments as aviation cadets and ordered to Pensacola for flight

¹²⁰ Naval Air Operational Training Command, *Fundamental Fixed Gunnery Approaches*; Lundstrom, *The First Team*, 458-468.

¹²¹ Bernard C. Nalty and Lieutenant Colonel Ralph F. Moody, USMC, *A Brief History of U.S. Marine Corps Officer Procurement, 1775-1969* (Washington, DC: Historical Division, Headquarters, U.S. Marine Corps, 1970 [1958], 7-10.

training. After flight training the reserve aviator remained on active duty for twelve months and then returned to civilian life with occasional reserve training or applied for a regular commission. In mid-1941, the Secretary of the Navy ended the separate marine aviation cadet program and appointed all aviation cadets into the naval reserve, commissioning marine aviators at the end of intermediate flight training.¹²²

A summary of VMF-221's aviators in December 1941 illustrates where the Marine Corps obtained its aviators and how much experience they accumulated by the outbreak of war. Four (Major McCaul, Captain Bauer, Captain John L. Smith, and First Lieutenant John F. Dobbin) obtained regular commissions and served as ground officers before requesting flight training. Master Technical Sergeant Robert L. Dickey had begun flight school as a private. As an enlisted marine he was designated a "naval aviation pilot" instead of a "naval aviator." The others sixteen pilots received their commissions through the aviation cadet program. McCaul, Dickey, and Captain Robert M. Haynes had been flying for over a decade. Two other captains and all three first lieutenants had completed flight school at least five years earlier. Captain John L. Smith and all but one second lieutenant had earned their wings between 1938 and 1940. Only one second lieutenant was less than a year out of flight school. McCaul, Bauer, Dickey, Neefus, and First Lieutenant Frederick R. Payne were qualified to land aboard carriers, and some others may have been as well.¹²³

¹²² BuAir, *Marine Aviation*, (1957), 67-69, 76; BuAir, vol. 22, *Aviation Personnel, 1939-1945*, (n.d.), 68-70.

¹²³ Marine Corps History Division, "Major General Marion E. Carl, USMC (Deceased), *Who's Who in Marine Corps History*, 23 Apr 2019, retrieved from <https://www.usmcu.edu/Research/Marine-Corps-History-Division/People/Whos-Who-in-Marine-Corps-History/Abrell-Cushman/Major-General-Marion-E-Carl/>; Marine Corps History Division, "Lieutenant General Verne J. McCaul (Deceased), *Who's Who in Marine Corps History*, 23 Apr 2019, retrieved from http://www.tecom.usmc.mil/HD/Whos_Who/MacCaul_VJ.htm; Marine Corps History Division, "Lieutenant Colonel Harold William Bauer (Deceased)," *Who's Who in Marine Corps History*, 23 Apr 2019, retrieved from <https://www.usmcu.edu/Research/Marine-Corps-History-Division/Information-for-Units/Medal-of-Honor-Recipients-By-Unit/LtCol-Harold-William-Bauer/>; Marine Corps History Division, Biographic Files Collection, "James L. Neefus;" Marine Corps Personal Papers Collection, Neefus Papers 2376, Box 2, PPC/3134; Marine Corps History Division, "Colonel John Lucien Smith (Deceased), *Who's Who in Marine Corps History*, 23 Apr 2019, retrieved from <https://www.usmcu.edu/Research/Marine-Corps-History-Division/Information-for-Units/Medal-of-Honor-Recipients-By-Unit/Maj-John-Lucian-Smith/>; Marine Corps History Division, U.S. Marine Corps, Quantico, Virginia, biographic file, Burns, Robert Rudolph, "Biography to be submitted by graduating students," US Naval Air Station Pensacola, 28 August 1939; ¹²³ Marine Barracks Pensacola, Florida, muster rolls, September 1936, November and

When McCaul took command of VMF-221 in October 1941, all his pilots were graduates of a naval aviation pipeline when it was still “an elimination training course to weed out the unfit,” according to the Bureau of Navigation’s official history, rather than a progressive training curriculum designed to meet fleet requirements.¹²⁴ Training consisted of three phases: primary, intermediate, and operational. Primary training lasted about three months. Students flew at least 85 hours and took classes in navigation, communications, aircraft recognition, and gunnery. Intermediate flight training included up to 120 hours of flight.¹²⁵ Intermediate students mastered flying, navigating, and landing on instruments. Intermediate students headed to fighters then specialized in skills such as acrobatics, formation tactics, gunnery, combat tactics, bombing, navigation, and night flying. Ground school classes covered engineering and maintenance, navigation, communications, aviation weather, survival training, and squadron operations.¹²⁶ Marine and naval student aviator training was fully integrated during primary and intermediate training.¹²⁷

December 1937, June and July 1938, September, October, November 1939, September 1940; Marine Barracks, Naval Air Station, San Diego, California, muster roll, July 1930; VMS-2, 2d MAG, FMF NAS San Diego, muster roll July 1940; Headquarters Squadron, 2nd MAW, FMF, NAS San Diego, muster roll October 1941; Naval History and Heritage Command (NHHHC), “Smith, John L., Colonel, USMC (1914-1972),” Photography Collection, retrieved 12 Dec 2023 from <https://www.history.navy.mil/our-collections/photography/us-people/s/smith-john-l.html>; Early and Pioneer Naval Aviators Association, “Frederick R. Payne, BGEN, USMC (Ret.),” retrieved 12 Dec 2023 from https://www.epnaao.com/BIOS_files/EMERITUS/Payne-%20Frederick%20R.pdf; “Frederick Payne Jr., Marine Corps ace of World War II, dies at 104,” *The Washington Post*, 17 August 2015, retrieved from www.washingtonpost.com/archive/; Fritz Payne interview by Dave Thompson, Veterans History Project, American Folklife Center, Library of Congress, retrieved 1 Jan 2023 from <https://www.loc.gov/item/afc2001001.16813/>; “Gen. John F. Dobbin Dies,” *The Washington Post*, 8 September 1995, retrieved from www.washingtonpost.com/archive/; Muster roll, Marine Barracks Pensacola, Florida; “Captain John Robert Alvord,” *Military Hall of Honor* (2021), retrieved from <https://militaryhallofhonor.com/honoree-record.php?id=87246>; Department of the Navy Naval Aviator No. 6199 certificate dated 27 October 1939, 2ndLt. Robert R. Burns, USMC, collection of Jim Burns; UMD Prange papers, “Miracle at Midway,” Box 2, Folder 9.0, Box 2, Folder 10.0, Colonel John F. Carey, USMC (ret.), interview by Robert Barde, 1 July 1966, 1, 3; “Capt Robert Edward Curtin,” *FindAGrave.com*, 6 Aug 2010, retrieved from <https://www.findagrave.com/memorial/56128103/robert-edward-curtin>; “Colonel Robert Lee Dickey,” obituary, originally published in *The Press Democrat*, posted by Legacy.com (2022 [2005]), retrieved from <https://www.legacy.com/us/obituaries/pressdemocrat/name/robert-dickey-obituary?id=15886721>.

¹²⁴ BuAir, *Marine Aviation*, 76.

¹²⁵ BuAir, *Marine Aviation*, 68, 112.

¹²⁶ “NATC Pensacola, Florida U.S. Naval Intermediate Flight Training,” E.L. Scharch, *USNR AvCad V-5, Naval Aviator AV(N), WWII*, retrieved 1 Jan 2023, from www.scharch.org.

¹²⁷ BuAir, *Marine Aviation*, 68.

Upon completion of intermediate training, aviation cadets were designated naval aviators and received their wings and commissions as second lieutenants. The marine aviators then reported to squadrons in the Fleet Marine Force for operational flight training in combat aircraft. *USF-74* directed four progressive phases for operational flight training. First, aviators flew familiarization flights in the squadron's assigned model of aircraft. These flights, essentially a review of intermediate training in the assigned aircraft, included acrobatics and combat maneuvers, and were flown day and night and under marginal weather conditions. In the second phase, the aviator practiced maintaining position in section formations while performing combat maneuvers. In the third phase, the aviator trained with the division and squadron in combat formations. In the final phase, the squadron trained as a team to attack enemy aircraft, attack ground targets, and to practice defensive tactics when attacked in the air.¹²⁸

In the years leading up to the Second World War, marine squadrons would then join the ground element of the Fleet Marine Force in a landing exercise.¹²⁹ From Lieutenant Carl's accounts, it does not appear that VMF-221 conducted any training on attacking surface targets during the four months at North Island. The squadron's focus of effort was aerial combat, section tactics, and instrument flying.¹³⁰

Manning and training marine ground crew

In the late 1930s, the Bureau of Aviation operated several 26-35 week technical schools to train navy and marine ground crews. However, only a portion of aviation ground crewmen were able to attend them. Annual output was just 600 graduates per year. Until 1941 the majority of aviation maintenance training still took place on the job. The same congressional act that authorized 15,000

¹²⁸ *USF-74* (March 1941), Section 2-302, 106.

¹²⁹ Johnson, *Marine Aviation: The Early Years*, 72-76.

¹³⁰ Carl, *Pushing the Envelope*, 18-19.

naval aircraft spawned a swift ramp up in aviation technical schools. By the outbreak of war, the navy could seat 8,720 students.¹³¹

How many of VMF-221's marines graduated from technical courses is a matter of conjecture. Among the regular marines, particularly the senior noncommissioned officers, technical expertise gained through schools and on the job was likely high. Junior marines, particularly those called up from the reserve, presumably required more training. Marines who joined the corps' thirteen reserve squadrons in the 1930s attended weekly training and two-week periods of active duty each summer but did not complete recruit training nor aviation schools.¹³²

VMF-221 deployed from San Diego with 127 enlisted marines. Just under half were noncommissioned officers. Almost one in five was a senior noncommissioned officer detailed to aviation. In addition to Dickey, the naval aviation pilot, the squadron had three master technical sergeants, both aviation marines. Master technical sergeant was the highest of the Marine Corps' six pay grades in 1941, so these senior noncommissioned officers provided VMF-221 with considerable technical expertise. Nine technical sergeants and seven staff sergeants were also detailed to aviation duties. In July 1941, the Marine Corps had sent three master technical sergeants (John J. Bobbin, Henry C. Meachem, and Ubal L. Rowden) and one staff sergeant (Joseph O. Lee) by cross country rail to the Grumman Aircraft Factory in Bethpage, NY for specialized training on the new F4F.¹³³

Neither the regular nor the reserve officers attended officer candidate school, as none then existed. Only regular officers attended The Basic School in Philadelphia, which prepared second lieutenants to lead ground units.¹³⁴ The enlisted reservists mobilized from naval air stations

¹³¹ Office of the Deputy Chief of Naval Operations (Air), vol. 13, *Aviation Training, 1911-1939* (Washington, DC: Department of the Navy, n.d.), 317, vol. 14, 74, 76, 86.

¹³² James Law, interview by Maria Carrillo, 26 June 2007, El Toro Marine Corps Air Station Oral History Project, Center for Oral and Public History, California State University, Fullerton, CA, 3-4, 7; Public Affairs Unit 4-1, *Marine Corps Reserve* (1966), 59.

¹³³ VMF-221 muster roll, July 1941, October 1941, January 1942.

¹³⁴ Nalty and Moody, *Officer Procurement*, 7-10.

throughout the U.S. without setting foot on a recruit depot. In a practice that might make modern marines apoplectic, neither the aviation cadets nor the enlisted reservists underwent indoctrination under drill instructors in close order drill, physical fitness, and rifle marksmanship. Inculcating these marines with the identity and high standards of the Marine Corps was left to the regular marines of VMF-221.

Japanese naval aviation aircraft, tactics, and training

During 1942, VMF-221 would encounter four types of Japanese aircraft: the Kawanishi H6K Type 97 flying boat (“Mavis”), the Nakajima B5N2 Type 97-3 carrier (torpedo) attack aircraft (“Kate”), the Aichi D3A Type 99 carrier (dive) bomber (“Val”), and the Mitsubishi A6M2 Model 21 Type 0 fighter (“Zeke” or “Zero”). As the Zero was the Imperial Japanese Navy’s aerial combat fighter, its characteristics deserve particular scrutiny.¹³⁵

On 22 September 1941, the Pacific Fleet’s Fleet Air Tactical Unit issued an intelligence bulletin on the Zero, warning of its superior speed. Other reports from the American Volunteer Group in China estimated the Zero could climb at 3,500 feet per minute and reach 16,000 feet from sea level in just six minutes. The report also warned of the Zero’s superior maneuverability.¹³⁶ The Zero’s actual maximum speed was 340 mph, only slightly faster than the F2A-3 and F4F-3, but its superior rate of climb and maneuverability gave the Zero immense advantages. The Zero traded armor for performance though, and it lacked self-sealing gas tanks, so it was far more vulnerable to machine-gun fire.¹³⁷ The Zero carried 680 rounds for each of its 7.7mm machine-guns, but these light machine-guns often proved ineffective against rugged American aircraft. The Zero’s powerful

¹³⁵ *Jane's Fighting Aircraft of World War II*, (New York: Crescent Books, 1996), 184-185, 187-188, 191.

¹³⁶ Lundstrom, *The First Team*, 480.

¹³⁷ *Jane's Fighting Aircraft*; 187-188; Parshall and Tully, *Shattered Sword*, 78-80.

20mm cannons fired explosive shells that were far more destructive, but with just 60 rounds per cannon the Zero had only 8.67 seconds of cannon firing time.¹³⁸



Figure 6. An A6M2 Zero fighter aboard the aircraft carrier *Akagi* around December 1941

(Naval History and Heritage Command, retrieved 1 Jan 2023 from

<https://www.history.navy.mil/content/history/museums/nnam/explore/collections/aircraft/a/a6m2-zero0.html>)

To attack ships and ground targets, the Imperial Japanese Navy utilized the Kate carrier attack aircraft. The Kate could drop torpedoes in a low-level attack or bombs in a high level attack. The Kate was particularly vulnerable to fighters, with no armor, no self-sealing gas tank, and a single 7.7mm machine-gun with a field of fire limited to the left and right of the tail. Its maximum speed was just 225 mph, and it took over eight minutes to climb to 10,000 feet, so the F2A-3 could easily overtake it.¹³⁹

¹³⁸ Lundstrom, *The First Team*, 480.

¹³⁹ *Jane's Fighting Aircraft*, 191; Hugh Bicheno, *Midway* (London: Cassell Co., 2001), 56.

The Val dive-bomber was a hair faster than the Kate torpedo bomber despite its fixed landing gear and could climb to 10,000 feet in about 6.5 minutes. It had twin 7.7 machine-guns up front as well as a similar rear machine-gun to the Kate.¹⁴⁰ As a dive-bomber, the Val was less vulnerable to fighters and anti-aircraft fire in its bombing run than a Kate in a horizontal high altitude bombing run or a low-level torpedo run.



Figure 7A. A Kate carrier attack plane (Naval History and Heritage Command photo 80-G-427153)

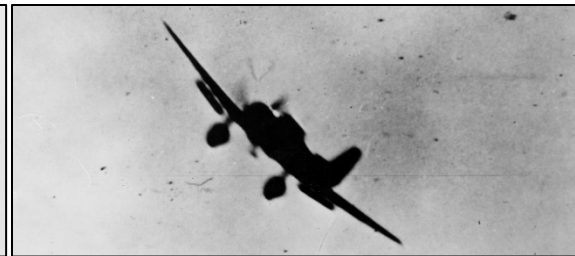


Figure 7B. A Val dive bomber attacking Pearl Harbor (Naval History and Heritage Command photo 80-G-32908)

The Mavis was a long-range reconnaissance flying boat. With an operational radius of 1,000 miles, the huge Mavis was an ideal scouting platform for the vast distances in the Pacific and was occasionally employed as a bomber. With a maximum speed of just 190 mph, the Mavis was slow, but it was heavily armed. It had 7.7mm machine-guns in its bow, dorsal (top), and sides, and had a 20mm cannon in its tail. A fighter attacking a Mavis flying at very low altitude would be unable to approach from below and would face one of its defensive weapons no matter the angle of approach.¹⁴¹

¹⁴⁰ *Jane's Fighting Aircraft*, 184-185; Bicheno, *Midway*, 57.

¹⁴¹ *Jane's Fighting Aircraft*, 185.



Figure 8. Kawanishi H6K Type 97 Mavis flying boat (Commander in Chief Pacific Ocean Areas Bulletin 105-45, *Japanese Operational Aircraft*, April 1945, 73)

Like U.S. naval aviation, Japanese naval aviation emphasized massing airpower. Unlike U.S. carrier task forces, the Imperial Japanese Navy was able to mass nearly 200 aircraft from two or three of its mobile strike force's carriers in a single wave. To control such a large strike, the Japanese maintained large formations enroute to the target. Three-plane sections formed inverted Vs, with the leader at the apex of the V and the trailing aircraft thirty to fifty yards astern and slightly above the leader. Three sections formed a nine-plane division, also formed into an inverted V. The trailing sections flew about 175 to 200 yards astern of the lead section. Three divisions formed an eighteen-plane squadron, similarly arrayed in the inverted V, with trailing divisions 440 to 880 yards astern the lead division. Each carrier had a single squadron of Zero fighters, Val dive bombers, and Kate torpedo bombers. When multiple squadrons from two or three carriers formed for a single strike, the squadrons of the same type grouped together in larger formations. Though the fighters fought by sections, the bombers maintained division integrity through the attack.¹⁴²

At the outbreak of the war, Imperial Japanese Navy pilots were highly proficient. The phases and skills covered in pilot training did not differ radically from U.S. naval aviator training. The overwhelming majority of Japanese naval pilots were enlisted aviators who accumulated over 250 hours before beginning around a year of more extensive training in a fleet squadron. In December

¹⁴² Parshall and Tully, *Shattered Sword*, 80-82; Paul S. Dull, *A Battle History of the Imperial Japanese Navy (1941-1945)* (Annapolis: Naval Institute Press, 1978), 14-15.

1941, the most junior fully qualified fighter pilots in the Imperial Japanese Navy had been flying about two years, which was roughly equivalent to experience level of the junior pilots of VMF-221. Most leaders from sections on up had flown in combat in China.¹⁴³

Summary

The purpose of this chapter was to examine the status of VMF-221 and marine aviation prior to the Second World War to provide a baseline for further evaluation of squadron effectiveness in the case studies. The evidence indicates VMF-221 was fairly ready to fulfil its role in the Pacific Fleet's strategy on the eve of war.

When VMF-221 departed California in December 1941, all its junior aviators save one had at least a year's experience. Three had flown for over ten years. Five had at least five years' experience since flight school. A handful of the experienced aviators had qualified aboard aircraft carriers. The squadron mustered a full complement of ground crew. The high proportion of senior noncommissioned officers suggests the squadron was well poised to train its junior marines.

The squadron had fourteen F2A-3 fighters. Though the Buffalo was not the Bureau of Aeronautics' preferred first line fighter, there was little evidence that the F2A-3 was significantly inferior to the F4F-3. The shortfall of four aircraft was a significant issue, but if the Bureau of Aeronautics could scrounge together another four aircraft for VMF-221, the squadron would have its full allowance.

Though embarked aboard *Saratoga*, VMF-221 could not help the carrier in a fight. Only a handful of the squadron's senior aviators were qualified to land on carriers, and none had done so in the F2A-3. The squadron could launch from *Saratoga* – once – but not recover. VMF-221 could only serve the Pacific Fleet by reinforcing an island garrison.

¹⁴³ Lundstrom, *The First Team*, 187, 454-457, 486-489.

Before the Japanese struck Pearl Harbor, the U.S. decided on a Europe-first strategy. The Pacific Fleet would fight defensively for the first eight months. Until the fleet began seizing advanced naval bases, marine squadrons would protect bases already controlled by the U.S. and its allies.

How the Marine Corps intended VMF-221 to fight in 1941 was fairly straightforward. Fighting squadrons would operate from advanced island bases in general support of the local commander rather than in direct support of a unit on the ground, a task force at sea, or a bombing strike. Depending on how early the aviation commander expected to detect attackers would determine how many fighters he would allocate to air patrol, air alert, and ground alert. Once alerted, the fighters would scramble to altitude and intercept the attackers. The fighters would ambush the attackers from above in a series of diving approaches and deflection shots from the sides and rear.

Navy and marine aviation had published coherent doctrine and VMF-221 had enjoyed four months in San Diego to progress through the first two phases of operational training delineated in *USF-74*. Though Lieutenant Carl's account indicates the squadron had not yet progressed beyond section tactics, the squadron was well-poised to progress through the remainder of the operational training phases prescribed by *USF-74* if given time.

The squadron had focused on aerial combat and eschewed attacking ground targets thus far. There would be no immediate need for marine squadrons to support a landing force. Would there be, such support would have to be provided initially by carrier aviation, which VMF-221 was not qualified to provide. VMF-221's focus on aerial combat during its four months at North Island therefore seems appropriate.

The tactics outlined in *USF-74* appear well suited to attacking Japanese naval bombers. With the Japanese emphasis on large formations and maintaining division integrity through the attack, American attacks by sections and divisions from multiple directions makes sense. However, the

American tactics presumed friendly and adversary fighters would be roughly matched in performance and American fighters would outnumber opponents. This was unlikely. The Zero was faster and more maneuverable and Japanese carriers could mass more airpower than the U.S. fleet. Japanese naval fighter pilots were at least as skilled as the pilots of VMF-221.

As *Saratoga* sailed out of San Diego Bay on 8 December 1941, the marines of VMF-221 may well have believed their squadron was ready to face the Imperial Japanese Navy, and that the Pacific Fleet had a plan to give them that chance.

Chapter 2: December 1941 - May 1942

Operational context, December 1941

The 7 December 1941 Japanese attack on the Pacific Fleet at Pearl Harbor was part of a coordinated offensive against American, British, and Dutch possessions and protectorates throughout Asia and the Pacific. The Japanese followed up their attack on Hawaii with offensives against U.S. forces in the Philippines, Guam, and Wake Island, against British forces in Hong Kong, Malaya, and Singapore, and against Dutch forces in the Dutch East Indies. The Japanese also occupied Thailand, undefended islands in the Solomons in the South Pacific, and undefended atolls in the Marshalls and Gilberts in the Central Pacific.¹⁴⁴

Though U.S. commanders had intended to pursue an aggressive, active defense in the Pacific, the loss of ships and aircraft in Hawaii curtailed the Pacific Fleet's ambitions.¹⁴⁵ On 9 December Admiral Harold R. Stark, Chief of Naval Operations, cancelled pre-war plans and limited the Pacific Fleet's immediate tasks to raiding enemy sea communications and defending Hawaii and Johnston, Midway, Palmyra, Samoa, and Wake atolls.¹⁴⁶

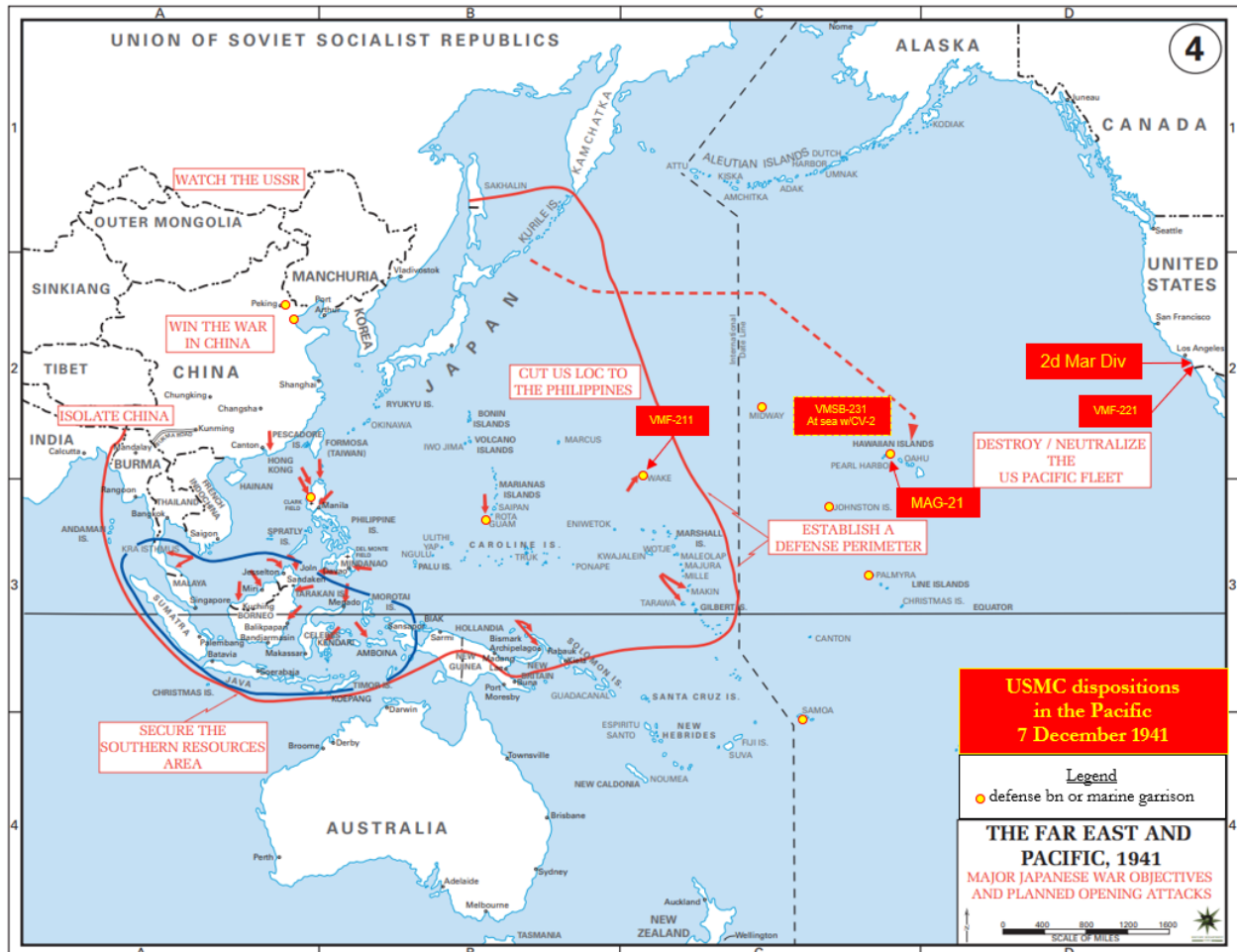
This had significant implications for the Fleet Marine Force, which had marine base defense units garrisoning the five atolls. Only Wake, 2200 miles west of Pearl Harbor, had aircraft: twelve

¹⁴⁴ Louis Morton, *Strategy and Command: The First Two Years*, United States Army in World War II: The War in the Pacific series (Washington, D.C.: Center for Military History, 1962), 138; Shaw et al., *Pearl Harbor to Guadalcanal*, 84; U.S. Military Academy, "The Far East and Pacific, 1941," map, World War II Asia-Pacific series, retrieved 1 Jan 2023 from https://www.westpoint.edu/sites/default/files/inline-images/academics/academic_departments/history/WWII%20Asia/WWIIAsia04.pdf.

¹⁴⁵ Spector, *Eagle Against the Sun*, 147.

¹⁴⁶ OPNAV to CINCPAC, CINCAF, 9 December 1941, 0120, Command Summary of Fleet Admiral Chester W. Nimitz, USN, 7 December 1941 – 31 August 1945, vol. 1, Running Estimate and Summary maintained by Captain James M. Steele, USN, CINCPAC staff at Pearl Harbor, Hawaii, covering the period 7 December 1941 to 31 August 1942, Papers of Chester W. Nimitz, Archives Branch, NHHHC, Washington, D.C., 6. Hereafter Nimitz, *Graybook*, vol.

F4F Wildcats from MAG-21's other fighting squadron, VMF-211, had landed on Wake from the carrier USS *Enterprise* (CV-6) on 4 December.¹⁴⁷



Map 1. Fleet Marine Force dispositions, 7 December 1941 (Shaw et al., *Pearl Harbor to Guadalcanal*, 66-68, 100-102; J. Michael Miller, *From Shanghai to Corregidor*; base map from U.S. Military Academy, "The Far East and Pacific, 1941," World War II Asia-Pacific series)

Strafing attacks by Japanese Zero fighters had destroyed every one of MAG-21's aircraft at Ewa Field, Hawaii on 7 December. A subsequent raid by bombers based in Kwajalein destroyed two-thirds of Wake Island's aircraft on the ground.¹⁴⁸ The Fleet Marine Force was no longer ready

¹⁴⁷ Shaw et al., *Pearl Harbor to Guadalcanal*, 66-68, 100-102.

¹⁴⁸ Sherrod, *Marine Aviation*, 1, 33, 38; Shaw et al., *Pearl Harbor to Guadalcanal*, 71-73. The raid on Wake Island occurred at 11:58 am on 8 December Wake Island time, which was 1:58 pm on 7 December in Hawaii.

to reinforce all five atolls with aircraft. Table 1.2 details the status of MAG-21's squadrons before and after 7 December.

Table 1.2. MAG-21 aircraft strength before and after Japanese attacks, 6-8 December 1941.

Squadron	Location 6 December	Aircraft 6 December	Aircraft 8 December
VMF-211	Wake Island	12 F4F-3	4 F4F-3
	Ewa Field	10 F4F-3, 1 SNJ	0
VMF-221	North Island	14 F2A-3	14 F2A-3
VMSB-231	USS <i>Lexington</i> (CV-2)	18 SB2U-3	18 SB2U-3
	Ewa Field	7 SB2U-3	0
VMSB-232	Ewa Field	19 SBD-1, 3 SBD-2	0
VMJ-252	Ewa Field	1 R3D-2, 1 JO-2, 2 J2F-4, 1 SB2U-3, 1 JRS-1, 1 SBD-1	0
	Ford Island	1 R3D-2	1 R3D-2
MAG-21 (total)		91	37

Source: Sherrod, *Marine Corps Aviation in World War II*, 1, 33, 38; Shaw et al., *Pearl Harbor to Guadalcanal*, 71-73.

Until the Bureau of Aeronautics could replace MAG-21's aircraft losses or deploy MAG-11's squadrons from Virginia to Hawaii, the Pacific Fleet would have just one fighting squadron (VMF-221) and one attack squadron (VMSB-231) to defend its advanced bases.

VMF-221 operations, December 1941 – May 1942

Saratoga's ferry mission was now a wartime sailing. In addition to VMF-221's fourteen F2A-3s, *Saratoga* had her aircraft group of sixty-seven navy planes and another twenty-two aircraft as cargo. The Pacific Fleet was short of fighter aircraft, which was one reason VMF-221 and USS *Lexington's* VF-2 still flew F2A-3s. *Saratoga's* fighting squadron, VF-3, had just twelve F4F-3s.¹⁴⁹ Private First Class William F. Hall, an ordnance marine in VMF-221, recalled that *Saratoga's* hangar deck was so crowded with extra aircraft that the marine F2A-3s were hoisted up and suspended

¹⁴⁹ Lundstrom, *The First Team*, 26-27.

from the overhead.¹⁵⁰ Stowed as they were, the marine F2A-3s would have been of little help to *Saratoga* had she encountered the Japanese. Even if the aircraft could have been readied for action, few of VMF-221's aviators were carrier qualified. They could have launched from her flight deck, but not recovered aboard her.

To escort *Saratoga*, the Pacific Fleet scrounged up three slow First World War-era destroyers. *Saratoga* did not get close enough to launch VMF-221's fighters until 14 December. Twelve of the squadron's F2A-3s landed at Naval Air Station Kaneohe on Oahu, along with *Saratoga*'s navy aircraft. The other two marine fighters remained aboard, presumably due to maintenance issues. The following morning, *Saratoga* pulled into Pearl Harbor.¹⁵¹

As *Saratoga* had sailed slowly toward Hawaii, Admiral Husband E. Kimmel, Commander in Chief, U.S. Pacific Fleet, was planning how he would employ both *Saratoga* and VMF-221. The defense battalion on Wake Island and VMF-211's four remaining F4F-3s had repulsed one attempt to assault the island and had withstood at least five air raids. Wake was in peril, but Kimmel was determined to relieve the siege. He placed Rear Admiral Frank J. Fletcher in command of Task Force 14 and gave him *Saratoga*, three cruisers, eight destroyers, an oiler, and the seaplane tender USS *Tangiers* (AV-8). VMF-221's aircraft and aviators re-embarked *Saratoga*. The ground echelon and a group of defense battalion marines embarked *Tangiers* along with radar, fire control equipment, and a month's supply of ammunition for Wake's defense battalion. Fletcher planned to sail to Wake and establish local air superiority long enough to fly VMF-221 and a navy dive bombing squadron ashore. While the marine and navy fighters provided protection, *Tangiers* would unload her marines and cargo.¹⁵²

¹⁵⁰ William Hall, Oral History, Part 3, "Wake Island," video recording, *The Digital Collections of the National WWII Museum: Oral Histories*, retrieved from ww2online.org.

¹⁵¹ Gregory J. Urwin, *Facing Fearful Odds: The Siege of Wake Island* (Lincoln, NE: University of Nebraska Press, 1997), 412; VMF-221 unit history, 3-4.

¹⁵² Nimitz, *Graybook*, vol. 1, 49; Lundstrom, *The First Team*, 34-35; Urwin, *Facing Fearful Odds*, 413, 418.

The aviators of VMF-221 had mixed feelings about the mission. Captain Bauer wrote,

Other news we received upon landing at Pearl Harbor--namely, that we were to go to Wake, stunned me. I felt very sorry for the Marines at Wake and wanted to go to their aid but at the same time I could see the futility of it all. Wake would fall to the Japs whenever they wanted to make the necessary effort. It could not be protected by our surface vessels due to its distance from Pearl Harbor. We felt the Wake Garrison should be evacuated rather than send more lambs to the slaughter. Wake or any small Pacific Island cannot accommodate the necessary force for self protection. The capture of Wake proved very costly to the Japs largely due to the state of training of its defenders and their never to be forgotten courage.

We left Pearl Harbor aboard the USS *Saratoga* bound for Wake feeling that we were to be sacrificed but we were determined to do our bit for our country and were proud to be able to serve her even for such a small thing as Wake Island. The general frame of mind then was that we knew it was curtains but we felt a sense of pride in our position for being called on to aid the gallant defenders of Wake and were completely resigned to our fate.¹⁵³

The ensuing Wake relief operation revealed the limitations harsh weather could impose on carrier task forces. A carrier's protective screen of destroyers required refueling every thirty hours or so. A prudent commander would sail into a fight with his destroyers fully fueled. As Task Force 14 neared Wake, heavy seas delayed refueling. Fletcher's oiler slowed the task force to her cruising speed of 13 knots. The threat of Japanese aircraft in the Marshalls forced Fletcher to set a circuitous course to the north. Task Force 14 would reach a position to relieve Wake on 24 December as planned (23 December Hawaii time), but no earlier. With few qualified carrier pilots, and none with recent carrier experience, VMF-221 did not participate in combat air patrols over the task force. It did not help that McCaul's ground support marines and equipment were aboard *Tangier*. With McCaul's marines unable to help protect *Saratoga*, VF-3's twelve busy Wildcats alternated in six-aircraft combat air patrols beginning on 22 December (21 December Hawaii time).¹⁵⁴

The day prior, aircraft from the carriers *Hiryū* and *Sōryū* had struck Wake Island, revealing that Japanese carriers were nearby. On 23 December (22 December Hawaii time), one day before

¹⁵³ Lieutenant Colonel Harold W. Bauer, USMC, "War Diary of Harold W. Bauer, December 1, 1941 to October 13, 1942," edited by Kent Brown, *Acepilots.com* (2011 [2002]), retrieved from http://acepilots.com/bauer/bauer_diary.html.

¹⁵⁴ Lundstrom, *The First Team*, 36-40, 44; Urwin, *Facing Fearful Odds*, 417-418, 518.

Fletcher planned to fly VMF-221 ashore, a Japanese amphibious force assaulted Wake. This time, Wake fell. The new acting Commander of the Pacific Fleet, Vice Admiral William S. Pye, briefly considered striking the Japanese carriers with *Saratoga's* air group. But Task Force 14 was no match for *Hiryū* and *Sōryū*, particularly with VF-3 at half strength and VMF-221 unable to pitch in. On 23 December (Hawaii time), Pye ordered Fletcher to abandon Wake and to take his marines to Midway.¹⁵⁵

On Christmas Day, VMF-221's fourteen F2A-3s and an escort of three SBDs launched from *Saratoga* 258 miles from Midway. "Needless to say the Marines and other inhabitants of Midway considered our arrival as the best Xmas present they had ever received," wrote Bauer.¹⁵⁶ The squadron wasted no time and flew two-plane section and four-plane division patrols until dark. The following day, *Tangier* and the remainder of the squadron arrived.¹⁵⁷

Midway atoll offered an austere, isolated home, but not a miserable climate nor harsh living. The atoll consisted of two islands: Sand Island, which had a small harbor and a seaplane base, and Eastern Island, where VMF-221 operated. The air station on Eastern Island was well developed, with a 5400-foot coral runway and a large parking apron. The marines lived around their aircraft in sandbagged dugouts. A chow hall served two starchy, unappetizing meals a day. The marines had plenty of sea water for showers and laundry and enough foul smelling cold water to drink. There was electricity and the island even had a small post exchange.¹⁵⁸

¹⁵⁵ Nimitz, *Graybook*, vol. 1, 71-72; Lundstrom, *The First Team*, 44; Urwin, *Facing Fearful Odds*, 518.

¹⁵⁶ Bauer, diary.

¹⁵⁷ VMF-221 war diary, November 1941-March 1942, 3-4.

¹⁵⁸ Bauer, diary; VMF-221 war diary, November 1941-March 1942, 3-5; RG 38 NAI 77629368 MAG-22 war history, Bureau of Aeronautics interview of Lieutenant Colonel Ira Kimes, 31 August 1942, 12.

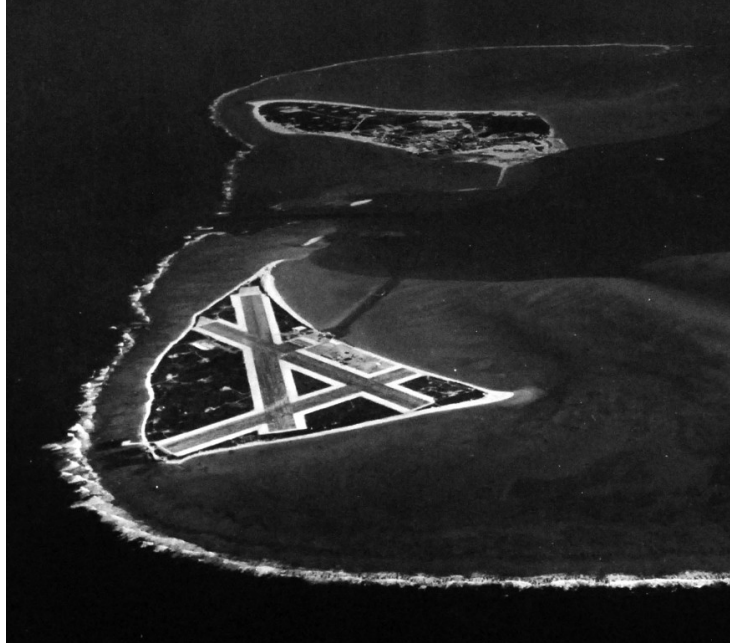


Figure 9. Midway Atoll, November 1941. Eastern Island and its airfield are in the foreground.
(NARA Photo #80-G-451086)

For the rest of December, the squadron focused on three tasks: maintaining combat air patrols, bore sighting the aircraft's guns, and preparing dugouts to protect the aircraft from bombs and bombardments. Pilots manned all aircraft in ground alert by dawn, and the squadron maintained a four-plane air patrol aloft until 8:00 a.m. The squadron rotated two-plane patrols until 4:00 p.m., when the squadron launched a four-plane dusk patrol and resumed ground alert with the balance of the squadron.¹⁵⁹

When the squadron first arrived, the marines found plenty of room to disperse their aircraft. This offered little protection from an aerial attack or naval bombardment; the pilots aloft could easily spot the parked aircraft against the white surface. To provide a modicum of camouflage, the marines cut out hollow spaces in the island's scrub brush. The marines then turned to the heavy

¹⁵⁹ VMF-221 war diary, November 1941-March 1942, 4-5.

labor of digging revetments for the aircraft and dugouts nearby for the aircrew. Eventually a bulldozer was scrounged up to complete the revetments in mid-January.¹⁶⁰

Midway and its garrison were now the forwardmost base in the Central Pacific. At the end of December, the new Commander-in-Chief of the U.S. Fleet, Admiral Earnest J. King, issued the new Commander-in-Chief of the Pacific Fleet, Admiral Chester W. Nimitz, two primary tasks: holding Midway and maintaining sea lines of communication to Australia.¹⁶¹

On 2 January Nimitz and his staff prepared a formal estimate of the situation. Nimitz assessed that the Japanese would focus on conquering the Philippines and Malaysia, possibly Burma and Northeast India, and advancing toward Australia. In the Central and South Pacific, the Japanese would conduct carrier raids against U.S. held islands, interdict lines of communication to them, and attempting to seize any or all of them, including Midway. To counter these actions, Nimitz had to rely principally on his four carrier task forces. The Pacific Fleet viewed island bases such as Midway as particularly vulnerable. Rather than spreading the carrier task forces across the Pacific and exposing them to destruction, the carriers would be preserved and employed in a counterpunch.¹⁶²

In addition to VMF-221, Midway's defenses included Marine Scout Bombing Squadron 231 (VMSB-231) and the 6th Defense Battalion. Marines had been fortifying Midway for nearly a year with seacoast artillery and anti-aircraft guns. VMSB-231 had preceded VMF-221, flying its 17 SB2U-3s 1,137 miles from Oahu to Midway on 17 December. On 9 January, Lieutenant Colonel William J. Wallace, who had lectured at Quantico on "Fighting Aviation," took command of the detachment of two squadrons. The marines operated under the naval air station commanding officer, Commander Cyril T. Simard, USN.¹⁶³

¹⁶⁰ VMF-221 war diary, November 1941-March 1942, 4-5, 8.

¹⁶¹ COMINCH TO CINCPAC, 30 December 1941, 1740, Nimitz, *Graybook*, vol. 1, 125.

¹⁶² CinCPac estimate 2 January 1942, "Employment of Carrier Forces in January," Nimitz, *Graybook*, vol. 1, 5, 7.

¹⁶³ Heinl, *Marines at Midway*, 7, 16, 17; Publication Section, Combat Intelligence Branch, *Battle of Midway June 3-6, 1942* (Washington, DC: Office of Naval Intelligence, United States Navy, 1943), 6.

Radar and fighter direction

The marine defense battalion operated three SCR-268 radars and one SCR-270 radar. The SCR-270 on Sand Island could detect a bomber at five thousand feet at fifty miles and provided the operator with range, azimuth, and altitude.¹⁶⁴ Marine Aircraft Group 22 (MAG-22) operated a second SCR-270 on Eastern Island.¹⁶⁵

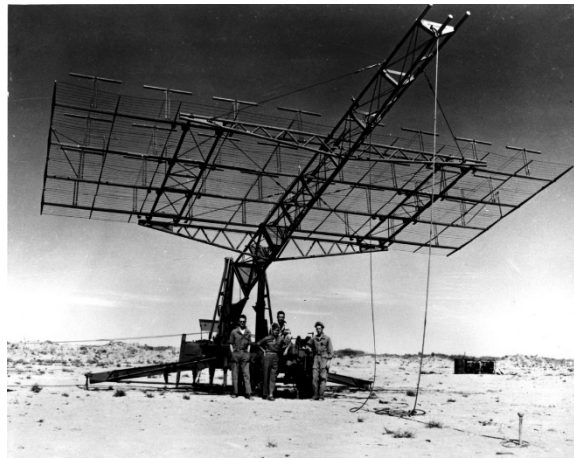


Figure 10. The SCR-270 radar (U.S. Army photograph retrieved from Susan Thompson, “Signal Corps in World War II,” 26 June 2020, https://www.army.mil/article/236799/signal_corps_in_world_war_ii)

Wallace implemented a simple procedure for launching aircraft and fighter direction. When radar detected unidentified aircraft, the command post watch alerted aircrews with sirens on its roof and on a truck. A single black ball run up the command post mast directed all aircraft to take off, fighters first. Two balls indicated the enemy was too close to launch bombers; only fighters took off. No balls meant the enemy was so close that aircrew should man anti-aircraft guns or seek shelter in the bunkers. No one on Midway was trained in fighter direction, so the marines improvised. The aviation detachment had dug out a command post in the sand and reinforced its walls with redwood

¹⁶⁴ Heintz, *Marines at Midway*, 48, 51; “The SCR-268 Radar,” *Electronics*, September 1945, 100; P. E. Matt, “SCR-270/SCR-271 Radar,” *Pacific Eagles*, 23 February 2019; Radar Research and Development Sub-Committee, *Operational Characteristics of Radar, FTP 217* (Washington, DC: the Joint Chiefs of Staff, 1 August 1943), 36.

¹⁶⁵ McCaul interview, Barde, 1. The marine aviation units at Midway were not organized as MAG-22 until 1 March 1942.

logs. The post had three small rooms and a fighter direction center. Inside the fighter direction center the marines set up a card table, covered it with graph paper, and laid out gradations for 360 around Midway. They affixed a pivot arm to the center of the table and marked distances out to 150 miles. With azimuth, distance, and altitude of enemy and friendly aircraft provided by radar, the command team could plot their locations, calculate intercept courses, and radio instructions to the fighters.¹⁶⁶

Combat

Midway did not rely on radar alone. Aircraft scouting missions were an essential component of Midway's defense against Japanese ships and submarines. On 7 December 1941, two Japanese destroyers had bombarded Midway, killing four marines and sailors and wounding ten more.¹⁶⁷

VMF-221's F2A-3s were well suited to the patrol mission. The Buffalo could cruise almost 1,200 miles—slightly greater than VMSB-231's SB2U-3s. The fighters carried two 100-pound bombs to strike targets of opportunity.¹⁶⁸

These patrols brought VMF-221's pilots into their first action. On 27 January and again on 8 February, submarines shelled Sand Island. Both attacks occurred during twilight. Both submarines approached from the south, where deeper water enabled the submarines to approach Midway closely and then escape into the darkness.¹⁶⁹ After the second attack, VMF-221 adjusted its patrols, keeping two aircraft aloft until dark.¹⁷⁰

On just the second night, the dusk patrol paid off. At 1800 on 10 February First Lieutenant John F. Carey and Second Lieutenant Philip R. White spotted a submarine three miles south of Sand

¹⁶⁶ Kimes interview, BuAir, 9, 12-13; McCaul interview, Barde, 2.

¹⁶⁷ Heinl, *Marines at Midway*, 12-15.

¹⁶⁸ Lundstrom, *The First Team*, 12; National Naval Aviation Museum, "SB2U Vindicator."

¹⁶⁹ Heinl, *Marines at Midway*, 17-18.

¹⁷⁰ VMF-221 unit history, 11.

Island. Wasting no time, they attacked. The submarine's deck gun had fired just two rounds when Carey and White's bombs exploded alongside. The marines recovered, whirled about, and strafed the submarine until it submerged. Although the pilots could not swear to any damage, no submarines bothered Midway for months.¹⁷¹

VMF-221 had its first aerial combat on 10 March. Midway's radar detected an aircraft heading toward the atoll. Captain James L. Neefus led a four-plane division airborne. The fighter director vectored the division to an intercept point where the marines spotted a twin-engine Mavis. Neefus led the division above and off the left wing of the Mavis and commenced a high side deflection run. His .50 caliber guns scored hits on one or both engines, which trailed smoke. The burning Mavis dove for a cloud bank below. Lieutenant Charles W. Somers, Jr. and Lieutenant Francis P. McCarthy each completed an overhead pass. Marine Gunner Dickey approached the Mavis from astern and received seven holes in his engine and one in his shoulder, likely from the 20mm cannon in the flying boat's tail. Neefus conducted a second gunnery pass and then dropped below the cloud bank, where he spotted a fire and aircraft remnants on the water. All four fighters returned to reached Eastern Island, but Dickey never flew in combat again.¹⁷²

Training new aviators

In addition to the constant patrols and occasional skirmishes, VMF-221 had to train its aviators. Along with most components of America's armed services, the expansion of marine aviation had accelerated rapidly following the attack on Pearl Harbor. On 31 December 1941, the Marine Corps had thirteen squadrons and 659 aviators. By 30 June 1942, it had thirty-one squadrons

¹⁷¹ RG 127 A1 1052 Box 29, CO, VMF-221 to CO, MAG-21, "Enemy submarine contact, report of," 11 February 1942; Heintz, *Marines at Midway*, 18; Fred H. Allison, "Out in Front at Midway," interview of Captain John F. Carey, USMC, *Naval History Magazine*, June 2004, vol. 18, no. 3, retrieved from <https://www.usni.org/magazines/naval-history-magazine/2004/june/out-front-midway>.

¹⁷² VMF-221 war diaries November 1941 – March 1942, 16-17; Box 30, VMF-221 unit history, 16-17; RG 38 NAID 133892566 NAS Midway Island war diary, March 1942, 2-3; Dickey, obituary, *The Press Democrat*.

and 1,369 aviators.¹⁷³ In the first half of 1942, the Marine Corps had to reconcile two conflicting aviation missions: it had to defend the fleet's advanced bases in the Pacific, and it had to train the Marine Corps' new aviators as the force expanded. The corps had to complete both tasks using the same limited number of aircraft.

Table 1.3. VMF-221 aviator transfers, 25 December 1941 – 3 June 1942

Date	Detached	Joined
9 February	1. Major Bauer 2. Captain Smith 3. Captain Payne 4. Captain Charles J. Quilter 5. 1stLt. Henry A. Ellis	
17 February		1. 2ndLt. Eugene F. Madole 2. 2ndLt. William B. Sandoval 3. 2ndLt. Walter W. Swansberger
17 March	7. Gunner Hickey (wounded)	
28 March		4. 2ndLt. John M. Butler 5. 2ndLt. Charles M. Kunz 6. 2ndLt. John C. Musselman 7. 2ndLt. Elwood Q. Lindsay
12 April	8. Captain Haynes 9. Captain Dobbin	
17 April		10. Captain Kirk L. Armistead
19 April	10. Major McCaul 11. 1stLt. Robert R. Burns (both to MAG-22)	
16 May		11. Major Floyd B. Parks
18 May	12. Captain Neefus 13. 1stLt. Somers	
25 May		12. Captain Daniel J. Hennesey 13. 2ndLt. Thomas W. Benson 14. 2ndLt. William W. Brooks 15. 2ndLt. Clayton M. Canfield 16. 2ndLt. Charles S. Hughes 17. 2ndLt. Darrell D. Irwin 18. 2ndLt. John D. Lucas 19. 2ndLt. Martin E. Mahannah 20. 2ndLt. Hyde Phillips 21. 2ndLt. Orvin H. Ramlo

Source: VMF-221 unit history, 7-24.

¹⁷³ Sherrod, *Marine Aviation*, 434-435.

Brigadier General Ross E. Rowell, the commanding general of Second Marine Air Wing, faced a conundrum. Newly winged aviators reported aboard with about 200 hours, but with none in the aircraft they would fly in combat and without essential operational flight training. The aircraft they needed experience flying were defending advanced bases in the Pacific. On 8 January 1942, Rowell outlined his dilemma in a letter to Admiral Halsey: “I have now accumulated 35 second lieutenants in various stages of advanced training... If ComAirBatFor approves and you want some half-baked flyers, send me a dispatch to that effect.” Halsey made the hard choice and directed Rowell to push his half-baked flyers out to squadrons like VMF-221 and VMSB-231.¹⁷⁴

Halsey’s decision triggered a sequence of personnel transfers that diluted the capability of marine squadrons in the short term. As inexperienced aviators reported to squadrons at the advanced bases, experienced aviators departed to form new squadrons in Hawaii and California. Table 1.3 illustrates the high turnover suffered by VMF-221.

Despite all the hours flown over five months at Midway, the squadron was a far less experienced bunch at the end of May than it had been at the end of December. As an aviator’s rank indicated longer time in service and therefore more hours’ flying, the give and take reveals VMF-221 had not fared well. It had lost two majors and gained one, lost six captains and gained two, lost three first lieutenants and a gunner and gained none, and gained sixteen second lieutenants.

General Rowell had shipped the novice aviators to Midway to complete their operational training. In that regard, Midway offered an excellent location. Before Major Bauer departed in February, he had written,

Operating conditions are ideal. There is unlimited space for flying, no one to interfere, and a grand airdrome to use. We made regular patrol flights during the day and training flights of short duration for tactical & gunnery practice. I would call Midway an ideal spot to train a new squadron and truly hope to get back there if I draw a full complement of airplanes and new pilots.¹⁷⁵

¹⁷⁴ Letter, Rowell to Halsey, cited in Sherrod, *Marine Aviation*, 54.

¹⁷⁵ Bauer, diary, undated entry.

However, several factors prevented VMF-221 from maximizing this opportunity. Table 1.4 tabulates sorties flown by the squadron through May 1942.

Table 1.4. VMF-221 operations, December 1942 – May 1942

Month	Patrols	AA and radar Calibration	Gunnery practice	Tactics and drills
December	12	0	0	2
January	44	1	7	2
February	20	20	15	15
March	30	10	7	3
April	60	0	10	24
May	53	1	10	29
Total	219	32	49	75

Note: Figures for March do not include VMF-222 operations.

Source: VMF-221 war diaries, 30 November 1941 – 31 March, April, and May 1942.

Until the end of March, the squadron devoted the majority of its flights to patrols and calibration vice gunnery and tactics. The defense battalion marines relied on the calibration flights to integrate their radar and anti-aircraft guns into a precisely accurate defensive system. Less than thirty per cent of flights were dedicated to improving proficiency. While the patrols and calibration missions gave the pilots flying experience, they did little to make them more lethal.¹⁷⁶

The impact of these defensive duties on combat readiness was not lost on senior commanders. On 21 May 1942, Vice Admiral Wilson Brown, Jr., the Commander, Amphibious Force, Pacific Fleet highlighted the inability of squadrons defending islands to train and recommended Nimitz subject these defensive assignments to Brown's approval and transfer three marine aircraft groups back to California where they could train.¹⁷⁷

¹⁷⁶ Kimes interview, BuAir, 14; VMF-221 war diary, April and May 1942.

¹⁷⁷ 21 May 1942, 1805, COMAMPHORPAC to CINCPAC, Nimitz, *Graybook*, 526.

However, events in May precluded Nimitz from releasing MAG-22 from Midway to train on the mainland. The marines on Midway would have to train where they were, when other missions did not crowd training out of the flight schedule.

VMF-221 recognized the imperative of training its new pilots. An acceleration in training in April and May coincided with the arrival of the first two cohorts of second lieutenants. And though the squadron flew just ten gunnery sorties in each of these months, and several of these consisted of dummy runs due to a shortage of .50 caliber ammunition, the focus of gunnery training was on these new lieutenants.¹⁷⁸

However, the ten lieutenants who reported at the end of May had virtually no opportunity to train. According to the group executive officer, these pilots were “fresh out of flight school.”¹⁷⁹ The war diary recorded familiarization flights for these aviators on 27 and 28 May. The squadron conducted section and division tactics on 28 and 30 May which the new aviators might have participated in.¹⁸⁰

Importantly, the marine aircraft group conducted little integrated training between the two squadrons. *USF-74* included plenty of instructions regarding fighters as escorts for bombers.¹⁸¹ Wallace had instructed students at Quantico that fighters should protect the home base, and they should not expect fighters to escort bombers.¹⁸² Wallace practiced what he preached; MAG-22 did not practice protective escort missions.

¹⁷⁸ VMF-221 war diary, 30 November 1941 – 31 March 1942.

¹⁷⁹ RG 127 A1 Box 10 MAG-22 Midway Action Report, Executive Officer's Report, 7 June 1942, 2. Also located in MAG-22 war history. Hereafter MAG-22 XO's report.

¹⁸⁰ VMF-221 war diary, May 1942.

¹⁸¹ *USF-74*, Section 2-324 and 2-325, 120.

¹⁸² Wallace, “Fighting Aviation,” 12. See Chapter 1.

Changing commands and commanders

The rapid expansion of marine aviation also brought a series of changes in organization and leadership. On 1 March 1942, Wallace's detachment became MAG-22. The Marine Corps bisected the two Midway squadrons that same date, assigning half of VMF-221's pilots, aircraft, and ground crew to the new VMF-222 under Captain Haynes. The SB2Us and personnel of VMSB-231 were divided between two new scout-bomber squadrons, VMSB-241 and VMSB-242, and VMSB-231 was reconstituted at Ewa Field on Oahu. The seaplane tender USS *Curtis* (AV-4) delivered eight F2A-3s on 28 March, bringing the group's strength to twenty-one fighters.¹⁸³

The intent had likely been to build up all four squadrons on Midway, but that idea was short-lived. On 12 April, all VMF-222's aircraft and personnel except Captain Haynes, Captain Dobbin, and twenty-two marines rejoined VMF-221. Captain Dobbin and his marines returned to Ewa Field to form their squadron. VMSB-241 absorbed all of VMSB-242's aircraft and personnel. Going forward, MAG-22 would consist of VMF-221 and VMSB-241.¹⁸⁴

In a final flurry of changes, the Marine Corps replaced all three commanding officers. On 17 April, Major Lofton R. Henderson took command of VMSB-241.¹⁸⁵ On 19 April, McCaul turned command of VMF-221 over to Captain Neefus and moved up to MAG-22 as its executive officer.¹⁸⁶ On 20 April, Major Ira L. Kimes relieved Wallace as the group commander; Wallace returned to Ewa to take command of MAG-23.¹⁸⁷

On 16 May, Major Floyd B. Parks took command of VMF-221 from Neefus, who also was ordered to Ewa. Parks had earned an appointment to the Naval Academy while serving as an enlisted sailor aboard destroyers. He had played water polo at the academy and served as a sea going

¹⁸³ VMF-221 unit history, 15, 19; RG 38 NAI 133901293 VMSB-241 war diary, April 1942, 3-4; RG 38 NAID 77630627 VMSB-231 war history, 8.

¹⁸⁴ VMF-221 unit history, 15, 20; Heinl, *Marines at Midway*, 19; VMSB-241 war diary, April 1942, 3-4.

¹⁸⁵ VMSB-241 war diary, April 1942, 5.

¹⁸⁶ VMF-221 unit history, 7-24.

¹⁸⁷ Heinl, *Marines at Midway*, 19.

marine before earning his wings in 1937. Since then, Parks had flown bombers and fighters and instructed at Pensacola. His academy yearbook entry described him as a good-humored charmer, more interested in girls than academics. It also indicates he earned a “Black N” while at the academy, an unofficial award reserved for midshipmen who commit the most severe disciplinary infractions.¹⁸⁸

Parks may not have shed his casual affection for regulations when he took command of VMF-221 in May 1942. By this time, the marine aircraft group had established a morning alert. Pilots manned all aircraft and warmed up their engines to be ready for an emergency sortie. On this morning, after receiving the order to stand down, Parks taxied out of his revetment, accelerated down the runway, and took off. Perplexed, the group assumed the worst, and the garrison went to red alert. Major McCaul, now the group executive officer, jumped on the phone and called the duty officer at VMF-221, Lieutenant Carl. Carl explained that nobody knew why Parks had taken off. McCaul ordered Carl to have Parks report to group operations as soon as he landed. After completing a short circumnavigation of the atoll, Parks landed. His explanation to McCaul was that he did not believe in warming up an aircraft without flying it. But he got the message and did not make any more unscheduled hops.¹⁸⁹

The perils of over water flight

Patrolling the ocean provided the pilots considerable experience with overwater navigation. In 1942, navy and marine fighters and dive-bombers only had a rudimentary radio navigation system, the YE-ZB homing system. A pilot equipped with a ZB receiver could determine the course to the YE beacon based on the combination of Morse code letters he was receiving. He could then

¹⁸⁸ VMF-221 unit history, 23; “Floyd B. Parks, Maj, USMC,” *USNA Memorial Hall*, retrieved from https://usnamemorialhall.org/index.php/FLOYD_B._PARKS,_MAJ,_USMC.

¹⁸⁹ Carl, *Pushing the Envelope*, 22.

“fly the beam” back to his base or carrier. The system was effective at 275 miles for an aircraft at 15,000 feet. Because it used a double-modulated VHF signal, the Japanese were unable to exploit the system for direction finding.¹⁹⁰

Once out of sight of land, which could happen quite quickly on a cloudy day, a pilot relied on dead reckoning. Dead reckoning required the pilot to estimate his position by calculating the distance and azimuth flown since his last known position. The pilots factored in variables such as wind speed, which an experienced aviator could estimate accurately by observing the waves.¹⁹¹ Keeping up with navigation was difficult enough in a one-man aircraft on patrol. Without the YE-ZB system, a fighter pilot might well survive a disorienting dogfight and yet lose awareness of the right course for home.

Final preparations for battle

The final cohort of lieutenants arrived on 26 May aboard the aircraft transport USS *Kitty Hawk* (AKV-1), which also brought seven F4F-3 Wildcats. As Captains Carey, Carl, and McCarthy all had experience in F4F-3s, Major Powers assigned the Wildcats to Carey’s division.¹⁹² *Kitty Hawk* also delivered VMSB-241 sixteen SBD-2 Dauntless dive-bombers, along with a platoon of light tanks and a 3-inch anti-aircraft group for the defense battalion. *Kitty Hawk* could not launch aircraft while at sea. Rather, she had hoisted the aircraft aboard at Pearl Harbor and then, upon arrival at Midway, craned them onto the pier at Sand Island. Marines from MAG-22 rolled the aircraft over to

¹⁹⁰ “ZB-1 Radio Homing Adapter and Security Cover,” Smithsonian Institute, 2012, retrieved from <https://timeandnavigation.si.edu/multimedia-asset/zb-1-radio-homing-adapter-and-security-cover>; Al Klase, “Aircraft-to-Carrier Homing: A Secret Weapon of WWII,” retrieved 1 Jan 2023 from <http://www.skywaves.ar88.net/Presentations/YE-ZB%20Presentation.pdf>; Michael Elliot Kern, “Striking Eagles: Doctrine, Training, and Fighting Squadron Five at War in the Pacific,” masters dissertation (George Washington University, 2011), 19, retrieved from <https://www.proquest.com/openview/d2a0597d2a77659c5a24bc220fc811d8/1?pq-origsite=gscholarcbl=18750>.

¹⁹¹ USF-74, 49, 52.

¹⁹² Allison, “Out in Front at Midway.”

the seaplane apron and gassed them up. Pilots from the two squadrons then conducted short field takeoffs from the tiny apron, flew the short distance across the lagoon, and landed on Eastern Island. This reinforcement brought MAG-22's strength to twenty-eight fighters (21 F2A-3s and seven F4F-3s in VMF-221) and thirty-six dive-bombers (19 SBD-2s and 17 SB2U-3s in VMSB-241).¹⁹³



Figure 11. At Pearl Harbor, USS *Kitty Hawk* (AKV-1) hoists aboard one of seven F4F-3 Wildcats bound for VMF-221 at Midway, May 1942. (U.S. Navy photograph, *NavSource Online* “USS *Kitty Hawk*” 17 February 2023, retrieved from <http://www.navsource.org/archives/09/17/1701.htm>)

VMF-221 would not see action until 4 June and had just received a significant reinforcement of aircraft and aviators, yet the squadron did not fly any training missions those first three days of June. Though the new lieutenants were woefully inexperienced, with less than ten hours per pilot in the F2A-3, the marine aircraft group curtailed training due to a shortage of fuel.

¹⁹³ Shaw et al. *Pearl Harbor to Guadalcanal*, 219; Heinl, *Marines at Midway*, 24.

McCaul’s fuel headaches had begun on 22 May. In an act of seldom-matched short-sightedness, someone had ordered emergency destruction demolition charges placed at the underground fuel storage on Sand Island. When one of the defense battalion batteries fired its eleven inch guns, sixteen of the island’s thirty-one tanks erupted in a catastrophic explosion. Although no one was injured, the station lost 375,000 gallons of precious aviation fuel, and the blast destroyed the pipeline to Eastern Island.¹⁹⁴ A marine gunner named Arnold, whom the Marine Corps official history claims was “exonerated on the spot of any responsibility for the mishap,” obtusely commented that, “Well, that proves that the damn thing works, anyway.”¹⁹⁵

Fuel consumption recorded by Major McCaul, now serving as the group executive officer, is detailed in Table 1.5.

Table 1.5. NAS Midway Island aviation fuel consumption, 24 May – 3 June 1942

Date	Gallons consumed
24 May	1,000
25 May	2,000
26 May	3,000
27 May	15,000
28 May	15,000
29 May	20,000
30 May	20,000
31 May	65,000
1 June	25,000
2 June	26,000
3 June	25,000

Source: MAG-22 Executive Officer’s Report, 2-4

Eastern Island’s storage capacity was about 165,000 gallons: 100,000 in the main stowage system, 51,000 in a reserve tank, and about 14,000 gallons in 55-gallon drums. After the 22 May

¹⁹⁴ RG 313-58-3397 Box 01 Folder 013 U.S. Naval Air Station Midway Island, War Diary, 16. Retrieved 1 Jan 2023 from http://www.midway42.org/Midway_AAR/NavalAirStationMidway.aspx.

¹⁹⁵ Heinl, *Marines at Midway*, 24-25; McCaul interview, Barde, 1. Some accounts ascribe the detonation to a sailor connecting the firing circuit. McCaul’s account seems more credible.

explosion, sailors and marines on Sand Island had to pump fuel into a 15,000 gallon barge, float it across the lagoon, and then pump it up into Eastern Island's main stowage system. The spike in gasoline consumption beginning on 27 May was not due to VMF-221's training flights, but by the commencement of searches by eleven PBY-5 Catalinas of Patrol Squadron 44 (VP-44). The arrival of four army air force B-26 Marauders, seventeen B-17 flying Fortress bombers, and sixteen amphibious PBY-5As at Eastern Island, and their incorporation into the naval air station's patrols, triggered an additional increase in fuel consumption during the last three days of May. As the heavy army air force bombers arrived, McCaul nervously monitored the island's fuel supply. The barge shuttled fuel day and night. On 1 June, Eastern Island's fuel supply dropped to just 21,000 gallons—less than one day of supply. The arrival of a resupply ship with 165,000 gallons averted a crisis. But this gas arrived in drums, and half the aircraft group's marines were detailed to pump fuel by hand from the drums into the army air force, navy, and marine aircraft.¹⁹⁶

In the final days before battle, MAG-22's marines may have sorely missed the 375,000 gallons lost on 22 May. Between Midway's low fuel stocks, the cumbersome supply chain to Eastern Island, and the thirsty army air force bombers and navy patrol planes, MAG-22 could not spare fuel to train its new pilots. VMF-221's pilots were able to make familiarization flights in the F2A-3s. VMSB-241's pilots did not even have the opportunity to get check rides in their SBD-2s.¹⁹⁷

¹⁹⁶ MAG-22 XO's report, 1, 2-3.

¹⁹⁷ Shaw et al., *Pearl Harbor to Guadalcanal* (1958), 220.

Chapter 3: Battle of Midway, June 1942

By the end of May, Eastern Island was crowded with army air force, navy, and marine aircraft. Their arrival left little doubt among the garrison that naval commanders expected trouble was coming to Midway.

Admiral Nimitz had inspected Midway's defenses on 2 May. During the visit, he had taken a few minutes to pin medals on Captain Neefus and Lieutenants Somers and McCarthy for shooting down the *Mavis* on 10 March.¹⁹⁸ But Nimitz's primary purpose had not been to pat some fighter pilots on the back; it had been to ensure Midway could repel invaders.¹⁹⁹

By 15 May, Commander Joseph Rochefort, the officer in charge of Station Hypo, the code-breaking Combat Intelligence Unit at Pearl Harbor, had convinced Nimitz that the Japanese planned to attack Midway with at least four carriers.²⁰⁰ Though Nimitz had already intended to reinforce Midway as a result his inspection, the alarming intelligence accelerated *Kitty Hawk's* departure.²⁰¹

On 20 May, Simard received a warning from his immediate superior, Rear Admiral David W. Bagley, the Commandant of the 14th Naval District. Bagley warned Simard that Midway would be attacked after 25 May, possibly around 30 May during the full moon. Bagley informed Simard he was reinforcing Midway and closed by charging Simard to "give them hell." Bagley did not mention the role Midway's aircraft should play in the coming battle.²⁰²

That same day, Nimitz sent King a message with his thoughts on land based aircraft that he had drawn from the recent Battle of the Coral Sea. Nimitz noted that the task force commander at

¹⁹⁸ VMF-221 unit history, 22. Neefus received the Navy Cross. Somers and McCarthy received Distinguished Flying Crosses, as did Gunner Dickey separately.

¹⁹⁹ John Lundstrom, quoted by Ronald W. Russel, *No Right to Win: A Continuing Dialogue with Veterans on the Battle of Midway* (Bloomington, IN: iUniverse, 2006), 186-187.

²⁰⁰ Symonds, *Midway*, 182.

²⁰¹ NHHC, "Kitty Hawk I (APV-1), 1941-1946," published 28 Jul 2015, retrieved from <https://www.history.navy.mil/research/histories/ship-histories/danfs/k/kitty-hawk-apv-1-i.html>.

²⁰² 20 0650 COM-14 to NAS MIDWAY, Nimitz, *Graybook*, 499-500.

sea and the land based air commander ashore should coordinate operations. In Nimitz's view, land based air should support the task force at sea with fighter protection and strikes.²⁰³

These views were reflected in several memoranda between Nimitz and his staff as they planned the Midway operation. On 23 May, Nimitz explicitly wrote to his chief of staff, Captain Milo F. Draemel, "Midway planes must thus make the CV's (aircraft carriers) their objective, rather than attempting any local defense of the atoll."²⁰⁴ In an undated memorandum likely written about the same time as his memorandum to Draemel, Nimitz reiterated his intent to Captain Arthur C. Davis, the air officer on his staff.

Balsa's (Midway's) air force must be employed to inflict prompt and early damage to Jap carrier flight decks if recurring attacks are to be stopped. Our objectives will be first—their flight decks rather than attempting to fight off the initial attacks on Balsa.... If this is correct, Balsa air force...should go all out for the carriers...leaving to Balsa's guns the first defense of the field.²⁰⁵

Nimitz laid out his plan to ambush the Japanese fleet in Operation Plan 29-42, issued on 27 May 1942. According to Nimitz's order, the mission of the Pacific Fleet was "to prevent the capture and occupation of Midway by enemy forces." Task forces organized around the aircraft carriers USS *Yorktown* (CV-5), USS *Enterprise* (CV-6), and USS *Hornet* (CV-8) would take position northeast of Midway to "inflict maximum damage on enemy."²⁰⁶

The tasks Nimitz assigned to Captain Simard at Naval Air Station Midway are revealing. Simard's first task was to hold Midway. To support the task forces at sea, Simard was to conduct aerial searches and inflict the maximum possible damage on the enemy. But Nimitz also admonished

²⁰³ 20 0359 CINCPAC TO COMINCH, Nimitz, *Graybook*, 487.

²⁰⁴ Nimitz to Captain Milo F. Draemel, 23 May 1942, cited in Heinl, *Marines at Midway*, 23.

²⁰⁵ Nimitz to Captain Arthur C. Davis, undated, cited in Heinl, *Marines at Midway*, 23. "Balsa" was a code name for Midway.

²⁰⁶ Commander-in-Chief, United States Pacific Fleet, Operation Plan No. 29-42, 27 May 1942, retrieved from op-plan29-42.pdf (midway42.org), 6.

Simard to take every precaution to guard against the destruction of his own forces on Midway.²⁰⁷

The order from Pacific Fleet, discussions between Nimitz and his senior commanders, and memoranda between Nimitz and his staff reveal conflicting priorities for Simard and the joint air force on Midway. They also suggest contradictions in the intent Nimitz expressed for the coming battle. Was Nimitz’s intent for Midway’s air force to “inflict maximum damage” or to “prevent the capture and occupation of Midway”? The very explicit language Nimitz used in his memoranda to his staff—that Midway’s aircraft “should go all out for the carriers...leaving to Balsa’s guns the first defense of the field” is not reflected in his operations order. How Simard and Kimes, the marine aircraft group commander on Midway, understood Nimitz’s intent would significantly influence how they employed their marine squadrons in the coming battle.

Table 1.6. Aircraft at Midway Atoll, morning, 4 June 1942

Type	Service	Number	Operational
B-17 heavy bomber	Army air force	17	16
B-26 medium bomber	Army air force	4	4
PBY-5 patrol bombers (seaplane)	Navy	14	13
PBY-5A patrol bombers (amphibious)	Navy	17	16
TBF torpedo bomber	Navy	6	6
F2A-3 fighter	Marine	21	20
F4F-3 fighter	Marine	7	6
SB2U-3 dive-bomber	Marine	17	14
SBD-2 dive-bomber	Marine	19	18
Total		122	113

Source: Shaw et al., *Pearl Harbor to Guadalcanal*, 219; Horan et al., “Orders of Battle, Battle of Midway and Aleutians 3-7 June 1942,” *The Battle of Midway Roundtable*.

Though Nimitz may have shorted Simard on guidance, he abundantly reinforced Midway with aircraft. By the end of May, every corner of Eastern Island was crowded with aircraft. As shown in Table 1.6, Simard now commanded a vast air armada. Newly promoted to captain, Simard would direct more aircraft than would the captain of an aircraft carrier. And on 30 May, Nimitz

²⁰⁷ Op-Plan 29-42, 7-8.

placed all aircraft on Midway under Simard's tactical control, with Commander Logan C. Ramsey acting as Simard's air operations officer.²⁰⁸ Nimitz sent Simard a Naval Base Air Defense detachment to help him control the aircraft and coordinate the defense of Midway.²⁰⁹

Ramsey's ability to coordinate this large air force from the naval air station command post on Sand Island was limited. According to McCaul, marines "ran their own show" on Eastern Island. The marine aircraft group did not command the army air force bombers and navy torpedo planes. The marines provided the visitors with services such as refueling and minor maintenance, but tactical direction of these aircraft came from Ramsey on Sand Island, often via the MAG-22 command post and out to the flight line by messenger. Neither Simard nor Kimes appears to have attempted to integrate the army air force bombers, navy torpedo planes, and marine aircraft group into a single tactical force.²¹⁰

On Eastern Island, the marines of MAG-22 scrambled to build additional protection for the extra aircraft and their crews and to keep them flying. Bulldozers scraped out revetments for the B-17s and PBV-5As and piled coral and sand on three sides. But the marines soon ran out of space, leaving excess aircraft to park wherever they could. A couple of the excavations were designated as rapid rearming and refueling points for fighters. Marines dug additional bunkers with overhead protection for themselves and aircrews. To augment the defense battalion's anti-aircraft guns, the marine squadrons emplaced eight water-cooled .50 caliber machine-guns and improvised anti-aircraft mounts for several spare air cooled .50 and .30 caliber aviation machine-guns. These mounts consisted of a fuel drum with a machine-gun mount affixed through a hole in the top center of the drum. Finally, each squadron formed a provisional company to augment a company of raiders on Eastern Island. The raiders, an elite commando-type unit, pitched in and helped refuel aircraft from

²⁰⁸ Nimitz, *Graybook*, 547; Symonds, *Midway*, 211.

²⁰⁹ Office of Naval Intelligence, *Battle of Midway*, 6.

²¹⁰ McCaul interview, Barde, 1.

the heavy drums. Though exhausted from servicing all the extra aircraft and fortifying the airfield, the ground side of the marine aircraft group was ready to fight.²¹¹

While the marines prepared for battle, the navy's codebreakers had not rested. On 26 May, Rochefort's team concluded that the Japanese did not plan to attack Midway until 4 June.²¹² This intelligence was passed to Simard and the marines at Midway.²¹³

The PBYs began patrolling on 14 May. MAG-22 continued to patrol the skies around Midway as well. The searching paid off on 3 June. PBY-5s began reporting surface contacts at 9:04 a.m. The ships were too far away to be struck by the marine aircraft, but not for the B-17s and PBYs. Simard launched daylight strikes with six B-17s and followed up with four PBYs after dark. Though the army air force bombers reported scoring hits, not one ship suffered damaged. A torpedo dropped by a PBY in the night attack damaged a Japanese tanker. Thus ended the first day of battle.²¹⁴

MAG-22's plan for 4 June assumed Sand Island's radar would provide sufficient warning. Prior to dawn, the two marine squadrons would warm up their aircraft. VMF-221 would send up a division of six fighters to protect the PBYs and B-17s during takeoff. Once the bombers and patrol aircraft were on their way, the six fighters would recover, refuel, and wait. As the aircraft group had practiced many times, once the radar detachment reported unidentified aircraft, the command post would alert VMF-221 and VMSB-241 by siren, mast signal, and telephone to scramble every aircraft. The fighters would take off first and get an intercept command by radio. The dive-bombers would rendezvous twenty miles east of the atoll so as not to be caught on the ground and stand-by to attack the Japanese carriers. According to one of the navy torpedo pilots, the TBFs planned to

²¹¹ Kimes interview, BuAir, 4-8.

²¹² Symonds, *Midway*, 188.

²¹³ Heinl, *Marines at Midway*, 23.

²¹⁴ NAS Midway war diary, 15, 27-28; Annex C to MAG-22 XO's report, 1; Symonds, *Midway*, 215-216.

rendezvous with the marine dive-bombers there as well. The aircraft group would either vector the dive-bombers to their targets by radio or the dive-bombers would follow the Japanese aircraft back to their ships. The dive-bombers would attack without a protective escort; every fighter would intercept the incoming Japanese strike.²¹⁵

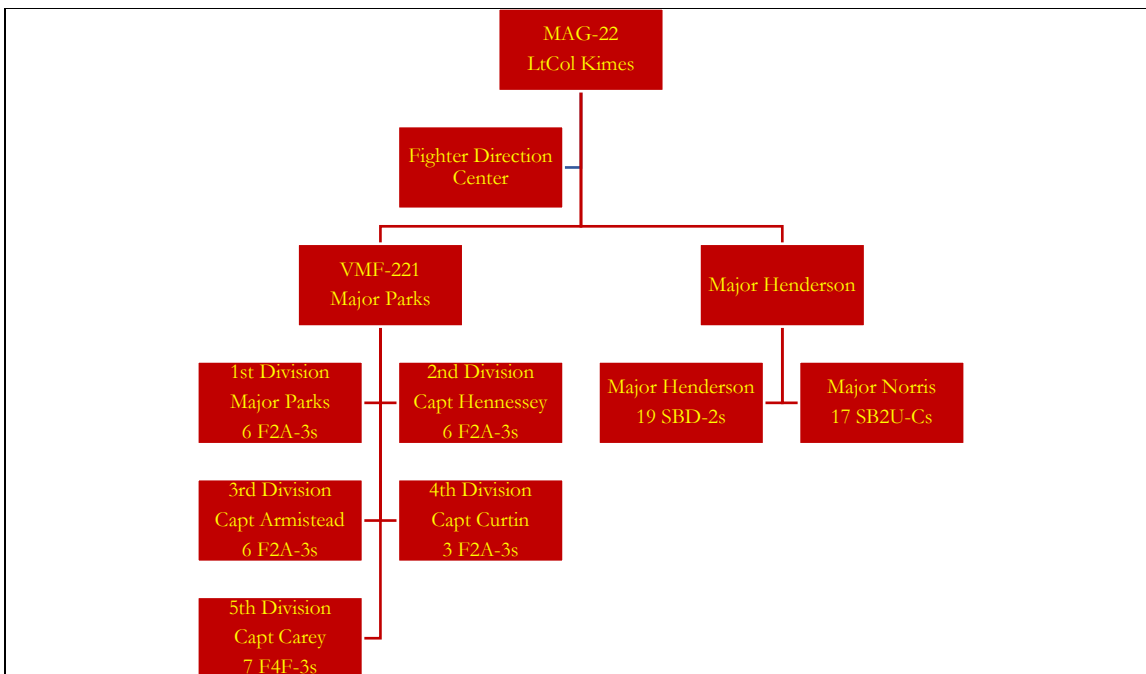


Figure 12. MAG-22 organization, 4 June 1942 (CO VMF-221, “enemy contact, report on,” 6 June 1942)

First light at Eastern Island would come at about 5:00 a.m. on 4 June.²¹⁶ The skies over Midway would be partly cloudy and clearing, with visibility between twelve and thirty miles. The

²¹⁵ RG 127 A1 1054 Box 10, MAG-22 Midway action report, CO MAG-22 “Battle of Midway Islands, report of,” 7 June 1942, 2; UMD Prange papers, “Miracle at Midway,” Box 2, Folder 9.0, Captain A. K. Earnest, USN, interview by Robert Barde, 28 April 1966, 1; Rich Pedroncelli, “The Lone Avenger,” *Naval History Magazine*, June 2001, vol. 15. No. 3, retrieved from <https://www.usni.org/magazines/naval-history-magazine/2001/june/lone-avenger>.

²¹⁶ Midway Atoll lies in the -11 Uniform Time Code zone. Beginning of Morning Nautical Twilight (BMNT) was estimated by subtracting the number of minutes BMNT begins prior to sunrise on 12 April 2023 for Midway Island (52 minutes) and subtracting that from sunrise on 4 June 1942 (0552). BMNT for 12 April 2023 retrieved 1 Jan 2023 from WorldTimer.net <http://worldtimer.net/Countries/index.php?c=Midway>. Sunrise for 4 June 1942 was retrieved 1 Jan 2023 from WolfRamAlpha <https://www.wolframalpha.com/input/?i=sunrise+june+4+1942+midway+atoll>.

Japanese carriers to the northwest would enjoy concealment from cloudier conditions and occasional rain squalls—as would American search and strike planes.²¹⁷

At 3:55 a.m., Captain Carey’s division of six F4F-3s took off and provided cover for the PBV-5As and B-17s. Kimes’ plan began to unravel right away. Captain Carl’s section joined up with Carey and his wingman, but Captain McCarthy’s section had radio trouble and did not. Carey and the three F4F-3s with him landed at 5:00 a.m. McCarthy, still unseen, continued to patrol with his wingman, Second Lieutenant Roy A. Corry, Jr.²¹⁸

At 5:20 a.m., a PBV reported enemy carriers 180 miles from Midway. MAG-22 alerted its aircrews to man their aircraft and warm up their engines. At 5:55 a.m., Midway’s radar detected a large Japanese strike at a bearing of 310 degrees, a distance of ninety-three miles, and an altitude of 11,000 feet. MAG-22’s siren wailed.²¹⁹

VMF-221, morning of 4 June 1942

“There was no briefing, no coordination,” Captain Carl later recalled. “Just a mad scramble to get out from under whatever was inbound.”²²⁰ In Carey’s division, Second Lieutenant Walter W. Swansberger’s F4F-3 slid into a dugout, temporarily stuck. Wildcats and Buffalos taxied from their revetments and accelerated down Eastern Island’s airstrip, nearly colliding at the intersection of the two runways. Captain Armistead’s division of six F2A-3s, standing by at the end of Runway Two with engines running, did not hear the siren until the squadron duty officer drove up in a truck and passed the air raid order. Armistead took off only slightly late, at 6:02 a.m. Swansberger, extracted by

²¹⁷ Aerology Section, *Aerology and Naval Warfare: The Battle of Midway*, NAVAER 50-40T-1 (Washington, DC: Chief of Naval Operations, March 1944), 3; Parshall and Tully, *Shattered Sword*, 109.

²¹⁸ Annex C to MAG-22 XO’s report, 5-9; Allison, “Out in Front at Midway;” RG 127 A1 Box 29, 2ndLt. Roy A. Corry, USMCR, statement, 6 June 1942.

²¹⁹ Annex C to MAG-22 XO’s report, 5-9; Carey interview, Barde, 1.

²²⁰ Carl, *Pushing the Envelope*, 2.

some marines from the dugout, caught up with Armistead’s division about twenty miles from Midway.²²¹

VMF-221 had gotten airborne quickly, but not at full strength and not according to plan. One F2A-3 and one F4F-3 were not airworthy. McCarthy and Corry were still patrolling, unaware of the air raid. The engine of Second Lieutenant Charles S. Hughes’ F2A-3 was running very roughly, and he headed back to Midway in the hope of a quick repair and relaunch. In Hennesey’s division, the landing gear of Second Lieutenant William V. Brooks’ F2A-3 would not fully retract. Brooks continued on the mission, ignorant of the reason his aircraft struggled to keep up. Second Lieutenant William B. Sandoval’s F2A-3 also lagged behind Hennesey’s division.²²² Table 1.7 details the planned and actual strength of VMF-221’s divisions that morning.

Table 1.7. VMF-221 aircraft strength and organization, 0615 4 June 1942

Division	Planned strength	Actual strength
1 – Parks	6 F2A-3	5 F2A-3
2 – Hennesey	6 F2A-3	6 F2A-3
3 – Armistead	6 F2A-3	6 F2A-3 1 F4F-3
4 – Curtin	3 F2A-3	2 F2A-3
5 – Carey	7 F4F-3	3 F4F-3
McCarthy (section)	--	2 F4F-3
Squadron total	21 F2A-3 7 F4F-3	19 F2A-3 6 F4F-3

Source: CO VMF-221, “enemy contact, report on,” and enclosed statements of aviators.

At 6:05 a.m., MAG-22’s fighter direction team ordered Parks’ division of five Buffalos, Carey’s division of three Wildcats, and Curtin’s division of two Buffalos to intercept the inbound air strike, now reported on a bearing of 310 degrees at 12,000 feet. The group ordered Hennesey and

²²¹ Allison, “Out in Front at Midway;” RG 127 A1 Box 29, Capt Kirk A. Armistead, statement, 4 June 1942 and 2ndLt. Charles M. Kunz, USMCR, statement, 4 June 1942; Carl, *Pushing the Envelope*, 2.

²²² RG 127 A1 Box 29, Commanding Officer VMF-221, “enemy contact, report on,” 6 June 1942, 2ndLt Charles S. Hughes, USMCR, statement, 4 June 1942, 2ndLt William V. Brooks, USMCR, statement, 4 June 1942.

Armistead, each leading a division of six Buffalos, out on the same bearing but to hold ten miles from Midway in case radar detected another strike.²²³ Visibility was excellent, with a low lying layer of puffy clouds below and scattered cumulus well above them.²²⁴

McCarthy and Corry finally heard the reports of enemy aircraft approaching when the Japanese had closed to just thirty-five miles. They reported they were low on fuel and requested instructions. MAG-22 ordered them to land, refuel, and take off again. The two F4F-3s landed and taxied into the squadron's rearming and refueling pits. They took off again at 6:25 a.m. and headed into the fight.²²⁵

Carey was left with just three F4F-3s instead of six. The three Wildcats circled for altitude. Each pilot reached down and pulled the machine-gun charging handles on either side of the cockpit, cocking the four .50 caliber wing guns in turn. Carey reached 14,000 feet before spotting the Japanese formation at 6:15 a.m.²²⁶

The Japanese strike consisted of 108 aircraft—almost the same number as Midway's air force. The strike included 36 Val dive-bombers and 36 Kate carrier attack aircraft from *Hiryū* and *Sōryū* and 36 Zero fighters, nine from each carrier. Lieutenant Joichi Tomonaga, the commander of *Hiryū's* air group, commanded the strike from his Kate. Each 18-plane squadron flew in a vee of vees, 440 to 880 yards in length, three planes to a section, three sections to a division. The two squadrons of Kates led at 12,000 feet, with the Vals following, and the Zeros further back and above at 14,000 feet.²²⁷

²²³ Annex C to MAG-22 XO's report, 5-9.

²²⁴ Carl, *Pushing the Envelope*, 3.

²²⁵ Corry, statement; Annex C to MAG-22 XO's report, 5-9.

²²⁶ Allison, "Out front at Midway."

²²⁷ Parshall and Tully, *Shattered Sword* 80-82, 125-126, 200-201; Paul S. Dull, *A Battle History of the Imperial Japanese Navy (1941-1945)* (Annapolis: Naval Institute Press, 1978), 14-15; Allison, "Out in Front at Midway;" Carey interview, Barde, 1.

Carey radioed, "'Tally ho, large formation of bombers!' and then, "Accompanied by fighters." Carey rolled inverted and executed a high side gunnery run from the right against one of the Val squadrons. Canfield followed. Carey targeted the lead Val and saw it explode in a fireball. Canfield engaged the third aircraft in the third section and watched it explode. After diving through the formation, Carey pulled up to position for a second overhead pass, with Canfield behind. During their second attack, a tail gunner's burst ripped through Carey's cockpit, smashing his right knee, and piercing his left leg. As Zeros caught up to the pair, the marines sped for the cover of a cloud five miles away. They evaded the Zeros headed back to Midway.²²⁸

Carl had been unable to keep up with Carey. He heard Carey's "Tally ho!" and watched the lead Wildcats begin their attack. Carl spotted Zeros moving up to intercept them and made a high side gunnery pass on one of the enemy fighters. He fired as the target filled his gunsight and dove through the formation of bombers. Looking back, Carl spotted several Zeros on his tail. He continued his dive to elude them, rolled 180 degrees, and headed away from Midway, reasoning the fighters would stay with the bombers. Alone, Carl climbed to 20,000 feet and started working his radio. He shortly spotted a Zero on his tail. As the Zero chased him, firing away, Carl ducked into a cloud, cut his throttle, stomped on the rudder, and threw the control stick in the opposite direction. This skid decelerated his Wildcat abruptly. The Zero overshot him and dove. Carl dove after the Zero, but the negative gravitational force had fouled the machine-gun belts, and all four guns malfunctioned. The Zero sped off, leaving Carl to manually charge his guns and clear the stoppages. Arriving back at Midway near the end of the engagement, he spotted three Zeros below. Carl made a

²²⁸ Allision, "Out front at Midway;" RG 127 A1 Box 29, 2ndLt. Clayton Melbourne Canfield, USMCR, statement, 6 June 1942; "Statement of Captain John Frank Carey, USMC," from Mark. E. Horan, "Midway Combat Reports," *Warbird Forum* (June 2019), retrieved from <https://www.warbirdforum.com/vmf221.htm>; Carey interview, Barde, 1-2.

diving gunnery pass on one unsuspecting pilot and sent the fighter spinning into the ocean. The other two fighters never noticed what happened and were out of sight when Carl recovered.²²⁹

Parks' five Buffalos engaged at nearly the same time as Carey's division. He commenced an overhead attack from 14,000 feet. Captain Curtin's division of two Buffalos had followed Parks up and attacked immediately thereafter.²³⁰ These first seven Buffalos may have surprised the Japanese. Japanese accounts suggest they lost at least three Kates from *Hiryū* to this initial gunnery pass.²³¹

Before Parks' division could begin its second pass, the Zeros engaged. As only Second Lieutenant Darrell D. Irwin, Curtin's wingman, survived the action, exactly how the other six pilots died is unclear. It is clear these seven fighters drew the attention of a large fraction of the thirty-six Zeros escorting the bombers. Irwin escaped by diving away and speeding back to Midway at full throttle at five hundred feet. Two Zeros took turns making gunnery passes at Irwin, peppering the armored plate behind his seat. Irwin landed his rugged Buffalo in the middle of the bombing of Eastern Island, with the Zeros still making passes at him.²³²

MAG-22 waited until 6:24 a.m. to direct the divisions led by Hennessy and Armistead into the fight.²³³ The two divisions did not operate together and did not attempt to coordinate their attacks. Hennessey led his division to 15,000 feet and intercepted the formation of Kates shortly thereafter. Armistead spotted the formation of Vals and attempted to position his division up sun and well above them.²³⁴

Hennessy led his six Buffalos in an overhead gunnery attack on the Kates. It appears that all but one of Hennessy's division were shot down during or shortly after the first gunnery run.²³⁵

²²⁹ Carl, *Pushing the Envelope*, 3, 23-25; RG 127 A1 Box 29, Capt. Marion Carl, USMC, statement, 6 June 1942; Carl interview, Frank and Parker, 94-96.

²³⁰ RG 127 A1 Box 29, 2ndLt. Darrel D. Irwin, USMCR, statement, 6 June 1942.

²³¹ Parshall and Tully, *Shattered Sword*, 200.

²³² Irwin, statement.

²³³ Annex C to MAG-22 XO's report, 5-9.

²³⁴ RG 127 A1 Box 29, Capt. Philip R. White, USMC, statement, 6 June 1942, and Armistead, statement.

²³⁵ White, statement.

Bullets struck the right wing of Captain Herbert T. Merrill's Buffalo and blasted his instrument panel as he pulled out of his dive. He dove and headed toward Midway. Zeros pursued him and struck his aircraft on two more passes. Merrill's aircraft caught fire and he either jumped or was blown clear of the flaming aircraft. He got his parachute open before landing in the ocean, swam toward the atoll for two hours, and climbed onto the reef, where a PT boat found him.²³⁶

Captain White managed to complete two overhead passes and was climbing to make his third when he spied a Zero climbing to get on his tail. "I rushed my stick forward as hard as I could and went into a violent dive. When I recovered and looked around, I had lost the Zero Fighter." After recovering, White heard a transmission from the fighter direction center. An enemy aircraft was departing on heading 310 degrees. White soon spotted the aircraft, a Val dive-bomber at just one thousand feet. White conducted a high side gunnery pass and watched as the dive-bomber made an easy left turn and crash into the ocean. White spotted another Val and may have damaged it before he exhausted his ammunition.²³⁷

Armistead's six Buffalos, reinforced by Swansberger in an F4F-3, attacked the formation of dive-bombers from an altitude of 17,000 feet. Armistead made a straight in approach from directly ahead of the formation. Diving fast and steep, Armistead targeted the leader of the fourth vee and watched his tracers pass through the Val and through the dive-bombers on the left side of the vee. Armistead looked back and saw two or possibly three planes falling in flames.²³⁸

Captain William C. Humberd followed Armistead into the attack and claimed one dive-bomber.²³⁹ Second Lieutenant Charles M. Kunz aimed for a Val in the fifth division and watched it burst into flames and pull out of the formation. Swansberger followed Kunz; what became of him

²³⁶ "Statement of Captain Herbert Thompson Merrill, USMC," from Horan, "Midway Combat Reports."

²³⁷ White, statement.

²³⁸ Armistead, statement.

²³⁹ RG 127 A1 Box 29, Capt. William C. Humberd, USMC, statement, 4 June 1942.

from then on remains a mystery.²⁴⁰ Sandoval and Brooks, who had lagged behind the division, made a gunnery run against the right flank of the fourth vee, claiming another dive-bomber.²⁴¹

Armistead's division claimed five Vals destroyed in its head-on, overhead run. He began to climb and position for another run when he saw three fighters climbing very fast and very steeply. Realizing they were Zeros gunning for him, Armistead commenced a violent split-S and dove. Three 20mm cannon shells and about twenty 7.7mm bullets ripped through his wings and engine cowling. His aircraft corkscrewed and he had difficulty controlling the aircraft. As the Zeros did not pursue him, he was able to lower his airspeed and level off.²⁴²

Following Armistead, Humberd was able to complete a second overhead gunnery pass and then a third. He was starting his fourth approach when a loud bang and a large hole in the cowling of his aircraft alerted him to the two Zeros behind him. Humberd dove with one Zero in pursuit. Humberd stated afterward that, at full throttle, he opened the distance between his F2A-3 and the pursuing Zero until he had enough separation to whirl about and meet the Zero head on. He reported that he fired a long burst at three hundred yards and watched the Zero catch fire and crash.²⁴³

Kunz also attempted a second gunnery run, this time employing a high side approach. He set one Val on fire but also discovered a Zero behind him. He dove and escaped, suffering a head wound and losing his radio and hydraulics to the enemy bullets.²⁴⁴ Brooks also attempted to climb for a second pass and was attacked by a pair of Zeros. With his wheels one-third extended, Brooks could not out dive them. He managed to dodge their fire and, as they shot past him, even let loose a burst in their direction. Brooks headed toward Midway, where the intense anti-aircraft fire drove off

²⁴⁰ RG 127 A1 Box 29, 2ndLt. Charles M. Kunz, USMCR, statement, 4 June 1942.

²⁴¹ Brooks, statement.

²⁴² Armistead, statement.

²⁴³ Humberd, statement. There were no other witnesses to this action. Humberd questionably claimed he opened the distance from his much faster pursuer.

²⁴⁴ Kunz, statement.

the Zeros. While contemplating a landing, Brooks saw two aircraft apparently dogfighting, so, despite his damaged, sluggish aircraft, headed over to help out a fellow marine. When he neared the dogfight, the aircraft—both Zeros—turned toward him. Brooks reported he shook off one and fired a burst into the other as they passed head on. He spied another two Japanese fighters attacking a Buffalo and raced across the island to help but was too late and watched the F2A-3 crash into the sea.²⁴⁵

The last marine fighters to get into the battle were the F4F-3s flown by McCarthy and Corry.²⁴⁶ Corry's account is succinct and to the point. Eight Zeros intercepted them before they could climb to the bombers' altitude. Corry reported afterwards that McCarthy shot down one fighter immediately and that Corry then shot down one on McCarthy's tail. The two Wildcats separated, and McCarthy was never seen again. Fire from the enemy fighters punctured Corry's fuel tanks, though Corry claimed, with fighters relentlessly shooting up his Wildcat, he shot down a lone Val near Eastern Island before he landed.²⁴⁷

Ten minutes after McCarthy and Corry had taken off, the Japanese Kates attacked Eastern Island from the east. After the Kates completed bombing runs on Eastern and Sand Islands, the dive-bombers circled in from the north, likewise attacking from the east. The fighters that had not expended all of their ammunition at VMF-221 then strafed the installations. The anti-aircraft guns of the marine defense battalion and the aircraft group's machine-guns erupted as the Japanese aircraft crossed over the island. Midway presented a nightmare of flak and automatic weapons fire to the lower dive-bombers and fighters. The marines shot down at least three and perhaps as many as five

²⁴⁵ Brooks, statement.

²⁴⁶ Annex C to MAG-22 XO's report, 5-9.

²⁴⁷ Corry, statement.

attacking aircraft and damaged many more. The surviving Japanese reported the marines' "...accuracy is excellent, and the anti-aircraft fire is intense."²⁴⁸

The bombing lasted from 6:35 until 7:10 a.m. Four 1000-pound bombs and ten 532-pound bombs hit Eastern Island, destroying the powerhouse, command post, mess hall, and post exchange, cutting the telephone line to Sand Island, and severing fuel lines. There were three craters in the runways. Most catastrophically for VMF-221, one dive-bomber had made a direct hit on a rearming and refueling point. The bomb triggered a secondary explosion of eight 100-pound bombs and 10,000 rounds of .50 caliber machine-gun ammunition. The four marines who had just refueled McCarthy and Corry's Wildcats, Privates First Class Maurice A. Belanger, Robert L. Holsbo, Robert E. Mowrey, and Abraham Zuckerman, never had a chance. Private William A. Burke perished when the powerhouse was hit, and a VMSB-241 marine died when a bomb struck near the squadron's engineering tent.²⁴⁹

As the Japanese air groups headed back towards their carriers, the survivors of VMF-221 began landing. Brooks was one of the first down, with seventy-two holes in his aircraft and one in his left leg.²⁵⁰ Corry's fuel tanks were hemorrhaging, but he managed a landing before running out of fuel and without immolating himself.²⁵¹ Armistead landed safely despite a damaged hydraulic system.²⁵² Humberd likewise discovered he had lost hydraulic fluid, lowered his landing gear manually, and landed without flaps.²⁵³ Kunz had lost hydraulics, his radio, and was dizzy from his head wound, but landed safely and staggered off to the dispensary.²⁵⁴ Carey, bleeding severely from

²⁴⁸ Parshall and Tully, *Shattered Sword*, 202.

²⁴⁹ Annex C to MAG-22 XO's report, 2; RG 38 NAI 133911503, Captain Logan C. Ramsey, USN, "Air Operations of Midway Defense Forces during Battle of Midway 30 May 1942 to 6 June 1942," 15 June 1942, 5; VMF-221 unit history, 26. The four PFCs were all line crew; Burke was a recent arrival.

²⁵⁰ Brooks, statement.

²⁵¹ Corry, statement.

²⁵² Armistead, statement.

²⁵³ Humberd, statement.

²⁵⁴ Kunz, statement.

both legs, ground looped spectacularly. Canfield, with no flaps, landed safely, but his landing gear collapsed.²⁵⁵

Captains Carl and White landed, taxied back to their revetments, and filled up with gas and ammunition. Though he could not raise his landing gear, Captain Humberd likewise rearmed and refueled. The three took off again before MAG-22 ordered them back.²⁵⁶

VMSB-241, morning of 4 June 1942

Immediately after receiving the radar report of incoming unidentified aircraft, the aircraft group sent a jeep over to the army air force B-26s and navy TBFs with an order to attack the enemy carriers. The messenger gave the carriers' bearing as 320 degrees, distance 180 miles, sailing on a course of 135 miles at a speed of twenty-five knots.²⁵⁷ The six navy TBFs from Torpedo Squadron Eight (VT-8) taxied out and took off right behind the fighters of VMF-221 and climbed to 4,000 feet. Instead of waiting for VMSB-241, the six torpedo bombers headed toward the Japanese fleet alone.²⁵⁸

The four army air force B-26 Marauders took off next. The army air force had modified these twin-engine bombers to drop torpedoes from a low altitude.²⁵⁹ With comparable top speeds of around 280 mph, both the navy torpedo bombers and the army air force bombers could reach the Japanese carriers in less than forty minutes—but they did not attempt to join together nor to make a combined attack.²⁶⁰

²⁵⁵ Canfield, statement.

²⁵⁶ Carl, *Pushing the Envelope*, 25; White, statement.

²⁵⁷ Annex C to MAG-22 XO's report, 5.

²⁵⁸ Pedroncelli, "The Lone Avenger."

²⁵⁹ Symonds, *Midway*, 236; NHHC, "Battle of Midway: Army Air Forces," *The Navy Department Library* (2020), retrieved from <https://www.history.navy.mil/research/library/online-reading-room/title-list-alphabetically/b/battle-of-midway-army-air-forces.html>.

²⁶⁰ *Jane's Fighting Aircraft*, 234, 246.

According to the VMSB-241 duty officer, the marine SBD-2s and SB2U-3s took off immediately following the B-26s and TBFs.²⁶¹ Major Henderson, the squadron commander, led the sixteen SBD-2s. Major Benjamin W. Norris, the executive officer, led the twelve SB2U-3s. Both groups rendezvoused about twenty miles east of Eastern Island. Henderson had received the same sighting report that MAG-22 had passed to the army air force and navy fliers by messenger, and the aircraft group passed it again by radio to ensure all the marine dive-bombers received it, too.²⁶²

Henderson and Norris proceeded northwest to intercept the carriers. The two units flew independently; Henderson took his unit to 9,000 feet, while Norris climbed to 13,000 feet.²⁶³ The dive-bombers were well above the cloud layer. The SB2U-3s were nearly as fast as the SBDs on paper, but the two groups proceeded virtually independently. At a speed of 250 mph, the groups would reach the Japanese carriers only minutes behind the TBFs and B-26s.²⁶⁴

More by coincidence than coordination, the TBFs and B-26s found the Japanese carriers shortly after 7:00 a.m. The TBFs attacked the Second Carrier Division to the east, consisting of *Hiryū* and *Sōryū*; the B-26s followed minutes behind, but against *Akagi*, over three miles to the west. *Kaga*, several miles from *Akagi*, escaped the attention of these first two attacks. The four Japanese carriers had up to thirty-three fighters on combat air patrol during these attacks. Unprotected by friendly fighters and attacking in small groups, Midway's navy torpedo bombers and army air force medium bombers quickly faced a series of gunnery runs by the nimble Zeros. The Japanese combat air patrol shot down five of the TBFs and damaged the sixth, killing one of its crew. Two of the four B-26s escaped, both with holes in their fuselages and wounded crew. None had scored a torpedo hit.²⁶⁵

²⁶¹ RG 127 A1 1054 Box 10, 2ndLt. Emmer P. Thompson, USMCR, statement 7 June 1942.

²⁶² RG 38 NAI 133933925, VMSB-241 war diary, June 1942, 3-4; Kimes interview, BuAir, 1.

²⁶³ VMSB-241 war diary, June 1942, 3-4

²⁶⁴ *Jane's Fighting Aircraft*, 228; National Naval Aviation Museum, "SB2U Vindicator."

²⁶⁵ Parshall and Tully, *Shattered Sword*, 154, 177; Symonds, *Midway*, 233-236.

The marine dive-bombers were somewhat slower than the navy and army air force aircraft. They had taken off later and had flown east to the linkup point before heading northwest in search of the carriers. Because of these factors, the first marine dive-bombers did not attack until a half hour after the army air force and navy attacks had ended. All four Japanese carriers had recovered some of their fighters during the interval. When Henderson and his SBDs spotted the carriers about 7:55 a.m., the combat air patrol had dropped to just thirteen fighters.²⁶⁶

Major Henderson had planned to conduct a glide-bombing attack instead of a dive-bombing attack.²⁶⁷ A dive-bombing attack was more accurate. The bomber dove faster in a steeper dive-bombing attack, making fighter gunnery and anti-aircraft solutions far more difficult. But the cloud cover would have made dive-bombing particularly difficult, and over half Henderson's pilots were inexperienced second lieutenants.²⁶⁸

Instead, Henderson began a circling descent from 9,000 feet about ten miles from the carriers. Henderson intended to commence the glide-bomb run from 4,000 feet. At 8,000 feet, nine fighters of the Japanese combat air patrol struck the sixteen SBDs. The Japanese concentrated their gunnery runs against Henderson and his SBD quickly caught fire. Captain Elmer G. Glidden led the remaining SBDs into a cloud bank. When he emerged, he found a carrier below and signaled the dive-bombers to attack. The Zeros resumed their attacks as soon as the SBDs broke from the cover of the clouds.²⁶⁹

The carrier Glidden spotted below him was *Hiryū*. One by one, the marines released their bombs—and missed. Some misses came petrifyingly close for *Hiryū*'s crew and fooled many marines into believing they had scored at least one hit. But between VMSB-241 and *Hiryū*, this was a

²⁶⁶ Parshall and Tully, *Shattered Sword*, 154.

²⁶⁷ RG 127 A1 1054 Box 10, Captain Elmer G. Glidden, USMC, statement, 7 June 1942.

²⁶⁸ VMSB-241 war diary, June 1942, 3.

²⁶⁹ Glidden, statement, and 2ndLt. Jesse D. Rollow, USMCR, statement, 7 June 1942; Parshall and Tully, *Shattered Sword*, 176.

bloodless encounter. No bombs struck the carrier, and none of the carrier's anti-aircraft guns downed a dive-bomber.²⁷⁰

Air-to-air combat was a different matter. The Japanese fighters pursued the marine dive-bombers as they hugged the surface and scooted for Midway. Six SBDs went down under the Japanese fighters' cannons. In return, rear seat gunners brought down one of the Zeros.²⁷¹

Before the SBDs completed their attack, fourteen army air force B-17s arrived overhead. The B-17s dropped their loads from 20,000 feet, missing the ships below but providing their captains a few more minutes of excitement.²⁷²

Major Norris and his eleven SB2U-3 Vindicators were the last to arrive at about 8:20 a.m., less than ten minutes after the surviving SBD-2s had started to scurry back to Midway, but before the B-17s had completed their runs. The combat air patrol strength was climbing again, from twenty-six fighters upon their arrival to thirty-six by the time the last marines began to run for safety. At least three fighters completed gunnery passes before Norris commenced his attack. Norris started from 13,000 feet, diving through the clouds towards *Akagi*. The Zeros could not find the dive-bombers as long as they were in the safety of the cloud bank, but neither could the dive-bombers see the ships below. When the dive-bombers emerged from the clouds at 2,000 feet, there was no carrier below them. The captain of *Akagi* had spotted the approaching dive-bombers and deftly steered away. Directly ahead of the marines was the battleship *Haruna*. Norris led the attack. *Haruna* maneuvered evasively, neatly avoiding every one of the marines' bombs. Like the SBDs before them, the SB2U-3s hugged the surface and set course for Midway.²⁷³

²⁷⁰ Parshall and Tully, *Shattered Sword*, 178.

²⁷¹ Parshall and Tully, *Shattered Sword*, 156, 178.

²⁷² NHHHC, "Battle of Midway: Army Air Forces;" Parshall and Tully, *Shattered Sword*, 156, 179-180.

²⁷³ RG 127 A1 1054 Box 10, Captain Leon M. Williamson, USMCR, 2ndLt. George T. Lumpkin, USMCR, 2ndLt. George E. Koutelas, USMCR, 2ndLt. Daniel E. Cummings, USMCR, 2ndLt. Jack Cosley, USMCR, 2ndLt. Allan H. Ringblom, USMCR, 2ndLt. Sumner H. Whitten, USMCR, 2ndLt. Orvin H. Ramlo, USMCR, statements 7 June 1942.

The Japanese had shot down four of the SB2U-3s and eight SBD-2s, including Major Henderson.²⁷⁴ Only eight of the sixteen SBD-2s and eight of the twelve SB2U-3s had returned. All but two of the Vindicators had battle damage. Just five SBDs and six SB2Us were still combat ready. Marines filled in the runway craters, bulldozed the wreckage of a Zero off the runway, and cobbled together a refueling system. VMSB-241 had suffered horrific losses but was still in the fight.²⁷⁵

Not so VMF-221. The Zeros had destroyed thirteen of its twenty-one F2A-3s and severely damaged another five. Of the remaining three, one could not raise its landing gear completely. In his 1994 memoir, Carl described VMF-221 as “a shattered command” after the morning’s combat. What he described next reveals that the squadron had not only lost many aviators, but that many of the survivors may have lost confidence in themselves and their ability to go up against the Imperial Japanese Navy and its fighters.

Our squadron fell apart. The senior surviving officer went to the first sergeant and asked if the NCO could run the outfit for the next few days. The career marine replied, “Yes, sir,” as expected. With that, the senior captain (Armistead) walked out of the command post, went to a bomb shelter, and proceeded to get drunk. He had plenty of company.²⁷⁶

To a man, the fighter pilots had not hesitated to plunge into combat that morning. Fortunately, the rest of the day’s action precluded any need to sortie their remaining two fighters.

VMSB-241, evening of 4 June 1942

While VMSB-241 was enroute to attack the Japanese carriers and the Japanese air group was wrapping up its attack on Midway, the carriers *Enterprise* and *Hornet* began launching their air groups

²⁷⁴ VMSB-241 war diary, June 1942, 1-9; RG 127 A1 1054 Box 10, 2ndLt. Orvin H. Ramlo, USMCR and Captain Richard L. Blain, statements 7 June 1942.

²⁷⁵ RG 127 A1 1052 Box 10, LtCol. Ira L. Kimes, USMC, “Preliminary Report of Marine Aircraft Group Twenty-Two of Battle of Midway June 4, 5, 6, 1942,” 8 June 1942, 4.

²⁷⁶ Carl, *Pushing the Envelope*, 26.

to strike the Japanese carriers. *Yorktown* began launching her air group around the time Major Norris and the SB2U-3s were skimming the wave tops away from *Haruna* and the Zeros. Roughly 45 minutes after the last marine dive-bomber had fled, the first American carrier squadron began its own attack. In a series of uncoordinated attacks between 9:20 and 10:40 a.m., navy TBD Devastator torpedo bombers from all three carriers fell under the Japanese fighters and anti-aircraft fire. The battle turned when SBD-3s from *Enterprise* and *Yorktown* arrived overhead. The dive-bombers scored fatal hits on three of the Japanese carriers, leaving just *Hiryū* untouched.²⁷⁷

For several hours, the Midway defenders had little idea of the battle's progress. At 11:50 a.m. a number of SBDs from *Hornet* landed, unable to make it back to their carrier after searching in vain for the Japanese. This was the first indication many marines had that American carriers were nearby. At 12:52 p.m. Midway learned *Yorktown* was under attack. Having no instructions and wanting to avoid being caught on the ground, the B-17s bypassed Midway and flew on to Oahu. "At this time," wrote Commander Ramsey, "things looked very black." The PBYS were ordered to prepare to withdraw to French Frigate Shoals, and the garrison began to wonder how soon Japanese battleships would appear over the horizon and blast their flimsy sand dugouts to smithereens.²⁷⁸

The two fleets traded carrier strikes that afternoon. *Hiryū*, the sole remaining Japanese carrier, had just thirty-eight operational aircraft left: ten Zeros, eighteen Vals, and ten Kates. Another twenty-seven fighters from all four carriers were still aloft; *Hiryū* would recover most and add them to her air group. *Hiryū* launched six fighters and all its dive-bombers in a strike against *Yorktown*, setting her ablaze just after noon but losing one fighter and all but one dive-bomber. *Hiryū* launched a second strike at 1:30 p.m. that included the remaining ten Kates escorted by six Zeros. Only four fighters and five carrier attack planes returned from this strike, but they struck *Yorktown*

²⁷⁷ Symonds, *Midway*, 245, 276-308.

²⁷⁸ Ramsey, "Air Operations of Midway Defense Forces," 5-6.

with two torpedoes, forcing her captain to order her abandoned.²⁷⁹ Finally, at 5:00 p.m., dive-bombers from *Enterprise* struck *Hiryū* with at least four 1,000-pound bombs, dooming the carrier.²⁸⁰

The mood in the Sand Island command post changed abruptly when Midway's patrol aircraft reported spotting burning Japanese ships. A PBYP confirmed that there were three carriers burning at 5:45 p.m.²⁸¹ Ramsey requested MAG-22 attack the burning vessels. Major Norris, now in command of VMSB-241, opted for a night attack, reasoning that the burning ships would be easy to find and the danger from fighters and anti-aircraft would be negligible. At 7:05 p.m., Norris led a strike of five SB2U-3s and six SBD-2s into the moonless night.²⁸²

Before the marines had taken off, Admiral Chūichi Nagumo, commanding the carrier battle group, concluded that *Kaga* and *Sōryū* could not be saved. Destroyers scuttled both by torpedo ten minutes after Norris and his dive-bombers began their mission. *Akagi's* captain ordered her abandoned at 7:20 p.m., fifteen minutes after Norris took off. *Hiryū* still burned, but could make twenty-eight knots.²⁸³

The eleven dive-bombers flew northwest for 175 miles, spotting nothing. Giving up the hunt, Norris headed back to Eastern Island. Squalls and low ceilings made a challenging over water flight even more perilous. Visibility was atrocious, with the ceiling at just five hundred feet. Ten of the eleven dive-bombers eventually landed safely. Major Norris and his gunner, Private First Class Arthur B. Whittington, were never recovered.²⁸⁴

²⁷⁹ Parshall and Tully, *Shattered Sword*, 269, 290, 292, 311, 316. Parshall and Tully state *Hiryū* had 37 aircraft but note a damaged tenth Kate was repaired and joined the second strike.

²⁸⁰ Symonds, *Midway*, 334-335.

²⁸¹ Ramsey, "Air Operations of Midway Defense Forces," 6.

²⁸² Kimes, "Preliminary Report, MAG-22," 4.

²⁸³ Pascall and Tully, *Shattered Sword*, 333-341.

²⁸⁴ Prosser, statement; Whitten, statement; RG 127 A1 1054 Box 10, Capt. M. A. Tyler, USMC, VMSB-241 "Casualties for 4 June 1942," 7 June 1942.

VMSB-241, 5 June 1942

The marines of MAG-22, the visiting raiders, and sailors from the PBV squadron worked through the night to refuel the ten marine dive bombers, sixteen B-17s, and sixteen PBV-5As. With the airfield refueling system out of commission, the sailors and marines pumped 45,000 gallons by hand from over 800 55-gallon drums. The refueling proved necessary. At 6:30 a.m., one of the PBVs reported two Japanese battleships 170 miles due west of Sand Island. MAG-22 ordered VMSB-241 to attack.²⁸⁵

The “battleships” were the cruisers *Mogami* and *Mikuma*, part of a task force that had slipped close to Midway to bombard the atoll at first light on 5 June. When a lookout spied an American submarine, the cruisers began evasive maneuvering and *Mogami* collided with *Mikuma*. The two cruisers were now trailing after the task force with an escort of two destroyers, within easy range of Midway.²⁸⁶

Captain Tyler, now in command of VMSB-241, led the strike. His tireless mechanics had repaired another two SB2U-3s. Tyler’s plan was for his division of six SBD-2s to dive-bomb from 10,000 feet, followed by a glide bombing attack from 4,000 feet by Captain Richard Fleming’s division of six SB2U-3s. Before 8:00 a.m., they found *Mogami* and *Mikuma*. The dive-bombers faced no fighters, but the cruisers’ anti-aircraft fire was heavy and accurate. All six SBDs dropped their bombs and swooped away, unhit but hitting nothing. Fleming’s six SB2U-3s, gliding in from 4,000 feet presented an easier target to the cruisers’ anti-aircraft gunners. Fleming’s dive-bomber was soon burning, but he continued his dive and released his bomb before his Vindicator burst into flames.

²⁸⁵ MAG-22 war history, 57.

²⁸⁶ Symonds, *Midway*, 341-342.

The other five SB2U-3s dropped their bombs in close succession. One pilot claimed a hit, and several claimed near misses, but none had hit either ship.²⁸⁷

Mogami and *Mikuma* escaped damage in a subsequent attack by B-17s a few minutes after the marines left. But *Mikuma's* luck ran out the following day. Strikes from *Enterprise* and *Hornet* damaged *Mogami* and crippled *Mikuma*. Fires raged, and her torpedoes soon detonated. She sank soon after.²⁸⁸

The attack against the cruisers was MAG-22's last mission during the Battle of Midway. As it became apparent the Japanese fleet had withdrawn, and the U.S. Pacific Fleet had achieved a spectacular victory, the marines turned their attention to counting the cost and writing their after-action reports.

²⁸⁷ VMSB-241 war diary, June 1942, 8; RG 127 A1 1052 Box 10, Williamson, statement 7 June 1942, 2ndLt. George E. Koutelas, USMCR statement 7 June 1942, 2ndLt. Allan H. Ringblom, USMCR statement 7 June 1942; Parshall and Tully, *Shattered Sword*, 362-363.

²⁸⁸ Symonds, *Midway*, 352-355; Parshall and Tully, *Shattered Sword*, 369-371.

Chapter 4: Evaluation of the squadron's effectiveness at Midway

The central research questions of this case study are, how well did marine aviation support the fleet at Midway, and what factors contributed to its effectiveness there? To answer the first question, this study will evaluate marine aviation's measures of performance and effectiveness. The impact of various contributing factors will then be considered.

The measures of performance for marine aviation at Midway are the number of aircraft each squadron sortied, the number of enemy aircraft the fighting squadron destroyed, the number of enemy ships the scout-bombing squadron hit, and the number of aircraft each squadron lost. Determining the measures of effectiveness for marine aviation at Midway first requires an examination of the fleet commander's intent.

How many aircraft did each squadron sortie?

Table 1.8 provides the sorties for each squadron.

Table 1.8. MAG-22 sorties during the Battle of Midway

Squadron	on hand 4 June AM	sortied 4 June AM	on hand 4 June PM	sortied 4 June PM	on hand 5 June	sortied 5 June
VMF-221	21 F2A-3 7 F4F-3	20 F2A-3 6 F4F-3	8 F2A-3 4 F4F-3	0	8 F2A-3 4 F4F-3	0
VMSB-241	17 SB2U-3 19 SBD-2	14 SB2U-3 18 SBD-2	13 SB2U-3 11 SBD-2	5 SB2U-3 6 SBD-2	12 SB2U-3 11 SBD-2	6 SB2U-3 6 SBD-2

The initial sortie rates on 4 June were remarkably high. All but two of the fighters, all but one of the SBD-2s, and all but three of the older SBU2-3s flew. As a full-strength squadron was normally allotted just eighteen aircraft, it is clear that the Marine Corps and the Pacific Fleet's Aircraft Battle Force had provided the squadrons with an abundance of combat-ready aircraft and the marines, tools, parts, and supplies to maintain them.

The inability of VMF-221 to generate any sorties after the first morning resulted from both its high losses and the effect the experience had on its pilots. By 8:00 a.m. on 4 June, the fighting squadron had just two combat ready fighters: one F2A-3 and one F4F-3. A second F2A-3 could fly, but its wheels would not retract.²⁸⁹ The marine aircraft group did not order any fighters aloft again for the remainder of the battle. The after-action reports of the group commander, group executive officer, and acting squadron commander are all silent on this matter, aside from expressing a lack of confidence in the F2A-3. Captain Armistead, who acceded to command of VMF-221 as the senior survivor, assessed that “The F2A-3 is sadly outclassed in all respects by the Japanese 00 (Zero) fighters.”²⁹⁰ The implication is that marine commanders believed ordering the two remaining fighters into combat would amount to a suicide mission and kept them on the ground.

For VMSB-241, the lower sortie rates for the strikes on the evening of 4 June and the morning of 5 June also resulted from their losses during the first morning’s action. The aircraft on hand that did not fly were too severely damaged to repair to operational status. The ground echelon of VMSB-241 was able to repair two additional SB2U-3s for the strike on 5 June.

How many enemy aircraft did the fighting squadron destroy?

The evidence presents great discrepancy in the number of Japanese aircraft lost on the morning of 4 June. The variance is due not only to the difficulty of ascertaining victories in a few seconds of action, but also to faulty calculus flavored by wishful thinking. In his official report of the action, Armistead stated that he observed two groups of approximately forty dive-bombers each before VMF-221 began its attack. He further stated that a pilot from VMSB-241 on the ground on Eastern Island counted just eighteen bombers overhead during the strike. Though a close

²⁸⁹ Kimes, “Preliminary Report, MAG-22,” 2.

²⁹⁰ CO VMF-221, “enemy contact, report on,” 2.

examination of the statements of his pilots only claimed nine enemy aircraft destroyed with certainty, Armistead nonetheless reasoned that VMF-221 must have destroyed about fifty bombers in air-to-air combat.²⁹¹ Lieutenant Colonel Kimes used similar arithmetic to estimate Japanese losses at 43 aircraft, which he admitted included “probable victories by missing fighter pilots” as well as multiple claims by the tail gunners of VMSB-241.²⁹² Aviation historian Frank Olynyk credited VMF-221 with eleven victories, though he relied on the same pilot statements that claim just nine victories unequivocally.²⁹³ Table 1.9 tabulates the conflicting sources.

Table 1.9. Japanese aircraft losses, 4 June 1942

Marine unit	MAG-22 report ²⁹⁴	Pilot statements ²⁹⁵	Olynyk ²⁹⁶	Nagumo ²⁹⁷	Parshall and Tully ²⁹⁸
VMF-221	25 Vals 18 Zeros	3 Vals 2 Kates 4 Zeros	6 Vals 1 Kate 4 Zeros	3 Kates 2 Zeros	2 Kates 1 Zero
VMSB-241		6 Zeros	6 Zeros	8 Zeros (including losses to U.S. Navy aircraft)	1 Zero
TOTAL	43	15	17	9-17	4

Japanese sources present a much lower count. Admiral Nagumo’s report admits just five aircraft lost to marine fighters on 4 June and eight more in aerial combat, including aircraft lost to U.S. carrier fighters and tail gunners. Naval historians Parshall and Tully have established perhaps the most authoritative accounting. Scrutinizing Japanese air group records, they calculated the

²⁹¹ CO VMF-221, “enemy contact, report on,” 1.

²⁹² RG 127 A1 1052 Box 10, LtCol. Ira L. Kimes, USMC, “Battle of Midway Island, report of,” 7 June 1942, 2-3.

²⁹³ Frank Olynyk, *USMC Credits for the Destruction of Enemy Aircraft in Air-to-Air Combat, World War 2* (Aurora, OH: Frank Olynyk, privately published, 1982), 2-3. The discrepancy is from 2ndLt Kunz’s statement. He describes aircraft he shot at as “burning,” but does not explicitly claim he saw them go down. Olynyk misstates Canfield claimed a Val; Canfield’s statement says it was not a Val.

²⁹⁴ Kimes, “Battle of Midway Island, report of,” 3.

²⁹⁵ CO VMF-221, “enemy contact, report on,” Olynyk, *USMC Credits*, 2-3.

²⁹⁶ Olynyk, *USMC Credits*, 2-3.

²⁹⁷ United States Navy, *Japanese Story of the Battle of Midway (A Translation)*, OPNAV P32-1002 (Washington: Office of Naval Intelligence, June 1947), 42-47.

²⁹⁸ Parshall and Tully, *Shattered Sword*, 204.

Japanese losses as shown below in table 1.10. Though they credit VMF-221 with just three aerial victories, they also note that another sixteen aircraft returned from the strike but then either ditched or were so irreparably damaged that they could not fly again. The loss of these sixteen aircraft occurred out of sight of the marine aviators and thus do not constitute aerial victories for the fighter pilots, but their loss to the Japanese fleet nonetheless constitutes a significant reduction of combat power at a critical moment.

Table 1.10. Parshall and Tully accounting of Japanese aircraft losses from the air raid on Midway, 4 June 1942

Air group	Shot down by VMF-221	Shot down by anti-aircraft fire	Damaged, then lost enroute to carrier	Severely damaged “mission kill”
<i>Hiryū</i>	2 Kates	1 Kate	2 Kates	5 Kates 2 Zeros
<i>Sōryū</i>		1 Kate	2 Kates	5 Kates
<i>Akagi</i>		1 Zero		1 Val
<i>Kaga</i>	1 Zero*	1 Val		1 Zero
Total	2 Kates 1 Zero	2 Kates 2 Zeros 1 Val	4 Kates	10 Kates 1 Val 1 Zero

*Parshall and Tully describe this Zero as “shot down over Midway,” but do not delineate whether it was by fighters or anti-aircraft fire; *Shattered Sword*, 204.

This is particularly apparent when one realizes *Hiryū* suffered the most losses in the strike on Midway. *Hiryū* was the only carrier that survived the morning strike by U.S. carrier aircraft, and thus was the only carrier to strike back at the American carriers. Her first strike included six fighters and eighteen dive-bombers. Her second strike at 1330 included just ten Kates and six Zeros. The ten Kates the marines removed from the game board in the morning effectively reduced the offensive strength of *Hiryū*'s second afternoon strike by half. In other words, the marines did not shoot down nearly as many aircraft as they claimed, but the aircraft they did bring down were the right ones—those from *Hiryū*.

When these Japanese losses are considered against marine losses, there is no doubt VMF-221 got the worst of the aerial action over Midway. Twenty-five marine fighters had been shot down or too severely damaged to continue the battle, whereas the marine fighters had shot down or inflicted a mission kill on at most just nineteen Japanese aircraft.

How many enemy ships did the scout-bombing squadron hit?

The performance of VMSB-241 is simpler to calculate. After reviewing the pilots' statements for 4 June, Kimes concluded that the dive-bombers had scored two hits on a single carrier or one hit each on two carriers and one hit on a battleship. In fact, there were several near misses, but none of the marines' bombs hit a Japanese ship. The result on 5 June was much the same. The marines claimed a hit and a near-miss on a battleship. The "battleships" were cruisers, and the hits were misses.²⁹⁹

In summary, marine dive-bombers had sortied fifty-five dive-bombers in three strikes and inflicted no damage to Japanese ships. In contrast, *Enterprise* and *Yorktown* had sortied fifty SBD-3s in their strike against the Japanese carriers on the morning of 4 June and inflicted five to ten hits on *Kaga*, at least one on *Akagi*, and three on *Sōryū*.³⁰⁰

How many aircraft did each squadron lose?

MAG-22 was destroyed at Midway. As shown in table 1.11, the group lost just over eighty percent of its aircraft. Though the marines repaired several aircraft, on 8 June the remaining twelve were in dire need of engine overhauls after operating at full power for prolonged periods.³⁰¹

²⁹⁹ Kimes, "Preliminary Report, MAG-22," 3; Symonds, *Midway*, 240-241342; Parshall and Tully, *Shattered Sword*, 176-178.

³⁰⁰ Symonds, *Midway*, 302-307.

³⁰¹ RG 127 A1 Box 10, LtCol. Ira L. Kimes, USMC, "Status of aircraft, MAG-22," 8 June 1942.

Table 1.11: Marine aircraft losses at Midway

Aircraft	On hand 4 June	Not operational 4 June AM	Lost 4 June AM	Mission killed 4 June AM	Lost 4 June PM	Lost 5 June	Operational 8 June
F2A-3	21	1	13	6	--	--	3
F4F-3	7	1	2	3	--	--	1
SB2U-3	17	3	4	10	1	1	5
SBD-2	19	1	8	5	--	--	3
Total	64	6	27	24	1	1	12

Kimes, "Preliminary Report, MAG-22," 3.

Measures of effectiveness

For marine aviation supporting a fleet, appropriate measures of effectiveness assess whether marine aviation is accomplishing the fleet commander's intent. This section first examines the fleet commander's intent and then how well marine aviation satisfied that intent.

Admiral Nimitz's intent is reflected in memoranda to his staff and in his operations order. Nimitz had explicitly written that Midway's aircraft "should go all out for the carriers...."³⁰² In his operations order, Nimitz stated the fleet's mission was "to prevent the capture and occupation of Midway by enemy forces." He explicitly directed Captain Simard at Midway to "Hold MIDWAY" but also to "Inflict maximum damage on enemy, particularly carriers, battleships, and transports."³⁰³

Midway held. The marine aircraft group had certainly not gone all out for the carriers, holding all its fighters in the defense of Midway, and failing to drop a single bomb on an enemy ship. But an evaluation of the aircraft group's effectiveness requires a deeper understanding of why Midway held and how MAG-22's modest performance contributed to the Pacific Fleet's destruction of the Japanese carriers.

The Japanese strike on 4 June inflicted considerable damage to Naval Air Station Midway but did not neutralize it as an air base. The interception of the incoming bombers by VMF-221's

³⁰² Nimitz to Davis, op. cit.

³⁰³ Op-Plan 29-42, 7-8.

fighters disrupted the Japanese formation and brought down a few bombers. Midway suffered no more strikes because the threat to Midway evaporated when the Japanese lost their carrier force.

Nimitz's objective of holding Midway was accomplished with the destruction of the Japanese carriers, as was his intent to inflict maximum damage on the enemy fleet. MAG-22's operations played a minor but significant part in the series of events that led to the destruction of those carriers.

As Parshall and Tully have shown, the series of attacks from Midway that began shortly after 7:00 a.m. and continued until sometime after 8:30 a.m. helped create conditions that delayed the Japanese strike against the American carriers and placed the Japanese carriers at greater vulnerability to subsequent attacks. Over these ninety minutes, the Japanese carriers evaded torpedoes from six TBFs and four B-26s, then bombs from VMSB-241's thirty-one dive-bombers, and finally bombs dropped by fourteen B-17s. Dodging these attacks required the captains to maneuver violently. Forty-five minutes after the attacks from Midway subsided, the torpedo planes from the American carriers began their tragic attacks. Defending against these attacks required the carriers to launch and recover fighters. Perhaps just as importantly, the persistent attacks presented Nagumo and his small staff with a series of menacing dilemmas, complicating their decision making. All of these factors disrupted preparations for Nagumo's counterstrike. When the dive-bombers from *Enterprise* and *Yorktown* appeared overhead, the Japanese Kates and Vals were all still on the hangar decks, fueled, armed, and waiting to spot on the flight deck for the strike against the U.S. carriers. These aircraft were not only lost in the resulting fires and explosions, but their fuel and ordnance amplified the destructive power of the American bombs.³⁰⁴

³⁰⁴ Parshall and Tully, *Shattered Sword*, 154-155, 186-189, 205, 210, 215-216.

As discussed above, the few Japanese aircraft that did strike the American carriers all flew from *Hiryū*, the one carrier unscathed that morning. Due to VMF-221's fighters and 6th Defense Battalion's anti-aircraft guns, their torpedo-bomber strength had been halved.

The damage MAG-22 had directly inflicted on Japanese ships and aircraft was disappointing. But the cumulative impact of the marine, army air force, and navy aircraft launched from Midway, and the torpedo squadrons launched from the U.S. carriers contributed indirectly to the destruction of the four Japanese carriers and the protection of the two surviving American carriers.

Contributing factors

Having evaluated the effectiveness of marine aviation at Midway, the impact of different contributing factors will be considered. These include the number and types of aircraft employed; doctrine and tactics; training and experience; command and control; intelligence and early warning; logistics; time; and Japanese capabilities.

Numbers and types of aircraft

MAG-22 started the battle with sixty-four aircraft, an abundant allocation. After it was clear in mid-May that Midway was threatened, the Pacific Fleet reinforced the aircraft group. *Kitty Hawk* delivered seven F4F-3s and sixteen SBD-2s on 26 May. It is worth examining whether the group could have had even more.

The Marine Corps had more squadrons. MAG-21 and MAG-23 at Ewa had at least three fighting squadrons and three scout-bomber squadrons between them, though their combat readiness was likely inferior to the squadrons at Midway.³⁰⁵ Whether they were available and ready to fight, reinforcing MAG-22 was not simple.

³⁰⁵ Sherrod, *Marine Corps Aviation*, 444-445, 463-464.

Getting the aircraft to Midway would have been difficult, but possible. The six TBFs that reached Midway on 1 June had flown from Oahu. This suggests the Pacific Fleet had no ships available to ferry aircraft to Midway. VMSB-231 made the flight in December 1941 in SB2U-3s, and F2A-3s could fly further than Vindicators. MAG-21 and MAG-23 could have reinforced MAG-22 by overwater flight.

Whether Midway could accommodate more marine squadrons is another matter. Eyewitness accounts indicate Eastern Island had no room for additional aircraft on 4 June. Adding additional marine aircraft would have required Midway to offset that with a reduction in other types of aircraft.

This raises the issue of aircraft type. In their statements, the surviving marine fighter pilots highlighted the inferiority of their aircraft and gave the F2A-3s scathing reviews.

Captain Armistead: “The Zero Fighter is faster in level flight than the F2A-3. It is much more maneuverable than the F2A-3. It can out climb the F2A-3. It has more fire power than the F2A-3.”³⁰⁶ In the final paragraph of the squadron after action report, Armistead concluded, “The F2A-3 is sadly out-classed in all respects by the Japanese (Zero) Fighters.”³⁰⁷

Captain Carey: “The ‘Zero’ fighters out-maneuvered, out-performed and out-climbed the Brewsters and Grummans in (every) respect. The only advantage the Brewsters and Grummans has was in armor.”³⁰⁸

Captain Humberd: “Frankly, I think the F2A-3 does not compare with their type (Zero) fighters whatsoever.”³⁰⁹

Lieutenant Kuntz: “As for the F2A-3, (or Brewster trainer) it should be in Miami as a training plane, rather than be used as a first line fighter.”³¹⁰

³⁰⁶ Armistead, statement.

³⁰⁷ CO VMF-221, “enemy contact, report on,” 2.

³⁰⁸ Carey, statement.

³⁰⁹ Humberd, statement.

³¹⁰ Kunz, statement.

Lieutenant Merrill: “The ‘Zero’ fighters were superior to the Grummans in speed and performance.”³¹¹

Lieutenant Musselman: “What action I witnessed brought out the superiority of the Japanese (Zero) Fighter over our F2A's and F4F's.”³¹²

Lieutenant Phillips: “Brewsters and Grummans were no match for the Zero Fighters.”

Captain White:

The F2A-3 is not a combat airplane. It is inferior to the planes we were fighting in every respect. The F2A-3 has about the same speed as an Aichi 99 Dive Bomber. The Japanese Zero Fighter can run circles around the F2A-3. I estimated the top speed of a Zero Fighter, from what I saw, at better than 450 mile per hour.

It is my belief that any commander that orders pilots out for combat in a F2A-3 should consider the pilot as lost before leaving the ground.³¹³

Lieutenant Colonel Kimes was persuaded. In his 7 June report, Kimes concluded, “...it is recommended that F2A-3 and F4F-3 type airplanes be not assigned as equipment for use in combat but be retained for use at training centers only.”

Kimes was equally pessimistic about the performance of his dive-bombers.

The SB2U-3 type airplane is inferior in all phases of performance. Furthermore those in this Group were, and those yet remaining are, in such deplorable condition as regards fabric covering because of long exposure to rain and sun and the performance of the power plant has been so unsatisfactory as to render them valueless except for training or use as “drones.” The SBD-2 airplanes, while being far superior to the SB2U-3 type, are deficient in performance to such a degree as to indicate that their only practical usefulness is for training purposes.³¹⁴

³¹¹ Merrill, statement.

³¹² Musselman, statement.

³¹³ White statement.

³¹⁴ Kimes, “Battle of Midway Island, report of,” 4.

If Kimes was right, this was not good news for naval aviation. The next generation of fighters and dive-bombers was a year away. The inferiority of marine aircraft troubled Nimitz enough that he recommended equipping marine squadrons with army air force aircraft.

It has been our practice to complement Marine fighter squadrons on shore with planes of carrier type. This results in a distinct and unwarranted reduction in performance and ability to combat the enemy. Having adequate ground facilities, the Marine VF squadrons ought to be furnished with the very best fighting planes available to the country. Because of the limitations which carrier operation imposes on Naval planes, suitable fighters will naturally be Army air force types.³¹⁵

In other words, Nimitz was ready to forego marine aviation's ability to perform its secondary mission, as a reserve for carrier aviation, in order to provide it with more capable aircraft.

However, there is evidence that Kimes was not right. Notwithstanding the opinions of his pilots, there is evidence that neither the F4F-3 nor even the F2A-3 was to blame for VMF-221's poor performance. Marine and navy pilots would achieve far better results with the F4F in other actions. Captain Carl, one of the only pilots who did not criticize his squadron's aircraft, and the only one who may have actually shot down a Zero, believed the F2A-3 was as maneuverable and fast as the F4F-3. The Buffalo's drawbacks were that it could not absorb as much punishment as the Wildcat and provided a less stable gunnery platform.³¹⁶ Aircraft specifications support Carl's opinion, as shown in table 1.1.

Nonetheless, a breakdown of each fighter's measures of performance in table 1.12 reveals the pilots of VMF-221 had justification for their low opinion of the F2A-3 as a combat fighter.

³¹⁵ Commander-in-Chief, United States Pacific Fleet to Commander-in-Chief, United States Fleet, Subj: Battle of Midway, CincPac A16/(90) Ser. 01693 of 6/15/42, published 20 Mar 2018, retrieved from <https://www.history.navy.mil/research/archives/digital-exhibits-highlights/action-reports/wwii-battle-of-midway/commander-in-chief-pacific-fleet.html>.

³¹⁶ Carl interview, Frank and Parker, 97.

Table 1.12: Measures of performance by aircraft type

Aircraft	On hand	Sortied	Per cent sortied	Lost	Per cent of sortied lost	Victories claimed	Victories claimed per aircraft sortied
F2A-3	21	20	95.2%	13	65.0%	3	1:6.3
F4F-3	7	6	85.7%	2	33.3%	6	1:1

The Finnish Air Force destroyed 496 Soviet aircraft from 1941-1945 while losing only nineteen of forty-four F2A-1 Buffalos received from the United States during its winter war against the Soviet Union in 1940.³¹⁷ The Soviet air force was not the same as the Imperial Japanese Navy, but the Finnish experience suggests that the F2A-3's inferiority was not the sole contributing factor to VMF-221's poor performance.

Doctrine and tactics

How navy and marine commanders employed marine aviation significantly impacted the group's performance. Their decisions were influenced by doctrine. They also resulted from poorly communicated intent by Nimitz and an inability to coordinate large air operations.

MAG-22 withheld all of its fighters to protect Midway, denying VMSB-241 fighter protection. Neither Naval Air Station Midway nor MAG-22 coordinated VMSB-241's strike with the army air force and navy bombers. VMSB-241 was unable to coordinate its SBD-2 and SBU2-3 attacks. These failures enabled Japanese fighters to engage each attack in turn.

MAG-22 employed its fighters in "general support," allowing the fighters to be "on the prowl," as Wallace had lectured at Quantico. Clearly preferring the freedom to go find trouble, Wallace had emphasized, "The rule, then, for the employment of fighter units should be – general

³¹⁷ Maas, *F2A Buffalo*, 10-12.

support wherever and whenever possible.³¹⁸ As Wallace commanded MAG-22 until April 1942, this bias likely influenced Kimes' decision to retain VMF-221 in general support on 4 June.

In stark contrast, both the Japanese and American carrier task forces allocated fighter escorts to their strikes on 4 June, even though carriers were far more vulnerable to air attack than an island base. Commanders at sea provided fighter protection to ensure their strikes achieved results against the enemy's fleet.

This suggests another factor that likely influenced Kimes' decision. Nimitz told his air officer that Midway's aircraft should go "all out for the carriers." Keeping fighters in general support was not an "all out for the carriers" move. Nimitz's own orders to Simard did not convey the "all out for the carriers" direction, but tasked Simard to "Hold MIDWAY," with "Inflict maximum damage on enemy, particularly carriers, battleships, and transports," included among tasks such as scouting. Given the competing tasks, without amplifying direction, and likely influenced by a marine commander advocating general support, it is unsurprising Simard did not direct Kimes to provide fighter escorts to his bombers.

In a 1966 interview, McCaul admitted there was "no organized plan whatsoever" to coordinate Midway's strikes.³¹⁹ In an interview two months after the battle, Kimes explained that the B-26s and TBFs were so much faster that they arrived ahead of the marine dive-bombers even though they took off after them. They may have been faster, but they had taken off before the marine dive-bombers. And though the sole surviving TBF pilot later stated the navy pilots were briefed that they would rendezvous with the marine dive-bombers, they had proceeded directly to the target. As it was, the B-26s and TBFs arrived around the same time, but did not attempt to coordinate their attacks, and arrived long before the marine dive-bombers. As Kimes acknowledged,

³¹⁸ Wallace, "Fighting Aviation," 6-8.

³¹⁹ McCaul interview, Barde, 1.

It would have been better if they had arrived simultaneously. It would have lessened the air resistance to both the dive bombers and the torpedo planes had they made a simultaneous attack. As it was, the Japs took them on one at a time.”³²⁰

Henderson and Norris had likewise attacked independently. In his August 1942 interview, Kimes pointed out that a squadron was normally allotted eighteen dive-bombers. Henderson commanded thirty dive-bombers that morning, fourteen SB2U-3s and sixteen SBD-2s. Rather than attempt to control such a large force, effectively two squadrons, Henderson had Norris lead the SB2U-3s separately. Another reason Henderson may have employed this tactic was because the SB2U-3s could not dive alongside the SBD-2. Rather than limit the SBD-2's to the SB2U-3's shallower dive, Henderson opted to operate in two independent divisions and attack two different targets.³²¹

Training and experience

The difference in airframes explains why VMSB-241 operated in two divisions. The limitations of the SB2U-3 explain why these aircraft were forced to glide bomb and not employ the more accurate and survivable dive-bombing technique. It does not explain why Henderson and the SBD-2s also conducted a glide bombing attack. Henderson apparently elected for a glide bombing attack because his pilots were so inexperienced.

Lieutenant Sumner Whitten had only 140 hours of flying when he arrived at Midway.³²² Seventeen pilots who arrived aboard *Kitty Hawk* were “fresh out of flight school,” according to

³²⁰ Kimes interview, BuAir, 3.

³²¹ Kimes interview, BuAir, 2.

³²² Sumner Whitten, Oral History, Part 4, “From Pearl Harbor to Midway,” *The Digital Collections of the National WWII Museum* (2015), retrieved from <https://www.w2online.org/view/sumner-whitten#from-pearl-harbor-to-midway>.

McCaul.³²³ One, Second Lieutenant Allan H. Ringblom, recalled that none of the nine replacements who joined VMSB-241 had ever flown the SB2U-3.³²⁴

There does not appear to be a very sharp correlation between experience and performance. As shown in table 1.13, experienced pilots were shot down at nearly the same rate as inexperienced ones. Twenty-seven pilots from VMF-221 flew on 4 June. Fifteen were shot down; one was recovered after bailing out. The others went missing. Another three were wounded but brought their aircraft back. In VMSB-241, thirty dive-bomber pilots flew in the morning. Twelve were shot down. One bailed out and was recovered; three ditched and were recovered.

Table 1.13: MAG-22 losses by experience category, morning of 4 June 1942

Experience level	Took off	Shot down	Loss rate
Experienced (2+ years' flying)	22	8	36.4%
Inexperienced (2ndLts, 9-15 weeks on Midway)	18	11	61.1%
Novice (2ndLts, arrived 27 May)	17	8	47.0%

Source: VMF-221 unit history, 23-24; Heintz, *Marines at Midway*, 53; Kimes, "Preliminary Report, MAG-22," 5-6.

The experienced pilots survived at a higher rate than inexperienced pilots but still suffered high losses. Surprisingly, novice pilots were less likely to get shot down than more experienced second lieutenants.

Table 1.14. VMF-221 victories claimed by experience level

Experience level	Aviators aloft	Victories claimed	Victories claimed per aviator
Experienced	11	6	0.55
Inexperienced	6	2	0.33
Novice	9	1	0.11

Source: VMF-221 unit history, 23-24; Heintz, *Marines at Midway*, 53; Kimes, "Preliminary Report, MAG-22," 5-6.

³²³ MAG-22 XO's report, 2.

³²⁴ Heintz, *Marines at Midway*, 53.

As marine claims exceeded Japanese planes shot down, evaluating this measure of performance is inexact. As shown in table 1.14, the pilots' statements reveal that more experienced aviators claimed victories at a much higher rate.

Loss rates aside, Lieutenant Colonel Kimes assessed that inexperience retarded the performance of both squadrons. In his report of 7 June 1942, he recommended that, "Replacement pilots should, prior to leaving the mainland, be given a short transitional training course in modern service aircraft. Such a course should cover training in gunnery, bombing, instrument flying, and basic type tactics."³²⁵

Command and control

Kimes also made recommendations regarding command and control. MAG-22's improvised fighter direction center had worked out well, but it was not state-of-the-art. The Japanese flew straight in at high altitude, simplifying radar detection and MAG-22's intercept problem. Kimes recommended the Marine Corps acquire superior radar similar to that used by the Royal Air Force.³²⁶

Command of aviation had not gone well. Neither Naval Air Station Midway nor MAG-22 coordinated the aircraft on Eastern Island into a unified strike. Coordination was exacerbated because Simard and Ramsey were located in the air station command post on Sand Island while Kimes and McCaul ran the aircraft group from their command post on Eastern Island. Communication between the two command posts was primarily by telephone and, after the air raid, by radio.

³²⁵ CO MAG-22 "Battle of Midway Islands, report of," 4.

³²⁶ Kimes interview, BuAir, 9; Annex C to MAG-22 XO's report, 1.

Coordination between Midway and the carriers was non-existent. After the Battle of the Coral Sea in early May, Nimitz had identified a need for land-based air commanders to support the fleet with strikes and fighter protection.³²⁷ The Pacific Fleet's experience at Midway suggests that capability was beyond its grasp in mid-1942. The carrier task forces struggled to coordinate strikes between squadrons from the same carrier, much less with the marine aircraft group ashore, which was unaware of the carriers' positions and intentions. As Kimes noted, "We had no idea how they were faring as far as other forces in the vicinity were concerned, or what our forces afloat were doing."³²⁸

Intelligence and early warning

U.S. naval intelligence performed superbly, providing the fleet commander with sufficient knowledge of enemy capabilities and intentions to achieve operational surprise and warn Midway of the impending attack. Fleet scouting by PBYs and B-17s from Midway provided the enemy fleet's location. Midway's radar provided MAG-22 sufficient warning to scramble its fighters and launch all attack aircraft. Although MAG-22 was plotting hundreds of aircraft at one point on 4 June, the group interpreted the information and directed its fighters to a successful interception.³²⁹

Had the Pacific Fleet relied on MAG-22 instead of PBYs to scout, it is doubtful the marines would have detected the Japanese task forces as early and as far away as the navy patrol bombers did. The PBYs could fly 3,100 miles. The F2A-3s and SBU2-3s were limited to 1,200 miles, and the SBD could fly just 773 miles in its scouting configuration. The F4F-3 could reach just 925 miles.³³⁰ A Navy PBY had detected one of the Japanese task forces (not the carriers) 700 miles from Midway

³²⁷ 20 0359 CINCPAC TO COMINCH, Nimitz, *Graybook*, 487.

³²⁸ Kimes interview, BuAir, 2.

³²⁹ MAG-22 XO's Report, 2-3.

³³⁰ Lundstrom, *The First Team*, 12; National Naval Aviation Museum, "SB2U Vindicator;" *Jane's Fighting Aircraft*, 218, 226, 234.

on 3 June, well beyond the patrolling range of any marine aircraft.³³¹ This suggests that employing carrier aircraft limited marine aviation's utility as a scouting force.

One piece of intelligence in the Pacific Fleet's hands either failed to reach VMF-221 or the marines failed to recognize its significance. The Pacific Fleet's Fleet Air Tactical Unit had issued an intelligence bulletin nine months previously regarding the Zero's superior speed and maneuverability. Reports from the American Volunteer Group in China warned of the Zero's speed and impressive climbing performance. Yet none of the accounts by VMF-221's pilots indicate anything but astonishment at the Zero's capabilities.³³² Unaware or indifferent to the Zero's superior flying characteristics, the marines made no effort to adapt their tactics to this emerging threat.

Logistics

Midway lay at the end of a long supply line. Reinforcements and supplies had to come by sea. Vessels like *Kitty Hawk* could moor alongside Sand Island's pier and discharge cargo. Getting to Midway from Pearl Harbor took four days at fifteen knots. Pearl Harbor lay at least eight days from the nearest West Coast ports.³³³ This supply chain provided Midway with sufficiency, but not abundance.

The fleet's ability to supply MAG-22 with two items directly impacted its performance. VMF-221 did not have enough .50 caliber machine-gun ammunition to conduct live gunnery practice on several occasions in April and May, when the squadron was trying to train its new lieutenants. The squadron's poor performance was not helped by the limitations imposed by the shortage of ammunition. Fuel shortages on Eastern Island in late May curtailed training more

³³¹ Symonds, *Midway*, 212.

³³² Lundstrom, *The First Team*, 480.

³³³ Sea route and distance calculator, retrieved from Ports.com.

severely. Between the loss of 375,000 gallons in an own goal on 22 May and the thirsty B-17s and PBYS, there was no fuel for the seventeen novice aviators to train after their arrival.

Other aspects of logistics did not limit operations. Though the army air force heavy and medium bombers arrived without ground support, the marines were able to service them as well as their own aircraft, even after bombs damaged the fuel system. The ground crews achieved an impressive sortie rate on 4 June and returned two damaged dive-bombers to operation. There is no indication that aircraft readiness was impaired by a shortage of tools, parts, or technical ability.

The airfield itself had three hard packed coral runways, enabling over forty aircraft to takeoff in minutes after the air raid warning. Revetments and bunkers provided sufficient protection for most of the marines and infrastructure.

Time

VMF-221 had abundant time to prepare for combat but was unable to utilize that time efficiently. The squadron spent over five months at Midway before the action on 4 June. As seen, conflicting operational requirements, personnel turbulence, and logistical limitations impaired the squadron's preparations. When the first replacement aviators arrived almost four months before the action, their training sorties were limited by the hours the squadron was tasked to devote to patrol and calibration flights. After the final replacements arrived in May, this short window before the action was insufficient to provide them even a modicum of training, a problem exacerbated by fuel shortages that limited flying hours.

Japanese capabilities

The reverse side of the aircraft performance coin is the superior performance of the Zero. The surviving marines agreed on that point. A few recognized that the Japanese were better airmen

as well. Lieutenant Musselman and Lieutenant Phillips, who witnessed the battle from the ground, both acknowledged the Japanese pilots' "skill and daring."³³⁴ Even the most junior Japanese naval fighter pilots had well over two years' experience, and many had combat experience earned in China, at Pearl Harbor, against the British, and at the Coral Sea.³³⁵

Armistead recognized that the Zero was not superior in every way, writing, "In general, the Japanese airplanes appear to be very vulnerable to .50 cal. Gun fire. They burst into flame in nearly all cases upon receiving any bullets."³³⁶ Lieutenant Corry observed the same weakness, reporting that "The Japanese planes seem to be very vulnerable if you are fortunate enough to bring your guns to bear."³³⁷

The Japanese coordinated a strike of over one hundred aircraft from four carriers. In contrast, the Americans could not coordinate a strike of less than fifty bombers from a single airfield. The Japanese Combined Fleet's ability to mass airpower had helped overwhelm VMF-221.

Summary

Marine aviation performed rather terribly in support of the fleet at Midway, but nonetheless helped achieve the fleet commander's intent. In three of the four measures of performance, marine aviation did not accomplish much, suffering greatly and destroying little. However, what little it destroyed—aircraft from *Hiryū*—limited Japanese offensive power when it mattered most. The marine strikes against the Japanese carriers, though causing no direct harm, and acting through no design, contributed to the accumulation of delay, distraction, and poor decision-making on the Japanese carriers that facilitated the dive-bomber attack from *Enterprise* and *Yorktown*.

³³⁴ Musselman, statement; 2ndLt. Hyde Phillips, USMCR, statement, 6 June 1942.

³³⁵ Lundstrom, *The First Team*, 187, 454-457, 486-489.

³³⁶ Armistead, statement.

³³⁷ Corry, statement.

Several factors inhibited marine aviation's performance at Midway. The relative inferiority of the F2A-3 in combat against the Zero cannot be ignored. The poor employment of VMF-221 that resulted from doctrinal bias and imprecise direction ensured the dive-bombers attacked without protection. The inability of Naval Air Station Midway and MAG-22 to coordinate the strike committed the strikes piecemeal, enabling the enemy fighters to defeat each attack in turn. Most of all, the relative inexperience of marine aviators prevented them from shooting down aircraft and sinking ships. This inexperience had many causes, including rapid expansion, an aircraft shortage, the competing demands of defending Midway, and logistical shortfalls.

On 19 June, the surviving pilots of VMF-221 boarded a transport and left Midway behind. A few days after debarking at Ewa Field on Oahu, some gathered for a group portrait.



Figure 13. VMF-221 pilots, Ewa Field, Oahu, 22 June 1942. From left: Captain Marion E. Carl, Captain Kirk Armistead, Major Raymond Scollin (MAG-22), Captain Herbert T. Merrill, 2ndLt. Charles M. Kunz, 2ndLt. Charles S. Hughes, 2ndLt. Hyde Phillips, Capt Philip R. White, 2ndLt. Roy A. Corry, Jr. The aircraft is an R4D-1 of VMJ-252. (NARA photo #80-G-357083)

The Marine Corps would rebuild the squadron at Ewa and redeploy it to a new combat zone within the year. The squadron's next chapter would reveal how well the Marine Corps would learn its lessons from Midway.

Case Two: The Solomon Islands and Rabaul, 1943

Chapter 5: Refitting, Rearming, Redeploying, June 1942 – February 1943

Rebuilding VMF-221, June 1942 – February 1943

The Marine Corps brought VMF-221 from Midway to Ewa Field on Oahu to rebuild it for its next operation. That fight was not just around the corner; VMF-221 would be spared another tour of island defense and would not deploy until February 1943, when it would sail for the South Pacific. Nonetheless, the squadron's reconstitution was not a simple matter of replacing its combat losses followed by seven months of rigorous training, because competing demands placed on marine aviation in the latter half of 1942 would hobble the squadron's reconstruction. Marine aviation continued its accelerated buildup, growing from thirty-one squadrons at the end of June 1942 to sixty a year later.³³⁸ The requirement to defend advanced naval bases continued to pull squadrons forward, inhibiting the attempts of the Fleet Marine Force and Air Force, Pacific Fleet (the renamed Aircraft Battle Force Pacific Fleet) to train, organize, and equip them. Most importantly, the victory at Midway enabled the Pacific Fleet to take the offensive. The battle for Guadalcanal that began in August 1942 would quickly become the focus of effort of marine aviation.

Personnel turbulence, June 1942 – February 1943

The marines of VMF-221 all reached Ewa Field by the end of June, as passengers aboard transport aircraft or logistics vessels. Before the last echelon arrived, the Marine Corps began transferring many to other squadrons. By early August, every officer and the majority of the senior noncommissioned officers had departed. Of the 167 enlisted marines who had fought at Midway,

³³⁸ Sherrod, *Marine Aviation*, 434.

just 102 remained on 1 August. The squadron would rebuild without a single pilot who flew at Midway and without the senior noncommissioned officers who kept the aircraft there flying.³³⁹

On 10 June 1942, 2nd Marine Aircraft Wing published a new table of organization. Each fighting squadron would have eighteen fighter aircraft, two trainer aircraft, forty-one officers, and 242 enlisted marines.³⁴⁰ The wing faced an acute shortage of pilots and ground crew in Hawaii and at its advanced bases at Midway, Palmyra, and Samoa.³⁴¹ At the end of August 1942, VMF-221 was a still long way from its full complement. The squadron had just seven aviators on hand, none of whom had flown at Midway, and 110 enlisted marines.³⁴²

Over the next three months pilots and enlisted marines joined the squadron while others transferred out in a confusing merry-go-round that defies comprehension. Between 1 September and 30 November, forty-six pilots joined VMF-221, but thirty-five pilots transferred out during the same period. The need for fighter pilots in Samoa, astride the shipping lanes to Australia and Guadalcanal, took priority. VMF-221 was stripped to a small cadre again. Not until December did the squadron bolster its roster with aviators who would stay around to train, deploy, and fight in its next action. Fourteen joined that month. Six additional pilots arrived near the end of January, just weeks before the squadron deployed; one of those detached a week later. The squadron's ground echelon likewise rose to near its authorized strength.³⁴³

The turnover among pilots was matched by a rotation of commanders. As the senior surviving officer, Captain Armistead had taken command on 4 June, but he left the squadron on 1

³³⁹ VMF-221 muster roll, July and October 1942; VMF 221 unit history, Appendix: "Schedule of Commissioned Personnel Changes, July 1941 – December 1944," 1-7 and "Schedule of Monthly Changes in Enlisted Personnel," 4-5.

³⁴⁰ RG 127 A1 237-H, Second Marine Air Wing Correspondence 1940-1946, Box 1, "Organization of Marine Corps Aircraft Units," 10 June 1942.

³⁴¹ RG 127 A1 1054 Box 11 MAG-21, Senior Naval Aviator Present, 2nd MAW Hawaii, to CG, 2nd MAW, 10 July 1942.

³⁴² VMF 221 unit history, "Commissioned Personnel Changes," 6-7 and "Monthly Changes in Enlisted Personnel," 5.

³⁴³ RG 38 NAI 133988362 VMF-221 war diary September 1942, 2-3, 22, October 1942, 2-3; November 1942, 2-4, December 1942, 2-3; VMF-221 muster roll, October 1942 and January 1943; VMF 221 "Schedule of Commissioned Personnel Changes," 10.

August, the last of the aviators who had flown in the Battle of Midway. Fortunately for VMF-221, Captain Robert R. Burns rejoined the squadron.³⁴⁴

Burns was an experienced fighter pilot. He had joined a marine aviation reserve unit in 1936 at Wold-Chamberlain Field in his hometown of Minneapolis, Minnesota. He served there for two years while studying aeronautical engineering at the University of Minnesota, graduating in 1938. Burns completed elimination flight training (an orientation and weeding out syllabus for aviation candidates) in September 1938 and reported to Pensacola that November. He earned his wings in October 1939.³⁴⁵

Burns flew with VMS-2 at Naval Air Station San Diego for a year before returning to Pensacola as an instructor. He joined VMF-221 in October 1941 and flew with the squadron at Midway until he moved up to MAG-22 on 19 April 1942.³⁴⁶ Throughout the fighting, Burns worked tirelessly aiding Colonel Kimes and Major McCaul as the group communications officer. He returned with VMF-221 to Ewa Field but detached to MAG-21 on 6 July while the Marine Corps decided what to do with him. On 1 August he replaced Armistead as the commanding officer of VMF-221.³⁴⁷

Burns' first period in command lasted a week. Major Luther S. "Sad Sam" Moore arrived from Palmyra Island, where he had commanded VMF-211, and took command on 8 August. But the Marine Corps promoted Moore to lieutenant colonel within a week, and he detached on 6 October, turning over the squadron to Major Harold J. Mitchener.³⁴⁸ Fortunately for Moore,

³⁴⁴ VMF-221 war diary August 1942, 2.

³⁴⁵ Burns, "Biography submitted by graduating students;" Naval Aviator No. 6199 certificate, 2ndLt. Robert R. Burns.

³⁴⁶ VMF-221 unit history, 4; VMF-221 muster roll, October 1941, January and April 1942.

³⁴⁷ VMF-221 unit history, 28, and "Schedule of Commissioned Personnel Changes," 6; Kimes, "Preparations of MAG-22 for Battle," in Heintz, *Marines at Midway*, 51-52; Headquarters Squadron 21, Marine Aircraft Group 21, 2nd Marine Aircraft Wing, FMF, C/O FPO, San Francisco, California muster roll July 1942.

³⁴⁸ RG 127 1052 Box 30 VMF 221 unit history, "Schedule of Commissioned Personnel Changes," 7; VMF-221 war diary August 1942, 13, 18; VMF-211 July 1942 muster roll.

Mitchener, and the squadron, Burns remained as the executive officer, providing the only continuity among the squadron's officers.

Mitchener had received a regular commission after graduating from Carnegie Technical College in Pittsburgh in 1936. He had attended The Basic School in Philadelphia and served at sea aboard the battleship USS *Mississippi* (BB-41) before flight school. He flew for several years with VMF-1 (redesignated VMF-111) at Quantico until 1942, when he was assigned to MAG-13. VMF-221 was his first command.³⁴⁹

By 1 February, weeks before deploying to the South Pacific, the squadron had thirty pilots. Its ground echelon counted three officers and 209 enlisted marines. The officers in the ground echelon were an adjutant-intelligence officer, a transportation-mess officer, and a ground defense officer. The squadron also had a navy flight surgeon and four hospital corpsmen.³⁵⁰ While this put the squadron at just 75% of its authorized officer strength, thirty aviators provided a healthy ratio of 1.6 pilots to each aircraft for an eighteen-plane squadron and the ground echelon was at 87% of its authorization.

In addition to Mitchener and Burns, two experienced aviators reported on board just prior to deployment. First Lieutenant John S. Payne arrived on 8 December and was promoted to captain a week later. Captain Sidney G. Bemis reported to the squadron with the final cohort of aviators on 29 January 1943.³⁵¹

The other twenty-six pilots lacked experience. The twenty-four second lieutenants all accessed through the naval reserve V-5 program, the navy's aviation cadet program, and completed

³⁴⁹ Marine Corps Aviation Association, *Chronolog*, 1912-1954 (Paducah, KY: Turner Publishing Company, 1989), 116.

³⁵⁰ VMF-221 muster roll, February 1943.

³⁵¹ VMF-221 unit history, "Schedule of Commissioned Personnel Changes," 9-10.

flight school between April and September 1942. The two enlisted naval aviation pilots also earned their wings in 1942.³⁵²

Of these twenty-six, James Swett was by far the most experienced. Swett had enrolled in the Civilian Pilot Training Program in 1939 while a student at San Mateo Junior College in California.³⁵³ President Roosevelt authorized this program in 1938 to train a pool of 20,000 pilots for the armed forces.³⁵⁴ By the time Swett graduated junior college in 1941, he had 240 hours.³⁵⁵ Swett enlisted in the V-5 program in August 1941 and began flight training in Corpus Christi, Texas the following October. Due to his high marks in intermediate training, the senior marine at Corpus Christi invited him to seek a commission in the Marine Corps. Swett was designated a naval aviator and commissioned a second lieutenant on 1 April 1942.³⁵⁶

At the end of April, the Marine Corps ordered Swett to Quantico, Virginia to attend communications school. While there, the air station commander placed Lieutenant Swett under arrest in quarters for ten days for “Diving & Zooming over traffic on U.S. Route #1, below the altitude of 500 ft.”³⁵⁷ Swett reported to 2nd Marine Aircraft Wing at San Diego in late July, where he was immediately sent to the Advanced Carrier Training Group.³⁵⁸

³⁵² VMF-221 muster roll, July 1942, October 1942, and February 1943; Headquarters Squadron, 2nd MAW, FMF, NAS San Diego, July 1942 muster roll; Marine Barracks, NAS Corpus Christi, July 1942 muster roll; Marine Barracks, NAS Miami, July and October 1942 muster rolls. In mid-1941, the Secretary of the Navy ended the marine aviation cadet program and appointed all aviation cadets into the naval reserve, commissioning marines at the end of intermediate flight training. BuAir, *Marine Aviation*, (1957), 81; BuAir, *Aviation Personnel, 1939-1945*, 68-70.

³⁵³ James E. Swett, interview by Eric Hammell, part 2, 1980s-1990s, *The American Fighter Aces Association Oral Interviews* (Seattle, WA: The Museum of Flight, undated), 4.

³⁵⁴ “Civilian Pilot Training Program,” *National Museum of the United States Air Force*, retrieved 3 July 2023 from <https://www.nationalmuseum.af.mil/Visit/Museum-Exhibits/Fact-Sheets/Display/Article/196137/civilian-pilot-training-program/>.

³⁵⁵ Swett, Hammell interview, part 2, 4.

³⁵⁶ “Colonel James Elms Swett, USMCR (Deceased),” Marine Corps University, retrieved 1 July 2023 from <https://www.usmcu.edu/Research/Marine-Corps-History-Division/Information-for-Units/Medal-of-Honor-Recipients-By-Unit/1stLt-James-Elms-Swett/>.

³⁵⁷ MCAS Quantico muster roll, July 1942.

³⁵⁸ Swett, Hammell interview, part 2, 5; Headquarters Squadron, MCAS Quantico muster roll April 1942 and Air Reg. Squadron 2 muster rolls, July and October 1942.

The Chief of Naval Operations had established Advanced Carrier Training Groups in Norfolk, Virginia, and San Diego in July 1941 to provide the operational training that had previously been the responsibility of fleet squadrons like VMF-221. An aviator assigned to the Advanced Carrier Training Group was supposed to complete a seventy-five-hour syllabus that included fighter tactics and gunnery, bombing, overwater navigation, instrument flying, night flying, and carrier qualification. According to Lundstrom, the Advanced Carrier Training Groups struggled to train their aviators due to shortages of pilots and aircraft. Few qualified to land on aircraft carriers because the carriers were busy operating with the fleet.³⁵⁹ From August to October 1942, the Advanced Carrier Training Group in San Diego had only fourteen to eighteen F4F fighters, seventeen to twenty-three SBD dive-bombers, eight to ten TBF torpedo bombers, and thirty to forty SNJ trainers to train all the navy and marine aviators rotating out to the Pacific. Not every aircraft could fly every day, and the training group also flew scouting patrols for the Western Sea Frontier Force, which detracted from its training mission.³⁶⁰ Second Lieutenant Jefferson J. DeBlanc reported to the Advanced Carrier Training Group in late July 1942, but spent most of his hours in SNJs and did not check out in an F4F until 28 September. DeBlanc deployed to the South Pacific with VMF-112 shortly thereafter.³⁶¹ As the navy winged 10,489 aviators in 1942, a monthly average of 875, it is clear that the Advanced Carrier Training Groups did not have enough aircraft, even after the aviators headed to patrol and utility squadrons and not carriers are subtracted.³⁶²

In August 1942 the navy established a Carrier Qualification Training Unit at the Naval Air Station in Glenview, Illinois. The navy refitted a coal-burning, side paddle Great Lakes excursion

³⁵⁹ Lundstrom, *The First Team*, 453-454.

³⁶⁰ RG 38 NAID 133992732 Commander Fleet Air, West Coast, War Diary of Aircraft Southern Sector, Western Sea Frontier Force Task Group 94.1, October 1941, 1; NAID 133953491 August 1942; NAID 133978649 September 1942.

³⁶¹ DeBlanc, *Guadalcanal Air War*, 35-41.

³⁶² Roy A. Grossnick, *United States Naval Aviation, 1910-1995* (Washington, DC: Naval Historical Center, Department of the Navy, 1997), 414.

ship named *Seaandbee* with a flight deck and commissioned her as USS *Wolverine* (IX-64).³⁶³ Second Lieutenant Warner O. Chapman trained there before joining VMF-221 on 8 December 1942.³⁶⁴



Figure 14. Pilots of VMF-221, Ewa Field, Oahu, 17 January 1943.

Back row from left: Warren Chapman, Norman L. George, William N. Snider, Warren C. Duncan, Marshall R. Tutton, Howard K. Winfield, Pitmer P. Pittman, Wallace Hallmeyer, Donald L. Balch, Frank B. Baldwin, William V. Moore, James E. Swett, Calvin J. Voelker, James E. Tyler (adjutant).
Front row: Walter J. Schocker, Albert E. Hacking, George E. Dawkins, John W. Kellogg, John S. Payne, Harold J. Mitchener, Robert H. Burns, John F. Connolly, Arthur T. Wood, Eugene Dillow, Paul T. Coe, Gale W. Roberts, William E. Walker, Jr. (Photo courtesy of the Marine Corps Aviation Association)

In addition to the lieutenants, the squadron acquired two naval aviation pilots, Technical Sergeant Calvin J. Voelker and Staff Sergeant Jack Pittman. Unlike pre-war naval aviation pilots like Gunner Dickman who had flown for years, these noncommissioned officers had no more experience than the lieutenants. Voelker had served three years as an aviation mechanic before extending his contract for two years to attend flight school. Pittman had flown as a radioman and gunner in dive-bombers and volunteered for flight school after witnessing the annihilation of his aircraft group during the Pearl Harbor raid.³⁶⁵

³⁶³ U.S. Naval Air Station Glenview, 1037-1995, "The Final Salute," 10, retrieved 3 July 2023 from <https://www.glenview.il.us/about/Documents/gnasfinalsalute.pdf>; NHHC, "USS *Wolverine* (IX-64)," National Museum of the U.S. Navy, retrieved 3 July 2023 from <https://www.history.navy.mil/content/history/museums/nmusn/explore/photography/ships-us/ships-us-w/uss-wolverine-ix-64.html>.

³⁶⁴ Marine Barracks, NAS Miami muster roll, October 1942.

³⁶⁵ Aircraft Engineering Squadron Twenty-One, Base Air Detachment Two, NAS San Diego muster roll January 1942, and Aviation Detachment Marine Barracks, NAS Pensacola muster roll April 1942; VMF-221 muster roll, October 1942; VMSB-231, Marine Aviation Detachment, MAG-21, 2nd Marine Aircraft Wing, FMF, January 1942 muster roll.

Turnover among the senior noncommissioned officers in the squadron's ground echelon was nearly as severe as the pilot turnover. Table 2.1 illustrates the net personnel changes among senior noncommissioned officers.

Table 2.1. VMF-221 Personnel changes among senior noncommissioned officers

Rank	4 June 1942	1 February 1943	Net change
Master Technical Sergeant	2	1	-1
First Sergeant	1	0	-1
Technical Sergeant	4	5	+1
Staff Sergeant	7	12	+5

Source: VMF-221 muster rolls, April and July 1942 and February 1943.

While the squadron would deploy with more senior noncommissioned officers than it fought the Battle of Midway with, it is important to note that these were not grizzled sergeants with decades of experience. Even the most senior of these, Master Technical Sergeant Carl N. Mason, the communications chief, had only about three years' time in service. Mason's only technical training had prepared him to install, maintain, and operate radios and radar, not to maintain airframes or powerplants.³⁶⁶

Technical Sergeants Martin Y. Andres and Victor A. Mroz, Jr., the senior noncommissioned officers who had been at Midway, had been a sergeant and staff sergeant respectively during the battle. Of the twelve staff sergeants, six months earlier one had been a staff sergeant, three had been corporals, and eight had been privates first class.³⁶⁷

The marine barracks at Naval Air Station Pensacola administered all marines attending the navy's technical schools there. The records of the barracks in Table 2.2 reveal which of the squadron's senior noncommissioned officers completed formal technical training courses.

³⁶⁶ Marine Corps Central Recruiting Division, Chicago December 1939 muster roll; Recruit Depot, San Diego December 1939 muster roll; Headquarters and Service Squadron 2, 2nd Marine Aircraft Group, FMF, NAS San Diego January and October 1940 muster rolls; Headquarters and Service Squadron 21, MAG-21, 2nd MAW, FMF, Ewa, Oahu, T.H, July and October 1941 muster rolls; Headquarters and Service Company, Force Special Trainers, Marine Force, 14th Naval District, Pearl Harbor, T.H.

³⁶⁷ VMF-221 muster rolls, April, July, and October 1942, January and February 1943.

Table 2.2. VMF-221 Senior Noncommissioned Officer Formal Training February 1942

Rank	Name	Course(s)
Master Technical Sergeant	Carl N. Mason	radio school Pacific Fleet Radar School
Technical Sergeant	Martin Y. Andres	aviation mechanic
	Jack J. Brennan	aviation mechanic
	Lyle H. Brinkman	none
	Albert L. Busch	aviation mechanic
	Victor A. Mroz, Jr.	aviation mechanic
Staff Sergeant	Wilbur J. Afflerbaugh	aviation ordnance
	Robert C. Buckingham	aviation mechanic
	William T. Ecker	aviation mechanic
	Lenor N. Evans	aviation mechanic
	Harold G. Grubbs	none
	Arne A. Jacobsen	aviation mechanic
	Everett L. Hammen	none
	Max R. Hartong	aviation ordnance
	Guy R. Ludwick	aviation metalsmith
	Benjamin O. Madden	none
	James S. Russell	aviation mechanic
	Harry E. Sullivan	none

Source: Marine Barracks, Naval Air Station, Pensacola, Florida, April, July, and October 1941 muster rolls; Signal Detachment, Base Service Battalion, Base Troops, Marine Corps Base San Diego muster rolls July – December 1940, and Headquarters and Service Company, Force Special Troops, Marine Force, 14th Naval District muster roll July 1942.

Aviation mechanics and metalsmiths maintained the aircraft from nose to tail, including not just engines, but also instruments, hydraulic systems, and airframes. Aviation ordnance marines maintained and calibrated machine-guns and ammunition, bombs and bomb racks, and both gunsights and bombsights.³⁶⁸

In a significant change, the squadron received a navy medical detachment. A flight surgeon, Lieutenant Joseph H. O’Connell, and seven pharmacist’s mates and hospital apprentices attended to the squadron’s health, particularly the pilots’ fitness for flying.³⁶⁹

³⁶⁸ Stan Fisher, *Sustaining the Carrier War: The Deployment of U.S. Naval Air Power to the Pacific* (Annapolis: Naval Institute Press, 2023), 69, 92, 223.

³⁶⁹ VMF-221 muster roll, February 1943.

Aircraft, by the numbers

Table 2.3. VMF-221 aircraft on hand July 1942 – February 1943

Date	Changes	On hand
6 July 1942	+7 F4F-3	7 F4F-3
7 July	-1 F4F-3 (crashed)	6 F4F-3
3 August 1942	+24 F4F-4	6 F4F-3 24 F4F-4
11 August 1942	-6 F4F-3	24 F4F-4
14 September 1942	+15 F4F-4 -21 F4F-4	18 F4F-4
15 September 1942	-18 F4F-4	0
15 October 1942	+2 SNJ	2 SNJ
10 November 1942	+1 F4F-4	2 SNJ 1 F4F-4
12 November 1942	-1 F4F-4	2 SNJ
9 December 1942	+5 F4F-4	5 F4F-4
10 December 1942	+6 F4F-4	11 F4F-4
16 December 1942	+8 F4F-4	19 F4F-4
25 January 1943	-1 F4F-4 (crashed)	18 F4F-4
1 February 1943	-1 F4F-4 (crashed)	17 F4F-4
4 February	-1 F4F-4 (crashed)	16 F4F-4
21 February 1943		16 F4F-4 2 SNJ

Source: RG 38 A1 UD 351 VMF-221 war diaries, NAID 133945851 July 1942, 7-8; NAID 133962535 August 1942, 4, 12; NAID 133988362 September 1942, 15-16; NAID 134002532 October 1942, 3; NAID 134025330 November 1942, 2; NAID 134050660 December 1942, 2-3; NAID 134084169 January 1943, 2; and NAID 78417788 February 1943, 2, 4.

Note: The war diary recorded gaining a F4F-7 long-ranged scout variant on 19 September 1942, but the disposition of this aircraft is not recorded.

The squadron brought no aircraft back to Ewa Field from Midway. VMF-221 would never be issued another F2A Buffalo, which disappointed no one. As illustrated in table 2.3, the fluctuations in personnel strength were matched by an ebb and flow in aircraft on hand. By mid-September, the squadron had no aircraft and almost no aviators. The cadre of pilots who remained borrowed aircraft from other squadrons or flew the two SNJs the squadron received in mid-October. Only in December, after the squadron began to accrue pilots in significant numbers, did more fighters arrive. By mid-December the squadron had nineteen F4F-4s, one over its allowance.

Due to operational losses, when the squadron deployed in late February it had sixteen F4F-4s and two SNJs, two fighters short of its authorized strength.

The revolving door of aircraft changes complicated maintenance as well as training. When aircraft were assigned to the squadron for only a few weeks, the ground crews had fewer opportunities to identify the nuances of each aircraft. When mechanics knew an aircraft they were working on today may be taken away next week, it became more difficult to embrace ownership and take pride in an aircraft's upkeep.

The F4F-4 added three features the F4F-3 lacked: two more machine-guns, drop tanks, and folding wings. The folding wings enabled the fleet to embark more fighters aboard its carriers by reducing the wingspan of a parked fighter from thirty-eight feet to just fourteen feet.³⁷⁰ The two 58-gallon drop tanks increased the fighter's range by 500 miles to 1275 miles, though its actual combat radius overseas would prove to be less than half this distance.³⁷¹ The additional machine-guns increased the number of rounds a pilot could fire in a burst by fifty per cent while providing some insurance against all his guns jamming in a fight.

But these modifications added weight. The folding wings came with a heavy hydraulic system. The F4F-4, heavier by 210 pounds, lost 10 miles per hour in top speed (dropping to 320 mph) and 2,600 feet in its service ceiling (dropping to 34,900 feet). Full drop tanks added another 787 pounds.³⁷² Aboard *Enterprise*, VF-6 tested the climb rate of the F4F-4 and determined that it took ten minutes to reach 15,000 feet.³⁷³ Though the tanks could be dropped when the fighters

³⁷⁰ Tillman, *Wildcat in World War II*, 17.

³⁷¹ Don Linn, *F4F Wildcat in Action* (Carrollton, TX: Squadron Signal Publications, Inc.), 22. See table 2.6 for the F4F-4's actual performance.

³⁷² Tillman, *Wildcat in World War II*, 17, 83; Dwyer, "Grumman F4F Wildcat;" "Wildcat," *Naval Aviation News*, December 1971, 20-26.

³⁷³ Commanding Officer, VF-6 to Commander, Air Battle Force, "F4F-4 Airplane—Performance of," 6 April 1942, cited by Lundstrom, *The First Team*, 140.

encountered the enemy, they could be dropped but once; once lost, the tanks had to be replaced, which proved terrifically difficult at sea and at advanced bases.³⁷⁴

Ammunition was usually belted in a sequence the marines referred to as “one-one-one”: one tracer round, one incendiary round, followed by one armor piercing round. This sequence proved highly effective against the Zero.³⁷⁵ The additional two guns not only added weight but robbed the wings of ammunition space. Instead of 430 rounds per gun, the F4F-4 carried just 240 rounds per gun, cutting firing time by over half when all six guns were fired. Navy fighter pilots aboard *Enterprise* who flew the F4F-4 in combat in October 1942 overwhelmingly recommended the navy revert to a four-gun fighter with 430 rounds per gun.³⁷⁶ Not all veterans agreed. After becoming an ace at Guadalcanal, Major Frederick Payne asserted, “I’d rather have six guns with 250 rounds than four guns with 400.”³⁷⁷

The Chief of the Bureau of Aeronautics, Rear Admiral John H. Towers, attempted to mitigate the weight problem in February 1942 by advising commanders to choose either a full load of fuel or six fully loaded machine-guns for the F4F-4.³⁷⁸ In other words, Towers told pilots to pick their poison: fight without enough ammunition, fight without enough fuel, or fight without optimum performance. Until the United States produced better fighter aircraft, navy and marine fighter pilots would need to adjust their tactics to fight and survive in the air.

In addition to the carrier aircraft VMF-221 had encountered at Midway, the squadron would face land-based aircraft in the South Pacific. Foremost of these would be the Mitsubishi G4M3

³⁷⁴ Commanding Officer, U.S.S. *Enterprise* to Commander-in-Chief, United States Pacific Fleet, “The Battle of Santa Cruz, October 26, 1942 - Report of,” 10 November 1942, “USS ENTERPRISE CV-6 The Most Decorated Ship Of The Second World War” (2003), retrieved from <http://www.cv6.org/ship/logs/action19421026.htm>.

³⁷⁵ Captain Joe J. Foss, USMC, interview by Bureau of Aeronautics, 26 April 1943, 10, RESEARCHER @ LARGE, retrieved 1 July 2023 from <http://www.researcheratlake.com/Aircraft/VMF-121/>.

³⁷⁶ CO, USS *Enterprise*, Santa Cruz report, 10 November 1942.

³⁷⁷ RG 38 NAID 134067189 Major Frederick R. Payne, USMC, in BuAir interview of Payne and Major Robert E. Galer, USMC, 6 January 1943, 9.

³⁷⁸ Bureau of Aeronautics to Commander Air Battle Force, 4 February 1942, cited by Lundstrom, *The First Team*, 140.

Model 34 “Betty” twin-engine navy bomber. The Betty could reach 325 mph at 20,000 feet and carry nearly 5,000 pounds of bombs or torpedoes. The Betty bristled with 20mm cannons in a top turret and tail and 7.7mm machine-guns in the nose and on either side.³⁷⁹

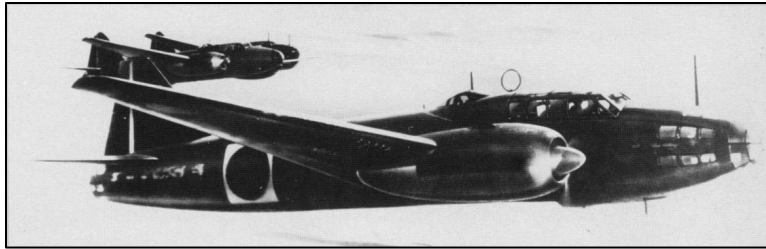


Figure 15. Mitsubishi G4M3 Model 34 “Betty” (Peter B. Mersky, *Time of the Aces: Marine Pilots in the Solomons, 1942-1944* [Washington, DC: History and Museums Division, Headquarters, U.S. Marine Corps, 1993], 10)

Training and tactical changes

The twenty-six new pilots who deployed with VMF-221 in February 1943 had all completed the same syllabus as their predecessors. An important difference is that these pilots accumulated between four and eleven months of experience after flight school before the squadron departed Hawaii. All learned basic fighter tactics and passed gunnery qualification in either F2A Buffalos at Miami or F3F biplanes at Corpus Christi. Frank B. Baldwin, William V. Moore, Walter J. Schocker, William N. Snider, and Swett all accrued time in F4Fs at Advanced Carrier Training Group; Chapman and Connally had never flown one before reporting to VMF-221. With a full complement of aircraft and two months to train the new pilots, the senior aviators wasted little time. Chapman estimated that all the new pilots got in at least a hundred hours before the squadron sailed on 21 February 1943.³⁸⁰

³⁷⁹ *Jane's Fighting Aircraft of World War II*, 189.

³⁸⁰ Porter, *Ace!* 40-45; DeBlanc, *Guadalcanal Air War*, 32-33; Warner Chapman, “Solomon Island,” in Caswell, *Fighting Falcons*, 67.

Table 2.4: VMF-221 final week of training, February 1943

Date in February	Training
2	Gunnery and familiarization for new pilots
3	Gunnery and division tactics; with priority to new pilots
4	Gunnery
5	Gunnery
6	Lecture on “Surface Winds Over the Water” Instrument flights Gunnery
7	Instrument practice in SNJ

Source: RG 127 A1 1052 Box 30 VMF-221 unit history, 37-38.

The squadron’s war diary and history recorded that the squadron conducted “normal flight operations” or “flight training” nearly every day in December 1942 and January 1943. Table 2.4 provides more specific details for February.

Though the aggressive schedule is apparent, what type of tactics the new aviators were practicing must be inferred. The war diary for VMF-213, another fighting squadron in Marine Aircraft Group 21, recorded that it predominantly flew gunnery practice missions in December and January, with section and division tactics and instrument flying.³⁸¹ VMF-221’s training likely mirrored that; both squadrons received new pilots during this period and deployed together in February.

VMF-213 conducted several sessions of gunnery practice at 20,000 feet, requiring pilots to fly on oxygen. The rarified atmosphere caused inexperienced pilots to misjudge distance at high altitude. The oxygen mask often fit so high that the lower frame of the pilot’s goggles cut across his line of vision. A pilot on oxygen had to fly with his goggles across his forehead. This was not a significant handicap with the windshield closed--until pieces of metal and glass began hurtling around the cockpit in combat.³⁸²

³⁸¹ RG 38 NAID 134050698 VMF-213 war diary December 1942, 2-4; RG 38 NAID 134084178 VMF-213 war diary January 1943, 2-4.

³⁸² RG 38 NAID 135904639, Bureau of Aeronautics interview, Major J. N. Renner, USMC, 17 July 1943, 2, 4.

The tactics and training syllabus published in *USF-74* in March 1941 still provided the foundation for the fleet's fighting squadrons. Since its publication, navy and marine fighter pilots had gained experience at the Coral Sea, Midway, and Guadalcanal. While the tactics developed in other F4F squadrons may not mirror what VMF-221 was training to do, they illustrate the innovations and adaptations that fleet fighting squadrons were incorporating.

Around the same time Mitchener was preparing VMF-221 for deployment to the South Pacific, Major Joseph N. Renner was already there, preparing VMO-251 for its first combat tour. Although designated an observation squadron, VMO-251 was a fighting squadron. Renner had been assigned twenty-two dive-bomber and observation pilots who had no experience in fighters but were eager to fight. Renner had only about three and a half weeks to train his new pilots, but he had been on Guadalcanal as an aviation staff officer and had absorbed as much as possible from the fighting squadron commanders there. Renner's accelerated syllabus included section and division tactics and gunnery. For two-plane section tactics, Renner above all emphasized the importance of wing men sticking with their section leaders. Training dogfights were similar to one-on-one engagements, but with two four-plane divisions maneuvering against each other, with wingmen staying with their section leaders throughout the fight. With less time to master gunnery, Renner focused on the overhead pass, in which the fighter started well above the target, dove at high speed, engaged, and then continued past without presenting the enemy with an opportunity to fire back. It enabled a fighter pilot to shoot first and get away quickly.³⁸³

The commanding officer of VF-3 at Midway, Lieutenant Commander John "Jimmy" Thach, had developed a defensive tactic to mitigate the Zero's superior speed and maneuverability. In Thach's beam defense tactic, Wildcats sections flew abreast of each other and watched each other's rear. When a fighter on one side saw a Japanese fighter maneuvering against his wingman, he turned

³⁸³ Renner, BuAir interview, 1-2.

toward his partner. This signaled his partner to likewise turn into him, forcing the Japanese fighter to face the guns of the first fighter or break off the attack. The navy incorporated the tactic into training publications and films in late 1942 and 1943.³⁸⁴ Aircraft, Pacific Fleet highlighted the “Thach Weave” in a tactical bulletin on 20 February 1943. The same report also advocated an F4F-4 attacking a Zero employ a steep, high side approach followed by a sharp, climbing turn in the same direction the enemy turned. This would keep the F4F-4 above the Zero and position the Wildcat for a stern attack.³⁸⁵ As this memorandum is located in the archives of Marine Aircraft Group 12, which served as Fighter Command, Solomons, it is reasonable to assume that the aviators of VMF-221 learned of these tactics not long after they reached Guadalcanal in late March, but likely not before departing Pearl Harbor on 21 February.

While it is unclear whether Mitchener, Burns, and the other pilots at VMF-221 received a heads up about Thach’s beam defense tactic, it is clear marines in combat adopted a similar tactic. As Renner described, he learned from Guadalcanal veterans that F4Fs needed to provide each other with mutual support when they were jumped by Zeros.

In order to knock Zeros down the Grummans stuck together, and each pilot paid less attention to the man on his tail than to the Zero on somebody else's tail. The Grumman fighters tried to stay in the same air, as we called it; once the dogfight started, we all revolved about in the same area. If a Zero dived out from the dogfight, our instructions were not to follow him but to swing back into the middle of the merry-go-round. In swinging back, you look for a Zero on some other Grumman's tail.³⁸⁶

At Midway, the squadron had fought with divisions as large as seven aircraft. Four-plane divisions were now the norm in VMF-221.³⁸⁷ Though this organization left two of the eighteen aircraft unassigned, it simplified the job of a division’s two sections to protect each other.

³⁸⁴ Lundstrom, *The First Team*, Appendix 4, “Naval Flight Formations and ‘The Thach Weave,’” 477-485.

³⁸⁵ RG 127 A1 Box 42, MAG-12, Warfare Operations, 1942-1943: Commander, Air Force, Pacific Fleet, to Air Force, Pacific Fleet, “Air Operations Memorandum 5-43,” 3-4.

³⁸⁶ Renner, BuAir interview, 3.

³⁸⁷ Hammell, Swett interview, part 2, 6.

Whether or not VMF-221 was practicing innovative tactics, it appears that its training in Hawaii in December and January was primarily internal. The only indication in the war diaries, squadron history, and personal accounts that the squadron trained with any outside organization is a reference in the Marine Corps Air Station Ewa war diary that notes VMF-221 was tasked with standing alert in conjunction with the army air force from 29 to 31 December 1942. The island's fighter direction center scrambled the marines several times each day, which provided some useful experience operating under army command and responding to a fighter direction center. Otherwise, VMF-221 appears to have trained on its own. There is no indication the squadron practiced escorting bombers.³⁸⁸

Though the war diary did characterize the squadron's flying as "normal," the flying was not routine. The squadron suffered a series of mishaps. On 3 September one of the pilots walked away from a crash that severely damaged his F4F-4. On 13 October, the landing gear on an F4F-3 on loan from VMF-214 collapsed upon landing and the Wildcat was quickly engulfed in flames. The pilot escaped with bruises and cuts, but the aircraft was a total loss. On 25 January Second Lieutenant Wallace H. Hallmeyer could not get his F4F-4 airborne on a takeoff run. He ran off the end of Ewa's runway. Hallmeyer escaped with minor injuries, but his aircraft was demolished. Six days later Hallmeyer was not so lucky. While flying through a thunderstorm off the coast of Oahu, he went into a spin. Unable to recover, he bailed out around noon over the ocean. His buddies could not find him in the rough weather, and the squadron called off its search at 7:00 p.m. At 2:00 the following morning, a sentry patrolling a beach on Oahu's windward side found Hallmeyer tangled in

³⁸⁸ RG 38 NAID 134027140 USMC Air Station Ewa, Oahu war diary December 1942, 6; NAID 134075956 USMC Air Station Ewa, Oahu war diary January 1943, 3; VMF-221 war diary December 1942 and January 1943, *passim*.

the barbed wire barrier. Hallmeyer was hospitalized for exposure and shock but rejoined the squadron on 1 February.³⁸⁹

On 4 February, the squadron suffered its first fatality in eight months. Captain Bemis, an experienced aviator, was making a gunnery pass against another section when his aircraft exploded or came apart in midair. The squadron stood down that afternoon for a safety lecture but was right back at gunnery practice the following day. On the squadron's last flying date before departing to the South Pacific, First Lieutenant Gale W. Roberts landed his SNJ in a strong cross wind and skidded, damaging the aircraft's right landing gear. Roberts was unhurt, and the aircraft was repairable.³⁹⁰

On the eve of deployment, VMF-221 lost yet another experienced aviator—its commander, Major Mitchener. Mitchener took ill—“very, very, ill,” according to Swett—and was hospitalized on 19 February.³⁹¹ It now fell on the shoulders of Captain Burns to embark the squadron's aircraft, equipment, and personnel, deploy to the South Pacific, and lead it into combat. Burns was twenty-six years old and had been a naval aviator for just three years and four months.³⁹² Except for Captain Payne, all of Burns' pilots had graduated flight school less than a year before.

³⁸⁹ VMF-221 war diary September 1942, 4, and October 1942, 3; VMF-221 unit history, 36-37; VMF-221 muster roll, February 1942.

³⁹⁰ VMF-221 unit history, 37-38.

³⁹¹ Swett, Hammell interview, part 2, 6; VMF-221 muster roll, February 1942; VMF-221 unit history, 39.

³⁹² Burns, Naval Aviator certificate.



Figure 16. Robert R. Burns (Jim Burns)

Deployment to the South Pacific

The Pacific Fleet could no longer tie up fleet carriers like *Saratoga* shuttling land-based squadrons like VMF-221 overseas. Bombers like the B-17 and patrol aircraft like the PBY could hop from island base to island base across the Pacific, but fighters had to embark aboard ships. To get squadrons overseas, the Secretary of the Navy approved conversion of twenty-four merchant vessels into aircraft auxiliary vessels. In an astounding feat, the Seattle-Tacoma Shipbuilding Corporation launched USS *Nassau* (APV-16; later CVE-16) on 4 April 1942, scarcely three months after laying her keel as a merchant vessel. *Nassau* had less than a third the displacement and just over half the length of *Saratoga*. Utilizing all of her flight and hangar deck space, she could squeeze ninety aircraft aboard, which—due to her shorter flight deck—required assisted takeoffs with hydraulic catapults.³⁹³

³⁹³ NHHC, “*Nassau I* (ACV-16), 1942-1959,” *The Sextant*, 14 March 2016, retrieved from <https://www.history.navy.mil/research/histories/ship-histories/danfs/n/nassau.html>; Dreadnaughtz, “*Bogue* Class (1941), *Naval Encyclopedia*, 6 June 2020, retrieved from <https://naval-encyclopedia.com/ww2/us/bogue-class-escort-aircraft-carriers.php>.

On 21 February 1943 *Nassau* was moored at Ford Island in Pearl Harbor, having completed a week of repair and refit, awaiting MAG-21.³⁹⁴

VMF-221 began packing for the deployment on 9 February. The squadron's mechanics overhauled every aircraft and vehicle. A small, advanced party of twenty-nine junior marines under Lieutenant Augustine B. Reynolds, Jr., the squadron's ground defense officer, sailed aboard the seaplane tender USS *Wright* (AV-1) on 11 February.³⁹⁵ The Pacific Fleet employed *Wright* as a transport to shuttle marines and cargo to advanced bases.³⁹⁶

On 20 February VMF-221 flew the short hop from Ewa to Ford Island. *Nassau* hoisted the squadron's eighteen F4F-4s and two SNJs aboard along with aircraft from VMF-213 and VMF-214. Burns, Payne, and eighteen other pilots, the squadron's plane captains, first mechanics, and leading NCOs, the flight surgeon, and a pharmacist's mate embarked *Nassau* as well.³⁹⁷ As she slipped her mooring late on 21 February, a navy band played "The Marines Hymn."³⁹⁸ A small detachment of six officers and twenty-seven marines and sailors from VMF-221 sailed the following day aboard the troopship USS *President Tyler*, a former ocean liner.³⁹⁹

The first two days at sea proved pleasant. Marines slept topside, enjoying the breeze and starlit sea. But at midday on 24 February, *Nassau's* escorting destroyer, USS *Sterett* (DD-407), reported sonar contact. *Nassau* went to general quarters and began a radical zigzag. *Sterett* dropped three depth charges. Three days later, *Sterett* established another sonar contact and *Nassau* repeated the drill. This occurred three more times on 28 February and twice on 2 March.⁴⁰⁰

³⁹⁴ RG 38 NAID 134122561, USS *Nassau* war diary February 1943, 8-10.

³⁹⁵ VMF-221 muster roll, February 1943.

³⁹⁶ NHHC, "*Wright I* (AZ-1)," *The Sextant*, 4 November 2015, retrieved from <https://www.history.navy.mil/research/histories/ship-histories/danfs/w/wright-i.html>.

³⁹⁷ VMF-221 unit history, 38.

³⁹⁸ Winnia, *Diary of a Corsair Pilot*, 7.

³⁹⁹ Roland W. Charles, *Troopships of World War II* (Washington, DC: The Army Transportation Association, 1947), 50.

⁴⁰⁰ USS *Nassau* war diary February 1943, 13-15; RG 38 NAID 134140737 USS *Nassau* war diary March 1943, 3-4.



Figure 17. USS *Nassau* (CVE-16) off Mare Island Navy Yard, 29 April 1944 (NARA 19-N-65106)

According to the diary of First Lieutenant Charles C. Winnia of VMF-213, the marines found the frequent general quarters a nuisance rather than a true scare.⁴⁰¹ But the vulnerability of *Nassau* and her embarked aircraft group to a submarine attack was quite real. A few weeks after delivering VMF-221 to Midway, *Saratoga* suffered a torpedo hit from a Japanese submarine and took another east of the Solomon Islands in September 1942. Though *Saratoga* survived both torpedoes, converted merchant vessels like *Nassau* were not constructed with the same degree of armor and watertight integrity. Just nine months after VMF-221's sailing aboard *Nassau*, a Japanese submarine sunk another converted merchantman, the escort carrier USS *Liscome Bay* (CVE-56), with a single torpedo. She sank so quickly that 644 of her crew and air group perished.⁴⁰²

Nassau safely reached her destination of Espiritu Santo in the New Hebrides on 3 March. It took her five hours to catapult all MAG-21's embarked fighters. One VMF-213 F4F-4 stalled on

⁴⁰¹ Winnia, *Diary of a Corsair Pilot*, 5-12. *Nassau* skipped 1 March 1943 as she sailed west across the international date line.

⁴⁰² "The Sinking of USS *Liscome Bay*," *History Up Close*, 24 November 2014, NHHHC, retrieved from <https://www.history.navy.mil/content/history/museums/nnam/education/articles/history-up-close/the-sinking-of-uss-liscome-bay.html>.

takeoff and spun into the sea. *Sterett* swiftly recovered the pilot.⁴⁰³ The pilots of VMF-221 survived their catapult launches and landed at the airfield codenamed, “Buttons.”⁴⁰⁴

The squadron was still dispersed in three echelons. *Wright* deposited Lieutenant Reynolds and his advanced party on Guadalcanal, 560 miles to the northwest. The detachment aboard *President Tyler* did not arrive on Espiritu Santo until 9 March.⁴⁰⁵

Espiritu Santo was beyond the range of Japanese aircraft at Rabaul, but close enough for replacement aircraft to reach Guadalcanal’s airfield, Henderson Field. An anchorage enabled deep draft vessels to discharge troops, equipment, and supplies. In March 1942, naval construction battalion engineers, or “Seabees,” were completing wharves to expedite unloading. A coral road led to the airfield where MAG-21’s fighters landed.⁴⁰⁶

The Seabees bulldozed the airfield on a former coconut plantation, which was typical in the South Pacific as coconut cultivation covered most of the few flat areas on the volcanic islands that could support runways. Buttons consisted of four airfields, Bomber 1, Bomber 2, Fighter 1, and Fighter 2. MAG-21 moved into four-man tents near the fighter strips adjacent to Pallikulo Bay. The food was good, and the marines slept on cots. The camp had showers and the marines could swim when time allowed. It would have seemed a tropical paradise, but frequent rain showers kept mud in the camp two feet deep and swarms of flies and mosquitos plagued the marines.⁴⁰⁷

On 9 March VMF-221’s pilots got back in the cockpit. For the next week the squadron’s four divisions practiced fighting as teams. On 16 March, the pilots boarded a marine R4D, which flew them to Guadalcanal to relieve VMF-123 there.⁴⁰⁸

⁴⁰³ USS *Nassau* war diary March 1943, 4; Winnia, *Diary of a Corsair Pilot*, 12.

⁴⁰⁴ VMF-221 war diary 39.

⁴⁰⁵ VMF-221 war diary 39.

⁴⁰⁶ Morison, *Breaking the Bismarck Barrier*, 103-106.

⁴⁰⁷ Winnia, *Diary of a Corsair Pilot*, 12-13, 18; VMF-221 war diary 40.

⁴⁰⁸ VMF-221 war diary 41.

Chapter 6: Air War in the South Pacific, March 1943

Operational context

When the pilots of VMF-221 disembarked the transport plane at Henderson Field, they re-entered a war vastly different from the one the squadron departed after Midway. Up until Midway, the Japanese Combined Fleet held the initiative in the Pacific. The Pacific Fleet's victory there enabled the United States to take the offensive. On 2 July 1942 the Joint Chiefs directed Nimitz to seize and occupy the Santa Cruz Islands and Tulagi as the first step toward seizing the Japanese stronghold at Rabaul. The airfield on Guadalcanal emerged as the key to success in that first step. The Japanese conceded defeat at Guadalcanal and withdrew the remnants of their landing force by 9 February 1943. Wasting no time, American soldiers and marines seized the unoccupied Russell Islands thirty miles northwest of Guadalcanal on 21 February. In the Southwest Pacific Area commanded by General Douglas MacArthur, American and Australian troops repelled a Japanese overland attempt to seize the Allied base at Port Moresby in late 1942. Army air force and Australian bombers annihilated a troop convoy in the Bismarck Sea on 2-3 March, preventing the Japanese from reinforcing their bases on the north coast of New Guinea.⁴⁰⁹

With Guadalcanal and Papua New Guinea secure, on 28 March the Joint Chiefs issued broad strategic guidance to MacArthur and Nimitz for the next offensive. MacArthur, in overall command, would seize bases on the northeast coast of New Guinea and on islands offshore. Admiral Halsey, now commanding the Third Fleet and the South Pacific Area, would seize the Solomons including the southern portion of Bougainville. These objectives would encircle Rabaul and enable Allied aircraft to overwhelm and neutralize the Japanese stronghold.⁴¹⁰

⁴⁰⁹ Shaw and Kane, *Isolation of Rabaul*, 8-10, 14, 28-29.

⁴¹⁰ Joint Chiefs of Staff to MacArthur, Nimitz, Halsey, 29 March 1943, in Nimitz, *Graybook* vol. 3, 1473-1474; see also Morton, *Strategy and Command*, 398-399.

In the Joint Chief's language, the purpose of the campaign was "To inflict losses on Japanese forces, to deny these areas to Japan, to contain Japanese forces in the Pacific Theater by maintaining the initiative, and to prepare for ultimate seizure of BISMARK ARCHIPELAGO."⁴¹¹ The Bismark Archipelago included the island of New Britain and the air and naval base of Rabaul. Control of the Bismark Archipelago would not only eliminate this Japanese base but would enable MacArthur to move toward the Philippines. Perhaps as importantly, it would force Japan to commit its naval and air forces into a battle of attrition at a time and place the United States chose.⁴¹²

South Pacific Area organization

As the drive up the Solomons would become the focus of VMF-221 and marine aviation for most of 1943, it is necessary to explain the complex organization under which marine squadrons operated in the South Pacific.

The Joint Chiefs had placed MacArthur in overall command. However, Halsey would directly oversee operations in the Solomons under MacArthur's "general directives."⁴¹³ To achieve unity of command in the Southern Pacific Area, Halsey integrated the army, navy, marine, and New Zealand forces assigned to him into a joint command. Table 2.5 lists Halsey's key subordinates.

Halsey's force required two chains of command: a task organization for combat and an administrative organization along service lines for logistics. The Commander of Aircraft South Pacific, Vice Admiral Aubrey W. Fitch, commanded all army, marine, and navy squadrons. Those in the Solomon Islands fell under Fitch's subordinate, Rear Admiral Marc A. Mitscher, commanding Air Command Solomon Islands, or "AirSols." Figures 18 and 19 illustrate the two complementary organization charts.

⁴¹¹ JCS to MacArthur, Nimitz, Halsey, 29 March 1943.

⁴¹² Leo Hirrel, *Bismarck Archipelago* (Washington, DC: U.S. Army Center of Military History, 1994), 3.

⁴¹³ JCS to MacArthur, Nimitz, Halsey, 29 March 1943.

Table 2.5. Select Third Fleet Commanders and Commands, April 1943

Commander	Command
Admiral Chester A. Nimitz, USN	Pacific Fleet Pacific Ocean Area
Vice Admiral John H. Towers, USN	Air Force, Pacific Fleet
Major General Ross E. Rowell, USMC	Marine Aircraft Wings, Pacific
Vice Admiral William F. Halsey, USN	Third Fleet South Pacific Area
Rear Admiral Richmond K. Turner, USN	III Amphibious Force South Pacific Amphibious Force
Major General Clayton B. Vogel, USMC	I Marine Amphibious Corps
Vice Admiral Aubrey W. Fitch, USN	Aircraft South Pacific
	Fleet Aircraft, South Pacific (Fleet Aircraft, Noumea)
Rear Admiral Marc A. Mitscher, USN	Air Command Solomon Islands ("AirSols")
Colonel Edward L. Pugh, USMC	Solomon Islands Fighter Command MAG-12
Colonel Christian F. Schilt, USMC	Solomon Islands Air Search and Attack Command (later Strike Command) MAG-11
Colonel William A. Matheny, USAAF	Solomon Islands Bomber Command XIII Bomber Command
Major General Ralph J. Mitchell, USMC	Marine Aircraft Wings South Pacific 1st Marine Aircraft Wing
Brigadier General Francis P. Mulcahy, USMC	2nd Marine Aircraft Wing
Major General Millard F. Harmon, USAAF	U.S. Army Forces, South Pacific
Brigadier General Nathan F. Twining, USAAF	Thirteenth Air Force
Colonel Dean C. Strother, USAAF	XIII Fighter Command
Group Captain Sidney Wallingford, RNZAF	No. 1 (Islands) Group (arrived late April)

Source: Morison, *Breaking the Bismarcks Barrier*, 144-146; Shaw and Kane, *Isolation of Rabaul*, 455-460; RG 38 NAID 78657231, Commander, Third Fleet, "South Pacific Campaign – Narrative account," 3 September 1944, 8.

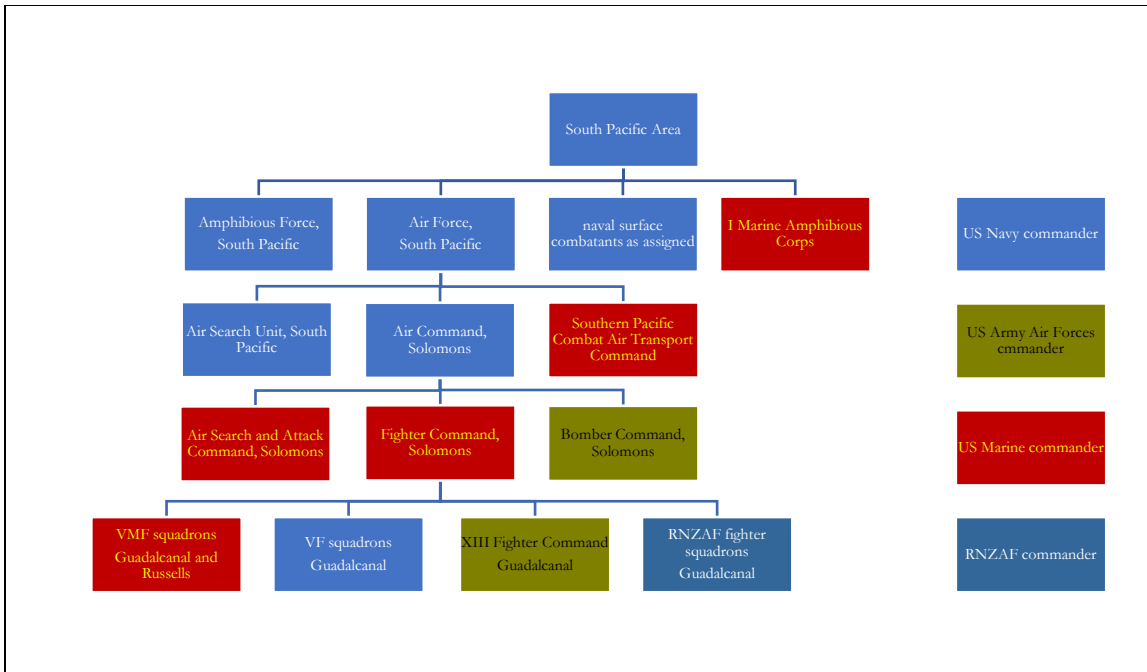


Figure 18. South Pacific Area aircraft task organization for combat, April 1943

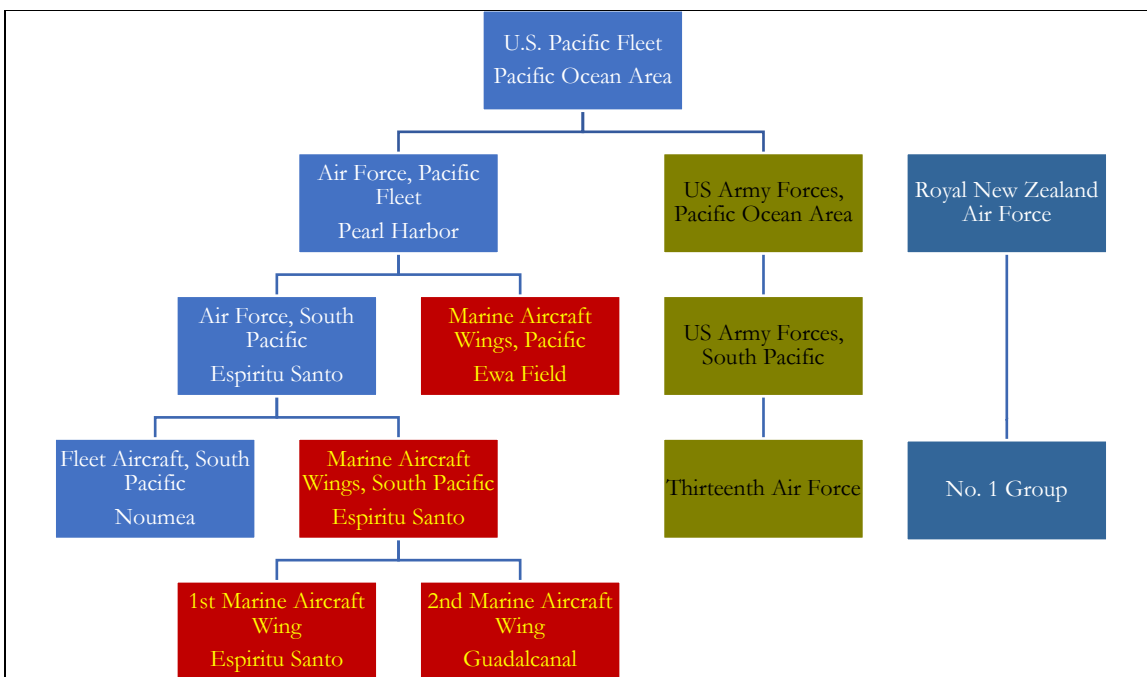


Figure 19. South Pacific Area administrative organization for aviation logistics, April 1943

(Figures 18 and 19: Morison, *Breaking the Bismarcks Barrier*, 144-146; Shaw and Kane, *Isolation of Rabaul*, 32, 455-460; Kramer J. Rohlfleisch and Richard L. Watson, “The Crisis in the South and Southwest Pacific,” 88-89; Alex Spencer, “The Cactus Air Force’s Forgotten Spine: The Royal New Zealand Air Force at Guadalcanal”)

When the pilots of VMF-221 arrived on Guadalcanal on 16 March, they fell under Colonel Edward L. Pugh and his Solomon Islands Fighter Command. Halsey had placed all army, marine, and navy fighters under Pugh, a marine. The VMF-221 aviators found they were relieving the pilots of VMF-123, who told the newcomers they had not seen a single Zero during their combat tour.⁴¹⁴

Pugh had graduated from the University of Maryland in 1926 and become a marine aviator in 1928. He flew fighters before the war and served as executive officer of VMF-1 at Quantico.⁴¹⁵ In mid-March, Pugh had 125 fighters under his command: 13 marine F4U Corsairs, 59 marine and navy F4F Wildcats, 21 army air force P-38 Lightnings, 16 army air force P-39 Airacobras, and 16 army air force P-40 Warhawks.⁴¹⁶ All squadrons flew from the Fighter 2 airstrip at this time. The historic Henderson Field primarily served Bomber Command, Solomons (Fighter Command's joint counterpart of bomber squadrons) due to its longer runway.⁴¹⁷ The marine squadrons included VMF-214, which arrived a week ahead of VMF-221, and VMF-124, the first marine squadron to convert to the F4U Corsair. Service Squadron 12 and the ground echelon of VMF-122 maintained the aircraft at Fighter 2. The navy F4F squadrons were VF-6, VGS-11, VGS-12, and VGS-16.⁴¹⁸

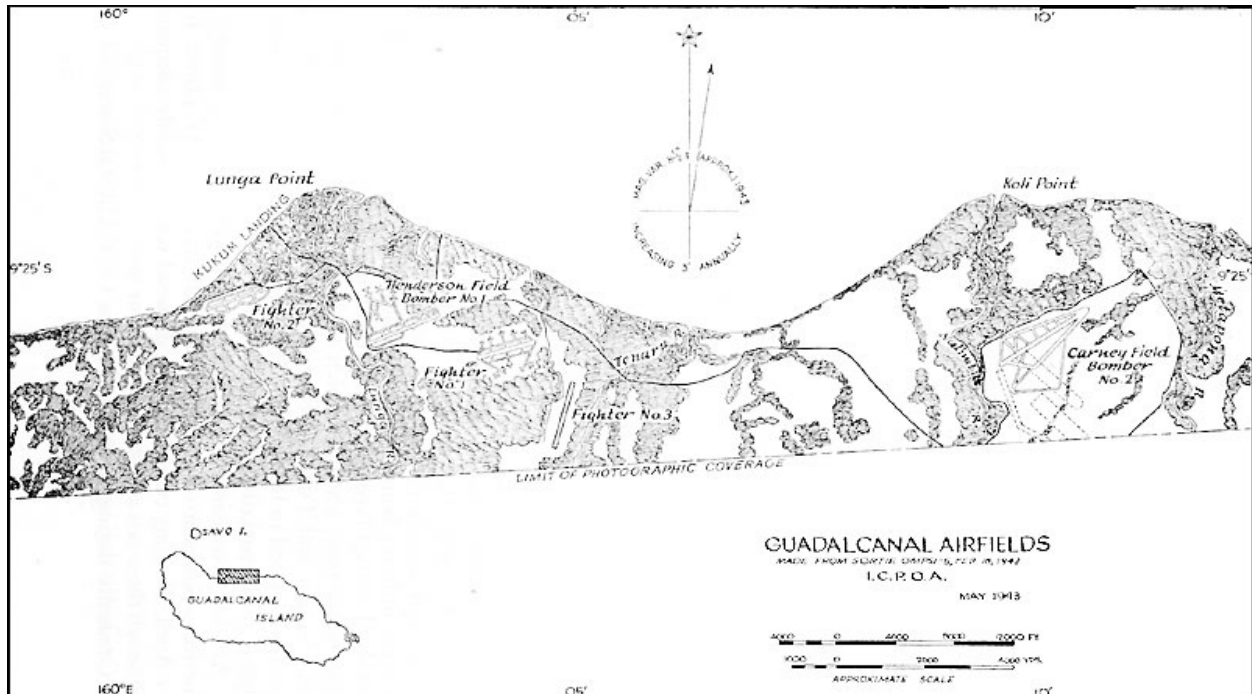
⁴¹⁴ VMF-221 unit history, 41.

⁴¹⁵ "Col. Edward Pugh Awarded Legion of Merit as Leader," *Coronado Eagle and Journal*, vol. 31, no. 44, 4 November 1943, California Digital Newspaper Collection, University of California Riverside Center for Bibliographical Studies and Research, retrieved from <https://cdnc.ucr.edu>; Carl, interview with Frank and Parker, 85.

⁴¹⁶ RG 127 A1 1055 Box 27 "ComAir Command, Solomons Fighter Availability, Enemy Planes Shot Down, Our Losses, February through July 1943," 7 August 1943, 4.

⁴¹⁷ Marine Corps History Division, Oral History Collection, Major General John P. Condon, interview by Cargill Hall, 8 March 1989, 207.

⁴¹⁸ Sherrod, *History of Marine Aviation*, 457, 461; RG 38 NAID 78208287 2nd Marine Aircraft Wing war diary March 1943, 1. The navy VGS squadrons were escort scout squadrons.



Map 2. Airfields on Guadalcanal, May 1943 (Rohfleisch, "Central Solomons," 216)

Aviation maintenance in the South Pacific

On paper, Air Force, Pacific Fleet assigned all navy and marine aircraft, materiel, and aviation and directed the training of all squadrons. Air Force, South Pacific, located on Espiritu Santo, performed those same functions within Halsey's Southern Pacific Area. Fleet Aircraft, South Pacific, located in Noumea on New Caledonia, was responsible to Air Force, South Pacific for aviation supply and maintenance in the Southern Pacific Area. Marine Aircraft Wings, South Pacific trained, organized, and equipped marine squadrons for combat, but did not direct combat operations. Of note, I Marine Amphibious Corps exercised no authority over marine aircraft units in the Southern Pacific.⁴¹⁹

As confusing as this may appear, in practice, logistics support to aviation units in the Solomons was far more muddled than even the wire diagrams suggest. By the spring of 1943,

⁴¹⁹ Shaw and Kane, *Isolation of Rabaul*, 456.

maintenance of naval aircraft could be separated into three echelons. Basic maintenance consisted of servicing tasks, such as refueling and ordnance loading, and routine maintenance, such as engine and pre-flight checks. These tasks did not require the marine or sailor who performed them to have technical training or years of experience. They were intended to be performed by a squadron's personnel. Specialized maintenance included overhauling accessories, instruments, and propellers, changing engines, minor repair to the airframe and power plant, and salvaging parts from damaged aircraft. Marines with such expertise were divided between the aircraft squadrons and the aircraft group service squadrons.⁴²⁰ More advanced work, such as engine overhauls and major repairs, were completed by a navy unit such as a Carrier Aircraft Service Unit or an Aviation Repair and Overhaul Unit.⁴²¹

From September 1942 to April 1943, ten to twenty-five per cent of 1st Marine Aircraft Wing's planes were continuously grounded awaiting minor repairs. Aircraft requiring repairs that should have taken five or six days sat idle for eight to ten weeks.⁴²² When VMF-221 joined Fighter Command, Solomons, F4F daily operational readiness was 78%, up from 60% the month before. This was far better than F4U readiness, which was just 46%--down from 70% in February.⁴²³

In April 1943, the Bureau of Aeronautics sent Commander Seldon B. Spangler, the head of its powerplant design section, on an inspection tour to determine why navy and marine aviation commands were struggling to get planes in the air. His report provides illuminating insight into logistics issues plaguing marine squadrons in the Solomons.⁴²⁴

⁴²⁰ RG 127 A1 1055 Box 8 Engineering Section memorandum to Chief of Staff, 1st Marine Aircraft Wing, 1 May 1943, 4.

⁴²¹ Fisher, *Sustaining the Carrier War*, 208-209.

⁴²² Engineering Section to Chief of Staff, 1st MAW, 1 May 1943, 1-5.

⁴²³ ComAirSols fighter availability February – July 1943, 4.

⁴²⁴ Bureau of Aeronautics interview of Commander Seldon B. Spangler, USN, 23 April 1943, 1, RESEARCHER @ LARGE, retrieved 1 July 2023 from <http://www.researcheratlarge.com/Aircraft/1943CdrSpanglerInterview/>.

The trouble began with the transportation of personnel, equipment, and supplies across the Pacific. Spangler observed that throughput at Noumea and Espiritu Santo was mind-numbingly slow: “I was reliably informed that there were enough ships in the harbor up there (at Espiritu Santo) to account for over a year of unloading at the rate they were able to put stuff ashore at present.”⁴²⁵ An army transportation command determined which ships to unload. Once material was unloaded, no one inventoried or tracked supplies. There were not enough trucks to move supplies, as many were hauling coral to keep the muddy roads surfaced. All manner of material was cached under trees in the hope the unit that ordered it, or at least one that needed it, would discover it.⁴²⁶

In an illuminating example of how these transportation snarls impeded aviation readiness, Carrier Aircraft Service Unit 3 in New Caledonia was assembling newly arrived aircraft under canvas tents that blew down in rain squalls.⁴²⁷ Fleet Aircraft, South Pacific established a base that could overhaul 200 engines each month, but it was in “the middle of the wilderness and mud.” Highly trained mechanics were assigned as camp guards, camp sanitation, and camp maintenance. Due to the harsh climate and rough living conditions, the navy counted on aviation mechanics to work only a six hour shift per day.⁴²⁸ Sailors of one maintenance command arrived on Guadalcanal, but their tools, housing, and supplies were offloaded at Espiritu Santo and Noumea.⁴²⁹

Spangler discovered that squadrons received little to no support from the Carrier Aircraft Service Units and were maintaining their aircraft on their own. The squadrons were doing ingenious work, salvaging parts from wrecks and performing advanced powerplant maintenance—such as valve replacements—that should have gone to the Carrier Aircraft Service Units.⁴³⁰ A marine salvage

⁴²⁵ Spangler interview, 3.

⁴²⁶ Spangler interview, 4-5.

⁴²⁷ Spangler interview, 3.

⁴²⁸ Spangler interview, 7, 9.

⁴²⁹ Spangler interview, 12-13.

⁴³⁰ Spangler interview, 17.

squadron at Guadalcanal recovered aircraft parts from wrecks, inventoried them, boxed and crated them, and cached them by the beach for shipment to naval aviation depots. However, the amphibious force commander insisted ships land troops and supplies and depart immediately to minimize exposure to enemy air attack. The salvaged parts sat on the beach, unused.⁴³¹

The marine and navy mechanics Spangler encountered impressed him with their attitude.

...there never was a serious complaint, by anyone on where he lived or how he had to live - the real basic complaint they had was that they had to do too many things with their bare hands. They wanted more tools, more equipment, more shops, more machinery. And those are the things we're not getting for them. They're being sent out of here, all right; but they're not getting to the squadrons....⁴³²

One marine squadron commander shared another perspective on the problem. According to Major Renner, commander of VMO-251, wing and group commanders were sending squadrons up from Espiritu Santo to Guadalcanal with reduced compliments of ground support when they should have been reinforced. There was more maintenance work at a combat airstrip, yet marines would become fatigued more quickly in the harsh conditions.⁴³³ VMF-221's aircraft and support marines remained in Espiritu Santo. The maintenance of the fifty-nine F4Fs and thirteen F4Us at Fighter 2 fell primarily on the shoulders of the mechanics in Service Squadron 12 and VMF-122.

Operating from austere airfields was hard on aircraft and men. Metal Marston matting, which engineers laid over soft ground as crude runways, tore up tires and tail wheels. Covering the matting with dirt or coral and growing grass under it mitigated the problem somewhat, but the tires and tail wheels were always in short supply.⁴³⁴

⁴³¹ Spangler interview, 8.

⁴³² Spangler interview, 8.

⁴³³ Renner, BuAir interview, 7.

⁴³⁴ Spangler interview, 3.

Tropical diseases exacerbated the challenge of getting pilots in cockpits and aircraft in the air. In mid-April, the 1st Marine Aircraft Wing medical officer reported that from September 1942 to March 1943, the wing evacuated 4,995 personnel due to disease—1,300 more than it evacuated due to combat wounds during the same period.⁴³⁵

Major General Ralph J. Mitchell, the 1st Marine Aircraft Wing commanding general, ordered his commanders to tighten up sanitation and mosquito protection measures on 25 April. Mitchell directed every unit to erect screens around its galleys, heads, messes, and garbage cans, to cover its litter bags, burn its garbage, and spray its latrines with waste oil. Sleeping under mosquito netting in shirts and trousers—despite the oppressive climate—was mandatory. He directed every commander to detail a squad to the medical officer to eradicate mosquito breeding areas. Mitchell ordered medical personnel to supervise their marines as they took their atabrine tablets.⁴³⁶

It was one thing to order the wing to battle malaria, but another to make it happen. Malaria hit all units ashore in the South Pacific. The same logistics snarls that impeded maintenance retarded the fight against malaria, as there was not enough netting, screening, and medicine to protect all the soldiers, sailors, and marines in New Caledonia, Espiritu Santo, and the Solomons.⁴³⁷

Guadalcanal, March 1943

Living conditions at Fighter 2 on Guadalcanal had improved considerably since the brutal battle of August to February. Guadalcanal was no longer a battlefield, but an advanced naval base, a vast supply depot, a busy port, a cluster of airfields, and the command post of Air Command Solomons.⁴³⁸ All hands were quartered in tents.⁴³⁹ There was an outdoor theater that screened

⁴³⁵ RG 127 A1 1053 Box 1, Enclosure (A) to Medical Department memorandum to Lieutenant Colonel Hagenah, USMC, 14 April 1943, "Table of Non-Effective Personnel, Monthly and Total Breakdown," 1.

⁴³⁶ RG 127 A1 1053 Box 1, CG 1st MAW, Wing General Order Number 22-1943, 25 April 1943, 1-2.

⁴³⁷ Spangler interview, 10.

⁴³⁸ Morison, *Breaking the Bismarcks Barrier*, 100-101.

⁴³⁹ VMF-221 unit history, 41.

Hollywood movies. Some nights a Japanese bomber orbited overhead and dropped a few bombs. The marines considered these raids a nuisance rather than a threat, but they contributed to the general fatigue that accumulated the longer marines spent at Guadalcanal.⁴⁴⁰

Temperatures were not brutally high on Guadalcanal in March and April, rising to no more than 84 degrees Fahrenheit (29 Celsius). Still, Guadalcanal was no tropical paradise. It rained two days out of three, accumulating ten to eleven inches per month, and humidity was an oppressive 87%.⁴⁴¹

With no refrigeration, food was plentiful but limited to canned meat, canned stew, canned hash, powdered eggs, powdered milk, occasional fresh Australian mutton, and coffee. Food was served on greasy metal trays that never seemed to get fully clean. Most marines contracted dysentery, an unpleasant affliction that sucked more energy from the tired marines.⁴⁴²

Actual performance of aircraft

Commanders discovered that not only were their marines not performing optimally in the South Pacific, but neither were their aircraft. Lieutenant Colonel Nathaniel S. Clifford, who took command of MAG-21 in the Russell Islands in May, recorded the actual performance of the F4F-4 at that time in the Solomons. Table 2.6 provides his findings.

⁴⁴⁰ Winnia, *Diary of a Corsair Pilot*, 29-32.

⁴⁴¹ "Guadalcanal Province Weather by Month // Weather Averages," *Climate-Data.Org*, retrieved from <https://en.climate-data.org/oceania/solomon-islands/guadalcanal-province-1962/1/march-3/>.

⁴⁴² Porter, *Ace!* 119-120.

Table 2.6. F4F-4 Aircraft Performance in the South Pacific Area

Item	Observed	Bureau of Aeronautics specification
Maximum speed at sea level	242 mph	
Maximum speed at 20,000 feet	287 mph	320 mph (at 18,800 feet)
Climbing time to 20,000 feet	25 minutes	12.4 minutes
Climbing time to 30,000 feet	50 minutes	
Runway required	2000 feet	
Landing speed	86 mph	
Cruising speed	150 mph	161 mph
Combat radius without wing tanks	172 miles	175 miles
Combat radius with wing tanks	230 miles	

Conditions: Formation flying with a full load of 144 gallons (196 gallons with wing tanks), 1440 rounds of .50 ammunition, bullet proofed windshield, seat, and oil tank.

Source: Marine Corps, History Division, General Roy S. Geiger Personal Papers Collection, 1st Marine Aircraft Wing Intelligence Section, "Performance Data Sheets," undated; Lundstrom, *The First Team*, 140.

The maximum speed Clifford recorded, 287 miles per hour at 20,000 feet, was considerably lower than the Bureau of Aeronautics specification of 320 miles per hour at 18,800 feet. Even accounting for the variation in altitude, this suggested around a ten percent loss in speed, with corresponding loss of efficiency at other altitudes and in climbing.

To calculate the combat radius, Clifford subtracted the amount of fuel required for twenty minutes of combat at high throttle and twenty minutes of reserve at cruising speed. Commander Spangler noted a relevant point during his inspection: pilots were operating at higher power, higher speeds, and richer fuel mixtures, in part due to a lack of education and in part to gain an edge in combat. Spangler found that there was a common lack of understanding among aviators about the difference cruising at higher speeds made: "They think because we say 160 knots that 200 knots won't make a lot of difference in fuel consumption. Well, actually the miles per gallon at 200 knots are only about half of what they are at 160 knots. And nobody has ever taken the trouble to explain that...."⁴⁴³

⁴⁴³ Spangler interview, 15.

Spangler identified a serious training oversight. But another factor curtailing the actual combat radius of fighters was the drop tank. Regardless of however many miles the tank extended the aircraft's range, the pilot had to drop tanks upon enemy contact. He then had to have enough internal fuel to fight, get home, and maintain a reserve. The reserve had to be enough to fly around adverse weather or unanticipated contact on the return trip.⁴⁴⁴

Before VMF-221's first aerial combat in the Solomons, its aviators began to suffer the cumulative effects of the harsh conditions in the South Pacific. The day after its arrival, the squadron began flying combat air patrols over Guadalcanal and the Russells. These patrols proved uneventful for the first two days. In the pre-dawn darkness of 19 March Second Lieutenant Paul T. Coe crashed two hundred yards from shore after takeoff and was killed. The squadron suspected Coe had experienced an engine failure. The next day Lieutenant Schocker's landing gear was caught in soft sand during a landing and his plane ground looped. His F4F-4 flipped onto its back. Shocker walked away, but his aircraft suffered severe damage. One day later, one of Lieutenant Chapman's landing gear dropped during flight. Chapman could not get the gear to lock, so he ditched rather than risk a belly landing on the runway. The Wildcat flipped on its back, but Chapman struggled free before it sank. That same day an army air force P-39 taxied into one of the F4F-4s, damaging a wing. Five days after Chapman ditched, his oil pump quit while he was at 22,000 feet over the Russells. Chapman managed to glide to a forced landing. One day later, the fuel tank on Second Lieutenant Eugene Dillow's F4F-4 malfunctioned, forcing him into a water landing. A PT boat retrieved Dillow and returned him to Guadalcanal.⁴⁴⁵ Eleven days into its first combat tour, the squadron had not laid eyes on an enemy aircraft and had suffered six operational mishaps, losing three aircraft and one pilot.

⁴⁴⁴ Renner, BuAir interview, 11-12.

⁴⁴⁵ VMF-221 unit history, 42-44; RG 127 A1 Box 29 VMF-221 war diary March 1943, 3-5.

Air Command Solomons replaced the squadron's aircraft losses in short order. On 24 March the hard working ground crews presented the squadron with a new plane they assembled from parts. On 29 March the squadron received three F4F-4s from VMF-213, which was still in Espiritu Santo transitioning to the F4U Corsair.⁴⁴⁶

While the frequent mishaps were troubling and the lack of enemy contacts may have disappointed most fighter pilots, the squadron was accumulating experience working with Fighter Command, Solomons and the torpedo and dive-bomber squadrons. Pilots flew almost every day, sometimes twice. Local patrols over Guadalcanal lasted two hours, and patrols over the Russells and missions to Munda could run over three hours.⁴⁴⁷ They also gained familiarity with the geography of the southern and central Solomons.

Though the squadron had not encountered any enemy aircraft yet, it had seen some action. Within four hours of their arrival on Guadalcanal, Fighter Command, Solomons had briefed the pilots of VMF-221 on the types of missions the command was conducting: combat air patrols, fighter sweeps, strikes, and bomber escorts. They learned about Japanese concentrations in the Solomons and the early warning they could expect from the Australian coast watchers. The following day Major John P. Condon, the Fighter Command, Solomons operations officer, gave the squadron a detailed lecture on fighter tactics and the air patrols they would be flying over Guadalcanal and the Russells.⁴⁴⁸

On 19 March, the day Coe perished, two divisions of VMF-221 joined another sixteen fighters from other squadrons and strafed Munda airfield on New Georgia. The following day Lieutenant Swett and his four-plane division escorted a flight of SBDs to strike Munda. On both

⁴⁴⁶ VMF-221 war diary 4; VMF-221 unit history, 44.

⁴⁴⁷ Calvin J. Voelker flying log, 10-31 March 1943, "Original U.S. WWII USMC Named Enlisted Fighter Pilot VMF-211 Grouping," *International Military Antiques*, retrieved 1 July 2023 from <https://www.ima-usa.com/products/original-u-s-wwii-usmc-named-enlisted-fighter-pilot-vmf-211-grouping?variant=31537269014597>.

⁴⁴⁸ VMF-221 war diary March 1943, 3.

missions the squadron encountered only light anti-aircraft fire. On 21 March the squadron escorted two PBV seaplanes who inserted a group of marine raiders off Segi Plantation. The raiders linked up with Melanesian guides working with an Australian coast watcher named Donald G. Kennedy and began scouting enemy positions, beaches, and terrain around New Georgia. A week later two divisions led by Captain Burns and Captain Payne escorted TBF strikes against Munda and another nearby on Kolombangara at Vila, and First Lieutenant Albert E. Hacking and his division escorted SBDs to strike forty-five Japanese troops who had gotten a little too close to the coast watcher on Rendova Island. On 30 March Burns and Schocker and their two divisions escorted SBDs on strikes against a seaplane base at Rekata Bay on Santa Isabel Island and Munda on New Georgia.⁴⁴⁹

Table 2.7 summarizes the squadron's combat operations during March 1942.

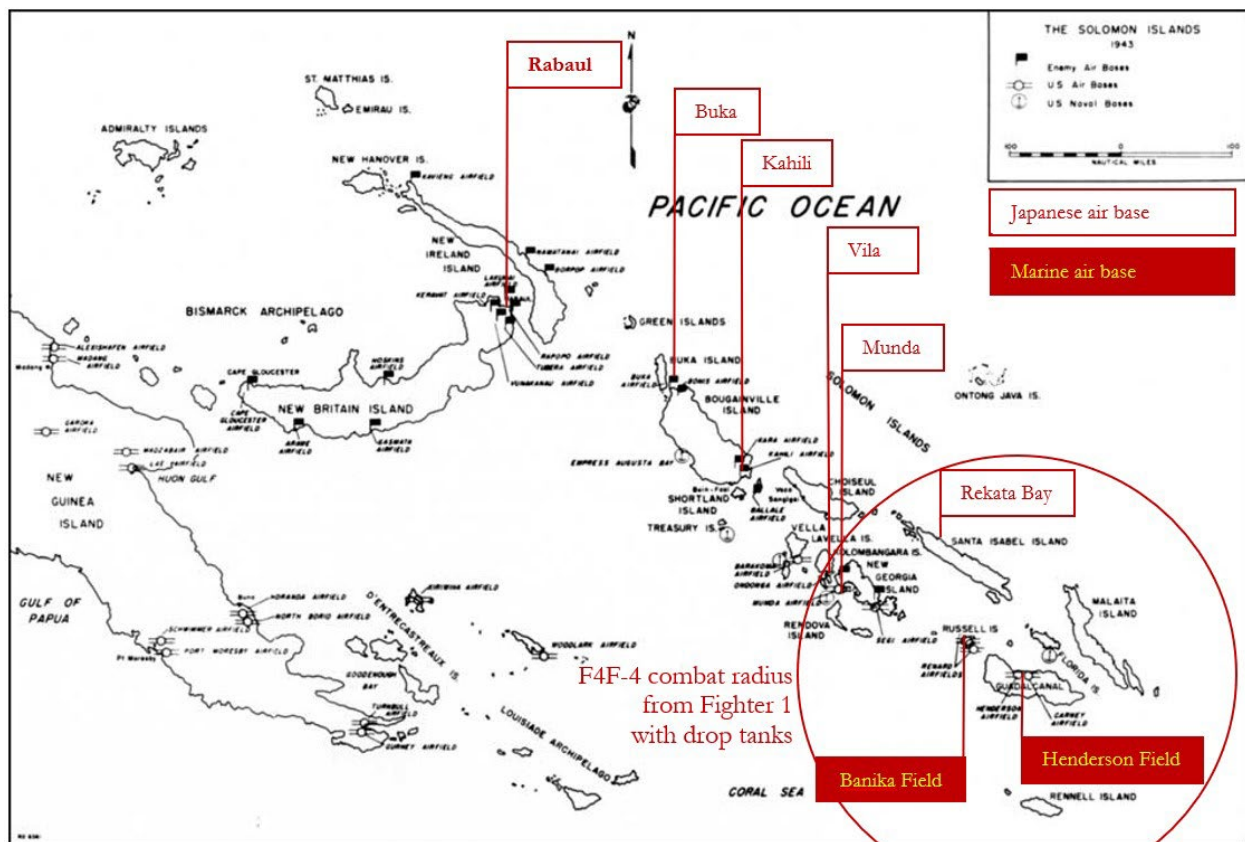
Table 2.7. VMF-221 combat missions, March 1943

Date	Missions	Aircraft assigned
17	Six combat air patrols over Guadalcanal	One four-plane division per patrol
18	One combat air patrol over Guadalcanal One combat air patrol over Russells	One four-plane division per patrol
19	One combat air patrol over Guadalcanal Strafing attack on Munda airfield	One four-plane division Two four-plane divisions plus sixteen aircraft from other squadrons
20	Multiple combat air patrols over Guadalcanal and Russells Escort SBDs on strike against Munda airfield	One four-plane division per patrol One four-plane division
21	One combat air patrol over Guadalcanal Escort two PBVs to Segi Point	One four-plane division Four four-plane divisions
22	Two combat air patrols over Guadalcanal	One four-plane division per patrol
23	Multiple combat air patrols over Guadalcanal and Russells	One four-plane division per patrol
24	One combat air patrol over Guadalcanal One combat air patrol over Russells	One four-plane division per patrol
25	Multiple combat air patrols over Guadalcanal and Russells	One four-plane division per patrol
26	Multiple combat air patrols over Guadalcanal and Russells	One four-plane division per patrol
27	Multiple combat air patrols over Guadalcanal and Russells Escort TBFs on strikes against Munda and Vila	One four-plane division per patrol Two four-plane divisions from VMF-221 Four four-plane divisions from other squadrons Two nine-plane TBF flights

⁴⁴⁹ VMF-221 unit history, 42-44; VMF-221 war diary March 1943, 4-5; Shaw and Kane, *Isolation of Rabaul*, 44.

	Escort SBDs on strike on Rendova	One four-plane division from VMF-221 One four-plane division from another squadron Six SBDs
28	Multiple combat air patrols over Guadalcanal and Russells	One four-plane division per patrol
29	Multiple combat air patrols over Guadalcanal, Russells, and vessels offshore	One four-plane division per patrol
30	Escort SBDs on strike on Rekata Bay and Munda	Two four plane divisions Undetermined number of SBDs
31	Multiple combat air patrols over Guadalcanal and Russells	One four-plane division per patrol

Source: VMF 221 unit history, 42-44; VMF-221 war diary, March 1942, 3-5



Map 3. The Solomon Islands, Japanese and Marine Air Bases, March – May 1943

(Base map from Major Charles D. Melson, USMC, *CONDITION RED: Marine Defense Battalions in World War II*, 1)

One thing the F4F-4s could not do was escort bombers all the way to Bougainville. On five occasions during the last two weeks of March, B-17s and B-24s from Bomber Command conducted

daylight raids against airfields at Buin and Kahili on Bougainville and nearby Ballale.⁴⁵⁰ As shown in map 3, the Japanese airfields at Vila and Munda lay at the extreme operating range of the F4F-4s at Fighter 2 on Guadalcanal.

Third Fleet operations and plans

As the absence of Japanese opposition suggests, March 1943 was a comparatively dull period in the South Pacific. Halsey postponed his next offensive to build up a vast supply dump on Guadalcanal. Determined to avoid the shoestring nature of the Guadalcanal landing the previous year, Halsey began Operation Dry-Goods in February 1943 to stock 50,000 tons of supplies and 80,000 barrels of gasoline to support an amphibious assault on New Georgia.⁴⁵¹

The purpose of an amphibious assault on New Georgia would be to capture the Japanese airfield at Munda.⁴⁵² Seizing Munda would not only deny the airfield to the Japanese, who used it as a staging base for air attacks on Guadalcanal and Tulagi. American fighters based on Munda could gain air superiority over Bougainville. Fighters from Bougainville could control the sky over Rabaul.⁴⁵³

But Halsey could not move against New Georgia until he had the troops, ships, aircraft, and supplies assembled at Guadalcanal. While Dry-Goods stocked its depots around Henderson Field, Pugh's Fighter Command, Solomons protected that buildup from Japanese interference. To degrade Japanese airpower, Air Search and Attack Command, Solomons (primarily marine and navy squadrons) and Bomber Command, Solomons (predominantly army air force medium and heavy bombers) struck resupply vessels and airfields, escorted by the squadrons of Fighter Command,

⁴⁵⁰ Eric Hammel, *Air War Pacific Chronology: America's Air War Against Japan in East Asia and the Pacific, 1941-1945* (Pacifica, CA: Pacifica Press, 1998), 147-152.

⁴⁵¹ Vice Admiral George C. Dyer, USN (Ret.), *The Amphibians Came to Conquer: The Story of Admiral Richmond Kelly Turner*, vol. 1 (Washington, DC: Government Printing Office, 1969), 498.

⁴⁵² Morison, *Breaking the Bismarcks Barrier*, 94-95.

⁴⁵³ Kramer J. Rohfleisch, "The Central Solomons," in Craven (ed.), *Guadalcanal to Saipan*, 207.

Solomons. Halsey's destroyers occasionally bombarded Japanese airfields, intercepted resupply vessels, and laid mines off New Georgia. To protect these task forces, Halsey tasked Air Command Solomons to conduct scouting and combat air patrols.⁴⁵⁴

During the period between Third Fleet's seizure of the Russells in February and the assault on New Georgia in late June, Halsey sought to establish the conditions for landings on New Georgia. These preparations included assembling troops, ships, landing craft, and aircraft in the southern Solomons and building up supplies on Guadalcanal while inhibiting similar efforts by the Japanese on New Georgia. To that end, Fighter Command, Solomons protected bases in the southern Solomons and bombers and destroyers sent to deny Japanese use of the sea around New Georgia and strike the airfields in the central Solomons.

Japanese plans

Japanese naval and military commanders correctly assessed that the United States would advance on Rabaul in a two-pronged offensive via the Solomons and New Guinea. The army and navy general staffs divided the defense of Rabaul along service lines, with the defense of New Guinea, opposing MacArthur, assigned to the 18th Army and 6th Air Division and defense of the Solomons assigned to Vice Admiral Jinichi Kusaka's Southeast Area Fleet, which included the land-based naval aircraft of the Eleventh Air Fleet and the ships of the Eighth Fleet. General Hitoshi Imamura, the Eighth Area Army commander, bolstered the land defenses in the central and northern Solomons with elements of the 17th Army.⁴⁵⁵

To delay Halsey's offensive, Kusaka's superior, Admiral Isoroku Yamamoto, directed a preemptive air offensive called Operation I. The offensive would begin against the American base at

⁴⁵⁴ RG 38 NAID 134244554 Commander, Southern Pacific Force war diary April 1943, 5-6.

⁴⁵⁵ Shaw and Kane, *Isolation of Rabaul*, 11; John Prados, *Combined Fleet Decoded: the Secret History of American Intelligence and the Japanese Navy in World War II* (New York: Random House, 1995).

Guadalcanal, then would follow up against MacArthur's forces in New Guinea. Yamamoto joined Kusaka at Rabaul and reinforced the Eleventh Air Fleet with the air groups from the carriers *Hijyo*, *Junyo*, *Zuibo*, and *Zuikaku*. By the beginning of April, Yamamoto had a naval air force at Rabaul of approximately 182 fighters, 92 dive-bombers, 72 medium bombers, and a few torpedo planes, a force larger than the one that struck Pearl Harbor.⁴⁵⁶

Facing the Eleventh Air Fleet, on 1 April Fighter Command, Solomons could muster 56 F4F-4s and eight F4Us from navy and marine squadrons and nine P-38s, ten P-39s, seven P-40s, and three P-70s from army air force squadrons. These ninety-three fighters represented the operationally ready aircraft; on hand strength was much higher, as Fighter Command's readiness hovered around seventy per cent.⁴⁵⁷

Air warning and fighter direction

Air Command Solomons relied upon an integrated network of radar, coast watchers, and fighter direction to detect enemy air attacks and control Fighter Command's interceptions. The principal marine radars were SCR-268 and SCR-270 search radars at Banika Field on the Russells Island and at Henderson Field on Guadalcanal. At Koli Point, eight miles east of Henderson Field, the Royal New Zealand Air Force erected a ground control intercept radar, or "GCI." The GCI provided far more accurate altitude measurements than the American search radars.⁴⁵⁸

The SCR-268 and SCR-270 proved less effective in the Solomons than they had at Midway. Major Frederick Payne, who served with VMF-221 on Midway until early February 1942, helped

⁴⁵⁶ Morison, *Breaking the Bismarcks Barrier*, 118.

⁴⁵⁷ ComAirSols fighter availability February – July 1943, 4. The average availability in March was 125 with 68% in commission. The average availability in April was 150 with 72% available.

⁴⁵⁸ Marine Corps History Division, Archives Branch, U.S. Pacific Fleet, South Pacific Force, Intelligence Division, "Report on F/D activities during Japanese dive-bombing attack on shipping in Guadalcanal-Tulagi area, April 7, 1943," 1-2; Squadron Leader John M. S. Ross, "Despatch of No. 52 Radar Unit to Guadalcanal," *Royal New Zealand Air Force* (Wellington, NZ: Historical Publications Branch, 1955), retrieved from <https://nzetc.victoria.ac.nz/tm/scholarly/tei-WH2AirF-c15-3.html>.

calibrate the marine radar there. After flying with VMF-212 from Guadalcanal in 1942, he observed that the numerous islands northwest and north of Guadalcanal created false echoes on the operator's scope. It took a sharp operator to tell the difference between an island and a flight of aircraft.⁴⁵⁹

Fortunately for Fighter Command, Australian coast watchers stationed across the Solomons provided early warning far beyond the range of Allied radars. Due to the great distance from Rabaul to Guadalcanal, Japanese aircraft flew in a direct line, passing overhead of coast watchers on Bougainville, Kolombangara, Rendova, and southeastern New Georgia. These Australian naval reservists and their Melanesian partners evaded Japanese patrols and radioed reports of aircraft and ships to the coast watcher liaison on Guadalcanal. The coast watchers could provide Fighter Command, Solomons with ninety minutes of warning.⁴⁶⁰

Pugh's fighter direction center assigned missions to fighting squadrons and directed the fighter launches and intercepts. Pugh's operations officer, Major Condon, spent nearly every hour in the command post, along with a team of communications, operations, and administrative marines.⁴⁶¹ To direct the fighters, Pugh and Condon needed to know where enemy aircraft were, to know where friendly aircraft were, and to communicate with the aircraft, radars, and coast watchers. By this point in the war, the navy was installing airborne recognition sets in its aircraft. These sets received radar transmissions and responded with an "Identification Friend or Foe" or "IFF" transmission. The IFF enabled radar operators to distinguish friendly aircraft among the many aircraft on their screens. The operations team used the information reported by the radar operators to plot friendly and enemy

⁴⁵⁹ Payne, BuAir interview, 9.

⁴⁶⁰ Cdr. E. A. Feldt, RAN (Ret.), "Coastwatching In World War II," *Proceedings*, vol. 87/9/703, September 1961, retrieved from https://www.usni.org/magazines/proceedings/1961/september/coastwatching-world-war-ii?check_logged_in=1, P. A. Selth, "Read William John (Jack) (1905-1992), and James Griffin, "Mason, Paul Edward (1901-1972), *Australian Dictionary of Biography*, retrieved from <https://adb.anu.edu.au/biography/>; Shaw and Kane, *Isolation of Rabaul*, 42-45.

⁴⁶¹ Condon, interview by Hall, 208.

aircraft on a circular plotting board. Pugh and Condon then directed fighters to intercept based on this plot.⁴⁶²

Fighter direction doctrine advised Pugh and Condon to keep their fighters between incoming aircraft and the base and within thirty miles to ensure communication. Fighters were directed as high as possible, but that altitude was limited by climbing speed and time available, visibility, and the oxygen supply of intercepting aircraft. Pacific Fleet doctrine considered it more than twice as effective to attack with eight aircraft at once than two four-plane divisions at separate times.⁴⁶³

With early warning and adequate radio communication, Pugh and Condon could get their fighters in an advantageous position to intercept incoming raids. From that point, it was up to the pilots of VMF-221 and the other squadrons to spot the enemy aircraft and shoot them down.

⁴⁶² RG 127 A1 Box 42 MAG-12 Warfare Operations 1942-1943, Commander Air Force Pacific Fleet to Air Force Pacific Fleet, "Memorandum on Radar and Fighter Direction," 21 March 1943, 2, 5-6.

⁴⁶³ Commander Air Force Pacific Fleet, "Radar and Fighter Direction," 7-8.

Chapter 7: First Combat Tour, Guadalcanal, 16 March – 3 May 1943

Eleventh Air Fleet Fighter Sweep, 1 April 1943

Prior to Operation I, Yamamoto's air offensive, Eleventh Air Fleet launched a fifty-eight plane fighter sweep in two waves on 1 April, with the first wave comprised of thirty-two fighters and the second of twenty-six.⁴⁶⁴ The Japanese fighters would be outnumbered one-to-two in overall fighter strength, but Fighter Command, Solomons would not be able to sortie all its fighters at once.

At 10:35 a.m., a coast watcher near Buka Passage on the northern end of Bougainville reported twenty-six single engine planes headed towards Guadalcanal. The marine radar on the Russells detected a large group of aircraft at 10:22 a.m. while the Japanese were still 155 miles from Henderson Field. The radar could not provide the number of aircraft, their type, nor their altitude. Fighter Command, Solomons had a division of navy F4Fs over the Russells. It scrambled two more divisions of navy F4Fs. The fighter direction center put one division at 22,000 feet, one at 15,000 feet, and one at 10,000 feet.⁴⁶⁵

At 11:10 a.m. the twelve navy F4Fs spotted the Japanese and reported them as between fifteen and thirty Zeros. The actual number was thirty-two. Recognizing the seriousness of the threat, Fighter Command, Solomons scrambled two divisions of F4Us from VMF-124.⁴⁶⁶

Though outnumbered more than two to one, the dozen navy F4F-4s attacked the large Japanese formation. Amazingly, the F4Fs brought down three enemy fighters and lost just four of their own. The eight survivors returned to the Fighter 2 airfield. The rest of this Japanese formation

⁴⁶⁴ Jeffrey R. Cox, *Dark Waters, Starry Skies: The Guadalcanal – Solomons Campaign March – October 1943* (New York: Osprey Publishing, Inc., 2023), 235.

⁴⁶⁵ RG 38 NAID 134191951 ComAirSols war diary April 1943, 1-2; RG 127 A1 Box 27 Commander Air Command, Solomons Intelligence Reports January – June 1943, "Interception of Enemy Fighters over the Russell Islands April 1, 1943," 1-2.

⁴⁶⁶ RG 38 NAID 134181788 VMF-124 war diary April 1943, 1.

may have retired; by noon, the seven F4Us had taken up combat air patrol over the Russells and had not yet encountered the enemy.⁴⁶⁷

At 12:02 p.m. the radar at Henderson Field detected an unknown aircraft (a “bogey” in fighter direction terminology) 142 miles distant. Fighter Command, Solomons vectored a four-plane division under Captain Burns and another from VS-27 from combat air patrol over the vessels anchored at Tulagi to join the F4Us over the Russells. At the same time the fighter direction center scrambled two four-plane divisions of F4F-4ss from VMF-221 under Lieutenant Roberts and Lieutenant Schocker and seven army air force P-38s and directed them into the fight over the Russells.⁴⁶⁸ Another division from VMF-221 under Swett patrolled over Henderson Field.⁴⁶⁹

The second bogey was the second wave of twenty-six Japanese fighters. Fighter Command, Solomons put thirty fighters up against them. Burns and his division, 23,000 feet over the Russells, spotted Zeros below them and attacked. Lieutenant Snider, flying on Burns’ wing, conducted an overhead pass against two Zeros in column, sending both down flaming. He spotted a third Zero below him at 10,000 feet so he continued his dive and torched that fighter too. Roberts and Schocker, climbing through 13,000 feet, observed the dogfight above them and attacked. Lieutenant Chapman destroyed a Zero looping to get behind Schocker. Staff Sergeant Pittman shot down a Zero tailing his wingman, Lieutenant William E. Walker.⁴⁷⁰

While the F4Us and F4F-4s tangled with the Zeros above the Russells, the P-38s dove on the Zeros from 32,000 feet. When the fight ended, the Americans claimed another fifteen victories,

⁴⁶⁷ Air Command, Solomons, “Interception of Enemy Fighters,” 1 April 1943, 2-3.

⁴⁶⁸ Air Command, Solomons, “Interception of Enemy Fighters,” 1 April 1943, 4; Air Command, Solomons war diary April 1943, 1; VMF-124 war diary April 1943, 1; VMF-221 unit history, 45.

⁴⁶⁹ Colonel James E. Swett, USMC (Ret.), “Combat in the Solomon Islands,” in Caswell, *Fighting Falcons*, 69.

⁴⁷⁰ Air Command, Solomons, “Interception of Enemy Fighters,” 1 April 1943, 5.

for a total of eighteen, while losing just two aircraft: an F4U and a P-38.⁴⁷¹ Actual Japanese losses amounted to just nine Zeros.⁴⁷²

In its first combat in the Solomons, VMF-221 claimed seven aerial victories. Chapman and Pittman each claimed one fighter and Lieutenant Dillow claimed two. In his first action, Snider claimed three Zeros. All twelve of the squadron's fighters returned without a single bullet hole between them.⁴⁷³

While actual Japanese losses were just over half of what Fighter Command's pilots claimed, they markedly exceeded the six lost by Fighter Command.⁴⁷⁴ Air Command Solomons recovered three of its downed aviators, while all the Eleventh Air Fleet's downed pilots perished.⁴⁷⁵

Operation I: 7 April 1943

For the next few days, VMF-221 resumed routine patrols without encountering enemy aircraft. If Technical Sergeant Voelker's log is representative of the squadron, the pilots were now flying one day on, one day off, but flying two and three patrols each day on.⁴⁷⁶ Brigadier General Francis P. Mulcahy, the 2nd Marine Aircraft Wing commanding general, stopped by on 2 April to congratulate the squadron on its performance the day before. On 4 April, VMF-213, which had remained behind at Espiritu Santo, landed on Fighter 2, sporting new F4U Corsairs. Maintenance issues continued to pop up at inconvenient moments. On 6 April Lieutenant Kellog's troublesome

⁴⁷¹ Air Command, Solomons war diary April 1943, 1, 7; Hammel, *Air War Pacific Chronology*, 153; Major Paul Bechtel, "Riding the Lightning," in *American Aces Speak*, vol. 3, edited by Eric Hammel (Pacifica, CA: Pacifica Press, 1996), 102-103. The total of 18 U.S. claims is from the Air Command, Solomons war diary. In *Air War Pacific Chronology*, Hammel states that Fighter Command, Solomons pilots claimed 19 victories. Both sources state the Japanese losses included one Val.

⁴⁷² Claringbould, *I-Go*, 14.

⁴⁷³ VMF-221 unit history, 45; RG 38 NAID 134214360 VMF-221 war diary April 1943, 1.

⁴⁷⁴ Shaw and Kane, *Isolation of Rabaul*, 467.

⁴⁷⁵ Air Command, Solomons war diary April 1943, 1.

⁴⁷⁶ Calvin J. Voelker flying log, 1-18 April 1943.

propeller and carburetor forced him to land and a broken oil line forced Lieutenant Moore to land at Koli Point Field on the opposite side of Henderson Field from Fighter 2.⁴⁷⁷

Fighter Command, Solomons was receiving excellent intelligence on the Eleventh Air Fleet's buildup in the northern Solomons. At 8:00 a.m. on 6 April, army air force F-5 Lightning reconnaissance planes photographed twenty-two fighters and four medium bombers at Buka and Kahili and eleven float planes at Faisi near Bougainville. The central Solomons airfields at Vila and Munda were empty, as was Ballalle.⁴⁷⁸

The seventh of April would see one of the largest air battles of the Pacific War. For this day's operations, Fighter Command, Solomons could count on only sixty-nine fighters, twenty-two less than it had sortied on 1 April: thirty F4F-4s, ten P-38s, ten P-39s, four P-70s, and six P-40s. Despite the arrival of VMF-213, there were just nine F4Us available; VMF-124 had departed at the conclusion of its combat tour.⁴⁷⁹ To bolster Fighter Command, VMF-213 received six additional F4Us from Espiritu Santo early on 7 April.⁴⁸⁰

The Eleventh Air Fleet, reinforced from the carriers *Hiyo*, *Zuibo*, and *Zuikaku*, would put up 162 fighters and seventy dive-bombers. This would give the Eleventh Air Fleet over a 2:1 advantage in fighters. The attackers would be organized into two fighter groups from Buka, one of twenty-seven Zeros and another of twenty-one, and four strike groups from Ballalle and Kahili of 17-18 Vals and 26-30 Zeros each.⁴⁸¹

Air Command Solomons did not wait for the Japanese to bring the fight to Guadalcanal. Two B-17s bombed Kahili and Ballalle in the early morning hours. Fourteen SBDs and four TBFs escorted by eleven F4F-4s struck Vila at 6:15 a.m.⁴⁸² For VMF-221, the day started with an escort

⁴⁷⁷ VMF-221 unit history, 46.

⁴⁷⁸ Air Command, Solomons war diary April 1943, 15; Hammel, *Air War Pacific*, 155.

⁴⁷⁹ Air Command, Solomons war diary April 1943, 15.

⁴⁸⁰ RG 38 NAID 134175316 VMF-213 war diary April 1943, 2.

⁴⁸¹ Claringbould, *I-Go*, 36.

⁴⁸² Air Command, Solomons war diary April 1943, 16.

mission by seven of the squadron's fighters for six TBFs and six SBDs on a search and attack mission. They found no ships, so they struck the seaplane base at Rekata Bay just after noon. One bomb hit a four-engine flying boat and the aircraft returned to Guadalcanal.⁴⁸³

These strikes by Air Command Solomons had little effect on the Eleventh Air Fleet. At 10:30 a.m., American aerial photographs revealed 247 single engine aircraft on southern Bougainville.⁴⁸⁴ This represented a dramatic increase over the previous twenty-four hours.

Fighter Command, Solomons was soon awash with intelligence. At 11:45 a.m., Air Command Solomons received a warning from Pacific Fleet headquarters at Pearl Harbor to expect a Japanese air attack that afternoon against the Russells or Guadalcanal. Less than an hour later, coast watchers on Bougainville reported a force of forty-eight fighters followed ten minutes later by a second group of fifty aircraft.⁴⁸⁵

Pugh now anticipated an attack of nearly one hundred aircraft at 2:00 p.m. His fighter direction center began stacking fighters over the Russells. A division of four F4Us over Henderson was ordered to the Russells and replaced by a division of F4F-4s. The fighter direction center scrambled additional fighters and pushed them up to the Russells. MAG-21's fighter direction center there took control and positioned them to intercept the incoming formation.⁴⁸⁶

Air Command Solomons launched a group of B-17s and TBFs that had been warming up on Guadalcanal for another strike on Kahili. With the escorting fighters busy and the Japanese aircraft aloft, the bombers flew east to avoid the incoming strike.⁴⁸⁷ Three American cruisers and six destroyers at Tulagi likewise got underway, but at least three dozen vessels remained. These included the tender USS *Niagara* (PG-52) and her fifteen motor torpedo boats, the tanker USS *Kanawha* (AO-

⁴⁸³ Air Command, Solomons war diary April 1943, 17; VMF-221 unit history, 46.

⁴⁸⁴ Air Command, Solomons war diary April 1943, 16.

⁴⁸⁵ South Pacific Force Intelligence Division, "Report on F/D activities," 1.

⁴⁸⁶ South Pacific Force Intelligence Division, "Report on F/D activities," 2.

⁴⁸⁷ Cox, *Dark Waters, Starry Skies*, 251.

1), the transport USS *Stratford* (AP-41), six small coastal transports (APCs), eight amphibious assault ships (LCTs), the New Zealand corvette HMNZS *Moa* (T233) refueling from the station tanker USS *Erskine Phelps* (YON-147), a minesweeper, and a mishmash of auxiliary vessels.⁴⁸⁸

At 1:48 p.m., the radar on the Russells detected a large bogey 207 miles from Henderson Field, just north of New Georgia. The Russells operators estimated this group included at least thirty aircraft. This group headed south across New Georgia.⁴⁸⁹

At 2:00 p.m., the Russells radar detected a second bogey 148 miles from Henderson Field, about 85 miles northwest of the Russells between 25,000 and 30,000 feet. This would place the approaching aircraft between Santa Isabel Island and New Georgia. Pugh concluded this smaller flight at higher altitude was a diversion, intended to be spotted by his radar to draw his fighters away from Henderson Field and Tulagi. The fighter direction center ordered MAG-21, “Suspect some bogey to draw off your fighter – save some for large bogey.”⁴⁹⁰ To all units in the area went the alert, “Condition red.”⁴⁹¹

At 2:18 p.m., the radar at Henderson Field detected a third flight at a lower altitude and slower speed just 90 miles away. In four minutes, the flight had closed the distance to 78 miles, indicating an airspeed of approximately 180 miles per hour.⁴⁹² Around this time, Guadalcanal updated its alert to, “Condition *very* red.”⁴⁹³ At 2:23 p.m. the radar at Henderson picked up the large flight that had cut across New Georgia. This flight was due west of Henderson at a range of 115 miles. Seventeen minutes later this large formation was just fifty-nine miles from Henderson, still

⁴⁸⁸ Morison, *Breaking the Bismarcks Barrier*, 120-121.

⁴⁸⁹ South Pacific Force Intelligence Division, “Report on F/D activities,” 2.

⁴⁹⁰ South Pacific Force Intelligence Division, “Report on F/D activities,” 2.

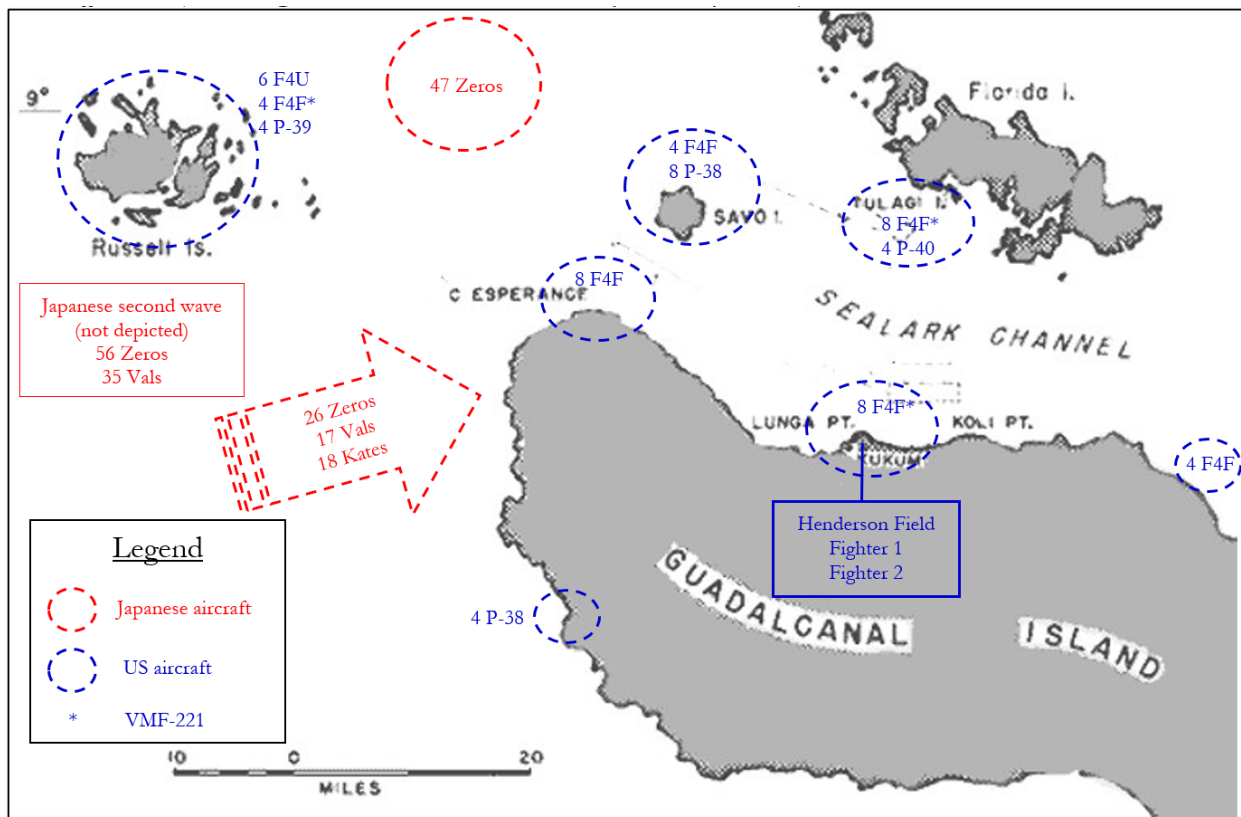
⁴⁹¹ Morison, *Breaking the Bismarcks Barrier*, 120.

⁴⁹² South Pacific Force Intelligence Division, “Report on F/D activities,” 2.

⁴⁹³ Morison, *Breaking the Bismarcks Barrier*, 120; Prados, *Combined Fleet Decoded*, 457.

due west.⁴⁹⁴ The constant bearing told Pugh the formation was headed for Henderson Field, but the rate of closure suggested the flight was approaching at just 146 miles per hour.

At 2:35 p.m. the New Zealand GCI radar began picking up the Japanese formations. The New Zealand operators began feeding the fighter direction center more precise altitudes. The GCI operators informed the fighter direction center that the first group had split into two groups of twenty to twenty-five aircraft each, orbiting at 28,000 to 30,000 feet between the Russells and Savo Island, about sixty miles from Henderson Field.⁴⁹⁵



Map 4. Fighter Command, Solomons Situation 3:00 p.m. 7 April 1943

(South Pacific Force Intelligence Division, “Report on F/D activities;” base map from John Miller, Jr., “The Approach, 7 August 1942,” Map No. 1, in *Guadalcanal: The First Offensive*, 60.

⁴⁹⁴ South Pacific Force Intelligence Division, “Report on F/D activities,” 2.

⁴⁹⁵ South Pacific Force Intelligence Division, “Report on F/D activities,” 3.

Twenty minutes later, at 2:55 p.m., the GCI detected the large formation closing on Henderson from the west. The GCI reported its altitude between 25,000 and 30,000 feet and its range as 43 miles—less than eighteen minutes from Henderson Field. The GCI operators also alerted the marines that the large formation altered course to the northeast and was descending.⁴⁹⁶

Pugh and his fighter direction team had a fairly clear picture of the situation. A large formation of dive bombers and fighters was approaching Guadalcanal from the west. Two groups of a couple dozen fighters each were loitering just sixty miles from Henderson Field at high altitude. Either of these groups could be over the anchorage at Tulagi, Henderson Field, or the Russells in ten to twelve minutes. Even if Pugh could get every one of his available fighters into the battle at once—an impossible task considering the continuous combat air patrols Fighter Command, Solomons had to maintain—his pilots would at best be evenly matched in fighter numbers.

At 2:38 p.m., Fighter Command, Solomons had sixty-two fighters aloft. All were well above the cumulus clouds. Over the Russells, MAG-21 had control of four P-39s at 22,000 feet, four F4F-4s under First Lieutenant Howard K. Winfield from VMF-221 at 25,000 feet, and six F4Us from VMF-213 under Captain William C. Humberd (who had fought at Midway with VMF-221) above 30,000 feet. A four-plane division from VMF-214 led by Second Lieutenant Vincent W. Carpenter was 25,000 feet over Savo Island, while eight P-38s under Major Paul Bechtel were climbing through 18,000 feet in the same area. Four P-38s that had detached from Bechtel were 31,000 feet above Beaufort Bay on Guadalcanal's southwest coast. Two four-plane divisions of F4F-4s from VMF-214 under Captain John R. "Smiley" Burnett were positioned over Cape Esperance, also at 30,000 feet. Another four F4F-4s from VMF-214 under Second Lieutenant Charles C. Lanphier patrolled over Rua Sura Island east of Henderson Field. Four P-40s patrolled over the Tulagi anchorage at 25,000 feet. First Lieutenant James Swett led a flight of two divisions of F4F-4s from VMF-221, his own

⁴⁹⁶ South Pacific Force Intelligence Division, "Report on F/D activities," 3.

and Captain John Payne's, climbing through 13,000 feet on his way to Tulagi. The last two divisions from VMF-221, led by Lieutenant Schocker and Lieutenant Hacking, patrolled over Henderson Field at 25,000 feet.⁴⁹⁷ Four F4Us led by Major George Britt were returning to Fighter Two, low on fuel after a three hour patrol over the Russells. Three more F4Us led by First Lieutenant Hilton were on alert at Fighter Two.

At 2:59 p.m., Captain Burnett over Cape Esperance sighted the Japanese formation approaching from the west. Burnett hollered over the fighter channel, "Jesus Christ! There's a million of 'em!" He then reported "Tally ho," and attacked the large force with his eight F4F-4s. Shortly thereafter he was heard to report, "There are Zeros and hawks all over me!"⁴⁹⁸

Burnett's flight of eight F4F-4s attacked the enemy flight of fighters and dive bombers. Each group of dive bombers flew in the same formation that VMF-221 had encountered at Midway, a larger vee of six three-plane vees. It is little wonder that Burnett reported the Zeros were all over him. With just eight Wildcats, he was engaging at least seventeen dive-bombers and twenty-six fighters. Though Burnett was shot down, he claimed a dive bomber. The other seven F4F-4s survived the engagement. Two pilots claimed dive-bombers and a fourth claimed a fighter.⁴⁹⁹

Over Tulagi, Swett saw the approaching formation nearing the ships below him. The following narrative of Swett's actions are drawn primarily from two of Swett's post war accounts. Gunning his F4F-4 to full throttle, he sprinted to intercept the dive-bombers. The other aircraft in Swett's flight followed, spread out over a half mile behind him. The escorting Zeros attacked the seven trailing F4F-4s, but Swett caught up to the fixed landing gear Vals as they entered their dive.

⁴⁹⁷ South Pacific Force Intelligence Division, "Report on F/D activities," 3-4; RG 38 NAID 135895315 VMF-214 war diary April 1943, 1-2; VMF-221 unit history, 46-47; VMF-221 war diary April 1943, 3-4. These sources provide conflicting information on fighter dispositions. As the Intelligence Division report relied on interviews conducted immediately after the action, where evidence conflicts, this summary presents the information from this report.

⁴⁹⁸ South Pacific Force Intelligence Division, "Report on F/D activities," 3; Swett, "Combat in the Solomon Islands," 69.

⁴⁹⁹ VMF-214 war diary April 1943, 2.

Making a right turn and diving with them, Swett closed the distance to a group of six dive-bombers. The bombers were about fifty yards apart. Swett, whose guns were boresighted at 150 yards, positioned his Wildcat fifty yards astern of the rear Val. He aimed for the pilot and let go a short burst. The fire killed the gunner and probably the pilot too. It caught fire and plunged toward the sea. Swett, soaked with perspiration in his first combat, wasted no time and closed to fifty yards astern of the next Val. Another quick burst and it too caught fire and plummeted towards earth. Ignoring the 7.7mm machine-gun fire from the rear gunners, Swett closed on the tail of a third Val. He let go another quick burst from his six .50 caliber machine-guns. This dive-bomber too flamed quickly and went down.⁵⁰⁰

Swett was nearing 1,000 feet. He pulled up sharply over the anchorage, levelling off at 500 feet. As he maneuvered amidst the enemy dive bombers, at least one anti-aircraft gunner mistook him for a Japanese plane. Something violently struck Swett's port wing. He glanced over and saw one of his machine-gun barrels bent upwards, protruding from a hole in his wing. His flaps were destroyed. But the plane was otherwise undamaged, and he had five working guns. Swett sped north over the harbor toward Florida Island, then east to avoid a layer of cumulus.⁵⁰¹

Flying between the clouds and the jungle at 500 feet, Swett emerged on the eastern side of Florida. To his surprise, Swett discovered "a whole flock of dive bombers," as he later described them. These were the bombers that had just attacked the ships near Tulagi. Swett had stumbled across their rendezvous point. As the dive bombers were at the same altitude as he was and were far slower, Swett was a fox in a chicken coop. He easily caught the nearest dive bomber which was turning slightly to the left. Swett closed on its tail and shot it down with a quick burst. The next dive bomber was ahead and to the right. Swett zigged right, zagged left, and positioned his fighter behind

⁵⁰⁰ Swett, interview by Hammel, part 2, 9-15; Swett, "Combat in the Solomon Islands," 69.

⁵⁰¹ Swett, interview by Hammel, part 2, 15; Swett, "Combat in the Solomon Islands," 69.

it. He fired a short burst, and this fifth Val went down too. Swett maneuvered behind a sixth, shot it down, and a seventh, and shot it down, too. He tried for number eight, but perhaps came too close. When he was between twenty-five and thirty feet from the dive-bomber's tail, the gunner fired his 7.7mm machine-gun and "knocked the living hell out of my windshield and my oil cooler and everything else." Swett got in a burst nonetheless, killing the gunner. He saw the aircraft trail smoke but did not see it go down. Alone, nearly out of ammunition, and losing oil pressure, Swett headed for Henderson Field.⁵⁰²

He recrossed Florida Island, but over Tulagi Harbor, Swett's engine froze, and his Wildcat dropped. With no flaps, the aircraft landed hard, bounced once, and plunged beneath the surface. Swett undid his seatbelt and shoulder harness, but his parachute harness caught on the life raft release handle as the aircraft sunk. The fighter dragged Swett deeper. The water became colder and darker. At last Swett freed himself and popped to the surface. His life raft emerged, but only half inflated. Within fifteen minutes a coast guard picket boat recovered him.⁵⁰³

If Swett's accounts are accurate, his gunnery was remarkable. He had destroyed seven enemy aircraft and probably an eighth. With just 240 rounds per gun, he had averaged just thirty rounds per gun against each victim, or 1.5 seconds of firing.

The rest of Swett's flight did not fare as well. Staff Sergeant Pittman, Swett's wingman, claimed he shot down one dive bomber before Zeros shot his plane full of holes. Pittman's landing gear collapsed at Fighter 2, but he walked away. In the second section of Swett's division, Lieutenant Roberts and Lieutenant Walsh were also shot down. Walsh claimed one fighter.⁵⁰⁴

Captain Payne's division jettisoned their wing tanks at 10,000 feet. Payne led the four F4F-4s in a climbing, head on attack in a line abreast. Around two dozen escorting Zeros peeled away from

⁵⁰² Swett, interview by Hammel, part 2, 16-19; Swett, "Combat in the Solomon Islands," 70.

⁵⁰³ Swett, interview by Hammel, part 2, 19-20; Swett, "Combat in the Solomon Islands," 70.

⁵⁰⁴ Swett, "Combat in the Solomon Islands," 69-70; VMF-221 unit history, 46-48; Olynyk, *USMC Credits*, 18.

the bombers and dove on Payne's division. Payne's wingman, Second Lieutenant Pitzer P. Pittman, reported he brought down a dive-bomber before the fighters swarmed over the two Wildcats and shot them both down. Lieutenant "Baldy" Baldwin and his wingman, Lieutenant Hallmeyer, each claimed a Zero in the melee. Hallmeyer claimed another before his F4F-4 was struck fatally. Baldwin watched Hallmeyer bail out, leaving Baldwin alone in a sky full of Zeros. One behind him fired wild bursts, maneuvering to get directly astern for a kill shot. Baldwin flew for his life. He remembered being told, "If you can see the adversary, you should never be shot down." Baldwin twisted and turned, keeping the pursuing fighter in view. The technique worked, and Baldwin eventually evaded the Zero.⁵⁰⁵

Twenty-five thousand feet over the Russells, ten Zeros hit Winfield's four plane division in an overhead attack. The four fighters evaded the attackers but took many hits and scored no kills. Fifteen Zeros attacked Schocker's division over Koli Point. Lieutenants Schocker, Chapman, and Arthur T. Wood were each credited with downing a fighter, though it was unclear exactly who actually downed which Zeros. The fighter direction center kept Hacking's division over Henderson Field, where it encountered no enemy aircraft.⁵⁰⁶

Out of the eight fighters in Swett's division, just Staff Sergeant Pittman's severely damaged F4F-4 survived. VMF-221's other three divisions returned to Fighter Two, but the aircraft in Winfield and Schocker's divisions suffered too much damage to fly right away. Only the four fighters in Hacking's division escaped unscathed and were ready to fly again.⁵⁰⁷

⁵⁰⁵ VMF-221 war history, 46-48; Frank "Baldy" Baldwin, "Baptism by Fire: April 1943," in Caswell, *Fighting Falcons*, 71-72. In this later account Baldwin claimed he shot down the Zero that shot his wingman down, but Baldwin was credited with only one Zero at the time. He also referred to his wingman as "Ed." The only Ed in VMF-221 was Walsh, but Walsh was in Swett's division. Of the pilots in Payne's division, only Baldwin and Hallmeyer claimed Zeros, so if Baldwin's account is accurate, his wingman was Hallmeyer.

⁵⁰⁶ VMF-221 unit history, 46-48; Olynyk, *USMC Credits*, 18.

⁵⁰⁷ VMF-221 unit history, 47.

As shown in table 2.8, Fighter Command, Solomons claimed forty-one aircraft. Anti-aircraft gunners aboard *Niagara* and nearby LCTs claimed another three dive-bombers fleeing north over Tulagi.⁵⁰⁸ The Japanese reported their actual losses as just twelve Zeros and seven Vals, just under half of Fighter Command’s claims. Another five Vals were lost enroute to Guadalcanal in bad weather or on the return flight out of sight of Allied observers.⁵⁰⁹

Table 2.8 Fighter Command, Solomons victory claims, 7 April 1943

Unit	Claims
VMF-213	1 Zero
VMF-214	4 Vals 4 Zeros + 1 probable
VMF-221	8 Vals + 1 probable 11 Zeros + 1 probable
XIII Fighter Command	13 aircraft all types
Total	41 aircraft

Source: Olynyk, *USMC Credits for the Destruction of Enemy Aircraft*, 18; VMF-213 war diary, April 1943, 3; VMF-214 war diary, April 1943, 2; VMF-221 unit history, 46-48; Rohfleisch, “Central Solomons,” 213.

Fighter Command, Solomons’ losses are detailed in table 2.9.

Table 2.9. Fighter Command, Solomons losses, 7 April 1943

Unit	Losses
VMF-213	none
VMF-214	2 F4F-4
VMF-221	7 F4F-4
XIII Fighter Command	1 P-39
Total	10 aircraft

Source: VMF-213 war diary, April 1943, 3; VMF-214 war diary, April 1943, 2; VMF-221 unit history, 46-48; Rohfleisch, “Central Solomons,” 213; “70th Fighter Squadron (70th FS),” *Pacific Wrecks*, retrieved from <https://pacificwrecks.com/units/usaaf/18fg/70fs.html>.

⁵⁰⁸ Morison, *Breaking the Bismarcks Barrier*, 122-123.

⁵⁰⁹ Cox, *Dark Waters, Starry Skies*, 258; Claringbould, *I-Go*, 57, 134.

If the Japanese reported losses are accurate, Fighter Command, Solomons achieved a better than 2:1 loss ratio. The attackers sank three ships: the destroyer USS *Aaron Ward* (DD-483), the tanker *Kanawha*, and the New Zealand corvette *Moa*. None of the airfields and supply depots suffered damage. Nonetheless, naval historian Samuel Eliot Morison assessed that the attack delayed Third Fleet's New Georgia offensive by ten days. Third Fleet postponed bombardment and minelaying operations in the Central Solomons until it was clear that no further aerial attacks were coming.⁵¹⁰

Aircrew survival and recovery

As previously mentioned, a coast guard patrol craft had pulled Swett from Tulagi Harbor fifteen minutes after he ditched. While Swett recovered on Tulagi that evening, Walsh walked in, having banged his head on the gunsight when he ditched but otherwise healthy. On 9 April Hallmeyer returned to the squadron. Solomon Islanders had picked him up and taken him by canoe to Tulagi. Later that evening the squadron learned Roberts had been recovered, two days after he had bailed out. This left only Lieutenant Pittman missing from the 7 April action. On 14 April, word came from Tulagi that Pittman was hospitalized there, recovering from a shrapnel wound in his leg.⁵¹¹

Air Force, South Pacific recovered all but one of Fighter Command's nine downed aviators, whereas all of Eleventh Air Fleet's pilots were lost.⁵¹² Recovering aircrew was a priority for Air Force, South Pacific. This practice not only preserved trained aircrew, but bolstered morale. The pilots of Air Command Solomons enjoyed the friendly support of the local population, as Hallmeyer's rescue demonstrated. The PBY's of Air Search Unit, South Pacific could land and

⁵¹⁰ Morison, *Breaking the Bismarcks Barrier*, 124.

⁵¹¹ VMF-221 unit history, 46-50.

⁵¹² VMF-214 war diary April 1943, 2; VMF-221 unit history, 46-48; Rohfleisch, "Central Solomons," 213.

recover aviators at sea and along island coastlines. In contrast, the Eleventh Air Fleet had no similar capability and placed little emphasis on rescuing its downed pilots. Those shot down in the southern Solomons had no chance of recovery.

Killing Yamamoto and the limitations of marine aircraft

On 17 April Third Fleet learned that Admiral Yamamoto would arrive at Ballale off the southern tip of Bougainville the following morning at 9:45 a.m. Halsey directed Fighter Command, Solomons to intercept the flight and shoot it down. Pugh and Condon quickly determined that only the P-38 fighters of XIII Fighter Command, Solomons had the range to conduct the mission. Eighteen P-38's intercepted Yamamoto's flight and sent both Yamamoto's Betty and a second one down in flames. The Commander of the Combined Fleet was dead.⁵¹³

The 660-mile round trip mission exceeded the combat radius of the marine F4F-4s and F4Us at Fighter Two. Not only were the carrier aircraft the marines flew unable to match the range of the army air force P-38s, but marine squadrons had learned that aircraft in the South Pacific were not able to achieve the aircraft specifications determined by the Bureau of Aeronautics. As noted in table 2.6, the F4F-4 was achieving an actual combat radius of just 230 miles with wing tanks in the South Pacific.⁵¹⁴

VMF-221 operations, 8 April – 2 May 1943

On 8 April, Fighter Command, Solomons could muster only eighteen airworthy F4F-4s. Four days later, that number surged to ninety-three combat ready Wildcats as ground crews repaired battle damage and Air Force, South Pacific pushed replacement aircraft and squadrons forward.

⁵¹³ Rohfleisch, "Central Solomons," 213-214.

⁵¹⁴ 1st MAW Intelligence Section, "Performance Data Sheets," 1.

Aerial photographs revealed Japanese strength dwindled to fifty-one fighters, five medium bombers, and fifteen float planes spread across the northern Solomons.⁵¹⁵⁵¹⁶

VMF-221's mechanics did not participate in this recovery. Beginning on 4 April, Marine Aircraft Wings South Pacific began transporting the squadron's ground echelon forward by ship, barge, and air transport from Espiritu Santo to the new airfield in the Russells, which Seabees completed on 15 April. Most would remain there until 14 June, supporting marine squadrons there.⁵¹⁷

The pilots of VMF-221 flew patrols over the southern Solomons for the remainder of this combat tour without encountering opposition. Air Command Solomons conducted strikes on Japanese airfields as far north as Kahili on the southern tip of Bougainville. As the airfields around Bougainville lay beyond the range of all but the P-38s, army air force B-17s and B-24s and marine and navy TBFs struck these airfields at night, with little to show for it. SBDs and TBFs struck the airfields at Munda and Vila in the New Georgia area and the seaplane base at Rekata Bay on Santa Isabel Island during daylight, escorted by fighters of VMF-221 and other squadrons, but rarely found targets of value. Search planes and coast watchers reported barges and occasionally destroyers and transports in the northern and central Solomons, but Air Command Solomons was unable to exploit this intelligence. The Japanese grew adept at concealing barges in small coves, and carefully kept their destroyers beyond the range of all but the army air force heavy bombers during daylight.⁵¹⁸

On 22 April the squadron moved to the newly renovated Fighter 1 airstrip. The delighted pilots moved into Quonset huts, prefabricated metal buildings that sheltered the marines from the weather and mosquitos. Malaria still took down marines. On 1 May Lieutenants Schocker, Tutton,

⁵¹⁵ ComAirSols war diary April 1943, 18.

⁵¹⁶ ComAirSols war diary April 1943, 23.

⁵¹⁷ VMF-221 muster roll, April and June 1943; Hammel, *Air War Pacific Chronology*, 157.

⁵¹⁸ ComAirSols war diary April 1943, 18-35, 26.

and Walsh and the flight surgeon, Lieutenant O'Connell, were evacuated to Espiritu Santo for medical treatment.⁵¹⁹

On 2 May, VMF-112, an F4U squadron, landed at Fighter 2 to relieve VMF-221. On 4 May eleven of the aviators flew their F4F-4s south to Espiritu Santo. The remaining pilots joined them there by 8 May, catching rides on transport aircraft.⁵²⁰

⁵¹⁹ VMF-221 unit history, 51-52.

⁵²⁰ VMF-221 unit history, 53.

Chapter 8: Second Combat Tour, Russell Islands, 26 June – 13 August 1943

Rotation, rest, and recreation 9-21 May 1943

VMF-221's first combat tour lasted seven weeks. Marine Aircraft Wings Pacific deliberately rotated its aircrews to the rear for rest. Around this time, the medical officer of the 2nd Marine Aircraft Wing reported some squadrons suffered from lower efficiency, fighting spirit, and morale. He attributed this to flying too many hours per day, combat tours that were too long, rest periods that were too brief, harsh living conditions, and poor rations. The medical officer observed pilots in other squadrons returning for a third combat tour who "recuperated so little mentally and physically that they were practically worthless."⁵²¹

VMF-221 benefited from the remedies the wings instituted. The Quonset huts at Fighter 1 were one obvious improvement at the front. The pilots appreciated the break from flying. They enjoyed a rest period in Sydney, Australia from 9 to 21 May. By most accounts, the people of Sydney, particularly young women and pub owners, enthusiastically welcomed the marines.⁵²²

New fighters, new pilots, new commander

The pilots returned to Espiritu Santo to another good deal: F4U-1 Corsairs replaced the squadron's F4F-4s. Tests by Major William E. Gise of MAG-12 revealed the F4U outclimbed the F4F-4, reaching 20,000 feet in less than half the time even when encumbered by full drop tanks. The F4U's operating radius with full tanks was 287 miles, 57 miles further than the Wildcat.⁵²³ The first marines who flew the F4U against the Zero estimated the Corsair was as fast as the Zero, could keep

⁵²¹ RG 127 A1 1055 Box 8 Marine Aircraft South Pacific Correspondence on Operations and Tactical Employment of Units January 1943 – June 1944, CG 2nd MAW to CG MASP, "Deficiencies brought out in combat experience," 10 July 1943, 4-5.

⁵²² For a revealing account of a marine aviator's rest period in Sydney, see Porter, *Ace!* 158-166.

⁵²³ 1st MAW Intelligence Section, "Performance Data Sheets," 1.

up in a climb with the Zero at 15,000 feet, and maneuvered at least as well as the Zero. They found a Corsair pilot in a jam could escape by making a steep, right-hand turn and diving away.⁵²⁴ In late 1944, the navy tested a captured Zero against the F4U and determined the F4U averaged 64 mph faster at all altitudes, outclimbed the Zero above 10,000 feet, and outdove the Zero. Above 230 mph, the Corsair outmaneuvered the Zero, but the slower the speed, the greater the Zero's advantage.⁵²⁵



Figure 20. An F4U-1 on Espiritu Santo, September 1943 (NARA 80G-54279)

The F4U was superior in many respects to the F6F Hellcat that the navy selected to replace F4Fs aboard carriers. Carrier landing experiments with the F4U had gone poorly. The long nose obscured the pilot's ability to see the flight deck. Rigid landing gear caused the aircraft to bounce. Tailwheels blew out on the hard flight decks. Most concerning to the fleet, there were no Corsair

⁵²⁴ Air Command, Solomons, "Interception of Enemy Fighters," 1 April 1943, 6.

⁵²⁵ Tillman, *Corsair*, 19-20.

parts in the pipeline for the carriers. Land-based marine squadrons benefited from the navy's preference for the Hellcat.⁵²⁶

Burns, now a major, turned the squadron over to Major Monfurd K. Peyton on 1 June.⁵²⁷ Burns contracted malaria and returned to the United States for treatment a short time later.⁵²⁸

Peyton, from Morgan County, Kentucky, graduated from Asbury College in 1930 and coached high school basketball, baseball, and tennis for two years before enlisting as a private in 1932. After recruit training he remained at Parris Island and served as a drill instructor. In June 1938, while a corporal at the marine barracks in Washington, DC, Peyton received a regular commission. As a second lieutenant he attended The Basic School and served aboard cruisers in the Pacific Fleet before reporting to flight school in November 1940. He earned his wings in May 1941.⁵²⁹

Peyton had flown the F4U in combat as the executive officer of VMF-213. On 25 April, Peyton led his four-plane division on a strafing attack against Vila. On the return leg, Peyton spotted sixteen Bettys and twenty or more Zeros. Though outnumbered nine-to-one, Peyton attacked. He shot down three Zeros, and his division claimed another two, though VMF-213 lost two Corsairs and one of its pilots. Peyton returned with seventy-eight holes in his Corsair, one in his left shoulder, and another in his left knee.⁵³⁰

In late May, eight lieutenants joined the squadron. After Lieutenant Schocker returned on 20 June, Peyton organized his twenty-six pilots into six divisions.⁵³¹ The majority of the pilots were now combat veterans, including all the division and section leaders.

⁵²⁶ Tillman, *Corsair*, 9-13.

⁵²⁷ VMF-221 unit history, 55.

⁵²⁸ Jim Burns, interview by P. F. Owen, 6 June 2023.

⁵²⁹ Marine Corps History Division, Archives Branch, "Peyton, Monford K., Col., USMC," general information file.

⁵³⁰ VMF-213 muster roll, April 1943; Shaw and Kane, *Isolation of Rabaul*, 471; William C. Livingood (surgeon), "Individual Pilot Log," retrieved 1 July 2023 from www.vmf-213.com.

⁵³¹ VMF-221 unit history, 57-58.

The squadron had exactly thirty days to train before its second combat tour. For the first three weeks, the flying concentrated on familiarization with the new aircraft. During the final week the pilots practiced gunnery, section tactics, division tactics, and night flying. Training was hampered because the squadron had to share its limited number of airworthy fighters with other squadrons. For the last three days of May, flying was suspended because there were no mechanics available. Mishaps took a toll of aircraft and men. On 24 May the veteran Lieutenant Norman L. George spun in while attempting to land. He survived, but his injuries grounded him, and the aircraft was lost. On 2 June, one of the new lieutenants ground looped his Corsair and it flipped and caught fire. He survived but was transferred to a dive-bomber squadron. On 8 June Lieutenant Wood, a veteran, also ground-looped and flipped his fighter. The following day Lieutenant Robert C. Hanckle, a new replacement, collided with an SBD during a practice interception and perished.⁵³²

On 25 June, the squadron flew nineteen Corsairs to Guadalcanal, and then on to the new base in the Russells the following day. One trailing Corsair and the six surplus pilots joined them there. The squadron commenced patrols immediately.⁵³³ The pilots had missed rejoining their ground echelon by twelve days. Marine Aircraft Wings Pacific rotated the majority of VMF-221's marines from the Russells to Guadalcanal on 14 June.⁵³⁴

Combat, 26 June – 13 August

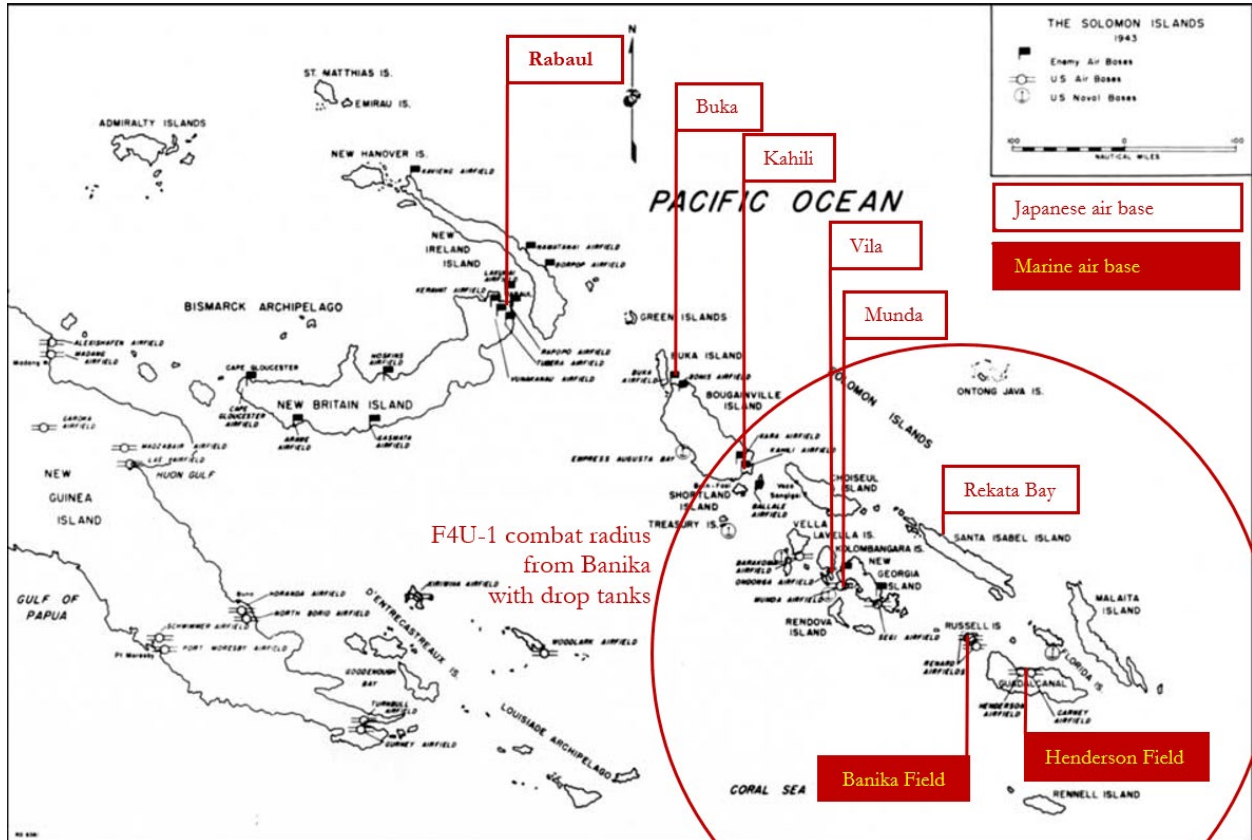
Seabees finished construction of a 4,100-foot, crushed coral runway on Banika in the Russells in late June. The new airfield extended the range of fighters based there and relieved the congestion on Guadalcanal, which had over 300 aircraft, often vulnerably parked wingtip to wingtip. Banika was home to Lieutenant Colonel Raymond F. Hopper's MAG-21, comprised of VMF-121,

⁵³² VMF-221 unit history, 55-58; VMF-221 muster roll, June 1943.

⁵³³ VMF-221 unit history, 55-58; VMF-221 muster roll, June 1943.

⁵³⁴ VMF-221 muster roll, June 1943.

VMF-214, and VMF-221. Banika was a nicer home than Fighter 2. The fighting squadrons had Quonset huts on a shaded hilltop for their ready rooms, offices, mess halls, and billets. Seabees provided burgers and milkshakes to any aircrew who dropped in. Fighters were parked in hardened revetments.⁵³⁵



Map 5. The Solomon Islands, Japanese and Marine Air Bases, June - August 1943

(Base map from Major Charles D. Melson, USMC, *CONDITION RED: Marine Defense Battalions in World War II*, 1)

MAG-21's mechanics worked tirelessly, sometimes 24 hours a day. Marines found the F4U more difficult to maintain than the F4F. Parts were in short supply and Banika had no boneyard of

⁵³⁵ "Banika Field (North Field, Sunlight)," Pacific Wrecks, 7 December 2022, retrieved from www.pacificwrecks.com; MAG-21 war diary June 1943, 4-6; Rohfleisch, "Bougainville," 215; James Swett, "Hamburgers and Milkshakes," in Caswell, *Fighting Falcons*, 75.

wrecked Corsairs to salvage. Machinists often fabricated parts the group could not supply. Pilots frequently flew aircraft in combat that would have been dead lined in the United States.⁵³⁶

VMF-221's arrival at Banika preceded Third Fleet's amphibious assault on New Georgia by four days. Halsey's operation would kick over a hornet's nest of Japanese air responses. In the weeks prior, Fighter Command, Solomons had crushed three attempts by Eleventh Air Fleet to disrupt the fleet's preparations. Japanese losses were so heavy that Admiral Mineichi Koga, who succeeded Yamamoto, stripped another 150 aircraft from his carriers at Truk and sent them to Rabaul to oppose Halsey's Third Fleet. MAG-21 would escort strikes in the central Solomons and intercept Japanese strikes.⁵³⁷ As shown in map 5, the F4Us could escort bombers as far as Kahili and intercept Japanese strikes threatening the Third Fleet's ships around New Georgia.

The squadron encountered no enemy aircraft during its first four days, but another ground loop reduced the squadron's strength to nineteen. For D-Day at New Georgia, 30 June, Air Command Solomons had an astounding 455 aircraft available, including 213 fighters. All army, marine, and navy aircraft in the New Georgia area were controlled by the New Georgia Air Force, the forward echelon of 2nd Marine Aircraft Wing. Fighters were initially directed by a fighter director group embarked aboard a destroyer and, later, by a similar group established ashore on Rendova. Radars on Rendova would support the fighter direction center, a light weight SCR-602 operated by New Georgia Air Force and SCR-268, SCR-270, and SCR-516 radars operated by 9th Defense Battalion.⁵³⁸

Fighter Command, Solomons tasked VMF-221 to rotate air patrols of sixteen fighters each over the amphibious force assaulting Rendova, beginning at 5:45 a.m. with only an hour between

⁵³⁶ Porter, *Ace!* 138-139; Spangler interview, 11.

⁵³⁷ Shaw and Kane, *Isolation of Rabaul*, 470-473.

⁵³⁸ MAG-21 war diary June 1943, 6-7; VMF-221 unit history, 63-64; RG 127 A1 1055 Box 27 HQ New Georgia Air Force "Special Action Report 29 June – 13 August 1943," 1-2; Major Charles D. Melson, USMC (Ret.), *Up the Slot: Marines in the Central Solomons* (Washington, DC: Department of Defense, 1993), 15.

patrols. Air Command New Georgia stacked fighters from the Russells and Guadalcanal over Rendova between 5,000 and 20,000 feet, rotating them to conserve the pilots' oxygen. On D-Day, visibility was poor during the squadron's morning and midday patrols, and they sighted no enemy aircraft. A final afternoon patrol of sixteen F4Us found clearer skies. Captain Payne, Captain Swett, Lieutenant Winfield, and Lieutenant Schocker orbited their divisions 10,000 feet over the task force of ten transports and seven destroyers, which was steaming south after completing its offload. The fighter direction center alerted the Corsairs to a force of Bettys inbound at 2,000 feet covered by Zeros at 15,000 feet. The four divisions commenced diving attacks against the Bettys. In the ensuing action, VMF-221 pilots claimed thirteen Bettys and three Zeros destroyed, with another five Bettys and four Zeros probably destroyed. Ten Bettys survived long enough to attack the task force, scoring a torpedo hit midships on the attack transport USS *McCawley* (APA-4). *McCawley* lost fifteen of her crew but stayed afloat. While under tow that night she was mistakenly torpedoed by American patrol torpedo boats and sank. VMF-221 lost no aircraft.⁵³⁹

For the next six days, VMF-221 provided fighter protection over Rendova without encountering enemy aircraft. Around noon on 2 July, Admiral Mitscher, commanding Air Command Solomons, withdrew fighter cover, including two divisions from VMF-221, due to the worsening weather. New Georgia Air Force, concerned of the loss of fighter protection, had Mitscher's order confirmed three times before releasing the fighters. In an unhappy coincidence, some marine refueled 9th Defense Battalion's SCR-268 radar with diesel oil from a drum labeled "gasoline," disabling it. The battalion's SCR-270 and SCR-516 radars were not yet operational, and New Georgia Air Force's SCR-602 radar was being refueled as well. Between eighteen and twenty-five

⁵³⁹ MAG-21 war diary June 1943, 6-7; VMF-221 unit history, 63-64; RG 38 NAID 78163625 COMSOPACFOR, "The Air Aspect of the Munda Campaign," 6; RG 127 A1 1055 Box 27 Task Force 31 Special Instructions 4 June 1943, 6; RG 38 NAID 134271791 VMF-221 action report 30 June 1943; Morison, *Breaking the Bismarcks Barrier*, 150-151; Sherrod, *Marine Aviation*, 145; Olynyk, *USMC Credits*, 21. Two pilots claimed another half victory each, shared with F4F pilots. by

Bettys escaped detection and dropped fifty bombs on the beachhead at Rendova. The raid killed fifty-nine soldiers, sailors, and marines, and wounded another seventy-seven. On 4 July, a day when VMF-221 did not fly combat air patrols, another raid by eighteen Bettys and twenty Zeros struck the Rendova beachhead, killing five and wounding thirteen.⁵⁴⁰

The two raids were anomalies. Though the landing beaches were just an hour from Japanese airfields on southern Bougainville, and New Georgia Air Force sounded condition red as many as four times a day for the next three weeks, bombers rarely got through Fighter Command, Solomons during daytime. At night, bombers often dropped their loads around American bases throughout the Solomons, but rarely inflicted damage.⁵⁴¹

Due to American air superiority, Japanese vessels were likewise restricted to nighttime forays. Eighth Fleet's cruisers and destroyers occasionally clashed with the Third Fleet around New Georgia while its transports attempted to reinforce New Georgia under the cover of darkness.⁵⁴² On 6 July, two divisions led by Captain Payne and Lieutenant Winfield covered the destroyers USS *Nicholas* (DD-449) and USS *Radford* (DD-446), who had lingered in Kula Gulf to pick up 745 survivors of the cruiser USS *Helena* (CL-50).⁵⁴³

The next day, two divisions under Captain Payne and Lieutenant Winfield took off just after noon for Rendova. Payne and Lieutenant Baldwin aborted as their engines were running roughly. The remaining six fighters consolidated into a single division. Around 1:50 p.m. they intercepted twelve inbound bombers at 25,000 feet covered by a dozen fighters. As Winfield climbed to an attack position, an unseen group of as many as fifty enemy fighters swarmed down from 30,000 feet.

⁵⁴⁰ Sherrod, *Marine Aviation*, 148-149; RG 127 A1 1055 Box 27, Air Command New Georgia Daily Intelligence Summary, 2 and 4 July 1943; RG 38 NAID 134301981 VMF-221 war diary July 1943, 2; RG 127 A1 1054 Box 10, MAG-21 war diary July 1943, 2; Melson, *Up the Slot*, 15.

⁵⁴¹ Air Command New Georgia Daily Intelligence Summary, "30 June – 20 July 1943.

⁵⁴² Morison, *Breaking the Bismarcks Barrier*, 160-190.

⁵⁴³ VMF-221 war diary July 1943, 2; Morison, *Breaking the Bismarcks Barrier*, 174.

The marines began weaving defensively. Despite being outnumbered, all six returned and three pilots each claimed a Zero, shooting down at least two off the tails of fellow marines.⁵⁴⁴

Overcast and rainy skies prevented Air Command Solomons from striking Bougainville until 5 July. Beginning the following day, B-17s, B-24s, and B-25s from Guadalcanal began day and night raids against the airfields there. VMF-221 escorted B-25s on 8 July without contact. On a similar mission on 10 July, VMF-221's eight F4Us failed to rendezvous with the B-25s, which proceeded without them and hit their target on Kolombangara without encountering enemy fighters.⁵⁴⁵

On the morning of 11 July, a division from VMF-221 patrolling over Munda spotted a lone Kawasaki Ki-45 "Nick" twin-engine fighter at 30,000 feet. Lieutenant Hacking pursued the fighter and made a climbing gunnery pass from astern. The fighter's rear gunner could not engage a fighter approaching from below. The Nick exploded on Hacking's second pass.⁵⁴⁶

At midday, two divisions led by Captain Swett and Lieutenant Schocker took off to patrol over Rendova. One fighter in each division developed mechanical issues and returned to Banika. Swett sent the impaired fighter's wingman back as well, leaving just Lieutenant Segal with him. Schocker had just his wingman, Chapman, and Lieutenant William E. Sage, a replacement. The fighter direction center on New Georgia vectored the five F4Us to intercept twelve to fifteen Bettys at high altitude. Schocker's division attacked a vee of twelve Bettys; Schocker downed one bomber and the rest jettisoned their bombs. Covering Zeros then jumped into the fight, downing Sage, the rookie. Chapman found all six of his guns jammed. He evaded the Zeros with a turning dive, but not before receiving a wound. Swett and Segal each made a single gunnery pass. Swett set a Betty on fire, and Segal shot down a Zero. Then the two F4Us dove for the clouds. When Swett emerged, he saw Segal's F4U on fire with a Zero on its tail. Swett wheeled behind the Zero and shot its wing off.

⁵⁴⁴ MAG-21 war diary July 1943, 3; VMF-221 war diary July 1943, 28-32; VMF-221 unit history, 61.

⁵⁴⁵ Rohfleisch, "Central Solomons, 225; MAG-21 war diary July 1943, 4; VMF-221 unit history, 61-62.

⁵⁴⁶ MAG-21 war diary July 1943, 4-5; VMF-221 war diary July 1943, 26-27; VMF-221 unit history, 62.

Diving through the clouds, he found a Betty flying low. He splashed the bomber, but then his instrument panel exploded from the fire of a Zero he had not seen. Swett went into the sea five miles off New Georgia.⁵⁴⁷

The strike withdrew without attacking the beachhead or vessels offshore. Swett, Segal, and Sage were missing. Swett paddled his raft ashore and spent the next two days and nights hiding by day and paddling by night until islanders fighting with Kennedy, the coast watcher, rescued him. Kennedy summoned a PBY Black Cat which returned Swett to Banika. There Swett found Segal, who had paddled about in a raft until picked up by a destroyer. Sage was never found.⁵⁴⁸

The next six days consisted of patrols without contact. On 14 July Lieutenant Hacking's F4U began smoking and vibrating over Viru Harbor, New Georgia. He bailed out and a crash boat rescued him a short time later. Throughout July the Eleventh Air Fleet based dozens of Zeros and Vals at Kahili, only minutes from New Georgia. On 17 July eight VMF-221 F4Us joined 106 other fighters to escort an exceptionally large strike against the airfield and vessels offshore. Seven B-24s bombed from high altitude followed by thirty-seven SBDs and twenty-five TBFs. The squadron's pilots shot down six Zeros. Lieutenant Hacking shot down four of these, and none of the VMF-221 fighters had a single bullet hole. Other squadrons claimed another forty-seven Zeros and five float planes. American losses amounted to one SBD, one TBF, two P-38s, and one F4U. The bombers had sunk the destroyer *Hatsuyuki*.⁵⁴⁹ The following day the two squadrons escorted another strike against Kahili, this time by B-24s. VMF-221 encountered no enemy aircraft.⁵⁵⁰

⁵⁴⁷ MAG-21 war diary July 1943, 4-5; VMF-221 war diary July 1943, 3-4, 22-25; VMF-221 unit history, 62; Warner Chapman, "Combat at Guadalcanal," and James Swett, "Combat Over Rendova," both in Caswell, *Fighting Falcons*, 74-76.

⁵⁴⁸ Swett, "Combat Over Rendova," 74-75; VMF-221 unit history, 62.

⁵⁴⁹ Air Command New Georgia Daily Intelligence Summary, 15 and 18 July; MAG-21 war diary July 1943, 8-12, and August 1943, 3-8; VMF-221 war diary July 1943, 11; VMF-221 unit history, 63-64; Shaw et al., *Isolation of Rabaul*, 474-475.

⁵⁵⁰ VMF-221 unit history, 63-64.

Around this time, the number of available aircraft plummeted. Earlier in July, magneto failure above 20,000 feet had caused numerous aborts. Now, thick sludge in the sump oil strainers prevented the squadron from flying on 19 July, limiting the aircraft to ground alert. Only two aircraft were operational on 20 July, and the divisions took turns with four aircraft on 21 July. On 21 July, the ground echelon of VMF-221 returned to Banika. For the first time since March, the pilots, mechanics, and aircraft of VMF-221 were at the same base. The availability of aircraft seemed to improve at this point, as the war diary records more missions flown each day, many with two divisions aloft at once.⁵⁵¹

For the remainder of this combat tour, the squadron flew patrols over Rendova and escorted B-24s, SBDs, and TBFs on strikes against Kahili and Munda. No aircraft were lost in action, though Lieutenant Hacking made a forced landing at Segi Point on 24 July and Lieutenant Edwin G. Nelson wrecked an F4U borrowed from VMF-214. The squadron encountered enemy aircraft on only three occasions. On 30 July two divisions escorted a B-24 strike to Kahili and repelled an attack by Zeros on the return leg. On 31 July Lieutenant Milton E. Schneider was wounded when he and Hacking tangled with some Zeros while returning from a B-24 strike on Kahili; no aircraft on either side went down. On 6 August Lieutenant Segal shot down two Zeros and Lieutenant Dillow shot down another while escorting an F-5A Lightning photo mission. On 13 August, after forty-eight days in combat, the pilots of VMF-214 and VMF-221 turned their Corsairs over to VMF-123 and VMF-215 and boarded transports for Guadalcanal. The ground echelon remained at Banika.⁵⁵²

⁵⁵¹ VMF-221 war diary July 1943, 1, 6; VMF-221 muster roll, July 1943.

⁵⁵² MAG-21 war diary July 1943, 7-8; VMF-221 war diary July 1943 11-12; RG 38 NAID 135937042 VMF-221 war diary August 1943 1-10; VMF-221 unit history, 63-64.

Chapter 9: Third Combat Tour, Vella Lavella, 10 October – 19 November 1943

Rest, training, and replacements

Before its third combat tour in the Solomons, the pilots of VMF-221 enjoyed another week in Sidney and then reassembled at their new base at Efate, south of Espiritu Santo, where their ground echelon rejoined them on 21 August. From 4 September to 10 October the squadron trained for the upcoming combat deployment. After familiarization flights the squadron practiced gunnery and interception problems when weather permitted and instrument flying in SNJs. Unlike the two previous training periods, the squadron suffered no operational mishaps.⁵⁵³



Figure 21. Major Nathan T. Post, USMC, April 1943
(USMC photograph, *NARA & DVIDS Public Domain Archive*, retrieved 1 July 2023 from www.nara.getarchive.net.)

Major Peyton detached on 1 August to take command of the airfield on Espiritu Santo, leaving Captain Payne in charge for the next two weeks.⁵⁵⁴ On 30 August Major Nathan T. Post took command. Post had graduated from the Naval Academy in 1938, where he had been awarded a

⁵⁵³ VMF-221 unit history, 69-71; VMF-221 war diary August 1943, 4; VMF-221 muster roll, October 1943.

⁵⁵⁴ Peyton general information file.

Black N for excessive demerits. Post's academy yearbook entry indicates he was more of an artist than an athlete. He attended The Basic School before flight training and earned his wings in 1941. While executive officer of VMF-122 on Guadalcanal in December 1942, flying alone, Post attacked three Nakajima E8N "Dave" seaplanes. Though wounded in the fight, Post downed all three.⁵⁵⁵

The squadron joined another eight aviators before departing Efate. Not all were untested. Captain Alonzo B. Treffer had deployed from Ewa and flown in combat with VMF-213. While flying with VMF-124, First Lieutenant Warren P. Nichols had achieved three victories and First Lieutenant George E. Moore had scored one. By the time VMF-221 returned to combat it had thirty aviators, or 1.5 per aircraft. All but five were veterans. Post organized his pilots into seven divisions, with two aviators as spares.⁵⁵⁶

On 11 October the pilots returned to Banika by transport aircraft, leaving their ground echelon and aircraft in Efate. On 13 October the pilots rode another transport to Munda airfield on New Georgia, now in US hands.⁵⁵⁷

Bougainville operational situation

Halsey set 2 November as D-Day for the amphibious assault on Bougainville. The purpose of the Bougainville operation was to establish airfields from which Air Command Solomons, now under Major General Nathan F. Twining, USAAF, could join the long-range bombers in New Guinea from General George C. Kenney's Fifth (U.S. Army) Air Force in airstrikes against Rabaul. Twining commanded 301 fighters, including 116 navy and marine F4Us, 162 navy and marine dive- and torpedo bombers, 138 army air force and navy medium and heavy bombers, and eleven night

⁵⁵⁵ Marine Corps History Division, Archives Branch, "Post, Nathan T. Colonel, USMC" biographies and general information file; United States Naval Academy, *The Lucky Bag, 1938* (Annapolis: n.p., 1938).

⁵⁵⁶ VMF-213 muster roll, January, April, July 1943; VMF-221 unit history, 71; Olynyk, *USMC Credits*, 181, 184, 205.

⁵⁵⁷ RG 38 NAID 78240906 VMF-221 war diary October 1943, 1.

fighters (six navy F4U-2s and five marine PV-1s). Counting patrol, reconnaissance, and utility aircraft, Twining commanded over 700 aircraft.⁵⁵⁸

Japanese strength at Rabaul reached 600 aircraft in November, but these were divided between army aircraft opposing the Fifth Air Force and navy aircraft opposing the Third Fleet. In anticipation of Halsey's offensive, Admiral Koga stripped 173 aircraft from his carriers at Truk and alerted the Twelfth Air Fleet in Japan to reinforce the 212 aircraft of the Eleventh Air Fleet.⁵⁵⁹

Twining's Air Command Solomons would fulfill three familiar roles: scouting, protecting the fleet and landing force, and striking Japanese vessels, bases, and troops. Prior to D-Day, Air Command Solomons and the Fifth Air Force would attempt to neutralize Japanese air power in the northern Solomons and around Rabaul. Air Command North Solomons, the forward echelon of 1st Marine Aircraft Wing, would control aircraft in the Bougainville area beginning on D-Day.⁵⁶⁰

The battle for air superiority, 10 October – 1 November 1943

VMF-221's return to the Solomons coincided with Air Command Solomons' offensive against the Eleventh Air Fleet. After four days of testing aircraft inherited from other squadrons, routine patrols, and escort missions, the action began for VMF-221 on 17 October. Major Post led his division to Kahili, hoping to lure Zeros aloft where fourteen F4Us of VMF-214, lurking at high altitude, could pounce on them. Lieutenant Snider and his wingman linked up with VMF-214; the other two aircraft of Snider's division took off late and failed to rendezvous. As Post circled Kahili at 10,000 feet, the enemy took the bait. Major Gregory Boyington, the commanding officer of VMF-214, led the eighteen F4Us down from 20,000 feet to meet the climbing Zeros. By the time they

⁵⁵⁸ Shaw et al., *Isolation of Rabaul*, 476.

⁵⁵⁹ USSBS, Naval Analysis Division, *The Allied Campaign Against Rabaul*, 11; Morison, *Breaking the Bismarck Barrier*, 284-286.

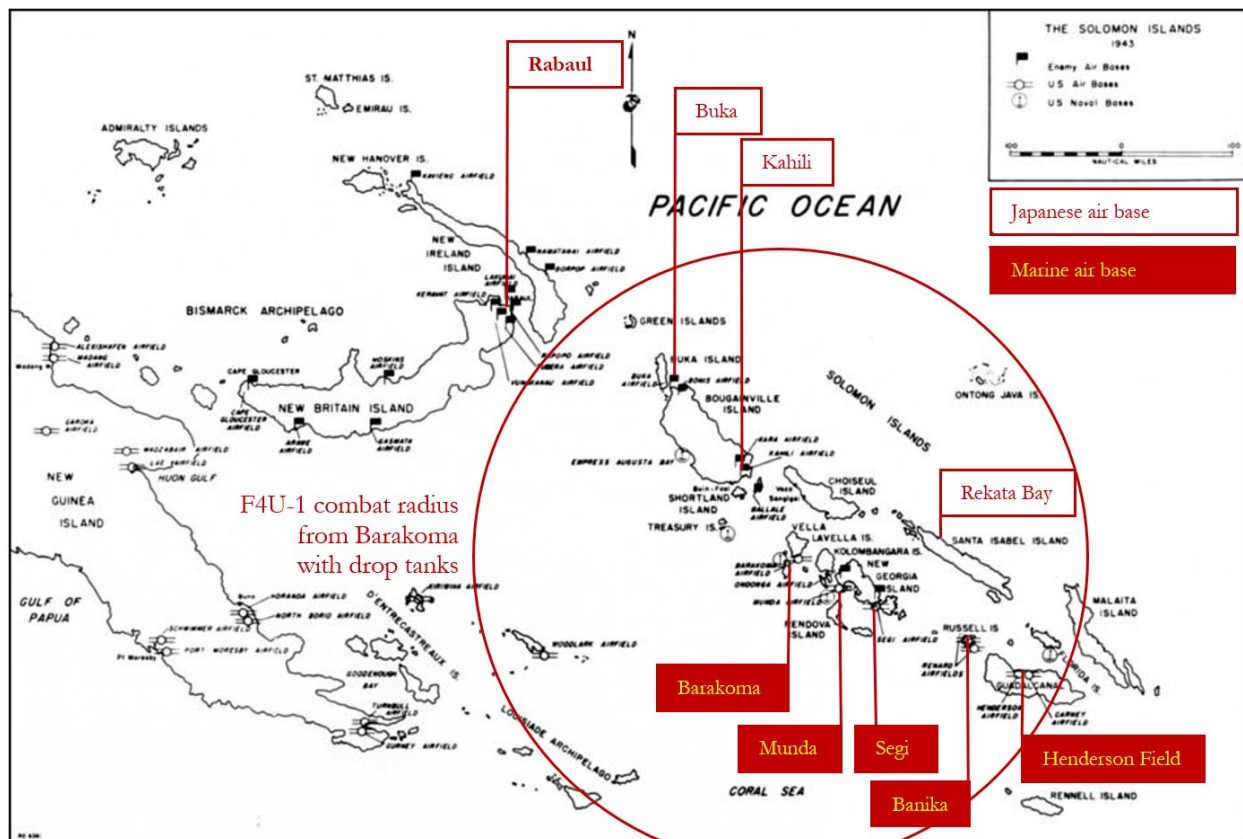
⁵⁶⁰ Rohfleisch, "Bougainville," 251-252.

reached 7,000 feet, Boyington and his flight had lost sight of the Zeros, so they climbed back to 18,000 feet. After orbiting Kahili, Snider saw thirty to forty Zeros approaching from the south at the same altitude. The Zeros and F4Us each attempted to outclimb the other. When Boyington realized the Zeros were getting above his squadron, he attacked into the middle of the formation, with Snider and the rest following. Snider's first gunnery pass was a head on engagement. He hit the Zero but did not see it go down. He dove evasively and then climbed back for a second run. Snider and his wingman attacked three Zeros. One climbed and two dove, so Snider dove and shot down one of the diving fighters at 200 yards with a 30-degree deflection shot. Snider then made a right hand dive, the standard tactic employed by F4Us to evade Zeros. After escaping, Snider levelled off, climbed, and spotted the belly of the Zero above him. Snider made a climbing 60-degree deflection pass, firing a long burst that sent the Zero spiraling into the sea. In addition to Snider's two victories, VMF-214 claimed a dozen fighters. All the marines returned home.⁵⁶¹

That afternoon the squadron flew from Munda to Barakoma on Vella Lavella. The Third Fleet had seized Vella Lavella in mid-August. SeaBees had completed the airfield there on 27 September. VMF-221, joining MAG-14, was the first squadron to be based there. Barakoma was just a hundred miles from Japanese airfields on southern Bougainville, guaranteeing MAG-14 plenty of action.⁵⁶²

⁵⁶¹ VMF-221 war diary October 1943, 2-3, and Aircraft Action Report (AAR) 16 (sic) October 1943, 3; RG 127 A1 1054 Box 6 MAG-14 war diary 16 August – 21 October 1943, 13; Bruce Gamble, *Black Sheep One: The Life of Gregory Pappy Boyington* (Novato, CA: Presidio, 2000), 264-265.

⁵⁶² VMF-221 unit history, 72; Shaw et al., *Isolation of Rabaul*, 154, 160.



Map 6. The Solomon Islands, Japanese and Marine Air Bases, October - November 1943

(Base map from Major Charles D. Melson, USMC, *CONDITION RED: Marine Defense Battalions in World War II*, 1)

The marine squadrons at Barakoma suffered from poor maintenance support. Lieutenant Chapman recalled that the squadron struggled to keep eight aircraft operational each day because spare parts were short and “the ground crews were not as skilled.”⁵⁶³ Major Herbert H. Williamson, the commanding officer of VMF-215, which operated from Barakoma alongside VMF-221 in October and November, attributed the unsatisfactory performance of the ground crews at Barakoma to three factors. First, the Carrier Air Service Unit did not report to the squadron commander, but to the air station. Second, the ground unit had no experience or training on the F4U-1, neglected simple duties such as cleaning windshields and checking tire pressure, and showed

⁵⁶³ Chapman, “Solomon Island,” 68.

little desire to remedy the situation. “The attitude of the unit as a whole indicated neither a desire to learn or embarrassment at the poor performance turned in,” wrote Williamson. Third, the Carrier Air Service Unit was short of tools and parts.⁵⁶⁴ These logistical and command problems would increasingly degrade the readiness of VMF-221’s aircraft the longer they operated from Barakoma.

The day after the squadron’s arrival at Barakoma, Major Post and Captain Swett linked up with Major Boyington and three divisions from VMF-214 to try the bait-and-ambush tactic again. The F4Us orbited over Kahili at 18,000 feet. The marines counted sixty aircraft on the ground, but none took off. Boyington taunted the Japanese on a channel they were known to monitor: “Come on up and fight, you yellow bastards!” The Zeros obliged. When they reached 6,000 feet, the twenty marines dove on them. With the altitude advantage, the F4Us could easily conduct overhead gunnery passes on the climbing Zeros and dive away. Major Post shot down one climbing Zero in just such an overhead run. After recharging his jammed guns, he returned to the fight and shot down a second from behind. Post was now an ace. Captain Swett also claimed one in the initial dive and a second in a stern attack. Captain Dawkins damaged a Zero with a 90-degree deflection shot. Pursued by three Zeros, he rejoined Swett and the two began a weave, after which the three Zeros disengaged. Jack Pittman, now a lieutenant, exploded two Zeros in a diving run from astern. He followed another Zero in a diving turn to the left and then a climbing, 180-degree turn to the right. The Zero rolled on its back and Pittman saw it burst into smoke. Pittman made an overhead pass on a fourth Zero, but his guns jammed. In addition to Post and Pittman, Lieutenant Segal also wrestled with machine-guns stoppages. Captain Treffer’s blower, which boosted power for a dogfight, malfunctioned. Lieutenant Schneider crashed when a Zero on his tail riddled his aircraft with 20mm cannon fire. He did not survive.⁵⁶⁵

⁵⁶⁴ RG 127 A1 1055 BOX 8 CO VMF-215 to Commander Aircraft South Pacific, 2 December 1943, 1.

⁵⁶⁵ VMF-221 unit history, 72; VMF-221 war diary October 1943, 3, and AAR 18 October 1943 3-4; MAG-14 war diary 16 August – 21 October 1943, 14; Gamble, *Black Sheep One*, 266-267.

Such aircraft malfunctions were maddeningly frustrating. Major Post and his pilots were not impressed with the F4U-1s they inherited. In his after action report for the 18 October mission, Post ended with a sobering comment.

The planes assigned to VMF-221 are definitely not suitable for combat due to excessive hard usage and poor upkeep. The majority need major overhauls. The guns have not been kept up properly. Some of the wing tanks do not draw, so that they are impossible to empty. The blowers do not function properly. Apparently, the newest planes in this area are used for training in the rear areas and the oldest ones are left in the combat area.⁵⁶⁶

Between the poor condition of the aircraft and the inadequate support from the Carrier Aircraft Service Unit, the squadron rarely operated more than one division at a time between 19 and 25 October.⁵⁶⁷

For the next three days the squadron's pilots encountered no aircraft aloft. On 22 October Captain Payne led three aircraft of his division and one from VMF-215 to strafe aircraft parked on Kara airfield near Kahili. As Payne approached at 100 feet, he saw twenty-five to thirty aircraft parked wingtip to wingtip. The four Corsairs opened up at 700 yards and continued firing until they pulled up twenty feet above the target. Payne estimated they had destroyed eighteen aircraft.⁵⁶⁸

For the rest of October VMF-221 escorted bombers to the northern Solomons without encountering enemy aircraft. On 30 October Major Post led five VMF-221 fighters and four from VMF-212 on an escort of six B-25s on a shipping strike northeast of Bougainville. B-25s were extremely effective at strafing enemy surface vessels, but on this occasion the B-25 crews did not spot two supply ships observed by Post's F4Us. The B-25s could not hear Post's radio calls and returned without engaging any targets, so on the return leg Post and his fighters took turns strafing

⁵⁶⁶ VMF-221 war diary October 1943, AAR 18 October 1943, 4.

⁵⁶⁷ VMF-221 war diary October 1943, 3-5.

⁵⁶⁸ VMF-221 unit history October 1943, AAR 22 October 1943, 3.

the supply vessels, a gunboat, and several barges, leaving the ships burning. Payne lost oil pressure due to anti-aircraft fire and ditched sixty miles from Barakoma. He climbed into his inflatable raft. Lieutenant Pittman spotted him in the water and used his IFF to lead rescuers to the location. A rescue boat picked Payne up two hours later.⁵⁶⁹

Protecting the amphibious force at Bougainville, 1 to 17 November 1943

From 1 to 3 November the squadron protected the Bougainville landing at Cape Torokina. The squadron could only put up twelve aircraft on D-Day, two divisions in the morning, one in midday, and two divisions (flying the same aircraft as the morning mission) in late afternoon.⁵⁷⁰ With the landings underway, Koga committed his carrier air wings, bringing the total Japanese strength around Rabaul to 550 aircraft, including over 390 fighters.⁵⁷¹ Koga also ordered a task force of two heavy cruisers, two light cruisers, and six destroyers to attack the American transports off Bougainville on the night of 1-2 November. A Third Fleet task force of four cruisers and eight destroyers sank one cruiser and one destroyer in the ensuing night action at the cost of one destroyer badly damaged. Dawn saw the Japanese task force retreating toward Rabaul, but the American task force was exposed to Japanese air strikes. Just before 8:00 a.m., a strike of over one hundred aircraft attacked. Captain Swett had joined three P-38s that morning after two aircraft in his division could not take off and the fourth aborted. From 30,000 feet, the mixed division attacked twenty Japanese dive-bombers and fighters. The dive-bombers released their bombs before the Americans reached them. Swett caught up with two Vals and shot them down. He came to the aid of a P-40 with a Tony on its tail. Swett saw the Tony smoke before noticing tracers whipping past him. He dove out of the fight and headed home. The P-38s, eight F6Fs, and four New Zealand P-

⁵⁶⁹ VMF-221 unit history, 74; VMF-221 war diary October 1943, AAR 30 October 1943, 1-4.

⁵⁷⁰ RG 38 NAID 78272034 VMF-221 war diary November 1943, 1.

⁵⁷¹ Rohfleisch, "Bougainville," 259.

40s destroyed another six aircraft. The dive-bombers scored only two hits, both on the light cruiser USS *Montpelier* (CL-57), wounding one sailor and inflicting minor damage. The task force was spared further attacks as heavy bombers from the Fifth Air Force compelled Eleventh Air Fleet to keep much of its fighter strength over Rabaul.⁵⁷²

On 4 November a 500-pound bomb on Barakoma's runway exploded while being defused. The blast killed nineteen personnel, wounded fifteen, and destroyed an SBD and a TBF. VMF-221 relocated to Munda on New Georgia until engineers repaired the runway.⁵⁷³

That same day, a Fifth Air Force B-24 spotted a task force of nineteen cruisers and destroyers approaching Rabaul, just a few hours' sailing from the transports at Empress Augusta Bay. This task force could overwhelm Third Fleet's cruiser force and wreak havoc among the amphibious ships. After the war, Halsey would write, "This was the most desperate emergency that confronted me in my entire term as Commander, South Pacific." Halsey ordered *Saratoga* and the light carrier USS *Princeton* (CVL-23) up from the southern Solomons to strike the Japanese cruisers the following day, and ordered Air Command Solomons to provide the carriers with fighter protection so the carriers could throw every aircraft into the strike. On 5 November, VMF-221 patrolled over the task force without seeing an enemy plane while the carriers' pilots severely damaged six cruisers and two destroyers, eliminating the danger to the amphibious transports.⁵⁷⁴

From 6 to 16 November, VMF-221 patrolled over the amphibious task force and escorted patrol and bombing missions without encountering aircraft. On 11 November Halsey ordered a second carrier strike on Rabaul, adding the air groups from USS *Essex* (CV-9), USS *Bunker Hill* (CV-17), and USS *Independence* (CVL-22) to those of *Saratoga* and *Princeton*. Rabaul was too far for F4Us to

⁵⁷² VMF-221 war diary November 1943, AAR 1 November 1943 3; VMF-221 unit history, 74-75; Morison, *Breaking the Bismarcks Barrier*, 306-321.

⁵⁷³ VMF-221 unit history, 75.

⁵⁷⁴ Morison, *Breaking the Bismarcks Barrier*, 324-328; William F. Halsey III, *Admiral Halsey's Story* (United States: The P-47 Press, 2019 [1947]), 146; VMF-221 unit history, 75-76.

reach from Vella Lavella, but Air Command Solomons provided air patrols over the carriers and Fifth Air Force added its heavy bombers to the strike. VMF-221 maintained two divisions over the carriers from 5:00 a.m. until 3:15 p.m. and one division until 4:40 p.m. The next morning the squadron repeated the patrols. Halsey was disappointed with the strikes, but cooperation between carrier and land based air had improved drastically since Midway.⁵⁷⁵

To avoid American airpower, the Japanese relied on barges to resupply their island garrisons in the Solomons. These small craft moved by night and concealed themselves in coves and rivers by day. After covering a strike by SBDs and TBFs against the airfield at Kara on 15 November, Captain Hacking and Captain Moore searched the coastline of the Shortlands for barges. They found several barges unprotected by antiaircraft guns and enjoyed what they called a “strafer’s heaven,” burning five.⁵⁷⁶

The squadron’s last day of combat in the Solomons, 17 November, began with tragedy. At 3:49 a.m., under the illumination of a parachute flare, a Betty dropped a torpedo that hit the high speed transport USS *McKean* (APD-5), enroute to Bougainville with 185 marines embarked. *McKean* sank in 28 minutes, taking 116 of the 338 men aboard with her.⁵⁷⁷ The ugly scene demonstrated that Air Command North Solomons’ protective umbrella folded up at night.

After sunup, Major Post’s division patrolled over the amphibious task force off Torokina. Around 8:20 a.m., an enemy strike of thirty-five fighters and bombers arrived. Air Command North Solomons vectored most of the air patrol against different elements, leaving just Major Post and Lieutenant Segal protecting the ships. When a group of twin-engine Yokosuka D4Y Suisei “Judys” arrived, Post and Segal had them all to themselves. The Judys were very fast, with a top speed of 361

⁵⁷⁵ VMF-221 unit history, 76; VMF-221 war diary November 1943, 4; Rohfleisch, “Bougainville,” 260-261.

⁵⁷⁶ VMF-221 war diary November 1943, 5.

⁵⁷⁷ Mark Lancaster, “USS *McKean*: Life and death in the darkness,” 17 November 2016, *The Low Stone Wall*, retrieved from <https://lowstonewall.com/>.

mph, but Post and Segal dispatched them easily. In stern attacks at 15,000 feet, Post shot three down in flames while Segal covered him. Segal then did the same to three heading towards the task force at 5,000 feet. None of the ships suffered damage.⁵⁷⁸



Figure 22. Yokosuka D4Y Suisei “Judy” (Cmdr. Peter Mersky, USNR [Ret.], “Literary Review: Yokosuka D4Y “Judy” Units, *Naval Aviation News*, 10 May 2022, retrieved from <https://navalaviationnews.navylive.dodlive.mil>)

It would take MacArthur and Halsey another four months to completely neutralize Rabaul. Marine squadrons began flying out of the airfield constructed at Torokina on Bougainville in December 1943. VMF-221 was not with them. On 19 November the pilots boarded transports and flew to Guadalcanal and on to Efate the next day, where they rejoined the ground echelon. On 14 December the squadron embarked the Dutch troopship M.S. *Sommelsdijk*, arriving in San Francisco on the last day of 1943.⁵⁷⁹

⁵⁷⁸ RG 38 NAID 78270763 COMSOPACFOR war diary November 1943, 46; VMF-221 unit diary November 1943, AAR 17 November 1943, 3.

⁵⁷⁹ Shaw et al., *Isolation of Rabaul*, 489, 502; VMF-221 unit history, 78-79; VMF-221 muster roll, November and December 1943.

Chapter 10: Evaluation of the squadron's effectiveness in the Solomons

Measures of Performance

The measures of performance for VMF-221 in the Solomons are the number of aircraft the squadron sortied, the number of enemy aircraft and surface targets the squadron destroyed, the number of aircraft the squadron lost, and the damage inflicted by Japanese aircraft on ships, bases, and aircraft the squadron protected.

Sorties

The squadron's war diary for November 1943 tabulated the number of combat flying hours and the number of combat sorties flown by each pilot during each of the three combat tour in the Solomons. The hours and sorties for the squadron are presented in Table 2.10.

Table 2.10. VMF-221 combat hours and sorties, 1943

Combat tour	Total combat hours	Average combat hours per day	Total combat sorties	Average sorties per day
1st tour, 16 March – 2 May (F4F-4)	2597	54.1	996	20.7
2nd combat tour, 26 June – 12 August (F4U-1)	1794	37.4	650	13.5
3rd combat tour, 12 October – 17 November (F4U-1)	1377	37.2	502	13.6

Note: Data for aviators who perished or detached before the third tour are omitted from this record. The average for the squadron is used to estimate hours and sorties for these pilots for the days they were present. (VMF-221 war diary, November 1943)

The data indicates that the squadron could only generate about two thirds as many flying hours and sorties per day after it transitioned from the F4F-4 to the F4U-1. The squadron's authorized strength was twenty fighters on each combat tour. While flying F4F-4s, VMF-221 sortied once a day for each authorized aircraft, but only managed to sortie two-thirds of its authorized strength when equipped with F4U-1s.

Another way to measure the squadron's ability to put aircraft up when assigned a mission is to determine the number of times a four-plane division launched short an aircraft, the number of times an aircraft aborted from a mission, the number of mishaps, and the number of aircraft lost due to mishaps. Table 2.11 provides a monthly breakdown of these factors.

Table 2.11. VMF-221 air strength shortfalls in combat, 1943

Month	Days in combat	Divisions sortied understrength	Aircraft aborts	Mishaps	Aircraft losses from mishaps	Mishap fatalities
1st combat tour, 16 March – 2 May (F4F-4)						
March	15			7	4	1
April	30	1	5	9	2	
May	2			0*	0*	0*
2nd combat tour, 26 June – 12 August (F4U-1)						
June	4			1	1	
July	31	4	19	3	1	
August	12	1	1	1	1	
3rd combat tour, 12 October – 17 November (F4U-1)						
October	19	8	8	2		
November	17	2	1	2	1	

* One F4U-1 was lost in a fatal mishap before the combat tour started in May.

Source: VMF-221 war diaries, March – November 1943

Consistent with the data for flying hours and sorties, the squadron sent understrength divisions into combat more often with the F4U-1 than the F4F-4. More F4U-1s aborted than F4F-4s, but the F4F-4s suffered many more mishaps.

Damage inflicted

Table 2.12 tabulates the damage the squadron reported inflicting across three combat tours.

Table 2.12. Damage inflicted as reported by VMF-221

Date	Aerial victories claimed - fighters	Probable fighters claimed	Aerial victories claimed - bombers	Probable bombers claimed	Surface targets destroyed
1 April	7	1			
7 April	10	1	8	1	
Total, 1st combat tour 16 March – 2 May (F4F-4)	17	2	8	1	
30 June	3.5	4	12.5	5	
7 July	3				
11 July	5		2		
15 July					4 barges
17 July	6				
6 August	3				2 seaplanes
Total, 2nd combat tour 26 June – 12 August (F4U-1)	20.5	4	14.5	5	4 barges 2 seaplanes
17 October	2	1			
18 October	6	4			
22 October					18 fighters
30 October					2 supply ships
2 November		1	2		
15 November					4 barges
17 November			6		
Total, 3rd combat tour 12 October – 17 November (F4U-1)	8	6	8		18 fighters 2 supply ships 4 barges
Total, Solomon Islands, 1943	45.5	12	30.5	6	18 fighters 2 seaplanes 2 supply ships 8 barges

Source: Olynyk, *USMC Credits for the Destruction of Enemy Aircraft*, 104; VMF-221 war diary November 1943, 7-11; VMF-221 unit history 63, 67, 73-74.

It is important to keep in mind that U.S. claims consistently exceeded Japanese reported losses. Table 2.13 illustrates discrepancies on several dates for actions in the South Pacific.

Table 2.13. Comparison of Japanese reported losses to U.S. aerial victory claims on select dates, 1943

Date	Japanese reported losses	U.S. aerial victories claimed
1 April	9	57
17 April	24*	33
6 June	9	41
12 June	7	24
16 August	17	27

*Navy vessels claimed three dive-bombers by anti-aircraft fire on 17 April.
Sources: Shaw et al., *Isolation of Rabaul*, 467, and Claringbould, *Operation I-Go*, 70.

Squadron losses

Table 2.14 tabulates VMF-221's losses in the Solomons.

Table 2.14: VMF-221 losses in the South Pacific, 1943

Combat tour	Dates	Aircraft	Aircraft combat losses	Aircraft mishap losses	Total aircraft lost	Combat fatalities	Mishap fatalities	Total fatalities
1	16 March – 2 May	F4F-4	7	6	13	0	1	1
2	26 June – 12 August	F4U-1	3	5*	8*	1	1*	2*
3	12 October – 17 November	F4U-1	1	1	2	1	0	1
Total			11	12*	23*	2	2*	4*

*Includes two mishaps and one fatality during F4U-1 familiarization, May-June 1943
Source: VMF-221 unit history, 42-77, passim.

The squadron lost as many aviators and aircraft in mishaps as it did in combat. The squadron claimed seven aerial victories for every aerial loss. Even factoring for inflated claims, the squadron clearly outperformed its adversaries in aerial combat.

Damage inflicted by Japanese aircraft

It is more difficult to quantify the damage inflicted by Japanese aircraft on ships, bases, and aircraft the squadron protected. The squadron was part of a larger force. Attributing to this squadron all damage inflicted by Japanese aircraft in the Solomons during each of its combat tours would misrepresent the squadron's performance. Table 2.15 tabulates the damage inflicted by Japanese aircraft on bombers the squadron was tasked to escort and vessels and bases over which the squadron was tasked to provide a combat air patrol.

Table 2.15. Damage inflicted by Japanese aircraft on ships, bases, and aircraft protected by VMF-221 in 1943

Date	Damage	VMF-221 task
7 April	Dive-bombers sank the destroyer <i>Aaron Ward</i> , the tanker <i>Kanawha</i> , and the New Zealand corvette <i>Moa</i> . No airfields or supply depots suffered damage.	Combat air patrol over Guadalcanal and Tulagi
30 June	A torpedo dropped from a Betty hit the transport <i>McCawley</i> , killing 15 sailors. American torpedo boats mistakenly sank her that night.	Combat air patrol over the task force
2 July	Between 18 and 25 Bettys escaped detection and dropped fifty bombs on the Rendova beachhead, killing 59 soldiers, sailors, and marines, and wounding another 77.	Combat air patrol over the beachhead. Withdrawn by Commander, Air Command Solomons.
4 July	A strike of 18 Bettys and 20 Zeros struck the Rendova beachhead on 4 July, killing 5 and wounding 13.	Flying limited to test hops
2 November	Dive-bombers hit the light cruiser <i>Montpelier</i> twice, wounding one sailor and inflicting minor damage.	Combat air patrol over the task force

Source: Morison, *Breaking the Bismarcks Barrier*, 124, 306-321; Melson, *Up the Slot*, 15.

Measures of Effectiveness

Determining the measures of effectiveness for VMF-221 in the Solomons first requires an examination of the fleet commander's intent and the tasks assigned to the squadron.

During the first combat tour, Halsey's intent was to build up supplies in the southern Solomons to support an amphibious assault on New Georgia. Air Command Solomons tasked Fighter Command, including VMF-221, to protect the ships and bases around Guadalcanal and to escort strikes against Japanese airfields and vessels to limit reinforcement and resupply of the garrison on New Georgia. In this combat tour, the Eleventh Air Fleet failed to substantially interfere with Halsey's plans. Though Morison concluded Operation I-Go delayed the landing on New Georgia by ten days, even if true that delay failed to affect the outcome of the assault. The protection afforded by VMF-221 and the other squadrons of Fighter Command, Solomons accomplished Halsey's intent.

In VMF-221's second tour, Halsey's intent was to seize New Georgia and its airfield on Munda. The damage inflicted by the Eleventh Air Fleet from 30 June – 4 July failed to slow the buildup of combat power on Rendova. The seizure of Rendova enabled American artillery to

support the infantry on New Georgia and provided a safe base for the radars and fighter direction center of the New Georgia Air Force. Due to the fighter protection afforded by VMF-221 and the hundreds of fighters supporting the New Georgia Air Force, the Eleventh Air Fleet failed to impede the assault on New Georgia.

In the third combat tour, Halsey's intent was to seize a beachhead at Cape Torokina on Bougainville and build an airfield there within fighter range of Rabaul. VMF-221 protected the ships and vessels at Bougainville. The squadron escorted bombers on strikes against Japanese airfields and surface vessels. It also covered the carrier task forces while they raided Rabaul. The purpose of these operations was to limit Japanese reinforcement and resupply of its Bougainville garrison and to limit air strikes and naval action against the amphibious force. The Eleventh Air Fleet and vessels of Kusaka's Southeast Area Fleet inflicted almost no damage on the Third Fleet's amphibious force at Bougainville during daylight strikes.

Moreover, Halsey's offensive had a second purpose equally important as neutralizing Rabaul. In its directive, the Joint Chiefs had included "To inflict losses on Japanese forces" among the reasons for the Solomons campaign. Air Command Solomons broke the back of Japanese naval aviation. The U.S. *Strategic Bombing Survey* assessed that Japan lost 752 aircraft in the Solomons and at Rabaul between August 1942 and March 1944. These figures, which the *Survey* characterized as "conservative," included an irreplaceable number of carrier aircraft.⁵⁸⁰ According to Commander Ryosuke Nomura, who served with the Eleventh Air Fleet from November 1942 to July 1943, "The naval land-based aircraft losses in the Rabaul-Solomons-New Guinea areas were extremely high and finally resulted in the destruction of the cream of the (Japanese) Naval Air Forces."⁵⁸¹ Other officers

⁵⁸⁰ USSBS, Naval Analysis Division, *The Allied Campaign Against Rabaul*, 24. These numbers do not include aircraft destroyed over New Guinea in the Southwest Pacific Area.

⁵⁸¹ Interrogation of Commander Ryosuke Nomura, IJN (Ret.), by Commander Thomas H. Moorer, USN, 28 November 1945, Interrogation No. 116, in USSBS, Naval Analysis Division, *Interrogations of Japanese Officials*, vol. 2, 532.

interrogated during the survey revealed that the Imperial Japanese Navy could not replace these losses as its training pipeline had to be restricted beginning in 1943. The same officers stated, “The loss of the Solomon Islands was not too important, but the losses in ships and pilots trying to hold them was vital.”⁵⁸²

The intent of the United States Joint Chiefs and of the Third Fleet commander was to inflict losses in a grinding battle of attrition in the Solomons. VMF-221 claimed seventy-six aircraft shot down and another twenty destroyed on the surface. Even accounting for inflation, it is clear the squadron proved highly effective at destroying enemy aircraft and killing Japanese naval aviators.

This attrition, in turn, supported both Halsey’s advance up the Solomons and Nimitz’s drive across the Central Pacific, which began in November 1943. According to Captain Takashi Miyazaki, a naval aviator who served at Rabaul from September 1942 to April 1944,

During the campaign, our aircraft and pilot losses became too great to make it practical to continue to hold the Solomons. Without aircraft cover and support we were unable to supply our garrisons without a useless expenditure of surface shipping. When our attempts to hold the Solomons was at its greatest in the last part of 1943, your advance through the Gilberts made it impracticable to hold the Solomons any longer. At that time our Naval Air Force had become too weak to assist in the defense of the Gilberts.⁵⁸³

Contributing factors

The factors that contributed to VMF-221’s performance and effectiveness in the Solomons included the capabilities and limitations of the aircraft the squadron flew, the tactics the squadron employed, the proficiency and health of its aviators, the time the squadron had to prepare, command

⁵⁸² Interrogation of Commander Tadishi Yamamoto, IJN and Captain Toshikazu Ohmae, IJN by Captain C. Shands, USN, 20 November 1945, Interrogation no. 109, USSBS, Naval Analysis Division, *Interrogations of Japanese Officials*, vol. 2, 468, 474.

⁵⁸³ Interrogation of: Captain Takashi Miyazaki, IJN; Commanding Officer of the Fourth Air Group at Rabaul from September 1942 to April 1943; senior staff officer of the 25th Air Flotilla at Rabaul from April 1943 to April 1944, by Captain C. Shands, USN, 19 November 1945, Interrogation no. 97, USSBS, Naval Analysis Division, *Interrogations of Japanese Officials*, vol. 2, 419.

and control, logistics and maintenance, early warning and fighter direction, aircrew survivability, and Japanese capabilities.

Aircraft

The F4U-1 clearly outperformed the F4F-4. VMF-221 lost four F4U-1s in aerial combat while claiming fifty-one aerial victories, a better than 12:1 victory-to-loss ratio. The squadron lost seven F4F-4s in aerial combat in the Solomons while claiming 25 aerial victories, achieving a respectable, but inferior, 3.5:1 victory-to-loss ratio. The F4U-1's greater range enabled the squadron to escort bombers to targets on Bougainville it could not have otherwise reached.

With the advent of the F4U-1 and the F6F, Japanese aviators "had a horror of American fighters," according to Commander Nomura. "The pilots continually discussed the relative merits of the Japanese and American aircraft and were convinced in their own mind that they were flying greatly inferior aircraft."⁵⁸⁴

However, the F4U-1 proved more difficult to maintain than the F4F-4. As shown in table 2.11, the squadron suffered far more aborts and divisions flew understrength far more often with the F4U-1 than the F4F-4.

Neither aircraft had the range of the P-38, so both were unsuitable escorts for heavy bombers on long-range missions. And neither the F4F-4 or the F4U-1 could fight at night, leaving vessels such as the high speed transport *McKean* unprotected from Japanese night strikes.

Doctrine and tactics

The improvements in fighting tactics appear to have directly contributed to the squadron's superior performance and effectiveness in the Solomons. A preponderance of enemy aircraft

⁵⁸⁴ Nomura, interrogation *USSBS Interrogations of Japanese Officials*, vol. 2, 532.

destroyed on 1 April fell to aircraft with an altitude advantage conducting overhead gunnery passes.⁵⁸⁵ The pilots themselves attributed their survivability to the defensive power of the beam defense tactic (the “weave”) and the ease at which they could escape a tight situation by executing a diving, righthand turn in the Corsair. The aggressive fighter sweeps and bait-and-ambush tactics pushed by Major Boyington proved particularly effective at drawing enemy fighters into a disadvantageous battle.

Pilot training, experience, and health

The pilots who flew with VMF-221 in the Solomons were better trained than the ones who fought at Midway. Though in the second half of 1942 the Marine Corps had filled and emptied the squadron roster in a bewildering series of transfers, the pilots who landed on Guadalcanal in March 1943 all had at least three months with the squadron. These months included several weeks of intense, dedicated training at Ewa and Espiritu Santo. As all but one of these aviators survived the first combat tour, the squadron’s collective proficiency only heightened with each succeeding combat tour. When VMF-221 returned for its third combat tour, several of its replacement pilots were veterans as well. When combined with the superior F4U-1, the squadron’s combat edge only grew.

The squadron benefited from the experience of preceding squadrons who had exhausted their pilots and lost aviators and mechanics to tropical disease. The aviators consistently spent at least seven weeks resting and training between combat tours and never more than seven weeks in combat. The trips to Sydney restored morale and enabled the pilots to recover from stress, disease,

⁵⁸⁵ Air Command, Solomons, “Interception of Enemy Fighters,” 1 April 1943, 6.

and exhaustion. The improved living conditions and sanitation enforced by commanders and the rigorous atabrine protocols resulted in very few evacuations for malaria after the first combat tour.⁵⁸⁶

Time

VMF-221 had sufficient time to prepare for each combat tour in the Solomons and used that time efficiently. Though the squadron enjoyed just two months at Ewa with most of its aviators, Major Mitchener led the squadron through a rigorous, systematic training syllabus. At Espiritu Santo, Captain Burns utilized the final month prior to combat to continue the squadron's training. In between combat tours, Marine Aircraft Wings South Pacific afforded the squadron sufficient time to qualify with the Corsair and sharpen its skills.

Command and control

Effective command and control contributed to VMF-221's performance and effectiveness. Halsey integrated army air force, marine, navy, and New Zealand squadrons under Air Command Solomons, enabling Mitscher and Twining to fight a single air battle. Air Command Solomons likewise consolidated all fighting squadrons under Fighter Command, enabling Pugh to mass fighters against the Eleventh Air Fleet raids in April. As Halsey's offensive pushed north, Third Fleet created the New Georgia Air Force and Air Command North Solomons. These forward commands co-located local fighter direction with early warning radar, facilitating rapid interception by squadrons like VMF-221.

The confusing organization of aviation logistics contributed to the squadron's poor aircraft readiness throughout 1943. Aircraft South Pacific and Marine Aircraft Wings South Pacific treated pilots, ground echelons, and aircraft as interchangeable parts. While this practice economized on

⁵⁸⁶ VMF-221 muster rolls, March – November 1943.

theater air and sea transportation, it obscured lines of authority and accountability, fostering neglect and waste in aviation logistics.

Logistics and maintenance

The logistical and maintenance troubles Commander Spangler reported in April appear to have deteriorated rather than ameliorated by October. On 30 November, Major Post typed out some observations on the difficulties the squadron encountered on its third combat tour. He noted that none of the twenty F4U-1s the squadron inherited had maintenance logs. As the squadron ferried these aircraft from the Russells and Munda to Vella Lavella, the aircraft were as new to the ground echelon as they were to the pilots. The ground echelon on Vella Lavella was from VMF-222, so the pilots and their ground support were strangers to each other as well as the aircraft. Post and the engineering officer of VMF-222 agreed that the twenty Corsairs could have been put in good condition by completing a standard 180-hour check or overhaul, but there were no facilities at Barakoma to do such work. Oxygen, CO₂, and spare parts were in short supply. Post directly attributed the nine aborted missions and one ditching on this tour to the sorry condition of the aircraft. He also noted that the pilots frequently flew at lower altitudes than planned because of oxygen problems.⁵⁸⁷

Shortly after VMF-221 departed Barakoma, Lieutenant John J. Hospers, in navy uniform but representing Chance Vought, the Corsair's manufacturer, inspected the condition of F4U-1s at the base. He found many Corsairs with over 350 hours of operation without an engine change. He also learned that some aircraft had been handed over from one squadron to the next four, five, and even six times after being used as training aircraft stateside. The navy Carrier Aircraft Service Unit at Barakoma—the unit whose efficiency and motivation Major Williamson decried in his report—was

⁵⁸⁷ RG 127 A1 1055 Box 8 CO VMF-221 to CG 2nd MAW 30 November 1943, 1.

not equipped to make engine changes or even repair accessories. Throughout the Solomons and particularly at Barakoma, Hospers saw an alarming accumulation of corrosion and rust on exposed metal, not only on operational aircraft but on spare parts, rendering them useless. Braim reported that any bare metal surface not coated with oil or grease quickly rusted in the tropics.⁵⁸⁸

Intelligence, early warning, and fighter direction

On 1 and 7 April, Fighter Command, Solomons had demonstrated it held a very distinct advantage: its coast watchers and radar enabled its fighter direction to see every aircraft in the sky—friendly and enemy. Once aloft, Japanese flight leaders could only be sure of the aircraft their pilots could see. Throughout the three combat tours, VMF-221 benefited from excellent aerial reconnaissance, early warning, and fighter direction. The lapse in radar coverage on 2 July and Mitscher's untimely withdrawal of fighter coverage stands as a terrible exception.

Search and rescue

VMF-221 lost twenty-three aircraft in the Solomons in combat and mishaps but lost just four pilots. The exceptional survival rate of the squadron's aviators can be attributed to the priority placed on their recovery by Air Command Solomons. Dedicated PBYS and rescue boats pulled countless aviators from shark infested waters, while friendly islanders secreted pilots who came ashore to safety. These aspects of the air war in the Solomons not only improved combat efficiency by returning experienced pilots to the fight but bolstered the morale of aviators across the Solomons who knew their comrades would do all in their power to rescue them if they went down. In contrast, Japanese aviators knew their country would not risk aircraft and aviators on rescue missions. Not

⁵⁸⁸ RG 127 A1 1055 Box 8 Fleet Air Command South Pacific, "F4U Aircraft – South Pacific Notes," memorandum of conference held 4 December 1943, 9-11.

only were downed Japanese aviators lost to the force, but the morale of surviving aviators plummeted as the campaign progressed.⁵⁸⁹

Japanese capabilities

This plummeting morale corresponded with a deterioration in the efficiency of Japanese naval aviation. As the Pacific Fleet and Kenney's Fifth Air Force strangled Rabaul, the shortage of spare parts and basic supplies devastated Eleventh Air Fleet's readiness. Even worse, according to Captain Miyazaki, was the skill of the mechanics and the quality of the parts.

In 1943, at any one time, only 50% of the planes were ever available and the next day following an all out operation only 30% would be available. By the end of 1943, only 40% at any one time would be serviceable. In 1942, the low availability was due to lack of supply; from 1943 on, it was due to lack of skill on the part of maintenance personnel and faulty manufacturing methods. Inspection of the aircraft and spare parts, prior to their delivery to Rabaul, was inadequate, and there were many poorly constructed and weak parts discovered. The Japanese tried to increase production figures so fast that proper examination was impossible.⁵⁹⁰

As the Japanese lost pilots, they shortened their training pipeline to remedy the deficit. Pilot training dropped from 200 hours and two years to sixty hours and six months. This put Japanese naval aviation in a death spiral: the worse the pilots, the sooner they died; the higher the casualties, the more urgent became the need for replacements, no matter how unready.⁵⁹¹

Marine aviation effectiveness in the Solomons

VMF-221's superior performance and effectiveness in its second combat tour indicates land-based marine aviation supported the Third Fleet extremely well. Marine aviation was on the

⁵⁸⁹ Shaw and Kane, *Isolation of Rabaul*, 474; Nomura, USSBS interrogation, 532.

⁵⁹⁰ Miyazaki, USSBS interrogation, 418.

⁵⁹¹ Shaw and Kane, *Isolation of Rabaul*, 453-4.

ascendance, with superior aircraft, better pilots, superb early warning and fighter direction, and effective command and control. That ascendance was restrained by inefficient logistics and inadequate maintenance, but the mass production of American industry overshadowed the shortcomings of aviation logistics in the Solomons. As the strength and proficiency of marine aviation blossomed, the numbers and ability of Japanese naval aviation dropped precipitously, creating opportunities for the Pacific Fleet to exploit in 1944.

Case Three: Aboard USS *Bunker Hill* (CV-17)

December 1944 – May 1945

Chapter 11: Redeployment to California and Reconstitution, 1944

Return to the United States

VMF-221 returned to the United States over two years after it had departed in December 1941. It returned to reorganize and retrain for another deployment, but also because the Pacific Fleet had more marine fighting squadrons than it could use. VMF-221 was one of seven veteran fighting squadrons the Marine Corps redeployed to the United States at the end of 1943, leaving another twenty-six fighting in the Pacific. The corps had organized another fifteen fighting squadrons that had not yet deployed.⁵⁹²

After helping neutralize Rabaul, marine squadrons found fewer opportunities to fight. With the concurrence of Major General Rowell, then Commanding General, Marine Aircraft Wings, Pacific, Nimitz had curtailed carrier qualification for marines in June 1943. This appeared to make sense at the time. Marines were taking up a third of available carrier qualification training, yet all their squadrons were fighting from shore. This decision prevented marine squadrons from supporting marine and army divisions in the Central Pacific throughout 1944, as marine aircraft did not have the range to support amphibious assaults from advanced bases and marine pilots could not operate aboard carriers. In the Southwest Pacific, Kenney's Fifth Air Force and the Royal Australian Air Force supported MacArthur's westward offensive. In the wake of both offensives, marine squadrons were relegated to patrolling the rear areas and striking bypassed Japanese garrisons.⁵⁹³

⁵⁹² Tillman, *Marine Corps Fighter Squadrons*, 87-153, passim.

⁵⁹³ Owen, "The Marine Corps Air War Over the Pacific," 16-18; Frank Futrell, "Hollandia," in Craven and Cate, *Guadalcanal to Saipan*, 647.

Rotation and replacements

The day after arriving in San Francisco, the squadron's marines boarded a troop train that took them to Marine Corps Air Station Miramar, outside San Diego. All but eight officers and fifty enlisted marines departed to other commands. After two weeks, Major Post and the remaining marines moved to Marine Corps Air Station Goleta outside Santa Barbara, California. Upon arrival on 15 January, all hands received thirty days' leave.⁵⁹⁴

By the end of March, another four veteran pilots would depart, and forty-two new aviators would arrive. Pilots rotated in and out of the squadron throughout 1944, but by June, all who would deploy with VMF-221 in January 1945 had joined. Only four aviators who had fought with the squadron in the Solomons would deploy with it in 1945: Captains Baldwin, Balch, Snider, and Swett.

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The ground echelon experienced similar turnover. All but fifty enlisted marines transferred to other commands at Miramar. After the leave period, 131 marines joined the squadron in February. By the end of the year the squadron had a ground echelon of two officers, 224 enlisted marines, a navy medical officer, and eight navy hospital corpsmen. When the squadron embarked *Bunker Hill*, it would bring only sixty-two enlisted marines aboard. Of note, twenty-eight of these had returned from the Solomons with the squadron, including all ten master technical sergeants.⁵⁹⁶

One of the first replacements to join was Major Edwin S. Roberts, Jr., who was waiting for the veterans at Goleta when they returned from leave in February. Roberts would serve as Post's executive officer until 13 October. When Post moved up to be the group operations officer at Goleta, he turned the squadron over to Roberts, and Swett became the squadron executive officer. Roberts had learned to fly in 1940 with the United Flying School of America while a student at the

⁵⁹⁴ RG 38 A1 UD 351 VMF-221 war diary, January 1944, 2; VMF-221 unit history 79-80.

⁵⁹⁵ VMF-221 unit history, 79-80; VMF-221 muster roll, January 1945.

⁵⁹⁶ VMF-221 muster rolls, January and October 1944, January 1945.

University of Southern California. He joined the naval aviation cadet program and earned his wings in May 1941. Roberts spent the next two years at Naval Air Station Grosse Ile, Michigan, where he flew nearly two thousand hours instructing American and Allied students. The instruction at Grosse Ile included qualification aboard training carriers such as *Wolverine*. After being promoted to major in May 1943, Roberts attended a wartime command and staff course at Quantico, Virginia before reporting to Marine Base Defense Aircraft Group 41 at Goleta in October 1943. Unlike most marine aviators, Roberts was a family man, with an expectant wife and two children waiting on his return.⁵⁹⁷



Figure 23. Major Edwin S. Roberts, Jr., on Okinawa, 18 May 1945 (Roberts family)

⁵⁹⁷ Marine Corps Reserve Aviation Unit Naval Reserve Aviation Base Grosse Ile, Michigan muster rolls October 1941 and April 1943; Marine Corps Schools Detachment, Quantico, Virginia muster roll July 1943; VMF-221 muster roll, October 1944; HqSq-41, MBDAG-41 muster roll October 1944; E. S. Roberts, Jr. Aviators Flight Log Book, United Flying School of America Log Sheet 15 July 1940, and Naval Aviator Certificate, 29 May 1941, collection of Judy Roberts; Edwin S. Roberts, Jr., *Tales from World War II*, compiled by Marta Turner (privately published by The Roberts Family, n.d.), 7.

Aircraft

The squadron received twenty-two Corsairs at Goleta: thirteen FG-1s, five F4U-1s, and four F3A-1s. All three were the same aircraft built by different manufacturers: the FG-1 by Goodyear, the F4U-1 by Vought, and the F3A-1 by Brewster. The Brewster F3A-1s had a reputation for inferior reliability and were often relegated to training stateside.⁵⁹⁸

It was easier to incorporate modifications to the F4U in California than it had been in the Solomons. Several of these modifications improved the Corsair's suitability for carrier operations. A small spoiler on the leading edge of the starboard wing reduced the Corsair's susceptibility to stalls on landing approach. A new tail hook prevented the hook from skipping over arresting wires. A less rigid oleo strut mitigated the bouncing Corsairs experienced on landings. A new water injection system reduced detonations and cooled supercharged air, enabling the pilot to increase carburetor inlet pressure and boost engine power in combat to three hundred horsepower for five minutes, giving the fighter a top speed of 415 miles per hour.⁵⁹⁹

In January 1945, just prior to deployment, the squadron exchanged the aircraft it had trained with for new F4U-1Ds. The F4U-1D had four rocket launchers and one bomb pylon under each wing. The fighter could carry either eight HVAR rockets, two 500- or 1,000-pound bombs, or napalm cannisters on its wings. The additional armament enabled the F4U-1D to attack vessels and ground targets in strafing and dive-bombing attacks. Because of the weight this ordnance added to the wings, the 63-gallon wing tanks were eliminated. Instead, the center-section twin pylons could each carry a 154-gallon drop tank. The additional fuel enabled the Corsair to fly 1200 miles at maximum weight while carrying a 1,000-pound bomb.⁶⁰⁰

⁵⁹⁸ RG 38 NAI 78569698 VMF 221 1944 war diaries February, 2, and March, 3, 5; Jim Sullivan, *F4U Corsair in Action* (Carrollton, TX: Squadron/Signal Publications, Inc., n.d.), 8.

⁵⁹⁹ VMF-221 war diary August 1944, 3-4; Tillman, *Corsair*, 13-15; Sullivan, *F4U Corsair*, 8; Spangler, BuAir interview, 10-11; AM O1-45HA-1 *Pilot's Handbook of Flight Operating Instructions, Navy Models F4U-1, F4U-1C, F4U-1D, F3A-1, F3A-1D, FG-1, FG-1D*, 15 March 1945, retrieved from vmfa251.org, 31. Hereafter *Corsair Pilot's Handbook*.

⁶⁰⁰ RG 127 A1 1029 Box 29 VMF-221 war diary January 1945, 5; *Corsair Pilot's Handbook*, 9, 62.

The pilots' flying equipment had improved as well. The gravitational forces a fighter pilot faced in combat pulled blood from the brain to other parts of the body, which could cause him to become disoriented or even blackout. VMF-221's pilots received Z-type anti-gravitational suits which compressed the pilot's legs, preventing blood from pooling there. Corsair pilots found they could endure maneuvers for five seconds or more at seven times their body weight without significant handicap.⁶⁰¹

The Japanese had also developed new fighters. In addition to the Zeros, VMF-221 would encounter four newer fighters in significant numbers. As shown in table 3.1, the newer fighters were faster than the Zeros they replaced, and most carried more firepower. Of these, only the Frank was faster than the F4U-1D.

Table 3.1. Speed and armament of principal Japanese fighters in 1945 compared to F4U-1D Corsair

Type	U.S. code name(s)	Best speed (mph)	Armament (wings)	Armament (fuselage)
F4U-1D	Corsair	415	Eight .50 caliber machine-guns	none
Mitsubishi A6M	Zero	340	Two 20mm cannons	Two 7.7mm machine-guns
Kawanishi N1K2-J	George	400	Four 20mm cannons	Two 7.7mm machine-guns
Kawasaki Ki-61	Tony	356	Two 12.7mm machine-guns or 20mm cannons	Two 7.7mm or 12.7mm machine-guns
Nakajima Ki-84	Frank	426	Two 20mm cannons	Two 12.7mm machine-guns
Nakajima Ki-44	Tojo	383	Two 20mm cannons	Two 7.7mm machine-guns

Source: *Jane's Fighting Aircraft of World War II*, 186-190.

Though VMF-221 would face better aircraft in 1945, it would not face better pilots. Japanese training standards continued to plummet as the supply of aviation fuel dwindled and the need for combat replacements climbed. In late 1943, the Japanese Naval Air Force discontinued intermediate training for aviators. Combat squadrons took on the burden of training pilots to fly their type and

⁶⁰¹ RG 38 NAID 139938807 C.O. CV-17 "ACA-1-1 Report – Air Group 84, First and Second Strikes on Tokyo and Support and Capture of Iwo, 10 February to 5 March 1945," AG-84 Aircraft Action Report 25 Feb 1945 0729, 6. ACA-1 reports through 1 March are from this record and are hereafter cited as unit, ACA-1, date, report number, and page(s).

model of aircraft and how to fight. As a result, the pilots VMF-221 would face in 1945 usually had far less training and experience than their predecessors in 1942 and 1943.⁶⁰²

Training and tactics

VMF-221's pilots would benefit from a thorough training syllabus influenced by two years of war. In contrast to the rushed and hectic training previous squadron commanders oversaw, Post and Roberts ran a systematic, unhurried training program. Table 3.2 tabulates the number of hours the squadron accumulated from February to November.

Table 3.2. VMF-221 hours flown, February – November 1944

Month	Hours flown by VMF-221	Average hours per aviator
February	140	3
March	unreported – flying on 28 days	
April	unreported – flying every day	
May	968	21.5
June	unreported – flying on 26 days	
July	1302	30.3
August	1046	24.9
September	592	14
October	815	19.4
November	1126	26.2

Note: The drop in hours in September reflects heavy fog that curtailed flying for the first three weeks.

Source: VMF-221 war diaries, February – November 1944.

The aviators did not merely fly a lot of hours; they devoted those hours to combat training. The war diaries repeatedly recorded instrument flying in SNJs, gunnery, and division and squadron tactics. Gunnery was the most frequent activity, at both low altitudes and higher elevations on oxygen, at slow and high speeds, using both live ammunition against towed sleeves and recorded gun camera footage. Instrument flying progressed from the Link simulator to multiple SNJ flights to

⁶⁰² Rear Admiral Katsumata, Seizo, IJN (Retired), interrogation by LCDR R. P. Aikin, USNR, 25 October 1945, Interrogation no. 31, *USSBS Interrogations of Japanese Officials* vol. 1, 135.

flying Corsairs on instruments alone at night. Countless times, the pilots bombed and strafed a prominence known as Wilson's Rock two miles offshore of San Miguel Island. The squadron conducted practice scrambles and intercepted army air force and navy bombers under radar direction. On the ground, pilots took turns working with the squadron engineering section to learn the intricacies of their aircraft and maintenance. They spent time in a pressure chamber to recognize the effects of thinner air, dropped from a suspended parachute harness into Santa Barbara Harbor, and quizzed each other on aircraft and vessel recognition.⁶⁰³

Despite all the combat training, the squadron had enough idle time to schedule events that marines a generation later would find familiar. Wednesday morning inspections included close order drill. Pilots participated in combat conditioning, bayonet drills, hand-to-hand fighting, and judo. When aviators were not scheduled to fly, the squadron sent them to the skeet and pistol ranges to hone their marksmanship. They sat through lectures on infantry tactics and films on subjects from air combat maneuvers to survival to the progress of the war effort. They played other squadrons in baseball, speedball, and water polo. They even visited the gas chamber just in case chemical warfare reared its head again. In late July, the squadron sent each marine home on fifteen days' leave in port and starboard shifts. In step with the squadron's "Fighting Falcons" name, someone returned with an actual falcon in a cage to serve as the squadron's mascot. When wildfires threatened the base and Santa Barbara, the squadron sent enlisted marines to fight fires for four days. In early November, Second Lieutenant Robert Glendinning was tapped to deliver lectures on the history of the United States Marine Corps.⁶⁰⁴

It was a tenet of Marine Corps doctrine that marine aviation existed to support marines on the ground. For VMF-221 and the majority of marine squadrons, that had not been the case thus far

⁶⁰³ VMF-221 war diaries, February – November 1944, *passim*.

⁶⁰⁴ VMF-221 war diaries, February – November 1944, *passim*.

in the Pacific War. As VMF-221's experience suggests, marine squadrons supported the fleet by defending advanced bases and helping it achieve air superiority and sea control. While at Goleta, the squadron incorporated air support to the landing force into its training. It conducted a couple of mock attacks against army ground units training at Camp Roberts a hundred miles to the north. In mid-October, shortly after Roberts took command, the squadron supported a landing operation at Camp Pendleton. On 26 November, the squadron sortied four divisions to San Clemente Island where a landing force was conducting an amphibious operation. The Corsairs bombed the island under the control of the Commander, Support Air, a naval aviator on the staff of the amphibious force commander. The Commander, Support Air directed the fighters by using a grid overlay, which only two of the pilots had received before takeoff, so the pilots with the overlay led the others in bombing and strafing runs.⁶⁰⁵

The episode illustrates just one of many difficulties the navy and marines struggled to iron out when coordinating landing force air support. At Saipan in June 1944, the Commander, Support Air directed airstrikes by navy carrier planes with the assistance of air observers aloft and air liaison officers at the division and regimental command posts. After the landing force captured an airfield, army air force P-47s also provided support. The amphibious force commander characterized air support at Saipan as "not very good;" the cumbersome coordination process was sluggish, and mistakes killed American troops on the ground. Marine commanders urged Nimitz to embark marine squadrons specifically trained to provide air support aboard escort carriers.⁶⁰⁶

As marines and soldiers wrapped up the fighting on Saipan, the Director of Aviation at Headquarters, Marine Corps, Brigadier General Louis E. Woods, realized that the F4U-1D might be a better dive-bomber than the SBD. The F4U-1D flew faster and further than the SBD. If the

⁶⁰⁵ VMF-221 1944 war diaries March 4, August, 2, October, 6-7, November, 5-6.

⁶⁰⁶ RG 38 NAID 77586160 Commander Amphibious Group 1 "Report of operations in the invasion of Saipan Island, Marianas, 16-26 June 1944," 21 July 1944, 8-11; 573-574; Allison, "The Black Sheep Squadron," 167-172.

Corsair could serve as both a fighter and a scout dive-bomber, it would create a number of efficiencies. Air commanders could task Corsair squadrons to gain air superiority early in a campaign and then task them with strike and close air support missions when they were no longer required on fighter sweeps and combat air patrol. Corsairs could strafe targets with six .50 caliber machine-guns instead of the SBD's two. Ground crews would only need training, tools, and parts for one type of aircraft.⁶⁰⁷ Three SBD squadrons and four F4U squadrons experimented in the Marshalls later that summer. They found that fifty percent of the SBD's bombs consistently landed within 175 feet of the target. For the Corsair, the distance was only marginally worse, at 195 feet.⁶⁰⁸

The F4U-1D could shoot rockets as well as drop bombs. The F4U-1D could carry eight High Velocity Aircraft Rockets, or "HVARs." The rocket weighed 134 pounds and had a range of three miles.⁶⁰⁹ The rocket came in a general purpose variant with 7.6 pounds of TNT and an armor piercing variant with 2.2 pounds of ammonium picrate. It could penetrate four feet of reinforced concrete and was effective against fortifications, armored vehicles, and soft targets such as ammunition and fuel.⁶¹⁰ The pilots of VMF-221 watched a film about the rockets on 17 October 1944.⁶¹¹ In December they flew up to the Marine Auxiliary Air Station at Mojave in Kern County, California. For four days the pilots attended lectures on field carrier landing procedures and the employment of the aircraft rockets, then practiced both at the remote training field. However, as the squadron still flew the earlier model Corsairs, its rocket practice was limited to dummy runs.⁶¹² In early January the squadron received its first F4U-1Ds and flew to Naval Auxiliary Air Station

⁶⁰⁷ RG 127 A1 1055 Marine Aircraft South Pacific Correspondence on Operations and Tactical Employment of Units January 1943 – June 1944, Director Aviation GQMC to MAWP and others, 12 June 1944, 1-4.

⁶⁰⁸ Tillman, *Corsair*, 80.

⁶⁰⁹ "Rocket, Air-to-Surface, 5-inch, HVAR," *Smithsonian Institute National Air and Space Museum*, retrieved from https://airandspace.si.edu/collection-objects/rocket-air-to-surface-5-inch-hvar/nasm_A19820116000.

⁶¹⁰ "September 16, 1944: High Velocity Aircraft Rocket Testing," *Air Force Test Center*, 16 September 2020, retrieved from <https://www.afmc.af.mil/News/On-This-Day-in-Test-History/Article-Display-Test-History/Article/2315047/september-16-1944-high-velocity-aircraft-rocket-testing/>.

⁶¹¹ VMF-221 war diary, 6.

⁶¹² VMF-221 war diaries December 1944, 1-3 and January 1945, 6.

Holtville in Imperial County, California for three days of live rocket firing. The pilots practiced firing the rockets at thirty- and fifty-degree dives before returning to North Island.⁶¹³

Carrier qualification

Marine fighting squadrons might be trained and equipped to support marines on the ground, but unless they could operate from carriers, they would have to wait until the landing force captured an airfield to get into the fight. Lieutenant General Alexander A. Vandegrift had been trying to get his squadrons aboard carriers since he had replaced General Holcomb as Commandant in January 1944. Vandegrift did not want his squadrons relegated to the rear areas of the Pacific. Moreover, he wanted marine squadrons aboard carriers to support marine landing forces during amphibious assaults. After navy and army air force squadrons performed unspectacularly while supporting ground troops in the Marianas, Vandegrift met with Nimitz in July 1944. Nimitz agreed to recommend to King that marine aircraft groups deploy aboard six escort carriers to provide close air support to marines ashore. King agreed, and the Marine Corps began organizing and training aircraft groups specifically for that mission.⁶¹⁴

VMF-221 was not assigned to one of the six aircraft groups destined for an escort carrier. The decision to assign VMF-221 to a carrier came later in 1944. On 25 October, Japanese pilots conducted the first organized suicide attacks against escort carriers off Samar. By late November, the threat of such suicide attacks sufficiently alarmed fleet commanders that Vice Admiral George D. Murray, Commander, Air Force, Pacific Fleet, concluded the carriers would need to increase their complement of fighters. The relative demise of the Combined Fleet justified reducing the carriers' offensive torpedo and dive-bomber numbers by fifteen, which would make room for nineteen

⁶¹³ VMF-221 war diary December 1944 1-2 and January 1945, 1; Roberts, Flight Log Book, January 1945.

⁶¹⁴ RG 127 A1 1055 Box 8 CMC to CG MAWP "Carrier Operations for Marine Aviation Squadrons," 29 January 1944, 1-2; Frank and Shaw, *Victory and Occupation*, 412-413; Sherrod, *Marine Aviation*, 329-330.

fighters. However, the navy was short of fighter pilots; the marines had an abundance of underemployed fighting squadrons. Moreover, the marines had Corsairs, whose superior speed would make them deadlier interceptors than the navy's F6F Hellcats. On 2 December, Murray recommended that Nimitz assign ten marine fighting squadrons to five fleet carriers. Each carrier would receive two squadrons of eighteen fighters each. VMF-221 and VMF-451 were assigned to USS *Bunker Hill* (CV-17). VMF-221 began field carrier landing refresher at Mojave just four days later.⁶¹⁵

With the exception of Roberts, it is unlikely any of VMF-221's pilots had landed aboard a carrier before. Their training began with lectures and films in August, followed by four days of practice on a grass landing field near Oxnard, California. The field carrier landing practice required the pilot to mimic the approach and landing he would employ at sea, including following the directions of a landing signal officer. The squadron conducted refresher training while at Mojave before flying down to Naval Air Station North Island in San Diego on 11 December. The following day, the pilots flew out to rendezvous with USS *Ranger* (CV-4).⁶¹⁶

Landing aboard a carrier is one of the most difficult tasks any aviator can attempt, and the F4U was one of the most difficult aircraft in which to attempt it. With a stall speed at around 86 mph with flaps configured for landing, the Corsair had to approach the carrier fast, typically at about 103 mph. Though the carrier would sail into the wind, reducing the aircraft's relative airspeed by as much as a third, the ship would pitch and roll, forcing the pilot to correct in three dimensions. The landing signal officer on the port side of the ship's stern guided the pilot down with paddles. But the Corsair's long nose prevented the pilot from seeing the landing signal officer on a straight in

⁶¹⁵ ComAirPac to CinCPac 02 0254, Nimitz *Graybook* vol. 5, 2296; Frank and Shaw, *Victory and Occupation*, 415; Sherrod, *Marine Aviation*, 331.

⁶¹⁶ VMF-221 1944 war diaries August, 2-3, and December, 2-3; Fred Briggs, "My First Carrier Landing," in Caswell, *Fighting Falcons*, 88.

approach. Corsair pilots therefore had to approach the carrier at an angle to keep the ship and the signal officer in sight. As the ship sailed ahead, this required the pilot to constantly turn to the left. At this slow speed, the Corsair's powerful torque required the pilot to add right rudder while making this left turn. If the pilot tried to correct by adding power too quickly, that torque could roll the Corsair, a deadly emergency two hundred feet above the water. While managing the airspeed, rate of descent, angle of approach, and following the landing signal officer's directions, the pilot had to remember to ensure the aircraft was configured for landing: electric fuel pump on, tail wheel unlocked, fuel selector on reserve, mixture to auto rich, supercharger in neutral, propeller control between 2,300 and 2,400 rpm, cowl flaps closed, wheels down, flaps at fifty degrees, arresting hook down, and guns and rockets off and safe.⁶¹⁷

When the landing signal officer waved a paddle across his throat, the pilot cut his throttle and the Corsair dropped to the deck. With the modifications to their oleo struts, wheels, and tailhook, the Corsairs flown by VMF-221 were far less likely to bounce over the arresting cables or break a wheel or tailhook than earlier versions..⁶¹⁸

Once safely on the deck, the pilot still faced the peril of a carrier takeoff. The pilot taxied to the takeoff spot facing the bow. After applying full flaps and raising the arresting hook, the pilot confirmed the fuel tank selector, mixture, supercharger, and propeller control were still properly configured. He then opened the cowl flaps two-thirds, closed the intercooler flap, and opened the oil cooler flap. The pilot adjusted the rudder tab to six degrees to the right and the right aileron tab six degrees down to compensate for the rotary engine's tremendous torque that gave the Corsair the tendency to drift right. The pilot then locked the tail wheel, ensured the cockpit was locked in the open position, and checked the manifold pressure and cylinder head and oil temperatures. The

⁶¹⁷ *Corsair Pilot's Handbook*, 40, 42; Fred Blechman, "F4U Corsair Carrier Qualification," (Fred Blechman, 1997), retrieved from <http://www.justinmuseum.com/famjustin/blechmanbio.html>.

⁶¹⁸ Tillman, *Corsair*, 15-16.

launch control officer signaled for the pilot to advance the throttle, who applied full toe brakes and held the joystick all the way back while advancing the throttle to forty-two inches of manifold pressure. The brakes held the aircraft in place and the elevator control kept the tail on the deck as the engine surged and shook the aircraft. Once set, the pilot nodded to the launch control officer, who threw his arm forward toward the bow. The pilot released the brakes and the Corsair surged forward. As the pilot increased rpm, he maintained right rudder, fighting the engine's powerful torque. When the pilot released the pressure on the joystick, the tail lifted, pitching the aircraft level, and the pilot now saw the bow rapidly approaching. The aircraft lifted airborne before he reached the bow. If nothing went wrong, the pilot only had to circle around and make seven more landings to qualify as a carrier pilot.⁶¹⁹

VMF-221 had just three days aboard *Ranger* to qualify its aviators. Not every pilot passed. Second Lieutenant Fred Briggs watched the pilot ahead of him receive a wave off on each attempt. With each wave off, the landing signal officer ducked into the safety net on the ship's port side. By the time the officer was back in position, Briggs would be forced to go around and try again. Through no fault of his own, Briggs exhausted his fuel before ever getting an opportunity to attempt a landing. He failed to qualify but pleaded with Roberts to take him on the deployment. Roberts relented; Briggs would not make his first carrier landing until after flying his first combat mission.⁶²⁰ Twenty-seven aviators qualified, averaging fourteen landings each by the time the squadron deployed.⁶²¹

⁶¹⁹ *Corsair Pilot's Handbook*, 34-35; Blechman, "F4U Corsair Carrier Qualification."

⁶²⁰ Briggs, "First Carrier Landing."

⁶²¹ VMF-221 war diary January 1945, 2.

Mishaps

VMF-221 did not experience a single mishap during carrier qualification. However, upon its return to North Island on the night of 12 December, the station duty officer initially refused to illuminate the runway for Captain Swett, who was leading three divisions back. After repeated calls from Swett, the duty officer reluctantly turned on a single row of lights. The marines had never landed at North Island at night and visibility was restricted by rain and fog. Instead of landing on the runway, they landed on the wrong side of the lights among parked aircraft and equipment. Lieutenant William Ormes' fighter collided with a bulldozer, flipped on its back, and was quickly engulfed in flames. Ormes escaped but his burns required years of hospitalization and treatment. Lieutenant Donald G. MacFarlane collided with a PBV. He escaped injury, but the Corsair required an extensive overhaul.⁶²²

The squadron suffered twenty-eight mishaps between February and December 1944, losing nine aircraft. Three aviators perished. On 13 May, Lieutenant Ewell H. Haynes, Jr. collided with his section leader, Captain Baldwin, during gunnery practice. Baldwin parachuted and was recovered. Another pilot saw Haynes ditch and climb onto his wing, but subsequent searches failed to locate him. According to another lieutenant, Haynes had heavily drunk the night before the accident and his squadron mates had urged him not to fly.⁶²³ On 27 November, Lieutenant Norman K. Sark misjudged his recovery from a low altitude gunnery run and flew into the sea. In the third fatal incident, Lieutenant Richard Chasserre spun into the ground after a waved off landing attempt at North Island on 30 December.⁶²⁴

⁶²² Ralph O. Glendinning, "The *Ranger* and the Bulldozer," in Caswell, *Fighting Falcons*, 86-87; VMF-221 war diary December 1944, 2.

⁶²³ Blaine Imel, "Memories of Slick," in Caswell, *Fighting Falcons*, 84-85.

⁶²⁴ VMF-221 1944 war diaries November, 6 and December, 5.

Aside from the duty officer's negligence at North Island and seven mechanical issues, the other nineteen mishaps were caused by a replacement pilot's error. Notably, fourteen of the replacements' errors occurred between February and May. As the replacements became more familiar with the Corsair, the mishap rate declined.⁶²⁵ The squadron's experience also highlighted a distinct advantage of training new aviators in California. Repairing and replacing aircraft and pilots was far simpler here than it would be overseas.

Air Group 84

A week after completing qualification aboard *Ranger*, the squadron divided into a flight echelon and a rear echelon. The flight echelon, which included the pilots and sixty-two ground echelon marines, joined Air Group 84, *Bunker Hill's* aircraft group, at North Island in mid-December. The rear echelon moved to Marine Corps Air Station El Centro in Imperial County, California where it remained for the remainder of the war.⁶²⁶

The flight echelon began training with the group's torpedo (VT-84), dive-bomber (VB-84), and other fighting squadrons (VF-84 and VMF-451) immediately. VT-84 had fifteen TBM Avenger torpedo bombers. VB-84 had fifteen SB2U-C Helldiver dive-bombers. VF-84 had twenty-seven F4U-1D Corsairs, six F6F-5P Hellcat photo reconnaissance fighters, and four F6F-5N Hellcat night fighters. With the thirty-six F4U-1Ds of VMF-221 and VMF-451, Air Group 84 had 103 aircraft.⁶²⁷

The group commander, Commander George M. Ottinger, was from Memphis, Tennessee and had graduated from the Naval Academy in 1932, where he had run track. He had been a naval aviator for over a decade. Ottinger had instructed fighter trainees for two years and had served as a dive-bomber pilot and a landing signal officer but had not yet flown in combat. He had taken

⁶²⁵ VMF-221 war diaries 1944, *passim*.

⁶²⁶ VMF-221 war diaries, December 1944, 4 and January 1945, 2.

⁶²⁷ VMF-221 war diary December 1944, 3-5; RG 38 NAID 139812413 AG-84 war diary December 1944, 1.

command of Air Group 84 shortly after it was formed in May 1944 and overseen its training at San Diego.⁶²⁸

At the end of 1944, Ottinger reported all his squadrons had completed 95 percent or more of their predeployment training.⁶²⁹ On 5 and 6 January the squadrons flew out to *Ranger*, where they practiced the difficult but essential task of taking off quickly and rendezvousing as a group. After returning to North Island, VMF-221 practiced day and night carrier landings at a practice field.⁶³⁰

On 18 and 19 January the squadron flew from San Diego to Naval Air Station Alameda on San Francisco Bay. On 24 January, the air group embarked *Bunker Hill* pier side at Alameda. Her new commander, Captain George A. Seitz, a naval aviator for over two decades, wasted no time. *Bunker Hill* was underway for Pearl Harbor at 4:08 p.m., taking VMF-221 back to the war.⁶³¹



Figure 24. USS *Bunker Hill* (CV-17), 18 March 1945, during strikes against Kyushu, Japan (NARA 80-G-373737)

⁶²⁸ “George M. Ottinger, CDR, USN,” *USNA Memorial Hall*, retrieved from https://usnamemorialhall.org/index.php/GEORGE_M_OTTINGER_CDR_USN; RG 38 NAID 78483674 AG-84 war diary May-June 1944, 1; RG 38 NAID 77685029 Air Group 84 war history, 8.

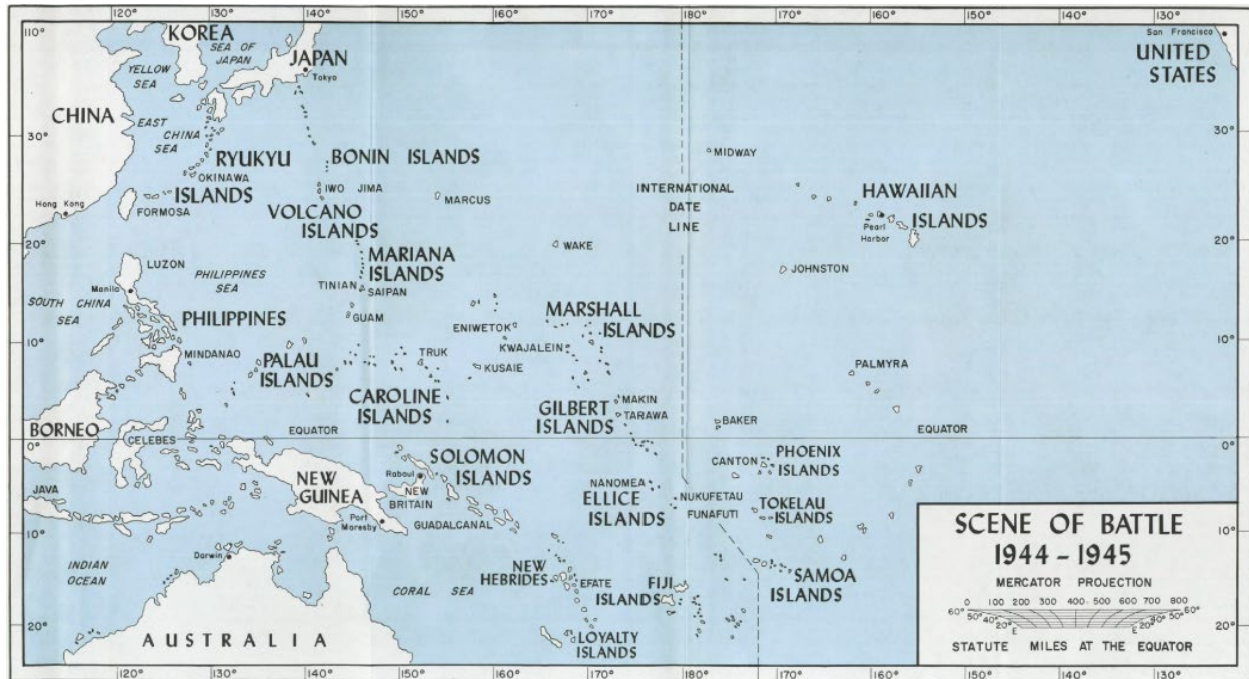
⁶²⁹ RG 38 NAID 139812413 AG-84 war diary December 1944, 2.

⁶³⁰ VMF-221 war diary January 1945, 2.

⁶³¹ VMF-221 war diary January 1945, 2; RG 38 NAID 139851648 USS *Bunker Hill* war diary January 1945, 1-2; “COMO George Albert Seitz,” *Find A Grave* (10 Apr 2009), retrieved from www.findagrave.com.

Chapter 12: Aboard USS *Bunker Hill*, January – February 1945

Operational context



Map 7. Scene of Battle 1944 – 1945 (Garand and Strobridge, *History of U.S. Marine Corps Operations in World War II*, vol. 4, *Western Pacific Operations*)

The Pacific War was entering its final phase in January 1945. On 3 October 1944, with the Marianas secure and the invasion of Leyte in the Philippines weeks away, the Joint Chiefs had ordered MacArthur to invade Luzon, the northernmost of the Philippine Islands, on 20 December, and had ordered Nimitz to cover and support MacArthur with the Pacific Fleet, assault Iwo Jima in the Bonins on 20 January 1945, and follow up with an assault on Okinawa in the Ryukyus by 1 March. When *Bunker Hill* sailed under the Golden Gate Bridge on 24 January, the U.S. Sixth Army

was still wrestling for control of Luzon, compelling Nimitz to postpone the assault on Iwo Jima until 19 February.⁶³²

Crossing the Pacific

Bunker Hill arrived in Pearl Harbor on 28 January, but there was no liberty for the crew. She departed the following morning as part of a task group of six carriers and seven escorts. On 31 January, Commander Ottinger, *Bunker Hill*'s air group commander, pulled the squadron commanders aside and informed them their first combat operation would be a strike on none other than Tokyo, followed by support to the marines assaulting Iwo Jima. "This naturally came as quite a blow to the assembled crowd—hitting the homeland on the first operation," Roberts wrote in his diary. "But everyone was eager, and the excitement ran high." Ottinger let Roberts inform his pilots the next day. "They received the news much the same as the squadron commanders had—that same air of intense apprehension coupled with excitement and eagerness."⁶³³

The air group made effective use of the time underway. The fighter pilots flew combat air patrols, becoming more familiar with task force procedures and more comfortable with carrier landings. Lieutenant Charles H. Nettles was reminded of the perils of carrier aviation two days after the squadron's first combat air patrol. On approach, Nettles dropped his belly tank without first switching to his reserve tank. His engine sputtered out and he made a water landing. A destroyer plucked him from the water. Nine days after departing Pearl Harbor, *Bunker Hill* dropped anchor in Ulithi. "Carriers, cruisers, and destroyers extended as far the eye could see," recalled Lieutenant Glendinning.⁶³⁴

⁶³² Robert Smith, *Triumph in the Philippines* (Washington, DC: Center for Military History, 1993), 170; Garand and Strobbridge, *Western Pacific Operations*, 465.

⁶³³ Edwin S. Roberts, diary, Roberts Family collection, 6, 8.

⁶³⁴ VMF-221 war diary January 1945, 3, and February 1945, 2; VMF-221 muster roll July 1945; Roberts, diary, 8.

Fifth Fleet organization

At Ulithi, *Bunker Hill* joined Vice Admiral Mitscher's Task Force 58. Mitscher's task force included eleven fleet carriers, five light carriers, eight battleships, fifteen cruisers, seventy-seven destroyers, and support ships. Mitscher organized this armada into five task groups, with *Bunker Hill* under Rear Admiral Frederick C. "Ted" Sherman's Task Group 58.3, along with the carrier USS *Essex* (CV-9), Sherman's flagship, and the light carrier USS *Compens* (CVL-25). Mitscher boarded *Bunker Hill* in Ulithi, choosing her as his task force flagship. Task Force 58 departed Ulithi with 1,200 aircraft embarked. Over 850 of these were fighters. VMF-221's eighteen F4U's comprised just 1.5 percent of Mitscher's aircraft strength.⁶³⁵

Task Force 58 was the most powerful of nine task forces in Admiral Spruance's Fifth Fleet. Spruance accompanied Task Group 58.3, flying his flag from the cruiser USS *Indianapolis* (CA-35). Nimitz had placed Spruance in charge of Operation Detachment, the Pacific Fleet's main effort in early 1945. The purpose of Detachment was to maintain pressure against Japan and extend US control over the Western Pacific. To accomplish this, Nimitz assigned three tasks to Spruance: reduce enemy air and naval strength and industrial facilities in the home islands, destroy Japanese air and naval forces in the Bonins, and assault and capture Iwo Jima. While accomplishing these missions, Spruance would also be preparing for the invasion of Okinawa. In support of Detachment, Spruance ordered Mitscher to support the landing on Iwo Jima twelve days off, but to strike Tokyo beforehand in pursuit of Detachment's first objective.⁶³⁶

⁶³⁵ *Bunker Hill* war diary January 1945, 5-6; Stephen L. Moore, *Rain of Steel* (Annapolis: Naval Institute Press, 2020), 10-11; RG 38 NAID 139932683 "TF 58 Combat Operations from 10 February to 4 March 1945," 2, retrieved 1 Nov 2023 from www.Fold3.com.

⁶³⁶ Garand and Strowbridge, *Western Pacific Operations*, 435, 465-466.

“The Big, Blue Blanket” and carrier warfare

The Pacific Fleet had been engaged in carrier warfare for over three years when *Bunker Hill* and Air Group 84 joined Task Force 58 in February 1945. At Midway in June 1942, commanders had struggled to coordinate air operations between just two carriers. Task Force 58 had developed the capability to coordinate carrier operations involving over one thousand aircraft. The task force had also incorporated numerous combat-tested tactical innovations.

Suicide planes had struck 137 of the Pacific Fleet’s vessels between 25 October 1944 and 13 January 1945, sinking twenty-two. To combat this threat, Commander James Flatley, Mitscher’s operations officer, implemented a tactic that his colleague Commander Jimmy Thach nicknamed, “The Big, Blue Blanket.” The tactic had three components. First, Task Force 58’s fighters would “blanket” Japanese airfields within range of the carriers, particularly those suspected to be bases for suicide attack units. Night fighters would enable the task force to maintain round-the-clock coverage of these airfields. Second, the combat air patrol over the task force was reinforced. Between twenty and twenty-four fighters patrolled above each task group: eight at twenty-thousand feet, four at twelve thousand feet, and four at five thousand feet. Another four to eight fighters patrolled at low level just outside the range of the screening ships’ anti-aircraft guns. These fighters flew below 3,000 feet in two-plane “Jack Patrols” to intercept attackers attempting to sneak in under the radar. Another eight fighters were poised on deck alert and twenty to twenty-four fighters were in reserve. Third, the task force positioned two or three pairs of destroyers, called “Tomcats,” forty miles from the task force. The destroyers used their radars to extend the task force’s early warning. At least a division of fighters patrolled over each Tomcat. It took fifty-six fighters to maintain this coverage over one task group and its Tomcat. The bulk of these combat air patrols were assigned to the light carriers’ fighting squadrons, enabling the fleet carriers to concentrate their combat power in offensive operations. Task Force 58 also decentralized its fighter direction. Rather than employing a

single Task Force fighter direction center, each group directed its own fighters. Moreover, any ship with fighters available and unidentified aircraft on its radar had the authority and responsibility to direct an interception.⁶³⁷

At Ulithi, Task Force 58 disseminated a memorandum approved by Mitscher titled “Air Combat Notes for Pilots.” After stressing bombing fundamentals for the torpedo and dive-bomber pilots, it listed some pointers for fighter pilots entering combat for the first time. The memorandum emphasized keeping section and division integrity, the defensive weave, maintaining air speed, and recovering altitude. It repeatedly stressed aggressiveness tempered with vigilance and cool headedness. The tone and the intent were not unlike a coach’s locker room talk before a big game, which may have resonated with many of the former athletes filling the ready rooms of the carriers.⁶³⁸

The Pacific Fleet had improved and standardized air-sea rescue in combat areas. Carrier strikes were often supported with submarines, destroyers, OS2U Kingfisher seaplanes aboard surface combatants, and rescue seaplanes such as the PBV and PBM Mariner. The fleet issued standard operating procedures in January 1945 so that all vessels and aircraft employed the same communications frequencies and reporting terminology.⁶³⁹

The Big Blue Blanket, Air Combat Instructions, and air-sea rescue procedures would all help protect Task Force 58’s ships, aircraft, and fliers. But the purpose of Task Force 58 was not to defend itself. Mitscher could keep his force safe just by steering clear of Japan. The purpose of Task Force 58’s strikes against Tokyo were offensive. By attacking airfields and aircraft manufacturing around Tokyo, Task Force 58 would force Japan’s aviators to come out and fight or watch their aircraft be destroyed on the ground. In April 1942, Mitscher had captained *Hornet* eight hundred

⁶³⁷ Barrett Tillman, *Hellcat: The F6F in World War II* (Annapolis: Naval Institute Press, 2012), 154; TF 58 Combat Operations 10 February to 4 March 1945, Enclosure (F), “Analysis of Availability of Aircraft for Offensive Operations.”

⁶³⁸ TF 58 Combat Operations 10 February to 4 March 1945, Enclosure (C), “Air Combat Notes For Pilots,” 1-4.

⁶³⁹ RG 127 A1 1023 Box 42 CNO Warfare and Operations, CincPOA SOP-2A “Air-Sea Rescue in Combat Areas in the Pacific Ocean Areas,” 15 January 1945, 1-7.

miles from Japan to launch a strike of sixteen army air force B-25s, then sped east before air strikes from the Home Islands could hit back. Three years later, Mitscher was bringing twelve hundred aircraft 115 miles from Japan and staying for two days.⁶⁴⁰

⁶⁴⁰ TF 58 Combat Operations 10 February to 4 March 1945, Enclosure (A), "Calendar of Employment of Task Groups of Task Force 58," 1.

Chapter 13: First combat cruise, 10 February - 4 March 1945

Tokyo, 16-17 February

Bunker Hill spent three days at Ulithi, refueling, replenishing supplies, and briefing aircrews about the upcoming operation. To reduce the risk that captured airmen would compromise plans under interrogation, the pilots received few specifics about their upcoming operations. On 9 February Ottinger, Roberts, and the other group and squadron commanders attended a detailed brief on the plan of attack. Mitscher had ordered Task Group 58.3 to destroy Japanese aircraft, aircraft facilities, and naval forces in the Tokyo area from 16 to 18 February. The admiral assumed his force would be detected by air patrols and picket boats and hit with heavy air attacks and possibly submarines. Roberts learned that he would lead sixteen aircraft from VMF-221 as part of the first of five strikes on day one, a forty-plane fighter sweep led by Commander F. K. Upham, *Essex's* air group commander. After returning, Roberts would lead a sixteen-plane, four hour combat air patrol at midday. Captain Swett would lead the fifth fighter sweep of the day. On day two, Roberts would lead the second of several more planned sweeps.⁶⁴¹

Task Group 58.3 sortied on 10 February. A day or so later, Captain Seitz assembled the crew on the flight deck and revealed that they were on their way to bomb Tokyo. “At that one word, the cheers were so loud there was concern the Japanese some 1500 miles away might hear,” recalled Glendinning.⁶⁴²

En route, Air Group 84 flew every day. The Tomcat destroyers practiced controlling fighters and anti-aircraft gunners fired at target sleeves. The amphibious force rehearsed the Iwo Jima assault on the island of Tinian in the Marianas on 11 and 12 February. VMF-221 did not get an opportunity

⁶⁴¹ RG 38 NAID 139921842 C.O. CV-17 “Action Report, First and Second Strikes on Tokyo and Support of Capture of Iwo, 10 February to 5 March 1945,” 18 March 1945, 2; Roberts, diary, 15.

⁶⁴² Glendinning, “Flight Deck,” in Caswell, *Fighting Falcons*, 94.

to participate until the afternoon of the second day, but the navy squadrons all practiced as a group each morning and VMF-451 practiced strafing and bombing the first afternoon.⁶⁴³

Upon returning from the practice runs on 12 February, Captain Snider landed hard, broke his tailhook, and skidded into a crash barrier erected for such mishaps. Lieutenant Balch also landed roughly, breaking his tailwheel and buckling his fuselage. Lieutenant Pemble forgot to lower his tail hook and rolled over the arresting cables and into the barrier, damaging his propeller, engine, and right wing. The squadron stripped one aircraft for parts to keep the remainder flying. For the last two days, between combat air patrols the pilots attended detailed briefings regarding the strikes against Tokyo.⁶⁴⁴

Bunker Hill served steak and green, powdered eggs to the aviators on the morning of 16 February. Roberts, about to lead fifteen of his young fighter pilots on his first combat operation, had no appetite. He and his marines emerged onto the flight deck into a miserable mix of icy rain and snow. Winds were gusting to forty mph. The sky was thoroughly overcast, and the ceiling was just 2,500 feet. Visibility was only two miles at best, and negligible during squalls. The weather would hide the task force until enemy radar pickets detected it, but it would complicate rendezvous, navigation, and targeting. It was ugly weather to step outside into, much less in which to take off from a carrier, fight a battle, find the carrier, and land.⁶⁴⁵

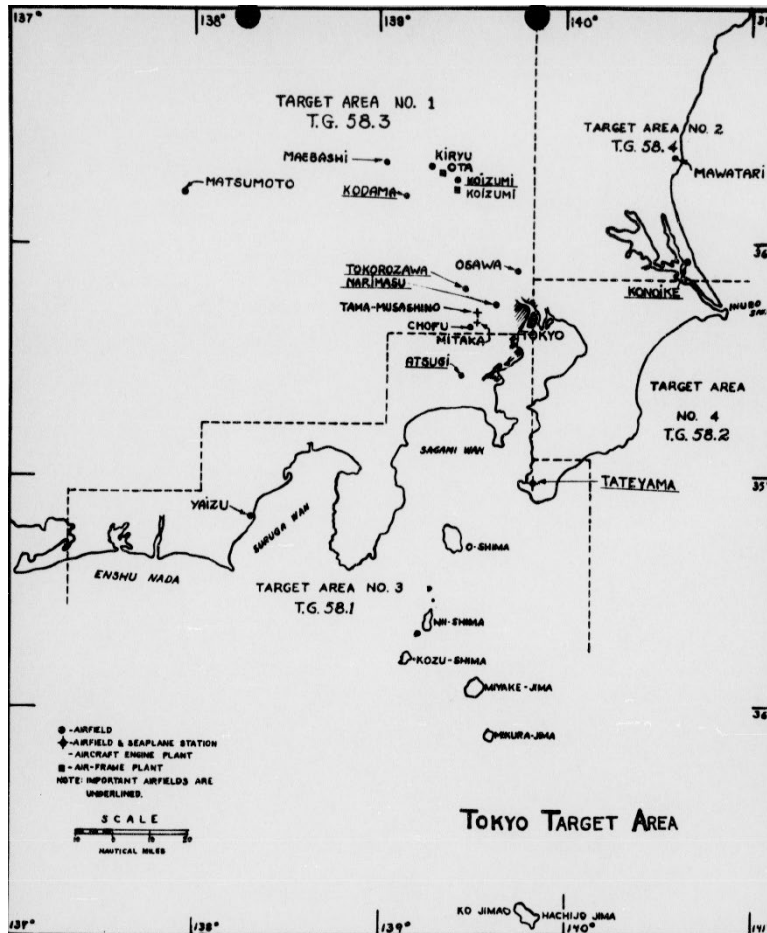
The pilots shivered in their open cockpits as they waited for the squalls to subside. Roberts took off twenty minutes late at 7:05 a.m. Only five of his marines found him in the rain and clouds, and he could not locate Upham and his twenty-two Hellcats. Roberts elected to attack Japan with his tiny force and flew northwest, three hundred feet above the waves.⁶⁴⁶

⁶⁴³ Roberts, diary, 17; TF 58 Combat Operations from 10 February to 4 March 1945, 20-21.

⁶⁴⁴ VMF-221 war diary February 1945, 3-4.

⁶⁴⁵ Roberts, diary, 19-20; CV-17 "Action report 10 February – 5 March 1945," 6.

⁶⁴⁶ Roberts, diary, 21-22; RG 38 NAID 139938807 VMF-221 ACA-1 16 Feb Report No. 1, 26-30.



Map 8. Tokyo Target Area (RG 38 NAID 139956869 Task Group 58.3 Action Report 10 February – 4 March 1945)

When he crossed the coastline, Roberts had little idea where he was, so he began climbing. Through a break in the clouds, he spotted Tateyama Airfield. Roberts attacked. The marines strafed the field, setting three twin-engine planes and a hangar on fire and crippling or damaging seven other aircraft. Roberts's six Corsairs then climbed to find more targets. They found four of the missing F4Us three miles offshore. This group had sunk a fishing boat on their way in. About fifteen miles southwest of Tateyama, Snider spotted a Betty and he and his wingman, Lieutenant Donald G. MacFarland, shot it down. Roberts found a barge, which the marines strafed but did not sink, and headed back to *Bunker Hill*.⁶⁴⁷

⁶⁴⁷ Ibid.

Lieutenant Turner found a flight of F6Fs from *Essex* and joined them in another strafing attack on Tateyama. Two other pilots found no friendly or enemy aircraft or targets. Three others joined the combat air patrol over the task force when they could not make the rendezvous. Despite the weather and a few aircraft with homing equipment failures, all sixteen aircraft recovered by 11:00 a.m. An hour later Roberts was back in the cockpit for a combat air patrol.⁶⁴⁸

Task Group 58.3's next three fighter sweeps all battled the same weather and stabbed at airfields and surface ships when occasional breaks in the clouds revealed them. The final strike of the day, launched at 2:15 p.m., found fewer clouds over the Nakajima Aircraft Assembly Plant at Ota, on the northwest side of Tokyo Bay. The strike included fifteen F4U-1Ds from VF-84, thirteen SB2C-4Es from VB-84, and fourteen TBM-3s from VT-84. To assess the bombing, a single F6F-5P was assigned to photograph the target immediately after the strike. Two F4U-1Ds from VMF-221 flown by Lieutenants George R. A. Johns and William M. Pemble protected the reconnaissance fighter and its wingman, a VF-84 F4U-1D.⁶⁴⁹

The bombers approached the target from the northwest at 13,500 feet. VF-84 flew top cover at 18,000 feet, with the photo section and marines in between. The clearing weather enabled the Japanese to respond with a large number of Oscar and Tojo fighters, which circled the formation. Five of the TBMs were equipped with electronic jamming equipment to interfere with enemy communications, and all the bombers' gunners threw sleeves of aluminum strips called "window" out before and during the bombing runs to confuse anti-aircraft radars. When the bombers began their dives, the Japanese fighters swarmed in. None of the bombers were lost on the bombing run, but two TBFs were lost to fighters on the return.⁶⁵⁰

⁶⁴⁸ Ibid.

⁶⁴⁹ RG 38 NAID 139938807 AG-84 ACA-1 16 Feb Report No. 1, 31.

⁶⁵⁰ RG 38 NAID 139938807 VMF-221 ACA-1 16 Feb Report No. 115, 29-30.

Johns and Pemble, who had volunteered at the last minute, did not realize that VF-84's fighters were going to dive with the bombers to strafe anti-aircraft emplacements. The four navy and marine fighters found themselves alone, high over Ota with what looked to Johns like a hundred enemy aircraft. By the time the photo plane began its run across the target, Pemble was missing. Johns fired at the enemy fighters as they swooped by while rolling around the F6F-5N until it had taken the precious photos. Johns then yelled to the photo pilot, "Fire wall the S.O.B. and dive!" The two fighters evaded the attackers, but Pemble did not return. The photos taken by the F6F-5P and subsequent photos taken on 25 February confirmed the bombing accuracy claimed by the torpedo and dive-bomber pilots of Air Group 84. The plant appeared to be ninety percent destroyed.⁶⁵¹

On 17 February Air Group 84 conducted a fighter sweep at 7:15 a.m. followed by a 100-plane Task Group 58.3 strike at 9:00 a.m. VMF-221 flew combat air patrol over the task group and saw no action. The strike scored multiple hits on two engine plants and Air Group 84 lost only one SB2C, which ditched within the task group where its aircrew were recovered. As the weather worsened, Mitchener called off further strikes at 11:17 a.m. and Task Force 58 sailed for Iwo Jima.⁶⁵²

Close air support doctrine

The Marine Corps had endeavored to not only get marine squadrons aboard carriers, but to develop doctrine and units to support landing forces ashore. After a poor showing at Tarawa, close air support by navy and army air force squadrons had steadily improved. For the assault on Iwo Jima, the Commander, Support Aircraft, a naval aviator at sea, would control all the aircraft supporting the landing. Carrier aircraft would check in with the Commander, Support Aircraft upon arrival. Once the landing force was ashore, air liaison parties embedded with each battalion,

⁶⁵¹ VMF-221 ACA-1 16 Feb Report No. 115, 26, and *Bunker Hill* Photo Interpretation Report #5, 3; George R. A. Johns, "The USS *Bunker Hill* and Combat," in Caswell, *Fighting Falcons*, 97-98.

⁶⁵² VMF-221 ACA-1 16 Feb Report No. 115, 26; TG 58.3 Action Report 10 February – 4 March 1945, 6.

regiment, and division would request air support from the Commander, Support Aircraft. The supporting aircraft would be directed to contact an air liaison party, who would confirm the target location and provide updates on friendly troop locations. Air liaison parties used several techniques to help pilots locate targets on the ground. In addition to providing map grid coordinates, they laid out orange target panels to identify their locations and dropped white phosphorous mortar rounds to indicate targets.⁶⁵³

The Marine Corps had developed a Landing Force Air Support Control Unit, or “LFASCU,” that would take control of aircraft once it was established ashore. However, the LFASCU did not begin controlling aircraft on Iwo Jima until 1 March, long after Task Force 58 departed the area.⁶⁵⁴

VMF-221 had practiced supporting troops ashore several times in California and for an afternoon at Tinian on the way to Iwo Jima. But within Air Group 84, it appears the navy squadrons were more proficient at close air support than the marines. The navy bomber squadrons had spent weeks practicing with amphibious forces on San Clemente Island off San Diego. During the rehearsal at Tinian, it was VB-84, VT-84, and VF-84 that had participated in the practice landing.⁶⁵⁵

Four days at Iwo Jima, 19-22 February

A team of marines had come aboard *Bunker Hill* at Ulithi to review the landing and air support plans for Iwo Jima. They had explained that the 4th and 5th Marine Divisions would land side by side on D-Day, with the 3rd Marine Division in floating reserve.⁶⁵⁶ VMF-221 and VMF-451

⁶⁵³ Hemler, *Delivering Destruction*, 70, 113.

⁶⁵⁴ Headquarters, Commander in Chief, United States Fleet, “Amphibious Operations--Capture of Iwo Jima--16 February to 16 March 1945,” 17 July 1945, 3-3, published online 23 Oct 2019, retrieved from <https://www.history.navy.mil/content/history/nhhc/research/library/online-reading-room/title-list-alphabetically/a/amphibious-operations-capture-iwo-jima.html#ch3>; USMC HD HAF Headquarters, Landing Force Air Support Control Unit One “Special Action Report – Iwo Jima Campaign,” 17 March 1945, 2.

⁶⁵⁵ AG-84 ACA-1 19 Feb Report No. 3, 96; TF 58 Combat Operations from 10 February to 4 March 1945, 20-21.

⁶⁵⁶ Roberts, diary, 13.

would fly close air support missions all afternoon. Each Corsair would be heavily loaded, with a full load of .50 caliber ammunition, eight rockets, and one napalm bomb. “That’s a lot of stuff to hang on a fighter,” recorded Roberts. “And they will have to give us lots of deck to get off on.”⁶⁵⁷

As practiced at Tinian, *Bunker Hill’s* three navy squadrons supported the initial landings on 19 February. With no troops yet ashore, Air Group 84 bombed, strafed, and rocketed areas on the left and right flanks of the landing beaches. Though the pilots reported they hit their assigned areas, they could not see whether they inflicted any actual damage.⁶⁵⁸ That afternoon, Roberts led Air Group 84’s second support mission of the day. His strike included sixteen of VMF-221’s F4U-1Ds, twelve more from VMF-451, and eleven bombers each from VB-84 and VT-84. As Roberts had feared, the Corsairs were burdened with a napalm bomb, eight rockets, and a full load of machine-gun ammunition.⁶⁵⁹

Napalm was a mixture of napalm powder and gasoline. Marines were told the burning napalm would not only set fire to whatever it contacted but would also asphyxiate defenders underground. The mixing was done on the flight deck by ordnance technicians. The technicians then filled the bombs with the napalm mixture and affixed fuses to the nose and tail. Each fuse had a safety pin that the crew removed just before launching.⁶⁶⁰

Despite the weight of all this ordnance, all Roberts’ aircraft launched safely and rendezvoused for the strike. The marines had been assigned artillery and mortar emplacements and fortified positions located four hundred yards north of Iwo Jima’s Airfield Number 2. These areas were far in advance of the assault units. Between dodging other aircraft and the dust and smoke generated from all the bombing and naval gunfire, the fighter pilots could not make out any

⁶⁵⁷ Roberts, diary, 16.

⁶⁵⁸ AG-84 ACA-1 19 Feb Report No. 3, 91-95.

⁶⁵⁹ AG-84 ACA-1 19 Feb Report No. 4, 99-103; Roberts, diary, 25.

⁶⁶⁰ Garand and Strowbridge, *Western Pacific Operations*, 92, 284; CO CV-15 to ComAirForPacFlt, “Napalm Fire-Bombs—Experience with use of,” 26 May 1945, 1-2.

Japanese emplacements. The marines dropped their napalm bombs on the first run, fired their rockets on the second, and strafed the area on a third pass. Five of VMF-221's napalm bombs failed to drop and four of Captain Swett's rockets failed to launch. The pilots jettisoned most of these weapons over the ocean, but Captain Snider and Lieutenant Walter Goeggel each landed with a hung rocket that failed to launch. All of *Bunker Hill's* aircraft returned safely on D-Day, though one TBM-3 was damaged and was scrapped after crashing into the barrier upon landing. None of the group's pilots could swear they had hit anything besides the assigned section of the island.⁶⁶¹

Bunker Hill's air group flew only combat air patrols on 20 February as the carrier refueled. VMF-221 contributed two divisions, none of which encountered enemy aircraft. The Japanese limited their air attacks to nighttime forays, which Task Group 58.3 detected on radar and evaded.⁶⁶²

On 21 February Captain Swett and nine VMF-221 pilots joined fifteen VMF-451 Corsairs, eleven VB-84 SB2Cs and five VB-84 TBMs on an Air Group 84 support mission to Iwo Jima led by Commander Ottinger. Instead of napalm, the Corsairs each carried a 500-pound general purpose bomb. When Ottinger checked in with the air support control unit at 7:30 a.m., he was directed to provide continuous attacks from 8:20 to 8:50 a.m. on an area just north of Airfield Number 2 in support of an 8:10 a.m. attack by the 4th and 5th Marine Divisions. This time the marines began their attack with rockets, then dropped their bombs, followed by three strafing attacks. "We could see the thousands of individual Marines inching forward, firing their weapons, but on the other side we could not see a single Japanese, all of whom were holed up in their underground tunnels connecting pillboxes and fortified blockhouses," recalled Lieutenant Glendinning. Though most defenders were concealed, Captain Balch spotted an artillery emplacement well north of the assigned area. After getting clearance from the air support control unit, Balch led his division in a strafing

⁶⁶¹ AG-84 ACA-1 19 Feb Report No. 4, 99-103; Roberts, diary, 25.

⁶⁶² TG 58.3 Action Report 10 February – 4 March 1945, 7-8; VMF-221 war diary February 1945, 5.

attack against it. The three navy squadrons conducted a second air support mission that afternoon. All of Air Group 84's planes returned safely once again.⁶⁶³

That evening fifty suicide attackers penetrated the combat air patrol over Task Force 52, the amphibious force. *Saratoga* was struck by three suicide planes and one bomb. Another suicide plane hit the escort carrier USS *Bismarck Sea* (CVE-95). Uncontrollable fires resulted in a catastrophic explosion, and *Bismarck Sea* sank. Suicide strikes also damaged a second escort carrier, a cargo ship, and a landing ship. The attack not only killed hundreds of sailors but also destroyed *Saratoga's* night fighter group. As a result, Mitscher detached *Enterprise* and her night fighter group, leaving Task Force 58 temporarily without a dedicated night fighter carrier.⁶⁶⁴

On *Bunker Hill's* last day at Iwo Jima, Air Group 84 launched one support mission at 12:50 p.m. Roberts was assigned twenty-six fighters from the two marine squadrons, and Ottinger flew along to coordinate the entire mission. The ceiling was just three hundred feet. In the heavy rain, only sixteen fighters linked up with Roberts. He headed for Iwo Jima on instruments just two hundred feet above the waves. When Roberts was just ten miles from the island, Ottinger radioed that the ceiling over Iwo Jima was just one hundred feet, and he ordered the flight back. *Bunker Hill* was not ready for the group's early return, and the fifty aircraft buzzed about the task force for an hour in the heavy rain, keeping under the low clouds. "I damned near got creamed about 6 times," Roberts wrote in his diary that night. "Why no one was killed in that melee I will never know."⁶⁶⁵

⁶⁶³ AG-84 ACA-1 19 Feb Reports No. 3 and 4, 95-103; Ralph Glendinning, "Attack on Koizumi," in Caswell, *Fighting Falcons*, 106.

⁶⁶⁴ Hammel, *Air War Pacific*, 578-579.

⁶⁶⁵ Roberts, diary, 27; AG-84 ACA-1 22 Feb Report No. 7, 124-126.

Tokyo again, 25 February

After refueling on 23 February, *Bunker Hill* sailed west for Task Force 58's second strike against Japan. While enroute, Lieutenant Nettles upended his Corsair onto its nose upon recovering from a combat air patrol. He was uninjured, but the marines ended up scrapping his aircraft for parts.⁶⁶⁶

VF-84 started 25 February by joining fighters from *Essex* in an early morning fighter sweep. The navy pilots claimed nine enemy fighters were destroyed and another four probable but lost one of their own.⁶⁶⁷ Twenty F4U-1Ds from VMF-221 were airborne by 8:45 a.m., led by Major Roberts. The marines flew top cover for VT-84 and VB-84, which each had thirteen bombers up, and a four-plane photo reconnaissance section from VF-84. The Air Group 84 strike linked up with similar groups from *Essex* and *Compens* and headed toward the Nakajima Musashima aircraft plant near Tokyo. The sky was overcast at 3,000 feet, but visibility was good below that. The strikes flew under the clouds. The ground was covered in freshly fallen snow. Thick clouds over Tokyo Bay forced *Bunker Hill's* strike to divert to its secondary target, the Nakajima Koizumi factory sixty miles inland. The *Essex* and *Compens* groups headed for the Nakajima Ota plant. "They petered out," according to Roberts. The Ota plant "had been creamed earlier by our bombers on the previous trip." Air Group 84 reached its secondary target around 10:30 a.m. without facing any fighters and found the skies clear. In addition to the bombs carried by VB-84 and VT-84, each Corsair carried a 500-pound bomb. One after another, the F4Us dove in from the southeast in fifty degree dives, releasing their bombs at 2,000 feet. Anti-aircraft fire failed to shoot down a single *Bunker Hill* aircraft. Photographs

⁶⁶⁶ VMF-221 war diary, 6.

⁶⁶⁷ VF-84 ACA-1 25 Feb Report No. 9, 134.

taken by an F6F-5N confirmed the bombing accuracy was superb, and Task Group 58.3 estimated twenty percent of the plant was destroyed.⁶⁶⁸

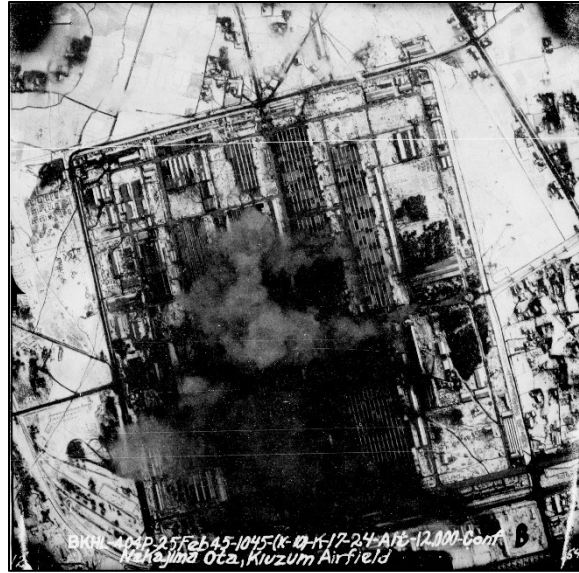


Figure 25. Nakajima aircraft assembly plant, Koizumi, Japan, 25 February 1945 immediately after Air Group 84's strike (Air Group 84 Air Combat Action report 25 February 1945 0825)

After the strike, a few of the marines strafed three nearby airfields. Roberts regretted they could not linger to strafe the Koizumi airfield more deliberately, as he estimated there were a hundred aircraft parked around the field. As the fighters escorted the bombers back home, a few Japanese fighters shadowed the formation but did not attack it. Over the ocean, Roberts saw about twenty fishing trawlers. He ordered two divisions to strafe them, and they set five boats on fire. The after action report postulated that they might have been picket boats headed toward the rescue submarine stationed offshore. Roberts had mixed feelings which he confided in his diary. "It might discourage Jap fishermen from venturing out into those waters, but other than that it did no good

⁶⁶⁸ AG-84 ACA-1 25 Feb Report No. 8, 140-145; Roberts, diary, 28-30; TG 58.3 Action Report 10 February – 4 March 1945, 10.

whatever except to ruin a few boats and maybe kill a few fisherman.” The strike force was recovered aboard the carrier without losing an aircraft.⁶⁶⁹

Okinawa, 1 March

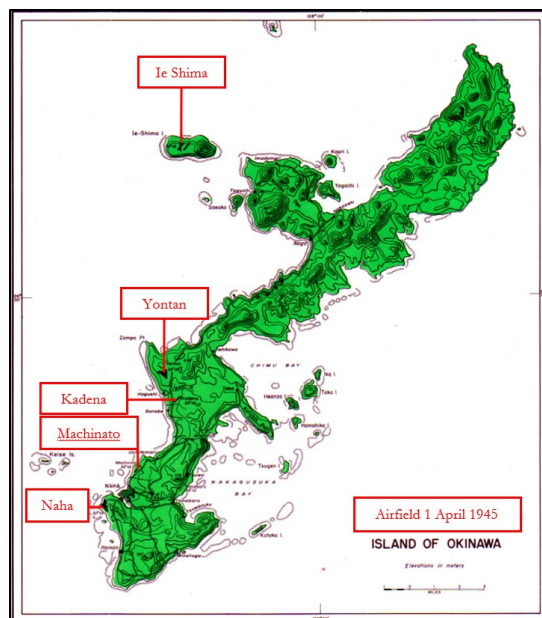
The mild weather did not last. Mitscher cancelled further strikes in the Tokyo area and ordered Task Force 58 to head southwest to strike shipping around Nagoya the next day. Enroute the ships battled gale force winds and heavy seas, which prevented the task force from reaching its launch point on time. Mitscher cancelled the Nagoya operation, and Task Group 58.3 headed out to sea to refuel on 27 February.⁶⁷⁰

Task Force 58’s final action during this underway period consisted of strikes and reconnaissance flights at Okinawa. In preparation for the landing, now scheduled for 1 April, Spruance wanted Mitscher to strike every airfield in the Ryukyus as well as to collect aerial photographs of Okinawa. Task Force 58 completed its refueling and reached a position seventy miles southeast of Okinawa early on the morning of 1 March.⁶⁷¹

⁶⁶⁹ AG-84 ACA-1 25 Feb Report No. 8, 140-145; Roberts, diary, 28-30.

⁶⁷⁰ TG 58.3 Action Report 10 February – 4 March 1945, 11; CV-17 “Action report 10 February – 5 March 1945,” 2.

⁶⁷¹ Moore, *Rain of Steel*, 85.



Map 9. Island of Okinawa, showing Japanese airfields, 1 April 1945 (Roy Appleman, *Okinawa: The Last Battle*, Map III)

Mitscher directed Task Group 58.3 to strike and photograph airfields and installations in the Naha area on the southern end of Okinawa and on Minamidaitōjima, two hundred miles east of Okinawa. VMF-221 provided two divisions led by Captain Swett and Captain Balch to Air Group 84's first fighter sweep of the day, an escort of five fighters led by Captain Delancey for a photographic mission, and combat air patrols led by Major Roberts, Captain Baldwin, and Captain Snider.⁶⁷²

Captain Swett found no enemy aircraft aloft, so he began by strafing and rocketing Suba Harbor and an airfield on Ie Shima on Okinawa's northwest coast. He then flew south to Yontan and did the same to its airfield. Most of the aircraft the marines found were dummies or appeared inoperable. While attacking anti-aircraft positions, Lieutenant Briggs' aircraft suffered a violent hit from one of the guns. He lost his hydraulics and his flaps. His right wing caught fire, and the ammunition in his burning wing started to detonate. Briggs kept the aircraft flying by applying

⁶⁷² TG 58.3 Action Report 10 February – 4 March 1945, 11; RG 127 A1 1052 Box 30, VMF-221 war diary March 1945, 1; Roberts, diary, 32.

forward right stick and left rudder. He could climb, but the burning fighter would stall if he slowed below two hundred mph. Landing or ditching was impossible at that speed. Briggs reached the task force, bailed out, and was rescued within minutes by a destroyer.⁶⁷³

Captain Delancey likewise encountered no enemy aircraft while escorting the photo mission. After the F6F-5P finished taking its pictures, Delancey's division strafed Yontan airfield. Anti-aircraft fire struck Lieutenant Richard Wasley's fighter on his third pass. Despite losing his flaps and aileron control Wasley managed to land aboard *Bunker Hill*, crashing into the barrier. He was unhurt.⁶⁷⁴

Task Group 58.3's pilots flew 272 sorties on 1 March. They encountered only one enemy aircraft aloft, but destroyed or damaged forty-four on the ground and damaged the airfields on and around Okinawa. All of the photographic flights completed their missions. The group lost eleven aircraft to combat and mishaps, but only three aircrew.⁶⁷⁵

Ulithi refitting and replacements, 4-13 March

On 4 March, after three weeks underway, Task Group 58.3 anchored at Ulithi. For the next ten days *Bunker Hill* and Air Group 84 restocked supplies, repaired aircraft, and rested. The sailors and marines rode landing craft across the lagoon to a fleet recreation area on Mog Mog Atoll, where they played softball, swam, drank beer, and ate fresh food. Four aviators from VMF-213 joined VMF-221. Their squadron had been one of the first marine squadrons to deploy aboard a carrier. Navy Corsair squadrons were replacing these four marine units. The four pilots had elected to stay and fight rather than rotate back to California with their command. Roberts was happy to see the squadron's air combat intelligence officer, Lieutenant Leo B. Pambrum, arrive from California. First

⁶⁷³ VMF-221 ACA-1 1 Mar 1945 Report No. 7, 1-5; Fred Briggs, "Bail Out," in Caswell, *Fighting Falcons*, 111-113.

⁶⁷⁴ VF-84 ACA-1 1 Mar 1945 Report No. 11, 166.

⁶⁷⁵ TG 58.3 Action Report 10 February – 4 March 1945, 10.

Lieutenant Frank E. Frisk had accumulated a troubling record of mishaps. The squadron had enough pilots that Roberts could afford to transfer him out and did so. When *Bunker Hill* hoisted anchor on 14 March, the squadron had forty-one aviators and all its aircraft were ready to fly.⁶⁷⁶

While Ulithi offered a respite from combat, one sobering incident warned of what loomed ahead. On the night of 11-12 March, twenty-four long-range Kugisho P1Y1 “Frances” twin-engine bombers made a suicide attack against Ulithi anchorage. One struck USS *Randolph* (CV-15), setting her a fire, killing twenty-six of her crew, wounding a hundred more, and forcing her to undertake repairs for the next eighteen days.⁶⁷⁷

The following morning, on *Bunker Hill*'s last full day at anchor, Roberts attended a task group operations brief led by Admiral Sherman. For the first time, Roberts and the other squadron commanders learned the details of Operation Iceberg, the invasion of Okinawa.⁶⁷⁸

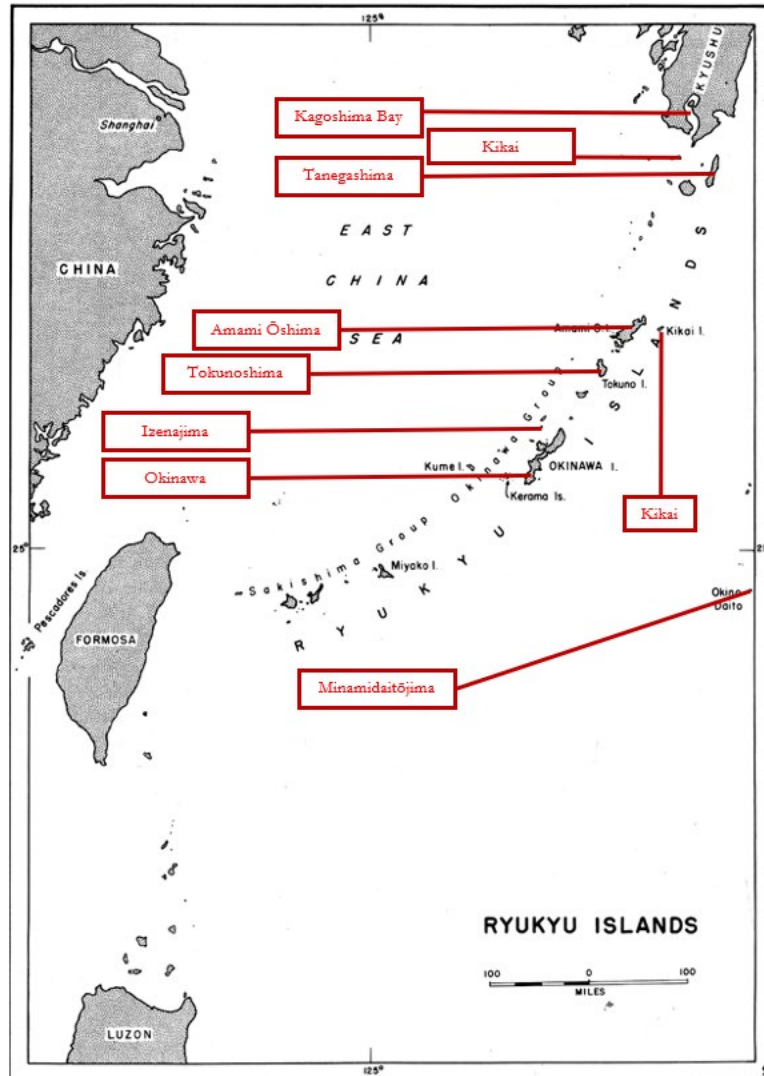
⁶⁷⁶ VMF-221 war diary March 1945, 2; Roberts, diary, 32-36; Moore, *Rain of Steel* (2020), 151.

⁶⁷⁷ Moore, *Rain of Steel*, 96-86; CV-17 war history, N-59.

⁶⁷⁸ Roberts, diary, 36-37.

Chapter 14: Second combat cruise, 14 March – 11 May 1945

Operation Iceberg, the invasion of Okinawa



Map 10. The Ryukyu Islands, with points struck by VMF-221 in 1945 annotated (Appleman, *Okinawa*, 5)

The purpose of seizing Okinawa was to facilitate a subsequent invasion of the Japanese home islands. The importance of Okinawa was obvious to both American and Japanese planners. Okinawa was just over three hundred miles from Kyushu. Japanese aircraft on Okinawa could

interfere with American vessels enroute to Kyushu. American medium bombers and long-range fighters on Okinawa could support landings on Kyushu. Though the Japanese Combined Fleet no longer had the capability to challenge the United States Pacific Fleet, American planners estimated the 32nd Army on Okinawa had 53,000-56,000 soldiers, who would ensure a protracted, costly battle for the island. American commanders fully anticipated the Japanese would allocate most of their remaining aircraft to attack the American fleet from its bases throughout the Ryukyus, on Formosa, and on Kyushu. ⁶⁷⁹

Iceberg was the largest operation of the Pacific War. Figure 26 illustrates the large force allocated to the operation.

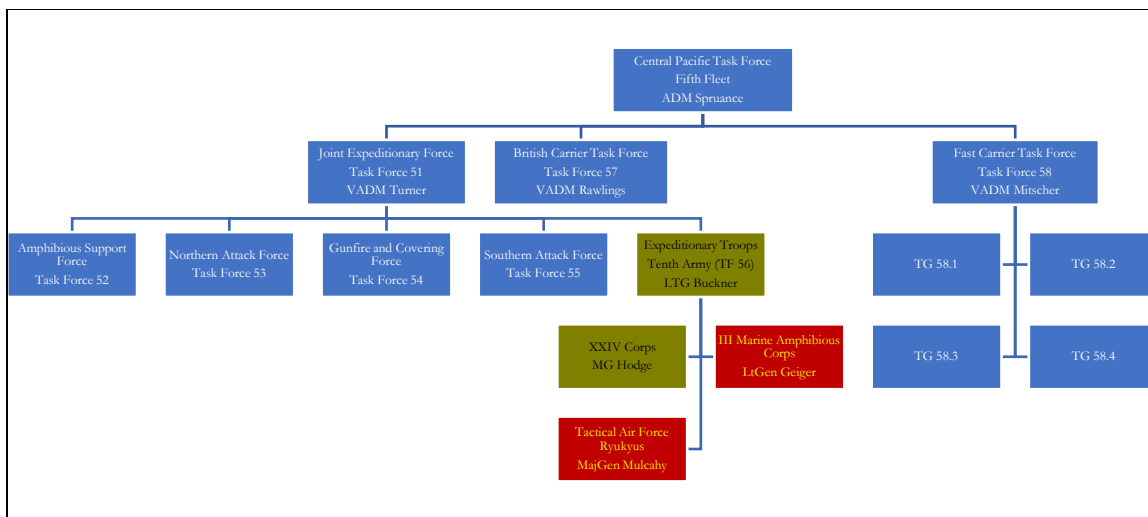


Figure 26. Iceberg Task Organization (Appleman, *Okinawa*, 22, 24)

Spruance allocated over six hundred ships to Iceberg. In addition to Task Force 58's eleven fleet carriers and six light carriers, Task Force 52 had seventeen escort carriers and Task Force 57 had five of the Royal Navy's smaller carriers. These thirty-nine ships carried somewhere around two

⁶⁷⁹ Appleman, *Okinawa*, 1-6; Morison, *Victory in the Pacific*, 89.

thousand aircraft. Once the U.S. Tenth Army was established ashore, Major General Mulcahy's Tactical Air Force Ryukyus would grow to almost eight hundred aircraft.⁶⁸⁰

For this operation, Task Group 58.3 sortied with three carriers: *Bunker Hill*, *Essex*, and USS *Cabot* (CVL-28), which replaced *Compens*. Mitscher had also assigned *Randolph* to the group, but she had to remain in Ulithi to repair her battle damage. For protection, the group had the firepower of two battleships, five cruisers, and seventeen destroyers.⁶⁸¹

Mitscher departed Ulithi with ten fleet carriers and five light carriers embarked with over 1,100 aircraft.⁶⁸² Prior to L-Day, 1 April, Mitscher's job was to attack airfields and vessels in southern Japan to limit counter-invasion attacks and to strike targets in the Ryukyus to reduce Japanese defenses prior to the landing. Throughout this period and until released from Iceberg, Task Force 58 would also provide fighter protection to the fleet off Okinawa.⁶⁸³

To oppose the Fifth Fleet, Japan's army and navy could muster about 2,300 combat aircraft. Over five hundred were stationed in Formosa. The remainder were spread across Japan and Korea. These 2,300 included 950 fighters, 560 bombers, 155 reconnaissance aircraft, and 650 "special attack" aircraft. The Imperial Japanese Army trained and organized the special attack units specifically to conduct suicide attacks. The navy had another 2,000 aircraft in training and in reserve in its Tenth Air Fleet, which it planned to employ in suicide attacks as well. Vice Admiral Matome Ugaki, commander of the Imperial Japanese Navy's Fifth Air Fleet, would direct both army and navy air operations opposing the invasion of Okinawa. Due to American strategic bombing, carrier strikes, and interdiction of Japan's sea lanes, Japanese aircraft plants were manufacturing fewer than 1,400 aircraft per month.⁶⁸⁴

⁶⁸⁰ Morison, *Victory in the Pacific*, 372-388.

⁶⁸¹ RG 38 NAID 140054760, TG-58.3 "Action Report 14 March – 1 June 1945," 18 June 1945, 2.

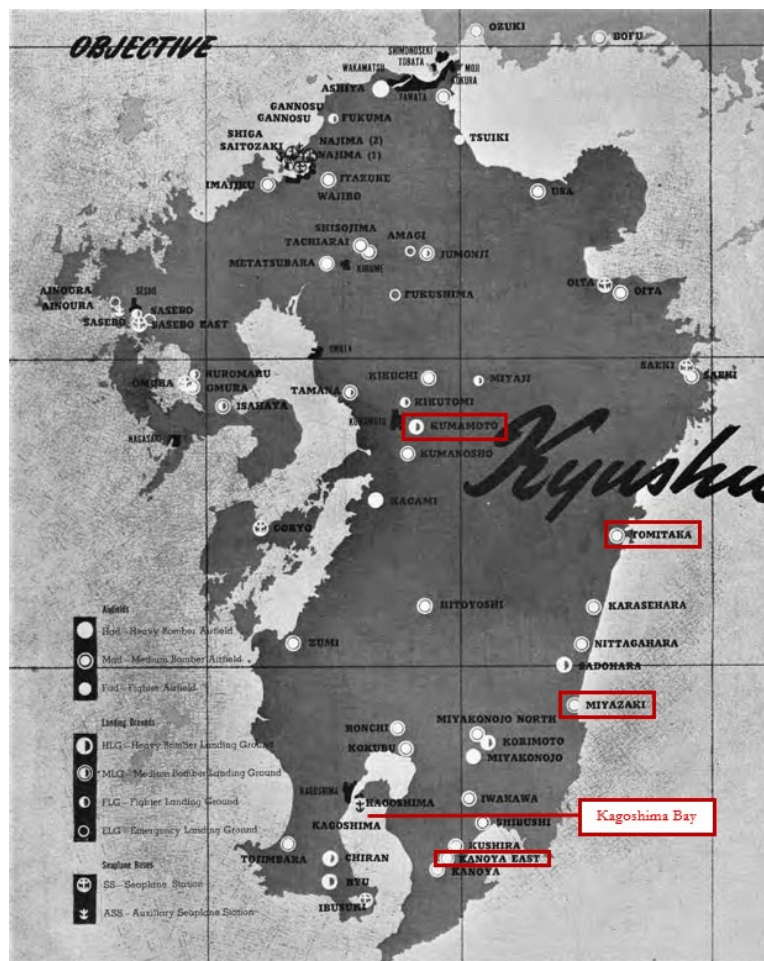
⁶⁸² Hammell, *Air War Pacific*, 595-596.

⁶⁸³ Moore, *Rain of Steel*, 104, 149-150; Morison, *Victory in the Pacific*, 94, 112.

⁶⁸⁴ Frank and Shaw, *Victory and Occupation*, 21-22; Robin L. Rielly, *Kamikazes, Corsairs, and Picket Ships: Okinawa, 1945* (Philadelphia: Casemate Publishers, 2010), 84-95; USSBS, Aircraft Division, *Japanese Aircraft Industry*, 11-112, 126;

Kyushu and the Inland Sea, 18-19 March

Task Force 58's first operation after departing Ulithi was a series of strikes against airfields on southern Kyushu to destroy aircraft and aviation infrastructure that could contest the landing on Okinawa. Ugaki was aware Mitscher's task force had sortied from Ulithi and correctly anticipated the American strike on 18 March. On the night of 17-18 March, Japanese scouts located the American fleet, and Ugaki ordered counterstrikes against Task Force 58.⁶⁸⁵



Map 11. Airfields on Kyushu, with those struck by VMF-221 March – May 1945 annotated (“Kyushu: Cradle of Kamikaze,” *Naval Aviation News*, 15 August 1945, 6)

Interrogation of: Captain Rikibei Inoguchi, IJN, by LCDR J.A. Field Jr., USNR, and LCDR R.P. Aikin, USNR, 15 October 1945, USSBS Naval Analysis Division, *Interrogations*, vol. 1, no. 62, 63.

⁶⁸⁵ Moore, *Rain of Steel*, 104; TG-58.3 “Operations 14 March – 1 June 1945,” 7.

VMF-221's day started early with reveille at 3:40 a.m. Commander Ottinger led the first strike of sixteen VMF-221 Corsairs, fourteen VB-84 dive-bombers, and thirteen VT-84 torpedo bombers against Miyazaki airfield at 6:38 a.m. They encountered no fighters enroute. Ottinger circled the airfield and struck from the northwest so that the attackers would be headed out to sea after completing their runs. The bombing and rocketing heavily damaged the airfield's hangars and fuel tanks and destroyed or damaged at least six Bettys on the ground. Ottinger led his division and Captain Delancey's division on a second strafing attack to destroy more Bettys. During this run anti-aircraft fire hit Lieutenant Glendinning's plane. He nursed his Corsair out to sea, survived ditching in heavy seas, and bobbed in an inflatable raft for six cold, wet hours before an OS2U from USS *New Jersey* (BB-62) retrieved him. Glendinning returned to *Bunker Hill* that evening.⁶⁸⁶

Around the time Glendinning ditched, a single Judy dive-bomber attacked *Bunker Hill* from out of the sun. Anti-aircraft guns from *Bunker Hill* and *Essex* did not hit the dive-bomber until after it released its bomb, which detonated off *Bunker Hill's* starboard quarter, close enough to splash water on the flight deck. The burning Judy crashed 1,500 yards off the port beam. Elsewhere in Task Force 58, bombs damaged the carriers *Enterprise* and USS *Intrepid* (CV-11).⁶⁸⁷

Captain Snider led a three division fighter sweep over southern Kyushu that afternoon. One fighter suffered an oil leak and aborted along with its wingman, leaving Snider just ten Corsairs. Snider led a rocket attack against the Kumamoto Airframe Plant. He then led his flight up to 13,000 feet. Near Tomitaka Airfield the marines encountered about twenty-five Zeros and Franks. Snider's flight attacked immediately. The marines noted that the Japanese pilots conducted head on attacks but did not use their planes' superior maneuverability to their advantage. "Their turns were wide and

⁶⁸⁶ RG 127 A1 1052 Box 30 VMF-221 war diary March 1945, VMF-221 ACA-1 18 March 1945, report no. 9, 1, 3-4. VMF-221 ACA-1 reports for March through May 1945 are from this record and hereafter cited as unit, ACA-1, date, report no. See also Ralph O. Glendinning, "Floating Off Kyushu," in Caswell, *Fighting Falcons*, 118-121.

⁶⁸⁷ RG 38 NAID 139977172 CV-17 war diary March 1945, 7; TG-58.3 "Operations 14 March – 1 June 1945," 7.

sloppy. Their speed and dives were inferior, and their only maneuver seemed to be the split-S,” noted the squadron’s report. After debriefing the pilots and reviewing their gun camera footage, Roberts concluded his marines had destroyed eleven enemy fighters. Snider and Lieutenant Caswell had each shot down three. Only one VMF-221 fighter suffered any damage, a single hole in its vertical stabilizer.⁶⁸⁸

Throughout the night Japanese bombers searched for Task Group 58.3 as it steamed northeast. The bombers dropped flares frequently. Two of these floated down within 10,000 yards of the task group, but the ships escaped detection. At 5:40 a.m., *Bunker Hill* launched eight Corsairs from VMF-221 under Captain Snider for the group’s combat air patrol. At 8:25 the fighter direction officer vectored Snider’s patrol to intercept several unidentified aircraft. Lieutenant Turner spotted a single Zero headed toward the task force low over the water. He pushed his nose down dove in pursuit of the Zero at full throttle. His faster Corsair closed from behind and he fired. He was only 800 feet behind the Zero when it exploded. The violent blast caused Turner to lose control and he crashed into the sea, disappearing immediately. His body was not recovered.⁶⁸⁹

Turner’s Zero was one of many suicide and bombing attacks against Task Force 58 that day. *Essex* narrowly evaded two aircraft shot down by anti-aircraft fire. A fighter from another squadron shot down a Judy just short of *Bunker Hill*. Bombs struck USS *Wasp* (CV-7), USS *Yorktown* (CV-10), and USS *Franklin* (CV-13). *Franklin* burned spectacularly. Her crew saved the ship, but she required major repairs, and 724 of her crew perished in the explosions and flames. Aboard *Bunker Hill*, Air Group 84 moved its pilots out of their ready rooms, vulnerably situated just beneath the flight deck, and into the wardroom below the hanger deck.⁶⁹⁰

⁶⁸⁸ VMF-221 ACA-1 18 March 1945, report no. 10, 1-6; Dean Caswell, “From My Diary,” in *Fighting Falcons*, 114-115.

⁶⁸⁹ VMF-221 ACA-1 19 March 1945, report no. 11, 4.

⁶⁹⁰ TG-58.3 “Operations 14 March – 1 June 1945,” 10; Roberts, diary, 40.

Snider and his patrol had protected the task group while other squadrons made a fighter sweep over the naval base at Kure. Their sweep encountered no enemy aircraft. A follow on strike from *Bunker Hill* and *Essex* damaged the aircraft carrier *Katsuragi*, the light carriers *Ryujo* and *Kaijō*, the battleships *Haruna* and *Yamato*, and a cruiser. The anti-aircraft barrage downed five Helldivers and one Avenger.⁶⁹¹

At 10:15 a.m., Major Roberts led a second fighter sweep of fourteen VMF-221 F4Us over the airfields on Shokaku. They encountered no aircraft aloft but destroyed at least ten on the ground and damaged another forty in rocket and strafing attacks.⁶⁹² Task Force 58 then retired to the south on 20 March to lend its weight against the Japanese defenses on Okinawa.

Okinawa, 23-27 March

With *Enterprise*, *Franklin*, and *Wasp* out of action, Mitscher reorganized Task Force 58 into three task groups. USS *Hancock* (CV-19), USS *Bataan* (CVL-29), USS *Washington* (BB-56), and a cruiser joined Task Group 58.3 on 22 March, and the battleship *New Jersey* departed. Though Mitscher still wielded a powerful air force, these three wounded carriers departed with over 250 aircraft, leaving Task Force 58 with fewer than nine hundred planes for its next operation.⁶⁹³

While underway that morning, the ships refueled from oilers and replenished their ammunition from supply ships. Underway replenishment, one of the many innovative techniques that had become routine, enabled the Pacific Fleet to keep Task Force 58 at sea and in combat without returning to Ulithi.⁶⁹⁴

⁶⁹¹ TG-58.3 "Operations 14 March – 1 June 1945," 9.

⁶⁹² VMF-221 ACA-1 19 March 1945, report no. 12, 1-5.

⁶⁹³ Hammel, *Air War Pacific*, 601-602.

⁶⁹⁴ CV-17 war diary March 1945, 10-11.

As Task Force 58 sailed toward Okinawa, Japanese scouts, bombers, and suicide attackers shadowed and jabbed Mitscher's ships each day. VMF-221 flew combat air patrols to protect the group from them. During the morning air patrol on 21 March, Lieutenants William L. Bailey and Jarvis H. Carpenter each shot down an interloper. They reported that neither Japanese pilot maneuvered effectively.⁶⁹⁵

In *Bunker Hill's* first strike against Okinawa, Commander Ottinger led fifteen VMF-221 Corsairs, nine Helldivers, and thirteen Avengers to hit a midget submarine base at Unten Kō north of Yontan on the morning of 23 March. Major Roberts destroyed one small submarine with rockets, but the damage inflicted by the remainder of the strike was inconsequential. Six aircraft had hung rockets that failed to launch, and three napalm bombs had failed to explode.⁶⁹⁶

The following morning Roberts led twenty-one Corsairs from his squadron on a fighter sweep to Yontan Airfield. Though they counted twenty-five aircraft around the field, the marines claimed only one definitively destroyed and eleven probably destroyed or damaged. Anti-aircraft fire peppered the fighters as they bombed, strafed, and rocketed the airfield. Lieutenant Wasley's engine caught fire on the first pass. He bailed out a hundred feet over the water, too low for his parachute to open. Captain Delancey searched the waves where Wasley hit but could find no trace of him. The squadron had fewer problems with its ordnance on this strike, but nonetheless could only estimate damage to the airfield's defenses and infrastructure.⁶⁹⁷

In a subsequent strike, anti-aircraft fire forced Commander Ottinger to make a water landing. He escaped from the wreckage, but when a rescue seaplane arrived, the aircrew discovered only his floating corpse. Returning from the same strike, Major Emerson H. Dedrick of VMF-451 made a water landing within the task force. His Corsair broke apart and he too perished. Lieutenant

⁶⁹⁵ VMF-221 ACA-1 21 March 1945, report no. 13, 1-4.

⁶⁹⁶ VMF-221 ACA-1 23 March 1945, report no. 14, 1-6.

⁶⁹⁷ VMF-221 ACA-1 24 March 1945, report no. 15, 1-7; Roberts, diary, 43-44.

Commander Roger R. Hedrick, the commander of VF-84, took command of the air group. Hedrick had shot down nine aircraft in the Solomons as executive officer of VF-17, a navy Corsair squadron.⁶⁹⁸

That afternoon, two divisions from VMF-221 under Captain Balch provided fighter cover for twelve dive-bombers and thirteen torpedo bombers headed back to Yontan Airfield. After bombing the airfield, Balch and his fighters strafed defensive positions and minor craft along the coast. Lieutenant John E. Jorgensen's aircraft caught fire after the second strafing run against some small craft and he ditched fifteen miles offshore. Despite the heavy seas, an OS2U rescued him a brief time later.⁶⁹⁹

VMF-221 did not fly on 25 March while *Bunker Hill* replenished ammunition and refueled. For the last six days of March, VMF-221 flew combat air patrols and escorted strikes and photoreconnaissance missions. Task Group 58.3 directed most of Air Group 84's strikes against airfields, small vessels, and infrastructure on Okinawa and the nearby island of Mimami Kaito. VMF-221 encountered no enemy aircraft on any of these strikes, so the fighters rocketed, strafed, and bombed anti-aircraft positions. *Bunker Hill* lost only two aircraft to enemy fire with no loss of aircrew. However, there is little evidence Air Group 84 accomplished much to pave the way for the coming amphibious assault. The airfields were devoid of parked aircraft. Except for active anti-aircraft positions, the defenders were largely invisible to aircraft overhead. In its action reports for the ten missions to Okinawa and Mimami Kaito, VMF-221's pilots could not attest to destroying much aside from structures and small boats of questionable importance.⁷⁰⁰

Task Groups 58.3 and 58.4 struck Kyushu on 29 March, hoping to find Japanese naval vessels, but had to strike airfields and small coastal vessels after finding no warships. A combat air

⁶⁹⁸ CV-17 war diary March 1945, 13-14; AG-84 war history, 12.

⁶⁹⁹ VMF-221 ACA-1 24 March 1945, report no. 16, 1-4.

⁷⁰⁰ VMF-221 ACA-1 26-28 and 30-31 March 1945, reports no. 17-23 and 24-27, passim.

patrol led by Captain Balch intercepted a single suicide attacker off Kyushu, which Lieutenant Earl W. Langston shot down easily.⁷⁰¹

The Japanese failed to damage any of Task Group 58.3's ships during the last week of March, and Japanese anti-aircraft fire shot down only two of the group's aircraft, whose aircrew survived. Nonetheless, Air Group 84 and VMF-221 suffered several fatal mishaps. During the 29 March strike against Kyushu, Air Group 84's torpedo and dive-bomber squadrons entered thick clouds. In the extremely limited visibility, several aircraft collided. Three Avengers and two Helldivers were lost, along with five of the thirteen aircrewmembers. The next day, Lieutenant Gerald D. Scott of VMF-221 returned early from a combat air patrol over Okinawa. On approach his engine caught fire and seized, forcing him to ditch into the ocean. He did so violently, breaking off one of the Corsair's wings. Though the tail section floated for a full minute, Scott did not escape, and was lost when his aircraft sank. The following day, two hours into a combat air patrol, divisions led by VMF-221's Major Roberts and Captain Mitchell L. Parks began practicing aerial combat maneuvers. As Roberts executed a mock gunnery pass, Parks responded too abruptly and sent his fighter into a flat spin at 10,000 feet. He did not recover nor bail out and was lost.⁷⁰²

To keep *Bunker Hill's* air group at maximum strength, the Pacific Fleet dispatched replacement aircraft and pilots on refueling days. To get them there, escort carriers ferried the replacement aircraft from advanced bases like Guam. Once Iwo Jima was secured, Corsairs would fly there from the Marianas and then on to Task Force 58 and Okinawa. *Bunker Hill* received replacement aircraft on 16, 22, 25, and 28 March. VMF-221 had lost seven aircraft during March and received seven replacements during this period. Though none of the replacement aviators joined

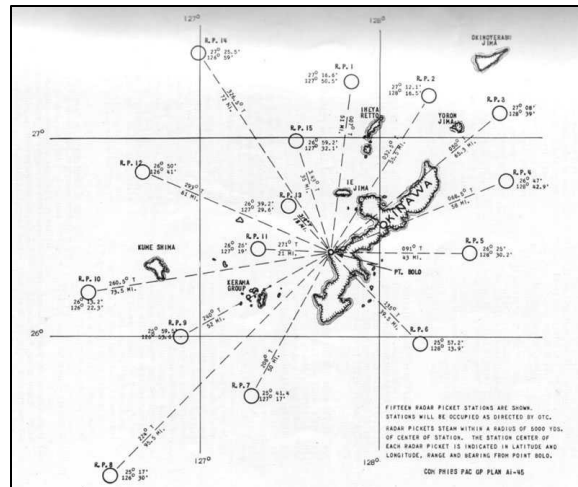
⁷⁰¹ TG-58.3 "Operations 14 March – 1 June 1945," 11-12,

⁷⁰² CV-17 war diary March 1945, 20; VMF-221 war diary March 1945, 6-7; Roberts, diary, 47-48.

VMF-221, presumably because they were navy pilots, the squadron still had thirty-nine pilots and seventeen fighters on 31 March, or 1.8 aviators per aircraft.⁷⁰³

Protecting the fleet and supporting the landing force on Okinawa, 1-5 April 1945

Landing Day (“L-Day”) on Okinawa was 1 April 1945. *Bunker Hill* and her air group would provide close air support to the troops ashore and protect the ships of the amphibious force from Japanese aircraft and warships. Task Force 51, the amphibious force commanded by Vice Admiral Turner, controlled all aircraft over and around Okinawa. When bombing the island or protecting the landing ships, Task Force 58’s aircraft would report to the Commander, Air Support Control Unit aboard Turner’s flagship, the amphibious force command ship USS *Eldorado* (AGC-11).⁷⁰⁴



Map 12. Radar picket stations around Okinawa (Commander Amphibious Force Pacific Operation Plan Ai-45, reprinted in Commander in Chief, United States Fleet, *Battle Experience: Radar Pickets and Methods of Combating Suicide Attacks Off Okinawa, March-May 1945*, 81-4)

⁷⁰³ Moore, *Rain of Steel*, 175; NHHC, “Corsairs – Iwo Jima,” retrieved 1 Nov 2023 from <https://www.history.navy.mil/content/history/museums/nnam/explore/exhibits/online-exhibits---collections/marine-corps-aviation-centennial/corsairs---iwo-jima.html>; CV-17 war diary March 1945, 6, 11, 15, 19; VMF-221 war diary March 1945, 10; VMF-221 muster roll, April 1945.

⁷⁰⁴ Morison, *Victory in the Pacific*, 132.

Mitscher's Big Blue Blanket would rely on radar picket vessels to provide early warning and direct fighters to intercept incoming aircraft. The Commander, Air Support Control Unit would farm out combat air patrols to the radar picket screen. Each radar picket would be assigned at least a division of fighters as its combat air patrol. The pickets consisted of a destroyer or two and at least one smaller landing craft support (large) vessel, or "LCS(L)."⁷⁰⁵ As depicted in map 12, the ships occupied pickets around the island as far as seventy-five miles out.

VMF-221's first mission on L-Day was to drop napalm on the beaches forty-five minutes before the assault waves of the 1st and 6th Marine Divisions landed across them. Major Roberts would lead twelve Corsairs from VMF-451 and sixteen from his own squadron. To improve bombing accuracy, the ordnance officer had affixed fins to the napalm tanks. The first Corsair to take off was from VMF-451. The heavily laden fighter cleared the bow, plunged into the waves, and exploded in a fireball so immense that pilots on the flight deck had to avert their faces. Despite the terrible accident, *Bunker Hill* had a strike to launch. The next Corsair taxied into position for take-off. It, too, accelerated down the flight deck, plummeted into the sea, and burst into a fireball. *Bunker Hill* now paused the launch. The plane captains investigated and discovered that the new fins on the napalm cannisters were obstructing the flaps, preventing them from fully extending. As the flaps could not lock into place, the airflow under the wing had pushed the flaps level, reducing lift and causing the heavy fighters to stall. The deck crew hastily remedied the problem by bending the fins on the napalm cannisters out of the way on some aircraft and by directing pilots of other fighters to take off with just twenty degrees of flaps instead of the normal forty degrees.⁷⁰⁶

⁷⁰⁵ Commander in Chief, United States Fleet, *Battle Experience: Radar Pickets and Methods of Combating Suicide Attacks Off Okinawa, March-May 1945* (Washington, DC: Navy Department, 20 July 1945), 81-1 to 81-5; Rielly, *Kamikazes, Corsairs, and Picket Ships*, 3-12.

⁷⁰⁶ VMF-221 ACA-1 1 April 1945, report no. 28, 1-5; George R. A. Johns, "Catastrophe on the Flight Deck," and Blaine Imel, "As Remembered," in Caswell, *Fighting Falcons*, 126-130.

No more Corsairs crashed, but four of VMF-221's fighters aborted before launching and a fifth returned to *Bunker Hill* with engine trouble, leaving Roberts with only twenty-one aircraft instead of twenty-eight. Over the beach, his Corsairs dropped their napalm canisters in a good pattern. Most canisters exploded. The fighters commenced a series of strafing runs, beginning at the water's edge and moving slightly inland with each pass as the landing craft neared the beach. The assault troops landed against light opposition at 8:30 a.m., and the fighters returned to *Bunker Hill* fifteen minutes later.⁷⁰⁷

Roberts and his marines did not support troops ashore again for the next eighteen days. During the first five days of April, VMF-221 flew combat air patrols over the fleet every day, encountering no enemy aircraft. The squadron also flew "target combat air patrols," so named because they were flown over a target such as Okinawa, a radar picket, or one of the enemy airfields. Target combat air patrols, typically consisting of eight fighters, had the additional mission of attacking targets of opportunity. VMF-221's patrols encountered no air opposition on 1 and 2 April, though one attacked some thirty-foot boats on the northwest coast of the island. The squadron also provided escorts to two Air Group 84 strikes, which destroyed some coastal vessels, a few buildings, and some anti-aircraft positions. In a more significant action, Major Roberts led eight Corsairs on a pre-dawn fighter sweep of a group of islands halfway between Okinawa and Kyushu on 4 April. Intelligence officers estimated that seventy-five enemy aircraft had flown down to an airfield on Tokunoshima, from which they could strike the American warships off Okinawa. The marines destroyed just four aircraft parked at an airfield on Tokunoshima and damaged several others. Though the intelligence officers appeared to have misjudged the number of aircraft there, the marines found a seaplane base on Amami Ōshima demolished from previous strikes.⁷⁰⁸

⁷⁰⁷ VMF-221 ACA-1 1 April 1945, report no. 28, 1-5.

⁷⁰⁸ RG 127 A1 1052 Box 30 VMF-221 forward echelon war diary April 1945, 1; VMF-221 ACA-1 4 April 1945, report no. 31, 1-4; Roberts, diary, 49-50.

The fighter sweep to Tokunoshima was exceptional in that the marines found significant targets to hit. The battle for Okinawa was underway, but the Japanese army and navy seemed curiously absent. Japan had over four thousand aircraft to strike against the Fifth Fleet off Okinawa, but very few had appeared. VMF-221 had not been directed to strike significant targets on Okinawa because the marines and soldiers of the Tenth Army had not yet encountered serious opposition. The marines of VMF-221, growing exhausted after three weeks of combat, began to speculate that *Bunker Hill* might retire to Ulithi soon for a much needed rest.⁷⁰⁹

“A very exciting and interesting day” -- Operation Ten, 6-7 April

Task Force 58’s strikes against Kyushu and airfields throughout the Ryukyus had forced the Japanese to keep the bulk of their aircraft further north, out of reach of the American carrier planes but also out of range of the American fleet off Okinawa. Vice Admiral Ugaki began staging aircraft to take advantage of clear weather forecast for 6 April. He succeeded in assembling over seven hundred aircraft for the strike, dubbed Operation Ten, including over three hundred suicide attack planes.⁷¹⁰

Ugaki did not catch Spruance by surprise. Codebreakers at Nimitz’s Joint Intelligence Center, Pacific Ocean Areas and in Washington, DC had decrypted diplomatic and naval traffic that revealed Japanese intentions for 6 April. In addition to the heads up about the air strikes, Spruance received warning that the Japanese Combined Fleet would sortie a task force built around the battleship *Yamato*.⁷¹¹ On the evening of 5 April, Roberts wrote in his diary, “We got word tonight that the Japs are going to make the all-out effort to get the fleet tomorrow. They are supposed to be mustering every pilot and every plane in the homeland to send down here tomorrow. Should be a

⁷⁰⁹ Roberts, diary, 50.

⁷¹⁰ Moore, *Rain of Steel*, 177; Hammell, *Air War Pacific*, 616.

⁷¹¹ Prados, *Combined Fleet Decoded*, 711.

very exciting and interesting day if this is true.”⁷¹² Spruance cancelled all air support missions for the Tenth Army. A few strikes would hit airfields to disrupt concentrations of aircraft. Mitscher’s carriers would stow the remaining torpedo and dive-bombers below on their hangar decks, keeping their flight decks free to cycle fighters.⁷¹³

Roberts led the first combat air patrol of the day, two divisions of Corsairs, taking off at 9:04 a.m. At 10:30 a.m. the fighter director aboard *Cabot* vectored the marines west of the task group where they intercepted a single Mitsubishi Ki-46 “Dinah,” a twin-engine reconnaissance plane. After ten minutes of hide and seek in the clouds, Lieutenant Eugene D. Cameron set the Dinah on fire at 7,000 feet and it plummeted into the sea. At 11:35 a.m. the fighter director vectored Roberts’s two divisions fifty miles north of the task group where they intercepted two Zeros at 18,000 feet and another nine or ten at 20,000 feet. Roberts ordered Lieutenant Robert J. Murray to attack the lower pair with his division while he attacked the larger flight with his four Corsairs. Murray’s division brought down the two lower fighters in a short chase. The leader of the higher Japanese flight abruptly turned towards Roberts. The two groups missed each other in a head on pass, then engaged in a general melee. Roberts pursued a Zero in a series of split-S turns but lost it in the clouds. Roberts was particularly impressed with his anti-gravity suit, as he pulled eight Gs in this action and suffered no ill effects. Cameron shot down a Zero that was on the tail of Roberts’ wingman, Lieutenant Charles B. Quick, Jr., but afterward could not find his own wingman, Lieutenant Carpenter. No one saw Carpenter go down, but he failed to return. His loss hit Roberts hard. “I don’t know what to tell his wife,” wrote Roberts. “They were really in love.”⁷¹⁴

When Roberts returned to the task group just after noon, the ships were under attack by several Japanese aircraft. Roberts received the command, “salvo,” warning him to stand clear. Anti-

⁷¹² Roberts, diary, 50.

⁷¹³ Hammell, *Air War Pacific*, 616.

⁷¹⁴ VMF-221 ACA-1 6 April 1945, report no. 33, 1-5; Roberts, diary, 53.

aircraft gunners shot down three attackers, including two Judys whose bombs narrowly missed *Cabot*. All seven Corsairs then recovered, though Cameron's fuel was so low he ignored a wave off. His engine ran out of fuel before he could finish taxiing clear of the arresting cables.⁷¹⁵

That afternoon the task group sent eighteen fighters from VMF-221 three hundred miles north to search for *Yamato* and the other surface ships that had sortied from Kyushu. The distance was so great that two divisions under Captains Bailey and Snider orbited at the halfway point to relay communications from the other three divisions. The marines found no ships but pounced on three separate flights of inbound aircraft. Lieutenant Johns shot down two Jills and a Zero. Lieutenant Imel shot down two Zeros in his first air-to-air engagement. Captain Snider shot down a Tony, Captain Baldwin destroyed a Jill, and Lieutenant Jorgensen shot down a Zero. All eighteen Corsairs from the search mission recovered aboard *Bunker Hill* by 6:04 p.m. Their kills brought the squadron's total to twelve for the day.⁷¹⁶

The Japanese lost about three hundred Japanese aircraft on 6 April. Though many were suicide attackers with no planned return, navy and marine fighter pilots had shot down 275 in aerial combat. Mitscher's Big Blue Blanket was covering the fleet nicely, but its protection was not absolute. Operation Ten's attackers had sunk three of Task Force 51's picket destroyers, two ammunition ships, and a landing ship tank, and had severely damaged another eight destroyers, a destroyer escort, and a minelayer.⁷¹⁷

Task Group 58.3 launched searches at dawn on 7 April to find *Yamato* and her task force. Roberts led a search of twenty-three F4U-1Ds from VMF-221. He and his divisions separated, some searching the southern tip of Kyushu and others acting as communications relays further south. The ceiling lay at just 2,000 feet, forcing the marines to fly under it. Roberts found no ships offshore.

⁷¹⁵ Roberts, diary, 53; Gene Cameron, "Combat," in Caswell, *Fighting Falcons*, 135.

⁷¹⁶ VMF-221 ACA-1 6 April 1945, report no. 34, 1-5; Blaine Imel, "My First Meatball," in Caswell, *Fighting Falcons*, 131.

⁷¹⁷ Morison, *Victory in the Pacific*, 197.

After weighing the considerable risks against the imperative of finding the Japanese task force, Roberts led his division into Kiroshima Bay, a twenty mile inlet surrounded by enemy gunners and airfields. The marines found hundreds of small coastal vessels and a seaplane base, but no warships. On his return flight back down the bay, having encountered no fighters, Roberts took the opportunity to attack the seaplane base. After strafing the hangers, Roberts spotted several Kawanishi N1K “Rex” fighters, floatplane variants of the Tony, “screaming across the bay at about 10 feet.” In quick succession Cameron shot one down, Lieutenant Haggard shot two down, and Roberts also downed two—his first aerial victories. Out over the South China Sea, Captain Delancey shot a Jill dive-bomber down.⁷¹⁸

Roberts had not located *Yamato*, but as he exited Kiroshima Bay he learned a similar search by *Essex*’s air group had located the battleship at 8:15 a.m. Mitscher launched a 280-plane strike at 10:00 a.m. *Bunker Hill* contributed fifteen fighters, fourteen torpedo-bombers, and ten dive-bombers. Task Force 58’s bombers swarmed over the Japanese task force around noon. VT-84’s Avengers scored at least two torpedo hits and possibly as many as nine, losing one bomber to anti-aircraft fire. A fighter from VF-84 was also lost. *Yamato* exploded spectacularly at 2:42 p.m. A light cruiser and four of *Yamato*’s eight escorting destroyers also sank.⁷¹⁹

Roberts’ flight recovered shortly after *Bunker Hill* had launched her strike. For the remainder of the day *Bunker Hill* cycled marine fighters from VMF-221 and VMF-451 aloft to protect the task group. Though the marines intercepted no attacking aircraft, other fighters shot down two Frances bombers and anti-aircraft gunners shot down two Jills. The second Jill released its bomb just before crashing into the flight deck of *Hancock*, 2,700 yards astern of *Bunker Hill*. Both the bomb and the bomber set ferocious fires, killing forty-three of *Hancock*’s crew, wounding over fifty, and taking the

⁷¹⁸ VMF-221 ACA-1 7 April 1945, report no. 35, 1-5; Roberts, diary, 55-56.

⁷¹⁹ Roberts, diary, 57; RG 38 NAID 140018742 CV-17 “Action Report 14 March – 14 May 1945,” 28-29; Moore, *Rain of Steel*, 203-204, 224, 232; Hammel, *Air War Pacific*, 618.

carrier and her air group out of the war for the next three months. With the day's action over, Task Force 58 recovered her strikes and air patrols and sailed south, back to Okinawa.⁷²⁰

Defending the fleet, 8-18 April

From 8-10 April VMF-221 flew combat air patrols and searched for enemy vessels and downed aviators but found neither. On the evening of 10 April, *Enterprise* rejoined Task Group 58.3, replacing *Hancock* and bringing the group's strength to four carriers: *Bunker Hill*, *Enterprise*, *Essex*, and the light carrier *Bataan*, which had replaced *Cabot*.⁷²¹

The next six days would see the task group fending off daily aerial attacks and striking enemy airfields to prevent them from being used in further attacks. On 11 April Captain Snider escorted an Air Group 84 morning strike against the airfield at Tokunoshima north of Okinawa again. The air group's bombs once more made the runways there temporarily unusable and shot more rounds into the sixty hulks previously destroyed. From 1:52 p.m. on, Task Group 58.3 was under continuous attack by suicide planes. The aircraft used the scattered cumulus to conceal their approaches. Fortunately for the anti-aircraft gunners, the attackers dove at the ships one at a time, enabling the gunners to engage each aircraft in turn. The task group's anti-aircraft fire destroyed ten attacking aircraft in this fashion. One Zero hit *Enterprise*, damaging her sufficiently so that she departed three days later for Ulithi to make repairs. *Essex* and several destroyers also suffered damage, one destroyer heavily enough to withdraw to Ulithi. During the afternoon action an eight-plane combat air patrol led by Captain Swett intercepted a Jill making a torpedo attack against a picket destroyer eighteen miles from the task group. Between the damage inflicted by Captain Baldwin's division and the destroyer's anti-aircraft fire, the bomber's torpedo missed, and the Jill crashed in flames. Swett's

⁷²⁰ CV-17 "Action Report 14 March – 14 May 1945," 28-29; RG 38 NAID 101725137 VMF-451 war diary April 1945, 4; TG 58.3 "Action Report 14 March – 1 June 1945," 4.

⁷²¹ CV-17 "Action Report 14 March – 14 May 1945," 30-31; VMF-221 war diary, April 1945, 2.

division later assisted three navy F6F's with the destruction of a Judy skimming the surface fourteen miles from the task group.⁷²²

Task Force 58 was forewarned that 12 April would be another heavy day for Japanese strikes. Ugaki had postponed this second major attack as he waited for clearer skies. The army and navy amassed 478 aircraft for 12 April's operation, including 185 suicide attackers. Roberts looked forward to another big action, reasoning that the sooner the Japanese ran out of aircraft, the sooner the fleet could sail unchallenged around Japan's home islands and invade them. Roberts' squadron would mount three missions: an early morning combat air patrol above the task force led by Captain Swett, an escort mission for a photoreconnaissance flight over Tokunoshima, and a twelve-plane combat air patrol over Okinawa that Roberts would lead.⁷²³

Swett's patrol was uneventful. After the F6F-Ps photographed Tokunoshima, Delancey led his division forty miles northeast to Kikai Shima where Hellcats from USS *Bennington* (CV-20) were engaged. Delancey destroyed a Zero at 1,000 feet with a twenty-degree deflection shot. Lieutenants Joseph Brocia, Jr. and Caswell each chased down Zeros and shot them down from astern. Lieutenant John McManus pursued a Frank over Kikai Shima, ignoring anti-aircraft fire that drove off some *Bennington* fighters, and fired several long bursts to bring down the Frank.⁷²⁴

Roberts checked in with a fighter director aboard one of the destroyers on picket assignment, who assigned each of Roberts' three divisions a position to orbit. A destroyer vectored Captain Baldwin's division to intercept a section of three Vals attacking one of the pickets. Jorgensen, Imel, and Baldwin each shot one of the slow dive-bombers down, and the one bomb Baldwin's Val released missed its target. Captain Balch's division was ordered to protect USS *Purdy*

⁷²² VMF-221 war diary April 1945, 2; VMF-221 ACA-1s 11 April 1945, report no. 36, 4, and report no. 37, 1, 4; TG 58.3 "Action Report 14 March – 1 June 1945," 5; NHHC, "Enterprise (CV-6) 1938–1956," *Dictionary of American Naval Fighting Ships* (10 Jul 2017), retrieved from <https://www.history.navy.mil/research/histories/ship-histories/danfs/e/enterprise-cv-6-vii.html>.

⁷²³ Roberts, diary, 61; Moore, *Rain of Steel*, 249; VMF-221 war diary April 1945, 2-3.

⁷²⁴ VMF-221 ACA-1 12 April 1945, report no. 38, 1-5.

(DD-734). *Purdy's* gunners had shot down four Vals, but another had crashed close alongside her. The Val's bomb had ricocheted off the water and exploded inside the destroyer. *Purdy* ordered Balch to "keep the Japs away as we cannot fire." Balch and Nettles complied, each shooting down a Zero. *Purdy* survived the attack, though she had lost thirteen sailors and had to withdraw for extensive repairs.⁷²⁵

Purdy had been at the epicenter of the day's action at Radar Picket Number 1, due north of Okinawa. Ugaki had adjusted his tactics on 12 April and targeted the more vulnerable picket destroyers instead of the carriers and landing ships. By the end of the day, Ugaki's aircraft had sunk one destroyer and one support vessel. Another three destroyers and four support vessels had suffered hits.⁷²⁶

To limit the enemy's ability to stage such attacks from Tokunoshima, Roberts and Snider led combat air patrols there on 13 April. They found no aircraft aloft, but strafed and rocketed the airfield, destroying what appeared to be three single-engine aircraft. Captain Swett led eight Corsairs in an uneventful combat air patrol.⁷²⁷

The following day, Task Group 58.3 refueled and took on ammunition two hundred miles southeast of Okinawa, well beyond the range of enemy aircraft. VMF-221 gained four replacement pilots, all marines, the first ones to join since the four veterans had joined from VMF-213 in early March. Three veterans joined from marine fighting squadrons aboard *Essex* and *Wasp*. Roberts was dismayed to see the fourth replacement was Lieutenant Frisk, the unsafe pilot he had gone out of his way to send away at Ulithi. Frisk did not fly with VMF-221 and was returned to California.⁷²⁸

⁷²⁵ VMF-221 ACA-1 12 April 1945, report no. 39, 1-5; Moore, *Rain of Steel*, 134-139.

⁷²⁶ Reilly, *Kamikazes, Corsairs, and Picket Ships*, 351.

⁷²⁷ VMF-221 war diary April 1945, 3; CV-17 "Action Report 14 March – 14 May 1945," 34-35.

⁷²⁸ VMF-213 muster roll January 1945; VMF-216 muster roll October 1944; VMF-217 muster roll January 1945; VMF-221 muster roll April 1945; Roberts, diary, 63.

VMF-221 reinforced a flight of ten VF-84 Corsairs with two divisions under Captains Baldwin and Delancey on a mission back to Kyushu to sweep Kanoya East Airfield on 15 April. The engine of Lieutenant Brocia's Corsair froze up just after takeoff, but he ditched safely and was rescued by a destroyer. The marines dropped 500-pound bombs and fired rockets and machine-guns into several enemy aircraft parked at Kanoya East, but the planes failed to burn. The marines suspected the Japanese had started defueling their aircraft between missions to prevent their catastrophic destruction on the ground.⁷²⁹

VMF-221's sweep helped spoil a third large Japanese strike Ugaki had originally planned for that morning. Poor weather delayed Ugaki's attack until the afternoon, and VMF-221's raid disrupted his ability to launch a coordinated attack that afternoon. At dawn on 16 April, under more favorable weather, Ugaki launched eight bombers to strike the U.S. airfields on Okinawa and fifty-eight Zeros to engage the American fighters covering the fleet. Forty-five dive-bombers, sixty-five army fighters and suicide attack aircraft, and a dozen twin-engine Frances bombers followed. Six of the Frances bombers carried a Kugisho MXY7 Ohka 11 ("Baka Bomb"), a manned suicide rocket. The Baka Bomb had to be dropped within about twenty miles of the target, as its rocket would only burn for ten seconds, but the rocket would reach 615 mph and carried a 2,646-pound warhead.⁷³⁰

VMF-221 flew three missions this day. At 9:38 a.m., *Bunker Hill* scrambled two divisions led by Major Roberts and two from VMF-451, but the flight did not contact enemy aircraft. A combat air patrol of two divisions under Captains Swett and Snider took off at noon. The flight orbited at 15,000 feet thirty miles north of Task Group 58.3. Snider's division spotted three Tojo's five thousand feet below them, headed toward the task group. In a short action, Snider and Lieutenants

⁷²⁹ VMF-221 ACA-1 15 April 1942, report no. 42, 1-5.

⁷³⁰ Moore, *Rain of Steel*, 265; "Yokosuka MXY7-K1 Ohka," National Museum of the United States Air Force, retrieved 1 Nov 2023 from <https://www.nationalmuseum.af.mil/Visit/Museum-Exhibits/Fact-Sheets/Display/Article/196246/yokosuka-mxy7-k1-ohka/>.

Murray and Bailey each blasted one of the enemy fighters, which all exploded magnificently. The flight returned to the task group on schedule at 3:30 p.m., only to find the ships under attack. As they waited out the action, Snider spotted a Zero on the surface headed away from the task group. After two failed gunnery passes, after which Snider realized he had failed to charge his guns, he made a third pass and shot the fighter down. In the squadron's third mission, Captain Delancey and a division from VMF-451 strafed a naval installation on Amami Ōshima after encountering no aircraft. Task Group 58.3 escaped damage, but elsewhere in the task force, a suicide attacker connected with *Intrepid's* flight deck. Her crew extinguished the fire and resumed flight operations three hours later. The pickets took another beating, with one destroyer sunk and six warships damaged, but their crews fought magnificently. The crew of the destroyer USS *Laffey* (DD-724) shot down eight attackers and kept her afloat despite suffering hits by six suicide planes and four bombs. In addition to the aircraft shot down by the fleet's gunners, aviators claimed 192 aerial victories.⁷³¹

After this violent eleven-day stretch, VMF-221 encountered no enemy aircraft for the following eleven days. As Ugaki husbanded his dwindling air fleet, Task Force 58 used the respite to turn its combat power back against Okinawa.

Strikes, support to the landing force, and Ugaki's fourth air attack, 19 April – 10 May

From 19-27 April, VMF-221 flew combat missions for eight days. Nine missions were combat air patrols of four to eight fighters over Task Group 58.3 or other ships of Task Force 58. None resulted in aerial combat. The squadron flew another five target combat air patrols over Okinawa. In a couple of these, the marines strafed targets of opportunity, but the pilots could not attest to inflicting severe damage against the island's defenders. On two occasions, on 19 and 20

⁷³¹ VMF-221 war diary April 1945, 3; VMF-221 ACA-1s 16 April 1945, report no. 43, 1-5, and no. 44, 4 Reilly, *Kamikazes, Corsairs, and Picket Ships*, 351-352; Moore, *Rain of Steel*, 279-280.

April, VMF-221 fighters escorted Air Group 84 strikes against Okinawa. The fighters strafed the towns of Iwa and Naha, and destroyed some buildings and docks, but otherwise achieved no observed results. On 21 April VMF-221 sent three separate two-division target combat air patrols over the enemy airfields on Amami and Kikai. The first of these destroyed eight aircraft on the ground.⁷³²

As the fighting ashore intensified, VMF-221 began to fly in direct support of the troops ashore more often. The U.S. Army's XXIV Corps had hit stiff opposition in its drive south. The 32nd Army had fortified the rugged hills on the southern third of Okinawa with tunnels and caves. After a week of vicious fighting, American soldiers had forced the Japanese to withdraw from their first defensive line on the night of 23-24 April. But these defenders now occupied a second line of prepared fortifications running the width of the narrow island.⁷³³

By this time, air support to the Tenth Army ashore had matured from L-Day. The marine LFASCU, co-located with the Tenth Army command post, coordinated requests from the divisions for air support missions. As on Iwo Jima, air liaison parties attached to frontline units directed such missions when they reported overhead. Air coordinators aloft also directed pilots on such attacks. Tenth Army assigned many such missions to its own Tactical Air Force, which included Marine Aircraft Groups 31 and 33 operating from the captured airfields at Kadena and Yontan.⁷³⁴

On 25 April, Air Group 84 began close support missions for the front line units. VMF-221 provided a division led by Captain Swett to accompany twelve Helldivers and eleven Avengers on a morning support mission. Each Corsair took off with a full load of machine-gun ammunition, eight rockets, and a 500-pound bomb. Swett's division was directed to attack caves and defensive emplacements east of Shuri in the US Army's 96th Infantry Division zone. With a heavy cloud layer

⁷³² VMF-221 war history April 1945, 4-5.

⁷³³ Appleman, *Okinawa*, 248.

⁷³⁴ Frank and Shaw, *Victory and Occupation*, 176-177, 180-183.

at 3,500 feet, Swett opted for a glide bombing attack. The marines achieved effective hits with bombs and rockets, then returned to strafe enemy soldiers fleeing the positions they had just attacked. Major Roberts led his division on a nearly identical mission the following morning, but instead of rockets and a 500-pound bomb, the marines each carried a 1,000-pound bomb. Roberts' flight struck caves, pillboxes, and trenches on the north slope of Conical Hill, slightly southeast of the positions attacked the day before. The weather was "stinking," according to Roberts, with the cloud layer at just 1,200 feet. To hit his target, Roberts led his division in a level bombing run directly over the target. The marines were so low that the concussion of the bombs rattled the Corsairs. "I thought my plane was falling apart the way it lurched and jumped around," wrote Roberts. "So I guess we were close enough to kill any Japs in the area." Roberts worried he had overshot his target, but the controller on the ground reported the bombs achieved good effects.⁷³⁵

After *Bunker Hill* refueled and replenished on 27 April, Air Group 84 resumed its support missions. Captain Snider's division, armed with rockets and 500-pound bombs, joined eight Avengers and eight Helldivers in another close support mission for the 96th Infantry Division on 28 April. Cloud cover was light, and the marines' bombs and rockets effectively covered some artillery emplacements and caves east of Shuri.⁷³⁶

Amidst these close support missions, Vice Admiral Ugaki attempted his fourth large aerial attack of the campaign. American B-29 Superfortress bombers in the Marianas had attacked his airfields on Kyushu and Shokaku on 26 and 27 April. These attacks severely damaged the airfields and forced the Japanese to retain more fighters for home island defense, curtailing the size of

⁷³⁵ VMF-221 ACA-1s 25 and 26 April 1945, report no. 51, 1-5, no. 52, 1-5; Roberts, diary, 69; Appleman, *Okinawa*, map "Attack on Shuri Defenses 25 April – 3 May."

⁷³⁶ VMF-221 ACA-1 28 April 1945, report no. 54, 1-5.

Ugaki's next attack. On 28 April he could muster just 165 aircraft, and only fifty-nine of these were suicide planes. That afternoon, the aircraft attempted to strike the radar pickets off Okinawa.⁷³⁷

After Snider's morning close support mission, at 2:30 p.m. Major Roberts took a flight of sixteen VMF-221 Corsairs on a combat air patrol over Radar Picket Number 2. Captain Delancey's fighter forced him to abort, leaving Lieutenant Brocia leading his division. Roberts took his division and Captain Swett's sixty miles northwest of Okinawa, where VF-84 had recently shot down eighteen enemy planes. Captain Balch and Brocia orbited about twenty miles southeast of Roberts, west of the island of Izenajima, over a radar picket. Shortly after arriving, the fighter director calmly informed Balch and Brocia, "Many bogeys, north, thirty miles out and high!" Balch and Brocia climbed to intercept the formation and ran head on into a group of thirty Zeros at 25,000 feet. Balch and his wingman Bailey each shot down two fighters; Bailey downed his second by accidentally colliding with it after his guns jammed. Bailey recovered from his spin, but his adversary could not. Lieutenant Langston found himself alone with three Zeros. He managed to shoot down two. The third Zero disabled Langston's Corsair in a pass from below and he bailed out at 10,000 feet. One of the picket vessels pulled him from the sea, and he was treated to a suicide aerial attack from the deck of a warship. Brocia chased one Zero from 25,000 feet down to 3,000 feet before destroying it. Lieutenant McManus, who had straggled behind during the climb due to a blower issue, pursued a Zero in a dive and shot it down. He rejoined Lieutenant Caswell at 10,000 feet. The two pursued a group of retreating Zeros. McManus shot two down and Caswell shot three down. The seven marines had destroyed fourteen Zeros and lost just one Corsair. Shortly after VMF-221's magnificent fight, a flight of eight to ten Vals attacked the radar picket they had supported. The marines had departed after exhausting their fuel, but the destroyers' anti-aircraft gunners aboard the

⁷³⁷ Hammel, *Air War Pacific*, 634-635.

destroyers USS *Daly* (DD-519) and USS *Twiggs* (DD-591) knocked down the suicide attackers one after another. Near misses inflicted only minor damage on the two destroyers.⁷³⁸

On 29 and 30 April, VMF-221 provided a division each day to Air Group 84 support missions to Okinawa. The *Bunker Hill* pilots dropped their ordnance in front of the 27th and 96th Infantry Divisions' troops assaulting the Japanese second line of defense east of Naha. Both missions achieved good effects. The supported unit on 29 April reported Captain Baldwin's division delivered "the best damn bombing they'd ever seen." On 30 April Captain Delancey first made a dummy run to confirm he had identified the correct target, a group of caves close to friendly positions. Delancey and the other three pilots then each dropped a 500-pound bomb and fired eight rockets into the caves.⁷³⁹

After a pause while *Bunker Hill* refueled and replenished on 1 May, followed by a day of harsh weather, Captain Swett led a fourteen-plane fighter sweep to Kikai and Tanegashima, two islands just twenty miles off the southern tip of Kyushu. The purpose of the sweep was to disrupt Vice Admiral Ugaki's fifth large air offensive. Ugaki had assembled 449 aircraft, including 160 suicide attack planes. The marines cratered the runway at Kikai with 500-pound bombs and destroyed three aircraft in revetments on Tanegashima. The anti-aircraft defenses on Tanegashima were particularly heavy. On his run over the airfield Captain Delancey spotted additional aircraft in revetments and led his division back in a second run. Delancey's aircraft was hit; he ditched offshore but was likely knocked unconscious on impact. He did not escape. Gunfire damaged Lieutenant Goeggel's engine. He nursed his Corsair nearly all the way back to the task force before he also made a water landing. Goeggel extricated himself from the floating plane, and an OS2U from a

⁷³⁸ VMF-221 ACA-1 28 April 1945, report no. 55, 1-5; Rielly, *Kamikazes, Corsairs, and Picket Ships*, 194, 352.

⁷³⁹ VMF-221 ACA-1s 29-30 April, reports no. 56, 1-5, and no. 57, 1-5.

cruiser rescued him. Despite damage from a 40mm shell, Lieutenant Nicolaides landed safely, but his aircraft was too heavily damaged to salvage and the deck crew rolled it over the side.⁷⁴⁰

Ugaki's strikes sank a destroyer and a support vessel on the radar pickets and damaged two other vessels on the evening of 3 May. The following day, Ugaki unleashed the bulk of his aircraft. In one of the costlier attacks for the radar pickets, the attackers sank two destroyers and two support vessels and damaged seven additional warships. Just before noon, suicide aircraft struck the Royal Navy carriers HMS *Formidable* and HMS *Indomitable* in Task Force 57. Unlike American carriers, these British ships had steel flight decks, which saved the two carriers from severe damage.⁷⁴¹

Though Task Force 58 had plenty of warning of Ugaki's fifth offensive, this time Mitscher did not curtail support missions to Okinawa nor concentrate all his fighters against the air attacks. Ugaki's attack coincided with a ground counterattack supported by an amphibious landing of infantry in barges against the 1st Marine Division and the 7th Infantry Division in front of the Shuri defenses. Instead of intercepting suicide attackers and bombers, VMF-221 supported an Air Group 84 support mission with two divisions of Corsairs. The marines dropped bombs and fired rockets to suppress anti-aircraft guns east of Naha, enabling twenty-three torpedo and dive-bombers to attack gun emplacements in front of 1st Marine Division. No *Bunker Hill* aircraft were lost. The marines and soldiers ashore soundly repulsed the Japanese counterattacks.⁷⁴²

The following afternoon Major Roberts led twelve VMF-221 Corsairs back to Amami Ōshima, halfway between Okinawa and Kyushu. This was *Bunker Hill*'s fifth strike against that island and the second of the day. The marines carried napalm cannisters to ensure any parked aircraft they hit would burn even if their fuel tanks were dry. The Corsairs dropped their canisters in a wooded

⁷⁴⁰ VMF-221 ACA-1 3 May 1945, report no. 58, 1-5; CV-17 "Action Report 14 March – 14 May 1945," 47-48; Moore, *Rain of Steel*, 296-298.

⁷⁴¹ Hammel, *Air War Pacific*, 639-641; Reilly, *Kamikazes, Corsairs, and Picket Ships*, 352.

⁷⁴² Moore, *Rain of Steel*, 304; Frank and Shaw, *Victory and Occupation*, 209-213; VMF-221 ACA-1 4 May 1945, report no. 59, 1-5; CV-17 "Action Report 14 March – 14 May 1945," 48-49.

area which intelligence officers suspected was being used to conceal aircraft or supplies. Despite very heavy anti-aircraft fire which shot away Roberts' left flaps, the marines achieved good hits. One fighter's canister failed to drop, so the pilot diverted to Yontan to have it removed rather than risk damaging the carrier. Roberts made a textbook landing without flaps aboard *Bunker Hill* on his third attempt, an impressive piece of airmanship.⁷⁴³

After Task Group 58.3 replenished on 6 May, Mitscher assigned returning warships to the group. *Bunker Hill* was now accompanied by *Essex*, *Enterprise*, *Randolph*, and the light carrier *Bataan*. The battleships *Washington* and USS *South Dakota* (BB-57) and five light cruisers encircled these carriers with a ring of anti-aircraft guns.⁷⁴⁴

On the morning of 7 May, Captain Snider's division accompanied an Air Group 84 support mission to Okinawa. The marines covered gun positions and troop concentrations facing the 1st Marine Division at Shuri with 500-pound bombs. That afternoon Major Roberts led eight fighters from his squadron and four from VF-84 back to Kikai, where Roberts had the satisfaction of placing a 500-pound bomb dead center of the anti-aircraft emplacement that had shot off his flaps two days earlier. Aside from hitting the anti-aircraft positions, the fighters strafed inconsequential small craft but found nothing more. Continuous rain and a low overcast prevented flight operations on 8 May, but visibility was unrestricted the following day. Captain Swett led a division along with an Air Group 84 strike back to Kikai in the afternoon, where they dropped napalm canisters on the airfield docks. All aircraft returned safely. Task Group 58.3 replenished and conducted anti-aircraft target practice on 10 May. The light carrier USS *Langley* (CVL-27) joined the task group.⁷⁴⁵

⁷⁴³ CV-17 "Action Report 14 March – 14 May 1945," 49; Roberts, diary, 75.

⁷⁴⁴ CV-17 "Action Report 14 March – 14 May 1945," 50.

⁷⁴⁵ VMF-221 ACA-1s 7 May 1945, reports no. 60, 1-5, and no. 61, 1-5; Roberts, diary, 76; CV-17 "Action Report 14 March – 14 May 1945," 52-53.

Suicide plane attack on *Bunker Hill*, 11 May 1945

Ugaki attempted a sixth air attack on 11 May. For this attack he assembled 217 aircraft, a mixture of dive-bombers, fighters, and 104 suicide attack planes. The attack would begin with an early morning strike on the marine aircraft groups at Yontan to limit their ability to intercept subsequent strikes. In addition to pummeling the radar pickets again, Ugaki tasked some suicide attackers to strike the aircraft carriers of Task Force 58.⁷⁴⁶

The picket destroyers and radars on Okinawa easily detected the aircraft attacking Yontan. Fighters from Okinawa and Task Force 58 intercepted them all, and the marines at Yontan escaped injury. The attackers next concentrated against Radar Picket Number 15, thirty-eight miles northwest of Okinawa.⁷⁴⁷

VMF-221 began the day with a target combat air patrol of seven Corsairs led by Captain Swett. Two of the fighters were replacement aircraft, F4U-1Cs armed with 20mm cannon instead of .50 caliber machine-guns. The F4U-1Cs had landed aboard *Bunker Hill* on 17 April, but this was the first mission in which VMF-221's pilots got to fly them. By 8:00 a.m. the flight was on station at 15,000 feet under the fighter direction of USS *Hugh W. Hadley* (DD-774) at Radar Picket Number 15.⁷⁴⁸

The seven marines were entering a great air clash that had begun twenty minutes before. Almost immediately, Lieutenant Jorgensen spotted a lone Frances 3,000 feet below. Swett led his division in the attack. Swett's 20mm guns had frozen at the high altitude and did not all fire, so Lieutenant Goeggel blasted the bomber to bits with his machine-guns. By 8:30, *Hadley* was directing fighters from five or more marine and navy squadrons against wave after wave of unidentified

⁷⁴⁶ Frank and Shaw, *Victory and Occupation*, 224; Moore, *Rain of Steel* (2020), 512-513 Reilly, *Kamikazes, Corsairs, and Picket Ships*, 85, 239.

⁷⁴⁷ Frank and Shaw, *Victory and Occupation*, 224; CV-17 "Action Report 14 March – 14 May 1945," 53.

⁷⁴⁸ CV-17 "Action Report 14 March – 14 May 1945," VI-B-21; VMF-221 ACA-1 11 May 1945, report no. 63, 1.

aircraft. Her gunners were fending off multiple attacks. They brought down thirteen aircraft during these first raids. So many fighter pilots were trying to talk over each other and *Hadley's* fighter director on the single channel that transmissions became indecipherable. *Hadley* told the fighters "they were on their own." Swett spotted a single Judy dive-bomber, which he quickly torched, but grew frustrated that the communications foul up prevented the marines from aiding the picket ships. After nearly an hour on station, Swett's division spotted a Betty carrying a Baka Bomb ten miles to the north. All four pilots got in hits before the Betty began burning and exploded. At 9:15, the VMF-221 pilots headed back toward *Bunker Hill* while the battle raged on. A few minutes later, ten attackers went after *Hadley*. The embattled destroyer brought down all ten, but soon after a bomb, a Baka bomb, and two suicide attackers struck her. By the time the morning's action ended, *Hadley's* fighter direction officer had counted 156 attacking aircraft in five waves. Fighters had brought down sixty-eight of these, and the destroyers accounted for many more. In addition to damaging *Hadley*, the attackers damaged the other picket destroyer and a support vessel.⁷⁴⁹

Major Roberts had taken off with his division and Captain Snider's on a fighter sweep back to Kakai a short time later. Due to the heavy enemy air activity, Roberts and Snider were diverted to combat air patrol off Okinawa. They stood by but did not receive any intercept tasks.⁷⁵⁰

Swett's flight arrived over the task group around 10:00 a.m. The stern was still obstructed with parked aircraft from the morning's launch, so the marines circled off the carrier's starboard quarter at 1,000 feet while the flight deck crew repositioned aircraft to make room for their recovery. Cumulus clouds covered eight-tenths of the sky 2,000 feet above Task Group 58.3.⁷⁵¹

⁷⁴⁹ VMF-221 ACA-1 11 May 1945, report no. 63, 4; Moore, *Rain of Steel* (2020), 316-320; Reilly, *Kamikazes, Corsairs, and Picket Ships*, 242-251.

⁷⁵⁰ Roberts, diary, 77.

⁷⁵¹ Captain Jim Swett, USMC, "Homeless," in Eric Hammel, *Aces Against Japan II* (Pacifica, California: Pacific Press, 1996), 284; CV-17 "Action Report 14 March – 14 May 1945," 53.

At 10:05 a.m. lookouts and gunners spotted a lone Zero approaching *Bunker Hill* from astern at 400 mph or more, one hundred feet above the waves and just 1,000 yards away. Swett saw the Zero about the same time and yelled a warning into his radio. The ship's gunners were at their stations but not poised to fire. Only one 20mm gunner got off a short burst before the enemy fighter hit. The Zero crashed into a parked Corsair, skidded across the deck, and plunged over the port side, carrying a section of the catwalk with it. The Zero's 500-pound armored piercing bomb pierced the wooden flight deck twenty feet from the port side, continued through the side of the ship, and detonated thirty feet beyond. The Corsair topside and several aircraft on the hanger deck caught fire. The impact and explosion placed a fire main and the fire sprinklers in that section of the hangar deck out of commission.⁷⁵²

Less than a minute later a Judy emerged from the low lying clouds, diving steeply at the carrier from around 2,000 to 3,000 feet. The gun crews were alert now. Four five-inch guns, two 40mm quad-mounts, and twenty 20mm guns engaged the dive-bomber for about twelve seconds, hitting the aircraft several times, but failing to destroy it. Lieutenant Glendening's section attempted to intercept the Judy but was too far away to close the distance. The Japanese pilot released his 500-pound high explosive bomb seconds before crashing into the base of the island. The bomb blasted a forty foot hole in the flight deck and immediately set severe fires in the hangar deck and in the gallery deck between the flight and hangar decks.⁷⁵³

A third attacker, another Zero, approached the starboard beam in a shallow glide from about 1,000 feet. This time *Bunker Hill's* gunners found their mark. Four five-inch guns and three 40mm quad mounts shot the fighter down at a range of 3,500 yards.⁷⁵⁴

⁷⁵² CV-17 "Action Report 14 March – 14 May 1945," 134-135, 157.

⁷⁵³ CV-17 "Action Report 14 March – 14 May 1945," 54, 135.

⁷⁵⁴ CV-17 "Action Report 14 March – 14 May 1945," 134-138.

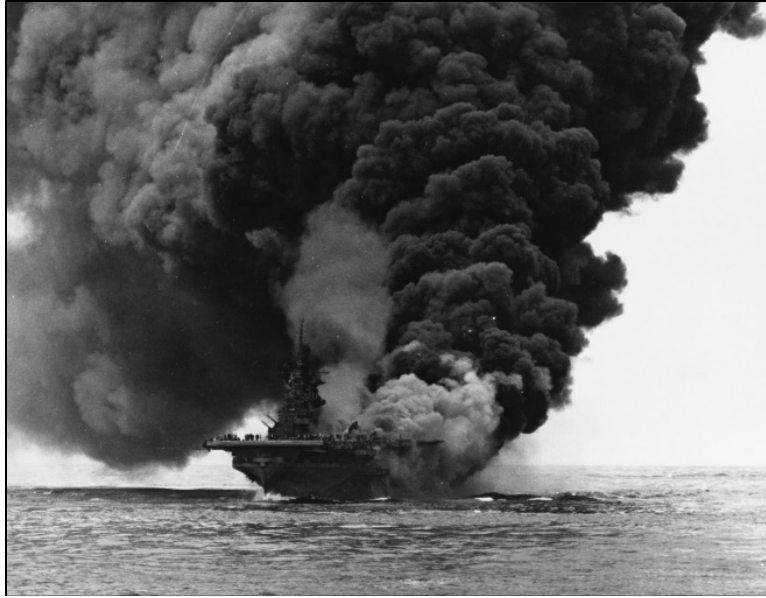


Figure 27. USS *Bunker Hill* burns after being hit by two suicide attack planes off Okinawa, 11 May 1945. (NARA 80-G-274266)

The squadron ready rooms on the gallery decks were quickly plunged into darkness. Smoke filled the passageways and spaces. Either the blast from the Judy's bomb or smoke inhalation killed many aviators from VF-84 and VT-84. Most of VMF-221's pilots were aloft with Roberts or Swett. Captain Balch, Lieutenants Imel, Nettles, and Pambrum, and a young navy steward who had brought them some sandwiches were in the squadron ready room. Nettles fought his way to the flight deck through passageways crowded with panicking crewmen. The others crawled through the pitch dark smoke the short distance to the port catwalk, where they joined a couple dozen sailors and marines cornered by the smoke and fire. Machine-gun rounds in a ready magazine began detonating from the heat. A locker full of rockets was also heating up from the fire on the hangar deck below, so the trapped men formed a daisy chain and tossed the rockets one by one over the rail. After what seemed like thirty minutes, they concluded their chances of survival were better in the ocean. Balch gave his life jacket to the mess steward, who could not swim, and the four dropped

the seventy-five feet to the surface. All four survived the drop, but the mess steward lost control of his life jacket and disappeared before the marines could reach him.⁷⁵⁵

Lieutenants Caswell and McManus were in the officer's mess room below the hangar deck when the planes hit. They still carried their gas masks from general quarters, so they donned them and crawled into the smoke filled passageway. "It was full of bodies, all asphyxiated," Caswell wrote a few days later. "It was hellish, crawling over mounds of dead sailors, while blindly trying to find a ladder going up to the hanger deck." They found a ladder which took them to a hatch that had been secured shut from above. They banged away and a shipmate opened it. After catching their breath on the hangar deck, the two marines joined the firefighting effort for the next few hours. The marines had no training in firefighting and damage control, and Caswell admitted it was "...debatable how much good we were doing..." McManus located a silver crash fire rescue suit and made his way to the squadron ready room but found no one there.⁷⁵⁶

The explosions, fires, and smoke decimated VMF-221's ground echelon. Many of these marines were likely working on the flight and hanger decks. Others were trapped in the crew's messing and berthing areas below the hangar deck. Of the squadron's sixty enlisted marines, eleven perished: Master Technical Sergeants Herman H. Delaney and Kenneth W. Muthard; Technical Sergeants Russell E. Dorniden, Earl R. Herrman, Perry E. Pert, Lawrence F. Sonderman, and Oswald A. Spinetti; Sergeants Mariano A. Moscolino and Francis Petty; and Corporals Ellis E. Lowery and Edward W. Yanik.⁷⁵⁷

Swett's flight circled over the sailors and marines who had abandoned ship. The pilots dropped life preservers and marker dye to the men below. With their own ship ablaze, the seven

⁷⁵⁵ Donald Balch, "In the Ready Room – Kamikaze!" and Blaine Imel, "Kamikaze Attack on the *Bunker Hill*," in Caswell, *Fighting Falcons*, 150-12, 155; Lieutenant Charles Nettles, diary, 11 May 1945, reprinted in Caswell, *Kamikaze Madness*, 118-119; CV-17 "Action Report 14 March – 14 May 1945," 263.

⁷⁵⁶ Lieutenant Dean Caswell, VMF-221, "From His Memoirs," in Caswell, *Kamikaze Madness*, 114-117.

⁷⁵⁷ USMC History Division Archives, VMF-221 war diary May 1945, 2. The war diary reported a twelfth marine was missing, but there is no entry within the USMC Casualty Indexes on ancestry.com.

Corsairs recovered aboard *Enterprise* at 11:30 a.m. Major Roberts' flight of eight fighters returned at 12:15, only to find their ship billowing smoke into the sky. After circling their ship twice in disbelief, the marines also landed aboard *Enterprise*.⁷⁵⁸

By that time *Bunker Hill's* crew had the fire on the flight deck under control, but the hanger deck continued to burn, detonating the fuel tanks of the aircraft stowed there. Two destroyers, a submarine tender, and a light cruiser came alongside and played their hoses into the burning hangar deck. In a monumentally heroic effort, *Bunker Hill's* boiler crew kept the ship under power and underway, and her firefighting crews had all fires under control by 2:30 p.m. Able to steam, but unable to fight, she set a course for Ulithi.⁷⁵⁹

The attack had taken the lives of 346 of *Bunker Hill's* air group and crew. Another forty-three men were missing and presumed lost. Most of the dead had succumbed to smoke inhalation. Many of those missing had been blown over the side in the initial blast or jumped and later drowned. The damage to the ship was not fatal, but she and VMF-221 were done with the war. *Bunker Hill* required several months of repairs before she could fight again. Though the aviators and surviving ground echelon marines of VMF-221 were still combat capable, and fifteen of the Corsairs had escaped the fire by landing aboard *Enterprise*, Task Force 58 could not use them. There was no room on any of the carriers for another fighting squadron. The aviators aboard *Enterprise* flew their Corsairs to Yontan, turned them over to the marine aircraft groups there, and rode transport aircraft to Ulithi, where they rejoined *Bunker Hill* for the voyage to the shipyard in Bremerton, Washington.⁷⁶⁰

⁷⁵⁸ VMF-221 ACA-1 11 May 1945, report no. 63, 6; Roberts, diary, 77.

⁷⁵⁹ CV-17 "Action Report 14 March – 14 May 1945," 54-55.

⁷⁶⁰ CV-17 "Action Report 14 March – 14 May 1945," 261, 263; VMF-221 war diary May 1945, 3.

Chapter 15: Evaluation of the squadron's effectiveness aboard USS *Bunker Hill*

Measures of performance

The measures of performance for VMF-221 aboard *Bunker Hill* are the number of aircraft the squadron sortied; the number of enemy aircraft, vessels, and ground targets the squadron destroyed; the number of aircraft and personnel the squadron lost; and the number of aircraft lost and vessels damaged while protected by the squadron.

Sorties

Before assessing the squadron's sorties, it is necessary to provide some insight into Corsair availability—that is, aircraft on hand and capable of flying in combat. *Bunker Hill's* action reports provide daily availability, but this is not broken down by squadron. The three fighting squadrons interchanged F4Us to meet mission requirements, so Corsair availability for VF-84, VMF-221, and VMF-451 is amalgamated. *Bunker Hill* left San Diego with fifty-three Corsairs aboard. She departed Ulithi on 16 February with sixty-two Corsairs available; she averaged fifty-seven available during her first combat cruise and fifty-four during her second. Her lowest strength of forty-one available Corsairs occurred the day after the landing on Okinawa.⁷⁶¹

The sorties flown by VMF-221 across *Bunker Hill's* two 1945 combat cruises are provided in table 3.3. During *Bunker Hill's* eighty-two days underway from her first sortie from Ulithi until her last day of combat, her air group flew combat missions on forty-seven days. On non-combat days while underway, the carrier launched combat air patrols, but these involved a fraction of her fighter complement.

⁷⁶¹ CV-17 "Action report 10 February – 5 March 1945," 27; CV-17 "Action Report 14 March – 14 May 1945," 199-200.

Table 3.3. VMF-221 days of combat and sorties, 1945

Combat cruise	Days underway	VMF-221 sorties	Average VMF-221 sorties	Days of combat	VMF-221 Sorties on combat days	Average VMF-221 sorties per combat day
First cruise, 10 February – 4 March	23	226	9.8	8	124	15.5
Second cruise, 14 March – 11 May	59	1,009	17.1	39	919	23.6
Total	82	1,235	15.1	47	1,043	22.2

Source: CV-17 “Action report 10 February – 5 March 1945,” 27; CV-17 “Action Report 14 March – 14 May 1945,” 199-200; VMF-221 war diaries, March – May 1945; *passim*.

During its second combat cruise, VMF-221 averaged 17.1 sorties per day and 23.6 sorties per combat day. This sortie rate on its combat days is slightly higher than its combat sortie rate while flying Wildcats in 1943 and 74% higher than its combat sortie rate flying the Corsair that year (see table 2.10). Though the squadron’s sortie rate was lower during its first 1945 combat cruise than during its second, aircraft availability was higher during the first combat cruise. The lower sortie rate during the first cruise was not due to aircraft availability, but because fewer sorties were required.

Table 3.4. VMF-221 air strength shortfalls in combat, 1945

Month	Days in combat	Divisions sorted understrength	Aborts	Mishaps (mechanical)	Aircraft losses from mishaps	Mishap fatalities
First combat cruise, 16 February – 4 March						
February	6	5				
March	2		1			
Second combat cruise, 14 March – 11 May						
March	10		2			
April	23	2	2	3	3	2
May	7	2	1			

Source: VMF-221 war diaries, March – May 1945; *passim*.

Table 3.4 tabulates the number of times a four-plane division launched short one aircraft, the number of times an aircraft aborted from a mission, the number of mishaps attributed to

maintenance problems and not pilot error, and the number of aircraft and aviators lost due to these mishaps. When compared with similar measures in 1943, the data suggests that the squadron suffered fewer air strength shortfalls in 1945 (see table 2.11).

Enemy aircraft, vessels, and ground targets destroyed

With the advent of gun cameras, fighting squadrons counted aerial victories more accurately. Major Roberts relied on these films and awarded credit guardedly, according to Lieutenant Caswell.⁷⁶² The squadron awarded credit for fifty-one aerial victories to its pilots during 1945. Caswell was the Marine Corps' leading carrier ace with seven victories.⁷⁶³

Assessing the damage inflicted by the squadron on targets on the ground and at sea is less precise. Gun cameras could corroborate destruction of parked aircraft. Aerial photography enabled interpreters to assess damage to factories and airfields. Aviator eyewitness statements of vessels sunk or damaged were credible. Such damage is enumerated in table 3.5.

Table 3.5. Damage inflicted by VMF-221, 1945

Month	Aerial victories	Aircraft (parked)	Vessels destroyed	Vessels damaged
February	1	9	1 patrol craft 5 fishing boats	4 fishing boats
March	15	13	1 midget sub 1 landing craft 10 small craft	
April	32	5	6 fishing boats 2 small craft	30 small craft
May	3	3		2 small vessels 20 small craft

Source: VMF-221 war diaries, February – May 1945; VMF-221 Aircraft Action (ACA-1) reports no. 1-63.

⁷⁶² Caswell, "From My Diary," 114, and "More Combat," 140, in *Fighting Falcons*.

⁷⁶³ VMF-221 1945 war diaries, February, 13, March, 15, April, 14, and May, 9; Moore, *Rain of Steel*, 369.

In contrast, damage inflicted on enemy troops and fortifications was often speculative. As Air Group 84's action report noted, "The efficiency of many of these missions was exceedingly difficult to evaluate, since many of the targets assigned were gun positions, trenches, and caves, on which damage assessment is next to impossible."⁷⁶⁴ The LFASCU concluded that carrier aviation was ineffective prior to the landing at Iwo Jima due to enemy concealment and dispersion.⁷⁶⁵ Once the squadron began flying close air support for frontline units on Okinawa, air controllers provided more reliable damage assessments.

Aircraft and personnel lost

The squadron suffered few losses in aircraft and personnel until the suicide aircraft attack of 11 May. Had it not been for the loss of ten aircraft aboard *Bunker Hill* that day, VMF-221's aircraft losses would have been markedly lower in 1945 than they had been in the Solomons (see Table 2.14.) When 11 May losses are included, the numbers for 1943 and 1945 are equivalent. Fatalities for 1943 and 1945 are comparable when 11 May casualties are excluded. Table 3.6 enumerates aircraft and personnel losses during VMF-221's two combat cruises.

Table 3.6: VMF-221 losses in 1945

Month	Aircraft lost to enemy aircraft	Aircraft lost to anti-aircraft fire	Aircraft lost aboard CV-17	Aircraft lost to mishaps	Total aircraft lost	Combat fatalities (air)	Combat fatalities aboard CV-17	Mishap fatalities	Total fatalities
First combat cruise, 16 February – 4 March									
February	1			2	3	1			1
March		1			1				0
Second combat cruise, 14 March – 11 May									
March	1*	2		2	5	1*		2	3
April	2			2	4	1			
May		2	10		12	1			
Total	4	5	10	6	25	4	11**	2	17

⁷⁶⁴ TG-58.3 "Operations 14 March – 1 June 1945," 20.

⁷⁶⁵ LFASCU "Special Action Report – Iwo Jima," 4-5.

*Includes loss of Lieutenant Turner to an exploding Zero.

**All from the squadron's ground echelon.

Source: VMF-221 war diaries, February – May 1945; VMF-221 ACA-1 reports no. 1-63.

Aircraft lost and vessels damaged while protected by the squadron

Air Group 84 did not lose a single bomber to enemy fighters in 1945. The group lost only five fighters in aerial combat; four of those were lost by VMF-221. The fifth, a VF-84 fighter, was lost to an exploding enemy aircraft as had happened to the unfortunate Lieutenant Turner.⁷⁶⁶

Attributing damage to vessels to the performance of VMF-221 is more complicated. Identifying warships sunk and damaged while VMF-221 was providing them with a combat air patrol is a clear cut process, but only part of the story. In addition to defending vessels with combat air patrols, VMF-221 also protected the vessels of the Fifth Fleet through strikes against enemy airfields and fighter sweeps. But as VMF-221 constituted at best just three percent of Task Force 58's fighter strength, Fifth Fleet's aggregate warship losses cannot be taken as a helpful indicator of VMF-221's performance.

In 1945, Japanese aircraft damaged five vessels protected by VMF-221. On 7 April, the carrier *Hancock* suffered a bomb hit while VMF-221 fighters were providing combat air patrol over Task Group 58.3. In this instance, the fighter director had sent another squadron's fighters to intercept the attackers. On 12 April, a crashing Judy damaged the destroyer *Purdy* shortly before VMF-221's fighters arrived overhead. On 28 April, near misses by suicide attackers damaged the destroyers *Daly* and *Twiggs* after VMF-221's fighters had exhausted their fuel in aerial combat and departed. When two dive-bombers struck *Bunker Hill* on 11 May, seven fighters from VMF-221 were waiting to recover, not assigned to combat air patrol but certainly in a position to intercept the attack.

⁷⁶⁶ CV-17 "Action report 10 February – 5 March 1945," 29; CV-17 "Action Report 14 March – 14 May 1945," 37, 203-204. The CV-17 action report attributed the loss of Lieutenant Pemble on 16 February to anti-aircraft fire. As he was last seen at high altitude surrounded by enemy fighters, this is unlikely.

Measures of effectiveness

Determining the measures of effectiveness for VMF-221 aboard *Bunker Hill* first requires an examination of the tasks assigned to the squadron in the context of the fleet commander's intent.

Table 3.7 associates squadron tasks with fleet commander intent during 1945.

Table 3.7. Fleet commander intent and squadron tasks, 1945

Operation	Dates	Commander, Fifth Fleet intent for Task Force 58	Task Force 58 tasks to VMF-221
Tokyo strikes	16-17 and 25 February	Reduce enemy air and naval strength and industrial facilities in the home islands	Fighter sweeps Combat air patrols Escort strikes and photoreconnaissance
Iwo Jima	19-22 February	Prevent air strength from contesting landing Support the landing force	Close air support
Okinawa	1, 23-27 March	Reduce air and naval strength in the Ryukyus Reconnaissance	Fighter sweeps Combat air patrols Escort strikes and photoreconnaissance
Kyushu and the Inland Sea	18-19 March	Prevent air strength from contesting landing	Escort strike Fighter sweeps Combat air patrol
Okinawa	1 April – 11 May	Prevent air and naval forces from contesting landing Support the landing force	Close air support Search for warships Combat air patrols (TF 58) Target combat air patrols (Ryukyus) Fighter sweeps

After the war, the United States Strategic Bombing Survey attempted to assess the effectiveness of American bombing during the war. Though its conclusions appear influenced by partisan service interests, the survey's method of assessing the effectiveness of individual American bombing raids against the Japanese aircraft industry appears rigorously objective. The survey assessed Task Force 58's strikes as indicated in table 3.8. Three of Task Force 58's strikes inflicted

heavy damage on Japan’s aircraft industry, which was manufacturing just 1,391 airframes and 1,695 engines per month by February 1945, less than half what it had produced at its peak in 1944.⁷⁶⁷

Table 3.8. Task Force 58 bombing of Japanese aircraft industry, February – March 1945

Date	Target	Damage effect rating	VMF-221 role
16 February	Nakajima Aircraft Assembly Plant, Ota	Heavy	Fighter sweep
			Escorted photoreconnaissance
			Combat air patrol
17 February	Nakajima Musashi Plant, Tokyo	Heavy	Combat air patrol
	Tachikawa Plant, Tachikawa	Medium	Combat air patrol
25 February	Nakajima Aircraft Assembly Plant, Ota	Negligible	none
	Nakajima plant, Koizumi	Heavy	Escorted strike
18 March	Mitsubishi Number 9 Plant, Kumamoto	Light	Struck Miyazaki airfield
			Rocket attack against the plant
19 March	Mitsubishi Number 7 Plant, Mizushima	Not hit	Combat air patrol
			Fighter sweep

Source: United States Strategic Bombing Survey, Aircraft Division, *The Japanese Aircraft Industry*, table VI-VI, 112-114.

VMF-221 contributed little to the seizure of Iwo Jima in February, and likewise inflicted little significant damage to Japanese air and naval strength in the Ryukyus in March. Nonetheless, Task Force 58’s Big Blue Blanket forced Vice Admiral Ugaki to cede control of the skies over the Ryukyus until the mass attacks of 6-7 April. Until then, the offensive fighter sweeps and powerful combat air patrols by VMF-221 and other fighting squadrons prevented Ugaki from interfering with Fifth Fleet’s pre-landing operations.

After the landing, Task Force 58 continued to prevent the Japanese Combined Fleet from contesting Operation Iceberg, but not from severely hurting the Fifth Fleet. The U.S. Tenth Army finally declared Okinawa secure on 21 June. By then the U.S. Fifth Fleet had lost thirty-six ships and 642 aircraft. Another 368 ships had suffered damage. Some, like *Bunker Hill*, required months of

⁷⁶⁷ USSBS, Aircraft Division, *The Japanese Aircraft Industry*, 11-112, 126.

repair before they would be ready for action again. The Joint Chiefs had ordered MacArthur and Nimitz to invade Kyushu on 1 November, over four months away, which provided both commanders time to reconstitute and reinforce their bloodied commands.⁷⁶⁸

VMF-221 had shot down fifty-one aircraft and destroyed another thirty on the ground. The squadron had lost twenty-five aircraft in combat and mishaps, but only four in air-to-air encounters. Though the 12:1 kill-to-loss ratio in aerial combat is remarkable, those figures alone are not a complete measure of VMF-221's effectiveness. The United States could replace VMF-221's aircraft, but Japan's aircraft industry struggled to stay afloat by mid-1945. VMF-221 had lost only six aviators, but killed every Japanese pilot it shot down. Most importantly, an evaluation of VMF-221's tasks reveals that it executed each one sufficiently to contribute to the accomplishment of the Fifth Fleet commander's intent.

Contributing factors

The factors that contributed to VMF-221's performance and effectiveness aboard *Bunker Hill* include the capabilities and limitations of the aircraft the squadron flew; the tactics the squadron employed; the ordnance the squadron employed; the proficiency of its aviators; the time it had to prepare; command and control; logistics and maintenance; intelligence and early warning; weather; aircrew survivability; and Japanese capabilities.

Aircraft

The F4U-1D had outclassed its adversaries, particularly when opposing aircraft were flown by less experienced pilots. The Corsair had the speed, maneuverability, and firepower to dominate

⁷⁶⁸ USSBS, Naval Analysis Division, *The Campaigns of the Pacific War*, 331; Frank and Shaw, *Victory and Occupation*, 365; Spector, *Eagle Against the Sun*, 542-543.

Japanese fighters. Its 1,200-mile range increased its utility as a scout. As a stable bomber, strafing, and rocket firing platform, the F4U-1D also turned out to be highly versatile. Perhaps as important to VMF-221, its modifications from earlier models enabled it to fly off carriers more safely.

Safer it was, but the F4U-1D still challenged carrier pilots. Captain Seitz, *Bunker Hill's* captain, noted that an excessively high number of Corsairs had to be scrapped when their fuselages buckled during hard landings. He considered this to be a pilot training problem.⁷⁶⁹ The Corsair had other troublesome drawbacks. The drop tanks caused the aircraft to buffet at low speeds and in dive-bombing runs.⁷⁷⁰ These issues contributed to the mishaps VMF-221 experienced and inhibited bombing accuracy. And for all its daytime advantages, the Corsair was neither a night fighter nor an all-weather fighter. Nonetheless, the F4U-1D's superiority as a fighter continued to contribute to the squadron's high kill ratio.

Tactics

Fighting tactics had not changed much since 1943, but fleet tactics had evolved significantly. Fifth Fleet's ability to fight as a single team of over six hundred ships and two thousand aircraft in multiple dimensions created conditions that set VMF-221 up for success, placing its fighters in the right place and the right time to fight and win. Task Force 58's Big Blue Blanket was not an iron clad tactic but proved sufficiently effective to protect the fleet from Japanese aircraft. Smaller innovations across the force gave the fleet the edge in many situations. As an example, bombers reported that aluminum "window" appeared to confuse enemy anti-aircraft targeting radars.⁷⁷¹

⁷⁶⁹ CV-17 "Action report 10 February – 5 March 1945," 43.

⁷⁷⁰ CV-17 "Action Report 14 March – 14 May 1945," 226-227.

⁷⁷¹ CV-17 "Action report 10 February – 5 March 1945," 48.

Ordnance

The F4U-1D's rockets added an effective ground-attack weapon to the squadron's arsenal, though pilot reports rarely attributed damage they inflicted specifically to rockets. Rockets malfunctioned only occasionally. *Bunker Hill's* pilots estimated that napalm canisters functioned only 75% of the time during both combat cruises. The napalm canisters' fins not only prevented the Corsair's flaps to extend but appeared to do little to improve the canister's horrible accuracy.⁷⁷² The 20mm cannons of the F4U-1Cs did not suffer stoppages more often than .50 caliber machine-guns.⁷⁷³

Aviators

VMF-221 brought no novice pilots aboard *Bunker Hill*. Though only four were Solomons veterans, the squadron's most inexperienced aviator had joined the squadron in June 1944, seven months before deploying. All had completed a systematic, progressive training syllabus in Southern California. All had qualified to land aboard carriers (except for Briggs, who proved capable). Even the replacements were combat veterans and experienced carrier pilots. When Roberts decided a pilot was unsafe, he was able to transfer him stateside. VMF-221's aviators were meticulously trained and thoroughly outclassed their opponents.

Time

VMF-221 enjoyed an extended period at Goleta to prepare for its final combat deployment. All of its aviators joined the squadron at least seven months before the squadron deployed. That time was not squandered. Major Post and Major Roberts led the squadron through a progressive and

⁷⁷² CV-17 "Action report 10 February – 5 March 1945," 44; CV-17 "Action Report 14 March – 14 May 1945," 228.

⁷⁷³ CV-17 "Action Report 14 March – 14 May 1945," 225.

well-rounded syllabus. When the Pacific Fleet directed the squadron to qualify aboard carriers just two months before departing California, the squadron had utilized its time thus far sufficiently well that this additional requirement did not supersede other essential training. The fleet was able to devote enough days of carrier qualifications aboard *Ranger* to provide VMF-221 and the other squadrons time to qualify.

Command and control

Though part of a vast fleet, VMF-221 benefited from a mature command and control system that leveraged technology, processes, and communications to put the squadron's fighters in the right place at the right time to fight and win. The squadron's fighters frequently participated in air group-sized strikes, protected their task group, flew under the fighter direction of a picket destroyer, and dropped bombs under the control of an air liaison party attached to an infantry unit, all within the same week or even the same day.

This command and control system was a force multiplier when it worked, but it did not always work. Coordination between the landing force and Task Force 58 proved particularly challenging and limited the effectiveness of VMF-221 in its ground support role. Air groups usually received air support requests late at night for the following day, which limited the time planners had to analyze targets and design missions. Friendly troop locations could be over a week out of date. Support requests specified the time to show, the number and type of aircraft needed, and the type of ordnance desired, but did not identify targets. Once the flight checked in with a controller, the aircraft often loitered while controllers on the ground and aloft figured out which targets to assign to them. Another factor that retarded effective ground strikes was that Task Force 58 ordered its aviators to target aircraft and warships. When the pilots could not find any, they expended their ordinance on targets of dubious value. Aviators often had to guess at the damage they inflicted when

they were instructed to hit targets of opportunity and those not identified by controllers in close proximity to the target. Often the targets were assigned so late that the aircrew had insufficient time to plan how they would approach, acquire, and attack the target, reducing accuracy. Late returns disrupted flight deck schedules. The difficulties so vexed Admiral Sherman, Task Group 58.3's commander, that he advocated limiting fleet carriers to two days of high tempo support missions for the landing force, and then unleashing the carriers to focus on offensive strikes against enemy air power. By lingering off Okinawa for such a long time, the carriers sacrificed mobility and security, exposed to enemy attacks like "a worm on a hook."⁷⁷⁴

Tactical communications also hindered command and control, even between aircraft of the same squadron. *Bunker Hill* noted that replacement aircraft often arrived with radios that were incompatible with the rest of the air group's communications equipment. The replacements arrived with the AN ARC-5, while the on hand aircraft had the AN ARC-1. This required one hundred man-hours to swap out if an AN ARC-1 was available.⁷⁷⁵ Captain Swett was particularly chagrined at the crowded radio fighter direction net at Radar Picket No. 15 on 11 May, which prevented *Hadley* from vectoring its fighters effectively.

Logistics and maintenance

VMF-221 and *Bunker Hill* were underway and fighting from 10 February to 11 May, with only one ten-day break at anchor in Ulithi. Replacement aircraft flew aboard from escort carriers and, later on, Iwo Jima. The Pacific Fleet supplied all the carrier's fuel, ammunition, food, and spare parts at sea, 1,000 miles from Ulithi and 6,500 miles from California. Replenishment at sea became

⁷⁷⁴ TG-58.3 "Operations 14 March – 1 June 1945," 20, 27-28, 38; CV-17 "Action Report 14 March – 14 May 1945," 25-26, 39, 220, VI-B-23

⁷⁷⁵ CV-17 "Action report 10 February – 5 March 1945," 43.

so efficient that many captains preferred refueling and restocking at sea rather than in port. The oilers also restocked drop tanks, which were often in short supply for the F4U.⁷⁷⁶

The squadron's sortie rate reflects the effectiveness of the fleet's supply chain. It also indicates that it was easier to maintain aircraft aboard a carrier than on a coral airstrip on a jungle island. Working conditions aboard a carrier at war were hardly cushy, but the crew was not plagued with disease, oppressive heat, tropical downpours, and spoiled food. The tools, parts, and supplies the technicians needed were usually immediately at hand. In short, it was easier to keep aircraft flying aboard a carrier. Roberts hand-picked the sixty marines of VMF-221's ground echelon aboard *Bunker Hill*. This group included twenty-eight Solomons veterans, who ensured a highly experienced team maintained the squadron's fighters.

Nonetheless, combat, and the sea, took a toll on men and their machines. The Fifth Fleet could not have continued its operational tempo indefinitely. After Okinawa, Admiral Sherman voiced great pride in the stamina of Task Group 58.3's ships and their crews, but assessed that both needed thirty days' rest and repair followed by ten to twelve days of training before they would be ready for another such combat cruise. That would not have seen the group underway again until early August.⁷⁷⁷

As helpful as the supply chain and working conditions at sea were, logistics were the single greatest inhibitor to VMF-221's sortie rate. *Bunker Hill* replenished on sixteen of her eighty-two days underway across her two combat cruises. On only one of these replenishment days did she fly any combat operations aside from combat air patrols. The requirement to spend every fifth day off the line gave her aviators a rest, but limited the number of punches she was throwing.⁷⁷⁸

⁷⁷⁶ TG-58.3 "Operations 14 March – 1 June 1945," 36-37.

⁷⁷⁷ TG-58.3 "Operations 14 March – 1 June 1945," 25-6.

⁷⁷⁸ CV-17 "Action Report 10 February – 5 March 1945," and "Action Report 14 March – 14 May 1945," passim.

Intelligence and early warning

VMF-221 benefited from excellent intelligence at times and frustrating gaps at others. Intelligence regarding Japanese dispositions and intentions kept the Fifth Fleet one step ahead of the Combined Fleet. Intelligence regarding strike targets was inconsistent. The target folders for the Tokyo strikes provided to *Bunker Hill*'s pilots included aerial photography and damage assessments from B-29 raids, which greatly enhanced mission planning. Photographs of the airfields on Kyushu often revealed hundreds of camouflaged aircraft protected within revetments. This intelligence enabled pilots to get in, hit known aircraft locations, and leave, instead of orbiting the airfield and looking for targets, which exposed them to responding fighters and anti-aircraft guns. Aerial photography also revealed the locations of midget submarines on Okinawa. But that type of clarity was often absent regarding targets on Okinawa, as it had been on Iwo Jima. Information about the battle on Okinawa was so sporadic that pilots relied on *Bunker Hill*'s internal newspaper for updates.⁷⁷⁹

Early warning of enemy air attacks was good but occasionally failed. With no equivalent to the coast watchers, Task Force 58 depended on radar operators aboard pickets, on Okinawa, and aboard its own vessels. *Bunker Hill*'s radars, among others, detected aircraft inconsistently. Identification Friend or Foe systems failed so often that they provided extremely limited value. U.S. radars could not detect aircraft above 25,000 feet beyond thirty miles nor accurately track them, greatly inhibiting interception. One handicap Task Group 58.3 suffered from was that the radars in its flagship, *Essex*, were already performing poorly and in need of repair or replacement when the attack on 11 April destroyed one of her radar antennas. From then on, Admiral Sherman relied on other ships in his task group to pass him radar information. Sherman concluded that the aircraft that struck *Bunker Hill* on 11 May likely evaded radar detection by approaching at a very low altitude.

⁷⁷⁹ TG-58.3 "Operations 14 March – 1 June 1945," 20, 29.

They then climbed into the heavy, low-lying clouds where they could not be spotted, and radar operators had trouble distinguishing them from friendly aircraft over the task group.⁷⁸⁰

Weather

The harsh weather of the western Pacific in winter had a direct effect on VMF-221's combat effectiveness. During her two combat cruises, on ten of *Bunker Hill's* eighty-two days underway, weather forced Admiral Mitscher to cancel or curtail operations. On several other occasions, such as during both Tokyo strikes, weather hamstrung VMF-221's effectiveness in the air.

Aircrew survivability

More than a couple of VMF-221's aviators owed their lives to the robust search and rescue capabilities the Pacific Fleet arranged. Five of the squadron's pilots ditched or parachuted over water and were subsequently rescued. Task Force 58's pilots had other options when they ran into difficulties. One VMF-221 pilot landed on the Yontan airfield when his napalm cannister would not release. Another landed aboard *Randolph* when he could not make it to *Bunker Hill*. On 11 May, *Enterprise* recovered fifteen aviators while *Bunker Hill* burned.

Flying with Task Force 58 added a margin of safety to aircrew survival, but also added new perils. Eleven of the squadron's ground crew perished in the 11 May fire. Some of the squadron's pilots may not have escaped either had they not been aloft. To increase survivability for the ship and her crew, Captain Seitz urged the fleet to train air group personnel to use a rescue breathing apparatus and to fight fires.⁷⁸¹

⁷⁸⁰ TG-58.3 "Operations 14 March – 1 June 1945," 32, 34-35; CV-17 "Action report 10 February – 5 March 1945," 45-6.

⁷⁸¹ CV-17 "Action Report 14 March – 14 May 1945," 165.

Japanese capabilities

The damage to *Bunker Hill* illustrates the adaption of Japan's air forces to their eclipse by American air power. As aircraft production diminished, aircraft performance lagged, and pilot training deteriorated, Japan resorted to suicide attacks. While such attacks did not threaten VMF-221 in the air, they could destroy aircraft aboard ships they struck and could eliminate the squadron from the battle by forcing its carrier to withdraw for repair.

In the air, improved Japanese fighters do not appear to have given their inexperienced pilots a significant edge. Japanese fighters shot down only three VMF-221 fighters. One was likely by a newer Oscar or Tojo; the other two were by Zeros.

On the ground, the Japanese used camouflage to limit VMF-221's effectiveness in its ground attack role. The marines rarely inflicted significant damage on Japanese defenders until American troops uncovered their locations. VMF-221 enjoyed greater success attacking parked aircraft. The Japanese tactic of defueling aircraft to improve survivability was only partially effective after the marines switched to napalm.

On an operational level, Vice Admiral Ugaki's careful management of the air war enabled him to mass aircraft against the Fifth Fleet. Ashore, the 32nd Army's prolonged defense forced Task Force 58 to linger off Okinawa for over two months, a "worm on a hook," as Admiral Sherman put it. Though Ugaki never overmatched Fifth Fleet's air forces, and the 32nd Army eventually succumbed to the Tenth Army, Japanese commanders made the battle for Okinawa longer and bloodier than American commanders had foreseen.

Marine aviation effectiveness aboard *Bunker Hill*

VMF-221's combat cruises aboard *Bunker Hill* indicate that it was a highly effective carrier fighting squadron. Its aircraft and its pilots could do the job they were designed to do: fly off a

carrier, intercept enemy aircraft, and attack enemy ground targets. There were shortcomings in their performance. The squadron's sortie rate would have been much higher, but logistical requirements and foul weather prevented *Bunker Hill* from launching combat missions on thirty percent of her underway days. Enemy aircraft slipped past the squadron's fighters and struck warships of the fleet, either because the fleet did not detect the adversary, the fighter director did not task the fighters to intercept them, or because the fighters were off station. In the ground attack role, the marines had tremendous difficulty identifying concealed defenders without the aid of frontline controllers.

VMF-221's successful conversion to a carrier squadron is as much a testament to the organizational efficiency of naval aviation as it is to the proficiency of the squadron's aviators. Because the marines were trained as naval aviators, equipped with carrier aircraft, and allotted the time and opportunity to qualify for carrier operations, VMF-221 was able to integrate into Task Force 58 and perform effectively.

Conclusion

Summary of findings

The central research questions of this study were, how well did marine aviation support the Pacific Fleet in the Second World War, and what factors contributed to its effectiveness? This dissertation demonstrated that marine aviation achieved mixed success, particularly in 1942. The determining factors of its effectiveness evolved across each of the three cases.

VMF-221 lost heavily at Midway and contributed little to the Pacific Fleet's victory there. The squadron was outnumbered, and its aircraft were inferior. MAG-22 employed the squadron in "general support," in defense of the base, leaving VMSB-241 to attack without fighter protection. Most significantly, too many of its aviators were inexperienced and inferior to their adversaries—"half-baked pilots," as General Rowell characterized them. The rapid expansion of marine aviation led the Pacific Fleet and the Fleet Marine Force to employ its forward squadrons as training commands. Flight hours for training competed with the requirement to defend the atoll. As the battle approached, fuel shortages limited training when it would have mattered most for its newest pilots. As a result, VMF-221 was not ready to fight on 4 June, despite the willingness of its aviators to try, the squadron's ability to get its planes in the air, and MAG-22's ability to detect the incoming strike and direct the squadron to a favorable interception point.

In striking contrast, the squadron proved highly effective in the Solomons, claiming seven aerial victories for every aerial loss. Even when flying the F4F-4 Wildcat on its first combat tour, the squadron claimed twenty-five victories. Once the squadron had transitioned to the F4U Corsair, its kill-to-loss ratio climbed as its loss rate plummeted. The protection VMF-221 and Fighter Command, Solomons extended to the fleet's ships and landing forces was not iron clad, as Japanese strikes occasionally sank and damaged ships and bombed forces ashore, but it was very good, and

unquestionably good enough. VMF-221's performance achieved the fleet commander's intent and contributed to the Third Fleet's neutralization of Rabaul and attrition of Japanese naval aviation.

VMF-221's aviators were far more prepared for combat in the Solomons in 1943 than they had been at Midway. This was primarily due to a focused, two-month training regimen, but also due to the assimilation of doctrine and tactics developed by other navy and marine squadrons during 1942. Intelligence, early warning, and fighter direction consistently placed the squadron in the right place at the right time to fight and win. The transition to the F4U Corsair measurably improved the squadron's performance in the Solomons, even though the squadron's difficulty maintaining the Corsair limited its sortie rate. The difficulty the Pacific Fleet experienced sustaining Air Command, Solomons at the end of a transoceanic supply chain directly impacted the squadron's ability to keep its aircraft flying. The tropical environment accelerated corrosion and other mechanical issues while requiring marines and sailors working on the aircraft to labor under miserable conditions. The practice of separating aviators, aircraft, and ground echelons from each other and employing these squadron components as interchangeable cogs exacerbated aircraft maintenance difficulties. The squadron had better success keeping its aviators and ground echelons healthy than had earlier units, as environmental health measures and unit discipline retarded tropical diseases and rest periods in Australia gave pilots much needed respites. Search and rescue boats and aircraft improved pilot morale as well as survivability.

The squadron's operational effectiveness continued when it deployed aboard *Bunker Hill*. Its pilots benefited from a prolonged, systematic training syllabus. They achieved a better than 12:1 kill-to-loss ratio in air-to-air combat. When they could locate targets on the ground or at sea, they inflicted significant damage. No aircraft the squadron escorted were lost to enemy fighters. Enemy suicide attacks often penetrated Task Force 58's Big Blue Blanket and struck warships of the Fifth Fleet, but never due to the inefficiency of VMF-221.

The squadron's deployment aboard a carrier revealed advantages and limitations of carrier squadrons in contrast to land-based squadrons. The carrier's mobility enabled its air group to strike targets throughout the theater of operations, mitigating the limited operational radius of its aircraft. Aircraft were easier to maintain and supply at sea than in the Solomon Islands. However, replenishment requirements and rough weather interrupted flight operations nearly a third of the time, curtailing the number of days the carrier could sustain offensive operations. Most importantly, the carrier and her air group were vulnerable to enemy strikes in a way that land-based squadrons were not. As the 11 May attack demonstrated, when attacking aircraft could locate the carrier and penetrate the fleet's defenses, they could sink or so damage the carrier and thereby remove her and her aircraft from the fight.

Implications of the findings

A. A. Cunningham's 1919 testimony that, "The only excuse for aviation in any service is its usefulness in assisting the troops on the ground," was shortsighted, even regarding marine aviation. The experience of VMF-221 demonstrated that aviation could be an integral component of a fleet, and its usefulness went well beyond supporting the fleet's landing force. The Pacific Fleet employed aviation to achieve air superiority, achieved air superiority to establish sea control, and established sea control to seize advanced bases. Advanced bases then enabled land-based aviation to help the fleet to extend air superiority, and the cycle repeated.

Though VMF-221 was a marine squadron, its experience in the Pacific War more closely aligns with naval aviation than with the Fleet Marine Force. Regarding the integration of marine squadrons into naval aviation, Allan Millett noted in his seminal history of the Marine Corps, "...the wonder is not that Marine pilots learned the air superiority and fleet-destroying doctrines of the

Navy but that they retained any Marine Corps character at all.⁷⁸² Though the primary mission of Marine Corps aviation was to support the Fleet Marine Force in landing operations, and its secondary mission was to provide replacement squadrons for carriers, few marine squadrons fulfilled either of those roles in the Second World War. Most who served in those roles did not do so until 1945. As VMF-221's story demonstrates, the fleet employed marine squadrons to meet the fleet's requirements and within marine aviation's capabilities. Until 1945, what the fleet required from marine aviation was land-based squadrons to defend advanced bases for the first year of the war and then to help the fleet achieve sea control in the South Pacific during the second year. When the Central Pacific drive began in late 1943, marine squadrons were unable to support amphibious assaults from carriers and marine aircraft were unable to reach these atolls from distant airstrips. Not until the fleet needed to draw upon marine squadrons as replacements for carrier aviation were squadrons like VMF-221 able to support the landing force before airstrips could be captured.

VMF-221's experience is best understood against the larger progression of the Pacific War. For the first year, competing requirements to rapidly expand marine aviation while concurrently defending advanced bases contributed to the disaster on 4 June at Midway. As marine and navy aviators gained experience, naval fighting squadrons innovated new tactics and proved capable of defeating Japanese aircraft even while flying the F4F Wildcat. Once marine squadrons received the F4U Corsair, their combat edge widened. The rate of attrition of Japanese aviation increased at the same time that American industrial mobilization accelerated the production of aircraft for the fleet. By 1945, the Pacific Fleet could exploit its superiority in numbers, logistics, technology, and experience to seize advanced bases close to Japan and bring the fight to the home islands.

VMF-221's story has implications for American naval planners in the 21st century, but there are limitations to its relevance. In 2018, General Berger, then Commandant, instructed his marines,

⁷⁸² Millet, *Semper Fidelis*, 361.

“We should ask ourselves – what do the Fleet Commanders want from the Marine Corps, and what does the Navy need from the Marine Corps?” In 1942, the fleet commander wanted marine squadrons to defend advanced bases. In 1943, the fleet commander wanted marine squadrons to help the fleet achieve air superiority and sea control as naval aviation’s land-based component. In 1945, the fleet commander wanted marine fighting squadrons aboard carriers to protect the fleet from suicide attack aircraft.

In 2020, U.S. naval services adopted a unifying doctrine that warned, “China’s and Russia’s aggressive naval growth and modernization are eroding U.S. military advantages. Unchecked, these trends will leave the Naval Service unprepared to ensure our advantage at sea and protect national interests within the next decade.”⁷⁸³ This naval doctrine integrates the Fleet Marine Force into the fleet to “...combine the effects of sea-based and land-based fires, enabling our forces to mass combat power at times and places of our choosing.”⁷⁸⁴ The U.S. Marine Corps’ underlying doctrinal publication, the *Tentative Manual for Expeditionary Advanced Base Operations*, assigns aviation the following role:

Massing distributed effects requires a force that is adept at reconnaissance and counter-reconnaissance, digitally interoperable with the joint force, and physically capable of maneuvering with speed and depth across expansive geographic areas. Marine Corps aviation fills these requirements with critical capabilities that digitally integrate aerial and ground sensing with lethal fires and long-range maneuver and sustainment; enabling the (stand in force) to thrive in a multi-domain, contested environment.⁷⁸⁵

In other words, the U.S. Marine Corps intends that marine aviation will provide the fleet with a force that can help it locate the enemy while protecting the fleet from enemy scouts, digitally

⁷⁸³ General David H. Berger, USMC, Admiral Michael M. Gilday, USN, and Admiral Karl L. Schultz, USCG, *Advantage at Sea* (Washington, DC: Department of the Navy, December 2020), 5.

⁷⁸⁴ Berger, Gilday, and Schultz, *Advantage at Sea*, 7.

⁷⁸⁵ United States Marine Corps, *Tentative Manual for Expeditionary Advanced Base Operations* (Washington, DC: United States Marine Corps, 9 May 2023), 5-1.

communicate with air force and army elements as well as marine and navy ones, and quickly reach across the battlespace to strike enemy forces as part of a larger fleet operation. The *Tentative Manual for Expeditionary Advanced Base Operations* further indicates that marine and navy aviation will be integrated under a single commander.⁷⁸⁶ These roles resemble some roles marine aviation performed for the fleet from 1941 – 1945: marine squadrons scouted, intercepted enemy scouts and strikes, integrated with army air force and navy squadrons, and helped the fleet commander mass combat power across the battlespace. The primary differences between then and now lie in the degrees to which each of these can be accomplished.

Many of the contributing factors to VMF-221's performance will be relevant to the Pacific Fleet in the 21st century. There is little reason to believe that aircraft numbers and capabilities and aircrew proficiency will not give the side possessing them an advantage in future conflicts. The Pacific Ocean is still vast and Pacific islands still present a harsh climate that will confound logisticians. Carriers still afford a fleet with mobility and simplify aircraft maintenance and supply; they also still consolidate aviation combat power aboard a warship vulnerable to enemy strikes.

Modern American naval doctrine also emphasizes maintaining combat ready forces forward to deter aggression and prevail in conflict.⁷⁸⁷ Naval experts have cautioned the naval services against trying to keep so large a fraction of their smaller fleet forward deployed. The operational tempo of U.S. naval forces overseas has challenged the navy's ability to maintain readiness for combat and operate safely.⁷⁸⁸ In a manner that echoes VMF-221's tribulations on Midway, the U.S. commitment to maintain a heavy forward naval presence in the Western Pacific will compete with the fleet's ability to keep its people, aircraft, and warships ready to fight.

⁷⁸⁶ USMC, *Tentative Manual*, 5-2.

⁷⁸⁷ Berger, Gilday, and Schultz, *Advantage at Sea*, 6.

⁷⁸⁸ See The Honorable Robert O. Work, "A Slavish Devotion to Forward Presence Has Nearly Broken the U.S. Navy," *Proceedings*, December 2021, Vol. 147/12/1426; Lieutenant Jeff Zeberlein, U.S. Navy, "Can-Do Is Not Working," *Proceedings*, December 2021, Vol. 147/12/1426.

In these instances, VMF-221's experience in the Second World War offers historical examples that may be of interest to today's naval professionals. But application of VMF-221's experiences should be tempered with an acknowledgement of the context in which this squadron operated. The rapid expansion of marine aviation beginning in 1941 is unlikely to be duplicated in the foreseeable future, even in a conflict with a near-peer competitor. Likewise, the U.S. cannot mobilize its shipbuilding industry today as it did in the 1930s to build the fleet that defeated Japan in the 1940s. Nor is it likely to be able to replace its principal combat aircraft in the first couple years of a major war. Development programs for ships and aircraft can take well over a decade. The U.S. naval services' next fight will likely be a come-as-you-are affair. Transformation on the scale of the backdrop to VMF-221's war is implausible.

As the U.S. Navy and Marine Corps seek to answer General Berger's questions—what do the fleet commanders want from the Marine Corps, and what does the Navy need from the Marine Corps?—they could be well served to reflect upon the role of marine aviation in the Second World War. As VMF-221's story suggests, the answers to these questions could be well informed by a careful understanding of marine aviation's effectiveness in support of the Pacific Fleet and the factors that contributed to its effectiveness.

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