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United States Marine Corps Air-Ground Integration in the Pacific Theater

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Air Command and Staff College
Wright Flyer Paper No. 9



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MAXWELL AIR FORCE BASE, ALABAMA

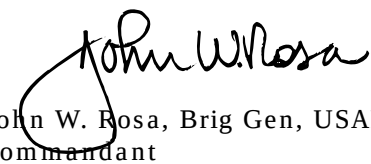
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Foreword

It is my great pleasure to present another of the *Wright Flyer Papers* series. In this series, Air Command and Staff College (ACSC) recognizes and publishes the "best of the best" student research projects from the prior academic year. The ACSC research program encourages our students to move beyond the school's core curriculum in their own professional development and in "advancing aerospace power." The series title reflects our desire to perpetuate the pioneering spirit embodied in earlier generations of airmen. Projects selected for publication combine solid research, innovative thought, and lucid presentation in exploring war at the operational level. With this broad perspective, the *Wright Flyer Papers* engage an eclectic range of doctrinal, technological, organizational, and operational questions. Some of these studies provide new solutions to familiar problems. Others encourage us to leave the familiar behind in pursuing new possibilities. By making these research studies available in the *Wright Flyer Papers*, ACSC hopes to encourage critical examination of the findings and to stimulate further research in these areas.



John W. Rosa, Brig Gen, USAF
Commandant

Preface

This paper addresses Marine Corps aviation's contribution in the area of air-ground integration during the Second World War. I chose this topic because it is not an area that has been widely researched, and it deals with a mission that I am tasked with as a FA-18 pilot. The issue of air-ground integration is as relevant today as it was in World War II, and it has many implications for air support in the joint arena. In addition, I have heard many anecdotes describing how well the Marines had conducted air support, and I wanted to see if the research would support that premise. Finally, I have always enjoyed studying the battles in the Pacific, and this provided me with a golden opportunity to do just that using some of the finest primary source documents in the country.

I would like to express my appreciation to Dr. Richard Muller for his guidance and assistance on this project. He has given me a great appreciation for the value of research and how the lessons learned from it can be applied to our current environment. His humor and insight have made the project particularly enjoyable.

Abstract

United States Marine Corps Air-Ground Integration in the Pacific Theater addresses how the United States Marine Corps dealt with the challenge of air support for the infantry in the Second World War. Sources for research included primary documents on doctrine and personal interviews from the United States Air Force Historical Research Agency. Periodicals written before and immediately after the war provided additional information. Finally, books on Marine Corps aviation from the Air University Library provided some material.

The research indicated that the Marines developed an effective means for air-ground integration during the Second World War. A great deal of this success was due to the Marine Corps' philosophy of airpower as well as to experience gained during the interwar years, particularly in Nicaragua. In addition, the unique environment in the Pacific influenced many of the procedures that were developed. Finally, the Marines learned a great deal during the course of the Pacific campaign itself. The battles of Guadalcanal, Bougainville, and Luzon illustrate the significant innovations and improvements that were made during the war.

United States Marine Corps Air-Ground Integration in the Pacific Theater

The effective integration of air and ground units has always been a difficult task. During the Second World War, this difficulty manifested itself time and again. At the beginning of the war, the German Luftwaffe probably had the most effective system for integrating air and ground units on the battlefield.[1] As time progressed, however, many air forces began to develop procedures that resulted in excellent air support for troops on the ground. The Army Air Forces (AAF) and Royal Australian Air Force, in particular, made significant contributions in this area. However, the United States Marine Corps (USMC) received much of the credit for innovations in the integration of air and ground units. According to B. Franklin Cooling, "The achievements of the Marine Corps' close support effort were appreciated at the time, and the fact that their exploits were celebrated in a number of well-written books has kept this appreciation alive. There are probably some US Air Force officers who believe the concept of close air support began with the Marine Corps."[2] If Cooling's assertion is true, what made the Marine Corps so effective in this area? An examination of the successes the Marine Corps enjoyed in air-ground integration makes apparent that the foundation was laid many years before the war began. The Marine Corps' philosophy of airpower, its experience during the interwar years, the unique environment in the Pacific, and wartime experience, particularly in the Guadalcanal, Bougainville, and Luzon campaigns, led the Marine Corps to develop one of the most effective means of air-ground integration in the Pacific theater.

Marine Aviation's Focus

Since its inception, Marine aviation has focused on air-ground integration. After World War I, Marine aviation was faced with the task of selling the benefits of airpower to the

rest of the Marine Corps. Unlike the Army Air Service (AAS), which was beginning to see an independent role for aviation, Marine aviators saw their role as supporting the ground forces. Maj Alfred Cunningham, the first Marine aviator, stated the direction that Marine aviation was taking when he said, "It is fully realized that the only excuse for aviation in any service is its usefulness in assisting the troops on the ground to successfully carry out their operations."[3] This statement was published in a 1920 article in the *Marine Corps Gazette* and foreshadowed the approach that Marine aviation would take in the interwar years and the Second World War.

Interwar Years

The Marine Corps gained a great deal of experience in air-ground integration during the interwar years. With the exception of US pilots who fought in Spain with the Republicans and those who later flew with the Royal Air Force (RAF) Eagle Squadrons, Marine aviators were the only American flyers in combat between 1918 and 1941. Marines flew missions for ground troops in Haiti, the Dominican Republic, and Nicaragua.[4]

Dive-bombing

One of the tactics practiced by the corps at this time that greatly improved its ability to support the troops on the ground was dive-bombing. The British pioneered this tactic while conducting close-support operations in 1918.[5] In 1923 Maj Ross E. Rowell, USMC, was assigned to the AAS for a tour of duty at Kelly Field, Texas. At that time, the 3d Attack Group was experimenting with dive-bombing. However, the AAS cooled to this type of attack because many aviators felt aircraft were too vulnerable to antiaircraft artillery while dive-bombing. In contrast, Rowell became convinced that dive-bombing attacks could be most useful in small guerilla wars. In 1924 Rowell became the commander of VO-1M, a squadron he trained as a dive-bombing unit. Later, during the Cleveland Air Races of 1933, Rowell and his marines demonstrated the dive-bombing technique. According to Rowell, Maj Ernst Udet,

a famous German ace who attended the show, was very interested in dive-bombing and made many detailed inquiries. Udet commented that he could see important developments for that type of attack. Udet was later promoted to lieutenant general and was responsible for the development of the German air force and the design of the Stuka.[6]

Nicaragua

In February 1927 Major Rowell received orders to take VO-1M and its DeHavilland DH-4Bs to Nicaragua to provide air support to marines fighting the bandits led by Sandino. This assignment provided Rowell with the opportunity to put his dive-bombing technique to the test as well as to begin to develop procedures for air-ground integration. Rowell's aircraft were armed with four 25-pound fragmentation bombs, 600 rounds of ammunition for the fixed gun, and 600 rounds for the free gun.[7] During the campaign, aircraft and infantry communicated with each other using the Very pistol, panels, and message drop and pick up. The infantry used panels to mark frontline positions and to indicate the direction and distance to the objective to be attacked.[8] In this fashion, Rowell's aircraft were able to provide effective close air support. A column was never sent out without a plane in almost constant attendance.[9] These procedures had been developed during World War I but had been largely forgotten by most air arms.

An example of effective air-ground integration occurred in the small Nicaraguan village of Ocotal. There, eight hundred Sandinistas attacked a small Marine outpost. A Marine reconnaissance aircraft saw panel signals indicating an emergency. Several DH-4Bs then dive-bombed the rebels and dispersed them.[10] As each aircraft commenced its dive, it opened fire with its fixed gun, dropped a bomb at the end of the dive, and then harassed the enemy with the observer's gun as the plane flew away. This procedure was repeated until all ordnance was expended.[11] The planes took back the seriously wounded, left a supply of ammunition for the garrison, and continued reconnaissance in the area to ensure the bandits did not return.[12] This mission was the first

known case of an air attack being directed by ground troops.[13] The outpost was the first American unit known to have survived a ground assault by vastly superior forces thanks to aerial intervention.[14]

Throughout their time in Nicaragua, Marine aviators continued to gain valuable experience with air support. Airplanes served as artillery in which the Marines were deficient. In addition, aircraft participated in sieges and battles where very little space separated the contending forces. They flew escort missions for columns and detected and broke up ambushes. Finally, they flew reconnaissance missions providing valuable intelligence information to the infantry units on the ground.[15]

Exercises

After their experience in Nicaragua, Marine aviators continued to practice air-ground integration. In 1928 Marines began to emphasize infantry-air communication using radios, which gave the infantry limited practice in directly controlling aircraft.[16] The idea of direct control of aircraft by a supported unit would resurface during the pitched battles of the Pacific campaign. During 1940 and 1941, aviators participated in several exercises. Marine squadrons took part in the Guantanamo, Louisiana, and North Carolina maneuvers, mostly with Army troops. Several lessons were learned in the area of air support. First, adequate and reliable radio communication from air to ground was essential for effective support. In addition, pilots found that one-channel radios were entirely inadequate to conduct the coordination required for close air support, and the later two-channel installations were not much better. Second, panels and pyrotechnics proved inferior to radio communication but often had to be resorted to because of poor radio equipment and radio discipline. Their use, however, required thorough air-ground coordination. The difficulty in using panels was exacerbated by the fact that the new monoplanes were much faster than the old biplanes, making it hard for pilots to correctly identify targets. Third, an airborne coordinator was required for liaison between scout bombers in the air and infantry assault units on the ground.[17] Unfor-

tunately for the Marines, not much was done to exploit these lessons, and they would have to be relearned on Guadalcanal.

Development of Doctrine

While aviators were gaining practical experience, the Marine Corps was beginning to develop doctrine for the support of troops on the ground. This doctrine included procedures that would form the foundation for operations in the Pacific. The development of doctrine began in 1935 when aviation was taken from the Division of Operations and Training at Headquarters Marine Corps and established as an independent section under the commandant.[18] A doctrine manual for the use of Marine Corps aviation was produced that same year. Much of the manual dealt with air support of amphibious assaults. The document outlined Marine aviation's focus when it stated, "Continuous air support must be provided throughout the landing phase and continued until the attacking force is well established on shore. The closest of cooperation must exist between air units and their operations must be meticulously coordinated with those of the supported troops. Much liaison and careful planning is required to insure proper air support under the difficulties to be encountered in these operations." The manual emphasized the importance of the radio for air-ground and interplane communications. It also emphasized the use of panels to mark frontline positions. Finally, it mentioned the use of pyrotechnics as a means for aircraft and ground troops to communicate.[19]

On 1 April 1936, Rowell, who was now the officer in charge, became the director of Marine Corps Aviation, which acquired division status. This put him in a position to further incorporate his personal experiences in Marine Corps doctrine. In January 1939, the Navy's General Board drafted Marine aviation's mission: "Marine aviation is to be equipped, organized and trained primarily for the support of the Fleet Marine Force in landing operations and in support of troop activities in the field; and secondarily as replacement squadrons for carrier-based naval aircraft."[20] In 1940 the Marine Corps published the *Small*

Wars Manual, reiterating the mission of Marine aviation: "The primary mission of combat aviation in a small war is the direct support of the ground forces." The document also outlined the procedure for requesting air support, and it stipulated that panels should be used to mark friendly positions and the direction and estimated distance to enemy positions.[21] This mission reflected the deep beliefs Marine aviators had held for quite some time.

The Marine concept was in contrast to the Army airmen's view that air support for the infantry did not take advantage of the full capabilities of airpower. Since these airmen were striving for their independence and perfecting the art of strategic bombing, they did not want to be tied too closely to ground forces. In July of 1943, War Department Field Manual (FM) 100-20, *Command and Employment of Air Power,* articulated the view of Army airmen regarding air support: "In the zone of contact, missions against hostile units are most difficult to control, are most expensive, and are, in general, least effective. Targets are small, well dispersed, and difficult to locate. In addition, there is always a considerable chance of striking friendly forces. . . . Only at critical times are contact zone missions profitable."[22] In contrast to the AAF view in FM 100-20, Navy Marine Corps (NAVMC) 3045, *Marine Corps Aviation—General,* published that same year by the Marine Corps, stressed the synergistic effect of air-ground integration: "The basis of effective air support of ground forces is teamwork. The air and ground units in such operations form a combat team. Each member of the team must have the technical skill and training to enable it to perform its part in the operation and a willingness to cooperate thoroughly."[23] NAVMC 3045 expressed an attitude that was being displayed by Marine aviators and infantrymen on tiny islands in the Pacific. This attitude influenced the degree of diligence applied to overcoming the difficulties of air-ground integration.

Unique Environment in the Pacific

The unique environment in the Pacific created an atmosphere where the need for integration was more pro-

nounced. For example, the great flying distances required in the Pacific precluded the United States from initiating its strategic bombing campaign against Japan until advanced bases in the Marianas were seized in 1944. This requirement for advanced bases resulted in the island hopping campaign that brought relatively large ground forces in contact with one another. The small size of many of the islands resulted in concentrated forces facing each other in proximity as soon as US forces landed on these islands. In addition, the inability to bring heavy forces ashore in the early stages of amphibious operations made air support a necessity. This required air-ground integration, setting the stage for the Marines to refine the procedures that had been practiced before the war.

Other factors required air-ground integration be extremely well coordinated to be effective and prevent friendly casualties. The density of the jungle hindered visual acquisition of targets, and also made it difficult for forces to find one another until they were very close.[24] Thus attacking aircraft had to bomb very close to friendlies. Finally, since ground forces were operating on remote islands, aviation assets often had to be based on the same islands. Such basing allowed extensive liaison between air and ground forces that resulted in improved integration as the war progressed.

Guadalcanal

On Guadalcanal in the Solomon Islands, the Marines got their first opportunity to practice some of the methods that they had worked on during the previous two decades. Unfortunately, many hard lessons were learned and relearned regarding air-ground integration. The mission of the Marines at Guadalcanal was to seize the island and then defend it from Japanese attack. A major mission of aviation was to disrupt attempts by the Japanese to land forces on the island. The mission of the ground forces, on the other hand, was to protect Henderson Field by destroying hostile forces ashore and preventing a surprise attack from the sea by night.[25] Of note, most of the Marine air and

ground commanders on Guadalcanal were veterans of Nicaragua.[26]

Air-Ground Integration

During the invasion, an air control center aboard the flagship of the attack force commander controlled and coordinated air support by maintaining radio contact with aircraft on station as well as with the carrier task force. Significantly, there was no direct communication between the landing force and the aircraft on station. Later, Army and Marine pilots rendered support to the ground troops, but again, communication facilities were limited. Liaison with the infantry was effected using rudimentary means. Frontline messages had to be relayed from the ground force commander to the division command post to Henderson Field, thence back to the supporting planes. Pilots were briefed on the ground or sometimes walked up to the front lines to look at targets. Marking targets for aircraft was very challenging. The use of panels proved to be very difficult in the jungle. Using mortar shells to designate and outline targets was much more successful.

Effectiveness of Integration

The first attempt at close air support in the Pacific produced mixed results. In some cases, effective strikes were made no more than one hundred yards from friendly positions.[27] One tactic emerged which was to reappear time and again during the course of the war. On some close-support missions, the aircraft, after completing bombing and strafing, made dummy runs, thus keeping the Japanese soldiers under cover while friendly troops advanced.[28] However, on 3 November, friendly aircraft strafed positions of the 7th Marines resulting in several casualties in a unit that was already badly under strength.[29]

The Army P-400 (an early export version of the Bell P-39 Airacobra) was most effective in supporting ground activities, particularly during the Battle of Bloody Ridge. In addition, both the Marine dauntless dive-bomber (SBD) and P-400 were used with good effect in support of the

Tasimboko raid. However, air-ground communication was poor, and after the battle, steps were taken to improvise air liaison parties (ALP). Maj Gen Alexander Archer Vandegrift, the commander of the Marine forces, stated that there remained a need for regularly organized air-ground communication teams within infantry regiments.[30] Although some degree of air-ground integration had been achieved, there were several shortcomings, particularly in the areas of communication and target identification.

Bougainville

The battle at Bougainville (largest of the Solomon Islands) proved to be a major step forward in air-ground integration. The objective of the invading forces was to secure a defensible perimeter large enough to contain the airfields needed for the neutralization of Rabaul (site of a major enemy base in the Bismarck Archipelago), not to conquer the whole island. The task occupied the ground forces at Cape Torokina during November and December 1943, and Marine aircraft rendered support when called upon.[31]

Air-Ground Integration

One of the reasons that air-ground integration improved at Bougainville was that the Marines trained intensively before the operation. Preparations for close air support were begun more than three months before L day. Three officers (bomber pilots) and six enlisted men (radiomen) of the 1st Marine Aircraft Wing reported to the 1st Marine Division for air-liaison duty. Lt Col John Gabbert organized an air-liaison party school to teach the capabilities and limitations of close air support, procedures for requesting such support, and details of air-ground communication. An officer from the operations section of each battalion and regiment was ordered to attend the school. Extensive tests proved the reliability of safety margins for different sized bombs (see table 1). The 100-pound bomb and the gun were the weapons of choice.

Table 1

Test Data for Close Air Support

Bomb	*Normal Use*	*Closest Possible Use*
(Pounds)	*(Yards)*	*(Yards)*
100	100	75
500	500	300
1,000	1,000	500
2,000	1,000	700

Source: Robert Sherrod, *History of Marine Corps Aviation in World War II* (Baltimore: Nautical and Aviation Publishing Co. of America, 1987), 190.

Another reason air-ground integration improved was that liaison with the infantry was superb. Since air and ground components were part of the same service, Gabbert could brief pilots and ground-liaison personnel in one language. Infantry officers briefed pilots on the peculiarities of the terrain and the tactical situation. In a similar manner, ground-liaison officers were flown in attacking strike aircraft. Furthermore, air-liaison officers were assigned to rifle companies.[32] This greatly improved the quality of air support. In addition, jeep-mounted SCR-193 radios provided reliable communication between aviation and ground units for the first time. Targets were marked using smoke instead of the previous practice of using panels.

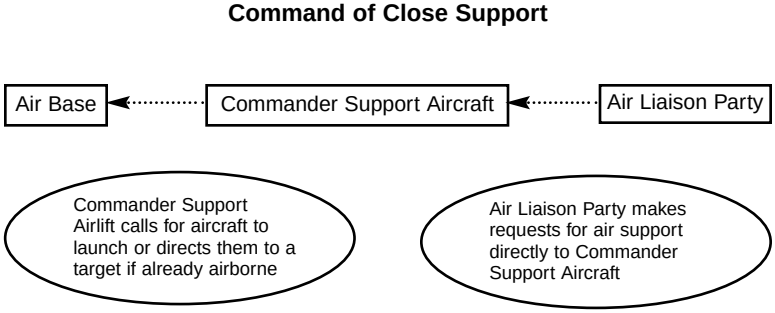
Hellzapoppin Ridge

One of the places where air and ground units worked particularly well together was “Hellzapoppin Ridge.” Here pilots were much more successful identifying their targets because the 3d Marine Division marked its front lines with colored smoke grenades and fired white phosphorus shells into the target area. On one occasion, 11 Avenger attack aircraft (TBF) attacked the reverse slope with delayed action bombs. Some of the bombs struck within 50 yards of the Marine positions. After the strike, marines were able

to take the ridge. During the attack, most of the bombs used were one hundred pounders. Unfortunately, two marines were killed and six more wounded by one plane whose crew misidentified its target and struck friendly forces. Nevertheless, the infantrymen judged the strike as "the most effective factor in taking the ridge."[33]

Effectiveness of Integration

The improvements in technique fashioned by Air Solomons Marines proved to be very beneficial and paid big dividends to Gen Douglas MacArthur's soldiers when Marine aviators moved from Bougainville over to the Philippines. One of the major improvements was that air liaison parties were well trained. In addition, effective communication was achieved between aviators and ground troops. Target marking had also been improved, which greatly enhanced the accuracy of bomb delivery. Finally, the 1st and 3d Marine Divisions incorporated the lessons learned from the Bougainville campaign and other campaigns into a document entitled "Standing Operating Procedure for Close Air Support Aviation." This document provided standardization and outlined command and control procedures and the duties of air liaison parties (see fig. 1).[34]



Source: 1st Marine Division, Standing Operating Procedure for Close Air Support Aviation, 22 May 1944.

Figure 1. Command and Control Procedures for Air Support

Lt Col Keith B. McCutcheon's Training Program

One of the most significant contributions to air-ground integration occurred after the battle of Bougainville was over. Colonel McCutcheon, the operations officer for Marine Aircraft Group (MAG) 24, received word that his unit would probably be used in the campaign to liberate the Philippines. As a result, in October 1944, he initiated an intensive two-month training program. This program consisted of 40 lectures on the subject of air-ground integration and close air support. Instructors included veteran ALP officers from the Central Pacific and Army officers from the 37th and Americal Divisions. Five hundred officers and gunners of the dive-bomber squadrons of MAG 24 and MAG 32 attended the classes.[35]

During the instruction, aviators proposed that for future operations, they should furnish their own air liaison parties, though there was nothing in their tables of organization making such a provision. They also proposed that the frontline ALP would control planes by direct communication. Although frontline ALPs had occasionally controlled aircraft directly, it was considered unorthodox. Marines felt that the ALP should talk planes onto a target by direct communication. According to them, this was far more efficient than relaying the information through intervening echelons and a far distant controller. This policy change proved a significant enhancement of air-ground integration in the Philippines campaign. The Fifth Air Force, however, did not contemplate direct communication between the ALP and aircraft providing support. This difference became a point of contention because the Marine aviators were under the operational control of Fifth Air Force. Interestingly, the Navy concurred with the Army Air Corps in this respect.[36]

Marine aviators also reiterated the principle, as articulated in Marine Corps doctrine, that close support aviation was only an additional weapon to be employed at the discretion of the ground commander. This concession was not as difficult for Marine aviators as it was for Army and Navy officers.[37] It was this attitude, as well as the quality of training they had received, that would hold the Marine aviators in good stead when the liberation of the Philippines began.

Luzon

Commanders have repeatedly expressed their admiration for the pin point precision, the willingness and enthusiastic desire of pilots to fly missions from dawn to dusk and the extremely close liaison with the ground forces which characterizes the operations of the Marine fighter groups.

—Walter E. Krueger
Commanding General, Sixth Army

The Luzon campaign provides one of the notable milestones in Marine aviation history. During the campaign, Marine aviators practiced joint warfare by providing true close support to Army troops. The impact of this experience would influence Marine aviation's postwar mission. The lessons learned on Luzon would pay off five years later in Korea.[38] The ability of the air arm to devote itself to the infantry was dependent on a number of factors. First and foremost was the fact that air superiority was complete. Japanese air forces no longer posed a threat in the Philippines. Of the sorties flown over Luzon between January 1945 and the end of the war, 85 percent were in support of ground forces. The marines of MAG 24 and MAG 32 arrived on 25 January 1945 at Mangaldan. They were part of the 308th Bomb Wing. The mission of the Sixth Army was to drive from the beaches of Lingayen south to Manila. The 1st Cavalry Division was ordered to advance to Manila on the right (west) flank. The 6th Infantry Division was ordered to advance to Manila on the left (east) flank.[39]

Air-Ground Integration

The foundation for effective integration between the Marine aviators and the Army units was laid when the Marines sent members of air liaison parties to talk with Army commanders. An example of this occurred when Marine captain Godolphin paid a visit to the 1st Cavalry Division. At the time, neither the AAF nor the ground troops were ready to have strikes directed on targets from frontline jeeps. The Marines, however, were determined to show the soldiers what Marine flyers, under proper frontline control, could do. At division headquarters, Godolphin recognized one of his former students at Princeton, an

Army lieutenant colonel who was the G-2 of the division. This meeting led to a close working relationship between the Marine ALPs and the mechanized cavalrymen.

The AAF's 308th Bomb Wing did not develop the same type of relationship with ground units. When requests for air support were made, they had to be forwarded and approved first by division, then corps, then army, and finally by the 308th Bomb Wing. As a result, response to requests was slow. In addition, there was no direct control by air liaison parties. This meant that pilots were not nearly as accurate when they delivered their ordnance because target descriptions were incomplete.

In contrast to this situation, Marine ALPs saw that requests for air support were serviced as quickly as possible. When requests were made through Marine channels, they went directly from division to Mangaldan strip, where Colonel McCutcheon ran operations. McCutcheon then sent the airplanes required. Requests did not have to pass through nearly as many agencies, thus greatly improving response time. In addition, the Marines offered an air alert that improved response time even more.

To further improve coordination, an experienced pilot acted as the air coordinator. The air coordinator was responsible for helping to direct strike aircraft in his area of responsibility. The goal was to have the air coordinator work the same area on all his missions to promote familiarity with the target area.[40] Furthermore, Marine air liaison parties provided direct control of aircraft; a practice the corps believed would greatly improve accuracy. Finally, the policy of alternating pilots in air liaison party work—to give them a "feel of the ground"—had been planned at Bougainville and was faithfully followed.[41] All of these factors combined to impress the ground forces and would have a significant impact when the Army units began their drive to Manila.

Support of the 1st Cavalry Division

Marine aviators had an opportunity to apply all of the integration techniques they had learned when they were ordered to provide an air alert of nine planes from dawn to dusk over the 1st Cavalry Division. The mission, in effect,

was to guard the flank of the division in its deep penetration. The aircraft basically became a flying column for Brig Gen William C. Chase, an unglamorous mission but exactly what the Army wanted. Missions included close air support and reconnaissance. In addition, the ALPs had an opportunity to provide direct control of aircraft during close air support. Direct control of the SBDs produced outstanding results near Santa Maria and San Isidro.

Support of the 6th Infantry Division

Marine aviators also provided excellent support to the 6th Infantry Division. However, convincing the commanding general that the Marines could provide reliable and safe air support for his troops was a difficult sale. Maj Gen Edwin Patrick had earlier stated that bombs would not be dropped closer than one thousand yards from his troops. He changed his mind when he saw Captain Godolphin direct close air support strikes against Japanese positions near the Marikina River, where Army and Marine coordination was superb. In this particular instance, a Philippine guerilla had plotted the Japanese positions on a map. Copies of the map were given to the airborne coordinator and to Godolphin, who directed a very successful strike by 81 aircraft from his position with the air liaison party. Close air support was also provided during the attack on the Shimbu Line. In this instance, effective attacks were conducted inside of five hundred yards. In addition, a tactic that had been used with success at Guadalcanal was used on Luzon. Some aircraft conducted dummy runs while the infantry advanced under them. This kept the heads of the enemy down, while minimizing the possibility of fratricide. When the Japanese caught on to this tactic, one section would make a dummy run while the next section dropped ordnance. This technique was very effective due to the close coordination between the aircraft and ground troops.[42]

Effectiveness of Integration

After two and one-half years of experience in the Pacific, Marine Corps air-ground integration had reached a relatively mature state. One of the reasons was the Marine

tenacity in developing effective liaison with the supported ground units, which was no easy task. On Luzon the close liaison with the Army was built on trust. For example, pilots showed up at the front lines on the afternoon before a morning mission to view the situation and take a look at the targets.[43] A member of one of the ALPs recounts a particular incident. "I remember an especially able regular Marine officer, Major Frazer, who landed his plane one day and came up forward. When the Japs let some rockets go he hit the dirt hard, like me. While we were loving the dirt a dogface in the same position said: 'Hey, were you one of those guys up there this morning?' Frazer grunted uh-huh. 'Well,' said the soldier, 'I'll be damned.' It was the first time he'd ever seen a flyer close-up."[44]

In addition to the close relationship that developed between aviators and ground troops, the Marines also used a streamlined command and control system combined with ground and airborne alerts that decreased response time. One of the problems encountered was that communications were sometimes hampered because there were too many aircraft working on the same frequency. This problem was partially overcome by setting the Marine SBDs up on medium frequencies, thus separating their channels from the Army's channels. This arrangement was possible because SBD radios had four VHF channels and two high or medium channels.[45] Next, direct control by the air liaison parties greatly improved accuracy. This point cannot be overemphasized in light of the fact that it is difficult to pick up targets in the jungle from the air. Finally, having pilots serve in air liaison parties resulted in infantrymen and aviators better understanding each others' needs. This helped to overcome the perceptions that pilots were aloof and not particularly responsive to the needs of the infantryman.

Conclusions

At the close of the Second World War, Marine aviation received a great deal of credit for its contributions to air-ground integration. Naturally, the Marine Corps tried to capitalize on this attention, particularly at a time when

budgets were becoming tight and the services were trying to justify funding. Indeed, General Vandegrift made several appearances before Congress articulating reasons why the Marine Corps should continue to exist. It was in this environment that the Marine Corps wrote its "Evaluation of USMC Air Operations in World War II." The first sentence of the chapter on close air support stated, "The basic principles and functional technique of close air support, as employed during the war just ended, are a U.S. Marine Corps development."[46] Statements such as this did not sit well with the Air Force. Commenting on the Luzon campaign, USAF Historical Study No. 86, *Close Air Support in the War against Japan*, made the following statement: "There is a legend which holds that Marine Corps aviation units on Luzon taught Fifth Air Force how to execute close support missions. . . . Without detracting in any way from the important contribution made by Marine units on Luzon, however, it must be stated that the legend, assiduously cultivated by Marine Corps publicists and historians, is a myth and nothing more."[47] Neither the statement made by the United States Marine Corps nor the United States Air Force is entirely accurate. The Marine Corps did not invent close air support, nor was it the only component to come up with innovations in air-ground integration. However, the contributions made by the Marines in this area were significant and enduring.

It should not be surprising that Marine Corps aviation would excel in air-ground integration. This excellence is due in large part to the focus that Marine aviators have had from the beginning. With its small air force, the corps has always linked its aviation mission to that of the infantry. This led to a mind-set that saw aviation in a support role. Then, when opportunities presented themselves as they did in Nicaragua, the Marines began to develop procedures for air-ground integration that were used as a foundation for operations in the Pacific. The Army Air Corps, on the other hand, was struggling to stretch its scanty funds far enough to buy a few four-engine bombers, and thus reacted against performing missions to support the infantry. The airmen considered advocacy of control by infantry officers to be a failure to recognize the full capabilities of airpower.[48] This difference goes to the heart of

the two service cultures. One culture encouraged improvement in air-ground integration while the other shunned the concept. When World War II broke out, marines continued to perfect the ideas that they had been working on for 20 years. Some ideas were original and some were not. However, if it was a good idea, it was incorporated into the system. Another advantage that the Marine aviator had was his close association with the infantryman. Although they were pilots, Marine aviators saw themselves as marines first. Many of the pilots had served as infantrymen or had been assigned to infantry units prior to becoming aviators. This helped them to understand the concerns of the infantry and often resulted in a strong loyalty to their brothers in arms on the ground. Naturally, they would do everything in their power to provide the best possible air support. Finally, the mission of Marine aviation was limited in scope. Its concern was at the tactical level, and marines focused their efforts there. The result was one of the most effective means of air-ground integration in the Pacific theater.

Notes

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25. Maj Gen Archer Vandegrift, *Extracts From 1st Marine Division Commander's Report on Guadalcanal Operations*, 7 August–8 December 1942, document located at Maxwell AFB, Ala., AFHRA, file 750.04-1, 14.
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27. Cooling, 301.
28. *Close Air Support in the War against Japan*, US Air Force Historical Study No. 86 (Maxwell AFB, Ala.: AFHRA, February 1955), file 101-86, 29.
29. John L. Zimmerman, *The Guadalcanal Campaign* (Washington, D.C.: Headquarters US Marine Corps, Historical Division, 1949), 136–37.
30. Vandegrift, 15.
31. *Close Air Support in the War against Japan*, 42.
32. John N. Rentz, *Bougainville and the Northern Solomons* (Washington, D.C.: Headquarters US Marine Corps, Historical Section, Division of Public Information, 1948), 90.
33. Hallion, 167.
34. 1st Marine Division, *Standing Operating Procedure for Close Air Support Aviation*, 22 May 1944, document located at Maxwell AFB, Ala., AFHRA, file 186.204A, 1.
35. Sherrod, 294.
36. Charles W. Boggs Jr., *Marine Aviation in the Philippines* (Washington, D.C.: Headquarters US Marine Corps, Historical Division, 1951), 61.
37. Sherrod, 295.
38. Ibid., 290.
39. Ibid., 300.
40. Lt Col Keith B. McCutcheon, "Close Air Support SOP," *Marine Corps Gazette* 29 (August 1945): 49.
41. Sherrod, 295.
42. Ibid., 304–5.
43. Cooling, 325.
44. Sherrod, 305.

45. Lt Col Keith B. McCutcheon, "Close Air Support on Luzon," *Marine Corps Gazette* 29 (September 1945): 39.

46. Headquarters United States Marine Corps, *Evaluation of USMC Air Operations in World War II,* 1945, document located at Maxwell AFB, Ala., AFHRA, II-1.

47. *Close Air Support in the War against Japan,* 238.

48. Sherrod, 291.

Appendix A

Excerpts From *Marine Corps Aviation—General,* 1943

CHAPTER VIII

AVIATION IN SUPPORT OF GROUND FORCES

		Paragraph
Section 1.	General	171
2.	Combat Operations	173

SECTION 1

GENERAL

171. Cooperation. The basis of effective air support of ground forces is teamwork. The air and ground units in such operations form a combat team. Each member of the team must have the technical skill and training to enable it to perform its part in the operation and a willingness to cooperate thoroughly.

SECTION 2

COMBAT OPERATIONS

173. Conduct. Combined operations of air and ground forces must be closely coordinated by the commander of the supported ground force. All operations should therefore be conducted in accordance with well-defined and practical plans.

175. Attacks. The timing of the air attack is of primary importance in securing the maximum effect.

When friendly troops might be endangered, definite time limits for the commencement and termination of the attack should be prescribed. Time allowances for action upon air

requests, the transmission of the attack order through channels, the aircraft to leave the ground, and for the flight to the objective must be carefully computed in determining the time of attack.

When the nature of the attack permits, the firing of prearranged flares by the last element of the combat aviation may serve to signal the end of the air attack as well as a signal to launch the ground attack. The ground attack may be launched on the signal from the combat aviation or at the end of the time bracket, whichever comes first.

177. Status of Air Units. In support operations when targets cannot be foreseen and developed sufficiently in advance for normal air operating procedure, special provision must be made to minimize the time lag between requests for missions and their execution. Frequently such targets will be encountered in a fast moving ground situation wherein time will be the vital factor in any air operation conducted.

Alert Status. To meet this time requirement, a suitable portion of supporting combat aviation should be maintained on "alert" status, either ground or air, prepared to proceed to and attack, with the least practicable delay, an assigned target. This will necessitate that the aircraft previously be armed and serviced.

In fast moving situations when "ground alert" does not permit timely attacks, it may sometimes be necessary to "air alert" a portion of the supporting force for the attack of targets of opportunity that constitute an immediate threat to the operations of the supported ground force. Air alert is highly uneconomical and can be maintained only for short periods of time. When airplanes are on air alert, direct air-ground communication with support unit will be maintained.[1]

Notes

1. Marine Corps Schools, *Marine Corps Aviation—General*, 1943, document located at Maxwell Air Force Base, Ala., Air Force Historical Research Agency, file 186.5-10.

Appendix B

Mission Request Form

Mission Request Form

1. BOMB and/or STRAFE _____
2. TARGET is _____
3. TARGET is LOCATED (Grid or Landmark) _____
4. White SMOKE on TARGET _____
5. TIME
   (a) Of ATTACK _____
   (b) Of COMPLETION _____
6. FRONT LINES MARKED
   (a) Colored SMOKE _____
   (b) Panels _____
7. DIRECTION of ATTACK _____
8. Additional Information, if required (Recommended bomb loading and fusing, and number of planes to be used).

_____
_____
_____

Note: Message will include essential information in this order. Any part not applicable will be omitted from the above form.

Sample mission request form from 1st and 3d Marine Divisions, Standard Operating Procedure.[1]

Notes

1. 1st Marine Division, *Standing Operating Procedure for Close Air Support Aviation*, 22 May 1944, document located at Maxwell AFB, Ala., Air Force Historical Research Agency, file 186.204A,8.

Glossary

AAS	Army Air Service
ALP	air liaison party
CSA	commander support aircraft
MAG	Marine aircraft group
P-400	Airacobra attack aircraft
SBD	Dauntless dive-bomber
TBF	Avenger attack aircraft