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THE DEVELOPMENT OF FIRE SUPPORT COORDINATION FOR
AMPHIBIOUS OPERATIONS BETWEEN WORLD WARS I AND II

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

MASTER OF MILITARY ARTS AND SCIENCE

by

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This study examines the efforts of the Marine Corps, in conjunction with the Navy, to develop an effective fire support coordination system for amphibious operations between the World War I and II. The focus of the study is on both the intellectual and the practical efforts of the period. On the intellectual side the doctrinal manuals, professional journal articles, and lectures are examined. On the practical side the exercises conducted to experiment with the doctrine are examined. These facts are then analyzed to determine if an effective coordination system was developed. Additionally, the reasons for the status of this system at the start of the war are explored. The study concludes with an examination of the meaning these findings have for current doctrinal developers. The principal conclusion of the thesis is that an adequate coordination system for fire support in amphibious operations had not been developed prior to World War II. Although a basic system for requesting and adjusting fires had been devised, particularly for naval					
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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

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ABSTRACT

THE DEVELOPMENT OF FIRE SUPPORT COORDINATION FOR AMPHIBIOUS OPERATIONS BETWEEN WORLD WARS I AND II, by Major David G. Dotterrer, USMC, 113 pages.

This study examines the efforts of the Marine Corps, in conjunction with the Navy, to develop an effective fire support coordination system for amphibious operations between the World Wars. The focus of the study is on both the intellectual and the practical efforts of the period. On the intellectual side the doctrinal manuals, professional Journal articles, and lectures are examined. On the practical side the exercises conducted to experiment with the doctrine are examined. These facts are then analyzed to determine if an effective coordination system was developed. Additionally, the reasons for the status of this system at the start of the war are explored. The study concludes with an examination of the meaning these findings have for current doctrinal developers.

The principal conclusion of the thesis is that an adequate coordination system for fire support in amphibious operations had not been developed prior to World War II. Although a basic system for requesting and adjusting fires had been devised, particularly for naval gunfire, there was no provision for the staff coordination of these fires. There was recognition of the problem in the period immediately prior to World War II, but it was not acted upon until well into the war. Consequently, it took the crucible of war, with all its difficulties, to compel the completion of the system.

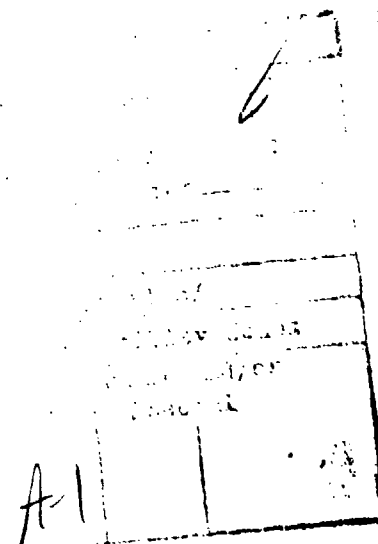


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CHAPTER 1

INTRODUCTION

Background

On 25 April 1915, the British Army and Navy conducted an amphibious assault on the Gallipoli Peninsula in an attempt to break the stalemate on the Western Front. Unfortunately, there was not even a modicum of fire support coordination between the services. As Alan Moorehead later describes in his book Gallipoli:

The Naval gunners yearned to intervene and kept asking the soldiers for targets. But only the most confusing signals came out from the shore, and so for long periods at a stretch the ships were forced to stand helplessly by in the hateful security of the sea. Often the ships were so close that the sailors could see the Turks running about on the shore. Then they fired with a will. But they could not always be certain that they were not firing on their own men. The captains kept asking one another on the wireless, 'Are any of our troops dressed in blue? Have we landed any cavalry?'¹

Clearly, the lack of fire support coordination contributed significantly to the failure of the Gallipoli Campaign. Just as clearly, the excellence in fire support coordination contributed significantly to the successes enjoyed by American forces conducting amphibious operations during

World War II. During that war a Japanese soldier at the battle for Guam in 1944 would write; "there were many useless casualties and no chance of success; also not a thing escaped the strafing of the airplanes, and regrettably it came about that we had to retreat... I was horrified by the number of deaths on our side due to the naval gunfire which continued every day."²

Problem Statement

To argue that there were enormous differences between the World Wars in the coordination of fire support in amphibious operations is to state the obvious. However, this begs the questions: how and why did these changes come about? How many of these changes were made during the period of peace between the wars through study and experiment? Further, is it possible to examine these improvements to garner lessons for today? This thesis will attempt to answer these questions by examining the efforts of the Marine Corps, in conjunction with the Navy, to develop an effective fire support coordination system and doctrine for amphibious operations between the World Wars. Furthermore, this thesis will examine the relevance of that doctrinal study and development during a period of peace to contemporary doctrinal study.

The question of how and why amphibious doctrine changed between the two World Wars leads to further

questions which must be answered in order to fully understand the larger question. These questions are:

- * what was the state of fire support coordination doctrine for amphibious operations in 1918?
- * why did this become a Navy/Marine Corps problem?
- * what procedures were implemented to ensure that the problem would be solved to the satisfaction of both services?
- * how were the problems associated with fire support coordination studied and what was the basis of these studies?
- * how was doctrine tested and how was this practical experience incorporated into doctrine?
- * what was the status of communications equipment during this period and how did this affect coordination procedures?

One final question needs to be answered: what is the significance of this study? First, since fire support doctrine is constantly being revised to keep pace with changing technology, strategies, and amphibious doctrine, it is important to understand the historical basis upon which current doctrine is built. Although there are many problems unique to the modern battlefield, the study of how the original doctrinal planners attempted to solve these

coordination problems can yield perspective and ideas to contemporary study and problems. Second, modification of existing doctrine without fully understanding how the doctrine was created is not only wrong, it leads to unnecessary additional effort. In studying this question one is amazed at how little the basic aspects of the problem have changed and how the original doctrinal writers had to wrestle with many of today's problems. We can learn much from their efforts. Third, of the many problems facing modern doctrinal planners, one of great significance is fire support coordination in the joint and combined arena. The development of a coordination system for amphibious operations involved the intellectual abilities and institutional motivation of two services. Thus, this study can provide insight into the joint development of doctrine. Finally, the doctrine for fire support coordination was developed at a time when very little or no doctrine existed. As a result, this study will provide an interesting look at the genesis of a new doctrine.

Review of Literature

A number of excellent studies have been written on the development of amphibious doctrine. Although each book examines amphibious operations in a different light, each has at least one chapter on the development of amphibious doctrine during the 1920's and 1930's. However, while fire

support is discussed in these books, the development of the coordination system during this period is dealt with only superficially. It is fire control, not coordination, which is emphasized. For example, Kenneth Clifford in Progress and Purpose (1973) mentions that "a sound doctrine for the effective delivery of naval gunfire was developed" but gives no details when he discusses the doctrinal work of 1934.³ In The U.S. Marines and Amphibious War (1951) Jeter A. Isely and Philip A. Crowl devoted five pages to discussing the state of the development of amphibious warfare doctrine in 1941. However, they devoted only five lines to fire support coordination and these emphasized the problems with communications.⁴ Allan Millett in Semper Paratus (1980) provides a much better discussion of the development of fire support coordination. However, he also notes the problems of "bombardment planning and fire direction" and thus highlights control rather coordination.⁵ None of the authors examined the failure to provide for the staff coordination of fire support means prior to the war.

The review of available literature raises another question: Why have these authors not closely studied this aspect of amphibious operations? Obviously the fire support question was one that had to be studied during the period of the 1920's and 1930's by the doctrine developers. Consequently, there are two possible answers to this question. First, previous researchers possibly did not

consider the coordination of fire support to be as important as its technological development. Thus, they concentrated on this aspect of the problem. A second possibility is that very little doctrinal or developmental work was done during the 1920's and 1930's on the coordination of fire support. If this was true then there would be very little material for previous authors to work with. Of course, a follow-on question is why did not these authors discuss this shortcoming in greater detail?

A final note on the literature and materials should be made at this point. The bibliography at the end of the thesis cites most of the available secondary sources on the subject. Nevertheless, as excellent as some of these secondary sources are this thesis is based, to the greatest extent possible, on the primary source documents. As a result, original exercise after-action reports and orders, lectures, articles, and manuals from the period provide the basis for this paper. Thus, any conclusions I reach will be strictly mine as opposed to being my compilation of other authors' research. The only exception is that the actual Fleet Landing Exercise reports were not available since they reside in the National Archives. Articles and interviews of participants, secondary sources, and items from the Historical Amphibious File, Quantico, Virginia were used instead.

Definitions

Several terms need to be defined to ensure that there is no confusion as to precisely what is to be examined in this thesis. JCS Publication 1 (DOD Dictionary of Military and Associated Terms), FM 6-20 (Fire Support in Combined Arms Operations), and Operational Handbook 0-2 (Marine Corps Dictionary) have been utilized to determine the definitions which are easiest to understand and have the most relevance to the period studied. This raises the question of whether modern definitions or those of the period should be used. As there is little evidence to suggest that precise definitions existed during the 1920's and 30's and because contemporary readers will find current definitions easier to comprehend, modern definitions will be used. The terms and definitions are:

- * Fire Support- the collective employment of mortars, field artillery, close air support, and naval gunfire in support of a battle plan.⁶
- * Fire Support Coordination- the planning and executing of fire so that targets are adequately covered by a suitable weapon or group of weapons.⁷
- * Target Acquisition- the detection, identification, and location of targets in sufficient detail to permit the effective employment of weapons.⁸

Scope of the Study

This thesis will examine the development of fire support coordination for amphibious operations during the period 1918 to 1941. The study is limited to this period for several reasons. First, this was a period of peacetime doctrinal development and practice. Thus the study is of a period which more closely approximates our current situation. Second, this was a period of intense debate, study, and experimentation of new doctrine. The study of these years will consequently provide a look at a doctrine that went through numerous evolutionary, if not revolutionary, changes. Third, prior to the 1920's there was little amphibious doctrine and, consequently, very little on fire support coordination. By the beginning of World War II the outline of a system had been devised and many of the associated technical problems had been studied. A study of this period provides a look at doctrine from birth. Finally, to expand the period of study would make the size of the study much larger than that of a thesis, especially if the World War II period is included. Accordingly, the depth of the study would be too superficial to provide the proper insight into the research question.

The definition of fire support coordination given above(p. 7) provides many aspects that could be examined. This study will be limited to three. First, targets must be

acquired so that they can be engaged by weapons. To allow fire support weapons to engage targets effectively, means of detection, identification, and location must be provided. This may be accomplished by spotters in airplanes, Marines on the ground, or by specially trained teams. Next, this thesis will look at how the information about the target was sent from the observer to the fire support means. This is question of communications. Finally, a fire support coordination system needs an agency to plan, coordinate, and execute the requested fires to ensure that fire support means are used in the most effective and efficient manner. The Fire Support Coordination Center of today is the best example of such an agency. This paper will examine whether such an agency was provided for in doctrine or even discussed prior to World War II.

Consequently, there are three aspects of fire support coordination as defined which will not be examined. First, although it could be part of the execution of fires, the actual weapons and ammunition employed during the period will not be addressed. Another aspect which will not be examined is the specific planning methods and techniques which were utilized, except when they apply directly to coordination. In spite of the fact that they form a significant part of planning for fire support their examination is too detailed for this thesis. Finally, artillery support will not be discussed as an individual

fire support means since, as a purely landing force weapon, it already had a maturing coordination doctrine of its own. Thus, it will only be discussed in relation to its coordination with aviation and naval gunfire.

Methodology

The methodology used in this thesis will be drawn from two books, The Modern Researcher(1977) by Jacques Barzun and Henry Graff and from A Guide to Historical Method(1980) edited by Robert Jones Shafer. The research has further been designed around the questions proposed above(p.3). The answers are to be found in the original documents. Thus I do not intend to substitute "investigative norms" or theoretical "research models" for basic research and deductive reasoning. Since the historical method of research is clearly in order, the study is organized chronologically.

Organization of the Study

In addition to this chronological organization each chapter will end with a short analysis. Chapter Two will examine the period from the end of World War I until 1933. This break was chosen because the period did not include systematic study, experimentation, or testing of doctrine. What it did include was a growing realization that a doctrine was necessary as shown by sporadic fleet landing

exercises, historic precedent, and the emerging Japanese threat in the Pacific. Chapter Three will begin with the formation in 1933 of the board to write the first complete doctrine for amphibious operations, The Tentative Manual for Landing Operations, and will examine the period through the beginning of World War II. This was a period of systematic study, doctrinal development, and experimentation through annual fleet landing exercises.

Each of these chapters will be further divided into several sections. The areas to be covered by these sections will be manuals, doctrinal writing, professional articles, lectures, exercises, and oral histories, as appropriate for the chapter. This will entail an examination of both the intellectual side and the practical side of the development problem.

In conclusion, Chapter Four will tie together the facts presented and the analysis to answer the research question. This final chapter will also look at the significance of the findings and what meaning they have for current doctrinal writers.

ENDNOTES CHAPTER 1

¹Alan Moorehead, Gallipoli (New York: Harper and Row: 1956): 147.

²Jeter A. Isely and Phillip A. Crowl, The U.S. Marines and Amphibious War (Princeton, N.J.: Princeton University Press: 1951; reprinted by The Marine Corps Association: 1979): 384.

³LtCol. Kenneth J. Clifford, USMCR, Progress and Purpose (Washington D.C.: History and Museums Division, U.S. Marine Corps: 1973): 47.

⁴Isely and Crowl, The U.S. Marines and Amphibious War, 61.

⁵Allan R. Millett, Semper Paratus (New York: Macmillan: 1980): 331.

⁶U.S. Marine Corps, DM-2. Marine Corps Dictionary and Glossary of Abbreviations/Acronyms (1983): 2-22.

⁷Joint Chiefs of Staff, JCS Pub. 1. Department of Defense Dictionary of Military and Associated Terms (1984): 146.

⁸JCS Pub. 1, 364.

CHAPTER 2
DEVELOPMENT FROM
1918 TO 1933

Introduction

The period of 1918 to 1933 was one of turmoil for the Navy and the Marine Corps. For both services it was a time of readjustment from the operations conducted during World War I. For the Navy, the naval disarmament conferences caused wrenching realignments in priorities as its shipbuilding program was decimated. For the Marine Corps the problem was two-fold. First, there was the question of whether it should return to its traditional role with the Navy or continue with the land combat role it had been assigned during the war. Second, its use as colonial infantry in Latin America stripped the Marine Corps of the necessary forces and officers for the systematic study and practice of amphibious operations. In spite of these problems, the services were able to devote time and study to such operations. This chapter will first examine the role the Marine Corps Schools played throughout the inter-war period in the development of doctrine. It will then look at the intellectual material of the period which was in the

form of manuals, professional articles, and lectures. Finally, although few exercises were held due to the above problems, the practical experiences gained from these will be examined.

Importance of the Marine Corps Schools

Before examining the writings and discussions of fire support coordination for amphibious operations it is important to understand the relationship of the Marine Corps Schools, Quantico, Virginia, to the development of amphibious doctrine. It was here that the doctrinal thinkers and planners of the Marine Corps resided, primarily because there was no organization which was tasked with this mission. For a school to teach it must have a curriculum and, in a military school, to have a curriculum one must have a doctrine. Thus, the doctrinal task fell to the schools by default. Additionally, for the purposes of this study, a good way of discovering what an organization is thinking about is to look at what it teaches and emphasizes at its schools.

After World War I the Marine Corps Schools were faced with a problem - what was the Marine Corps to do next? Although Marines had always had to serve in a wide diversity of roles, were the experiences of the war the future, or something special? "It was a problem, first, of invisioning [sic] the mission of the Corps, in all its ramifications.

and then, from experience, coupled with imagination and foresight, developing an adequate curriculum."¹ As stated above, the doctrine had to be prepared between the mission and the curriculum. Another problem, particularly during the 1920's, was that the Marine Corps's mission changed with U.S. foreign policy. Because of this, the curriculum at different times emphasized small wars planning, World War I land warfare planning, and naval affairs planning. Throughout the period of the 1920's, however, there was a tendency to move toward a more amphibious point of view as the war faded in importance, as the Marine Corps role in interventions ended, and as the Marine Corps's mission became clearer.² Eventually, the study of amphibious operations, in conjunction with the fleet, made up the majority of the teaching at the schools.³

Another reason the Marine Corps Schools became so important to amphibious warfare doctrinal development was because most of the units which participated in the landing force exercises came from Quantico. Thus, many participants in these exercises would return to be instructors. Additionally, in the spring of 1925, the schools were shut down so that the students and instructors could take part as headquarters elements of the expeditionary force during a Joint Army - Navy/Marine Corps landing exercise. As gaps in doctrine were discovered it naturally followed that the participants would attempt to fill them.

In his annual report of 1933, the Commandant of the Marine Corps Schools stated that personnel were to be designated to prepare manuals for areas not currently covered by texts and doctrine. He also stated that a close relationship was to be established with the Naval War College so that the support of naval gunfire and other agencies could be developed in detail.⁴ Consequently, during each academic year prior to World War II, students at both schools worked together on problems involving seizing or defending an advanced base.⁵ Furthermore, the creation of the Fleet Marine Force as an integral part of the fleet and the writing of a landing manual in the early 1930's, assured the development and study of amphibious operations and the fire support coordination for such operations.

Advanced Base Operations in Micronesia

In 1921 Major Earl H. Ellis, USMC, wrote a paper describing possible operations against the Japanese in the Marshall Islands. His plan concentrated on seizing bases for the Navy for the prosecution of further operations into Japanese home waters. The study of this plan is important for two reasons. First, it provides an excellent starting point for examining the development of doctrine during the period under study. There is no other document which provided, at the time, such a detailed description of amphibious operations. Thus, the paper provides insight

into the development of doctrinal thought of the period on fire support coordination. Second, Ellis's plan was a break with tradition in that he launched the Marine Corps toward not only defending advanced bases, but also seizing them. An entirely new set of criteria and requirements would need to be established for the landing force. An assault would also place much greater demands on fire support systems. This would be particularly true for non-traditional, sea-based arms such as naval guns and aircraft. Unfortunately, the plan, although prescient in many areas, was so general in its description of an amphibious operation that its true importance was as a first-step work. It certainly was not a detailed description of the tactics and techniques used during World War II, as some have called it. Nowhere is this more true than for fire support coordination.

As the majority of the 78 page paper was on the strategic picture and the defense of a base once it was seized, the description of the tactics of amphibious operations was necessarily short. Fire support was reduced to two points. Aerial support was to include reconnaissance, air superiority, observation, and strafing. Ellis believed that the "observation and strafing[sic] of enemy counter attack troops and machine gun nests is of particular value to the landing force during the initial fighting." Naval gunfire was covered in a little more

detail. Supporting ships were to be placed, if possible, on the flanks of the landing to sweep the beach and allow these fires to continue until the landing force was close to the beach. The fires would then shift to deep targets. He also stated that charts should be prepared for designating targets and fire zones. Arrangements needed to be made so that targets could be designated by "transmitting bearings and ranges from prearranged reference points." There was no other description of coordination for these fire support means. The communications paragraph merely pointed out that various measures must be established "at once if the full value of ship and airplane supporting fire is to be obtained." There is no mention of staff planning for or coordination of fires except to note that the brigade staff would be responsible for "fire command." Although Major Ellis's work was significant because it was original, it was a very modest beginning in fire support.⁶

Articles

In the January, 1921, Naval Institute Proceedings appeared the first article of the interwar period which specifically addressed the coordination of ships fire in support of ground forces. Using his experiences at Vera Cruz in 1914 as a guide, Commander Walter S. Anderson, USN, suggested a system of "Indirect Fire for Naval Gunfire" which included several of the techniques in use today.

Significantly, in the opening of his article he stated, "As I have never seen any reference to the possible use of indirect fire for guns on board ship in any of our standard books or articles on gunnery, nor even heard it discussed, it seemed that these notes might prove useful." He recommended that a spotter, with a signalman, be placed on an elevated position ashore where he could view both the target and the ship. The spotter and the ship's navigator would each possess a chart "marked with squares" which would be utilized to designate targets. Target locations so designated would be transmitted back to the ship by the signalman and acted upon by the navigator and the gunnery officer. The article then discussed, in some detail, the technical means of accurately bringing indirect fire to bear. The article mentioned nothing about who has the authority ashore to designate targets or even that the spotter must coordinate with ground forces. Nevertheless, it was a beginning for a rudimentary control system.⁷

During 1925 Captain N.S. Pye, USN, wrote a series of six articles in the Proceedings entitled "Joint Army and Navy Operations." In addition to being an excellent treatise on joint operations, the articles discussed amphibious operations at length. He recognized that the landing force, while approaching the beach, must be supported by naval aircraft and gunfire as part of covering operations. He further divided these covering operations into two types:

(1) preparation for the landing; and, (2) support of the landing. Nothing was discussed about support after the landing. Although naval gunfire was lauded as the "greatest possible concentration of modern artillery" there were only five paragraphs of discussion given to it in all articles. Captain Pye further discussed the limitations of naval gunfire, noting that it "can only be effective when the fire is controlled by air observation." While the concept of controlling such fires from the air was noteworthy, his idea that it could only be controlled from the air certainly would not ease coordination problems with the ground commander. His only mention of air support for the landing was for the Navy to provide air superiority and air spotting. In his concluding paragraph Captain Nye merely pointed out that any shortcomings of naval air or gunfire support could be "overcome by preparation for this type of operations." What these preparations would be were never stated.⁸

In the March, 1926 Marine Corps Gazette Captain Ridley McLean's article "Naval Communications" provides some insight into how coordination by radio would be effected between ship and shore. Although the majority of the article was on the Navy's communication system, it does have one paragraph on communications between the fleet and a shore-based Marine Expeditionary Force. He stated that frequencies would be allocated to allow the Force

headquarters to converse only with its subordinate headquarters and the Fleet Commander. Thus only command channels would be provided. If communications were required between subordinate Marine units and the Fleet (i.e., a supporting gunfire ship) then they must be relayed through the Force and Fleet headquarters. Such a small and restrictive communications system would certainly not be conducive to rapid and reliable requests for fire support.⁹

Two articles in the September, 1929 Marine Corps Gazette also discussed Marine Corps communications and at least mentioned the relationship between radio communications and fire support coordination. The "Professional Notes" section of the magazine discussed the current status of radio communications in the Marine Corps. One of the problems discussed was that of the excessive weight of the current radio equipment for use with expeditionary and front line troops. The Marine Corps was providing for spotting fire support from aircraft as the Secretary of the Navy had assigned frequencies for that purpose.¹⁰ A second article in the issue by Captain G.E. Cole, USMC, was also on "Marine Corps Communications." He likewise discussed the excessive weight and incapability of the Army and Navy communications equipment which the Marine Corps had purchased.¹¹ These two articles indicated that radio communications were going to be needed to properly coordinate fire support but that much more

technical development needed to be done before this problem could be solved.

In the September, 1926 and the March, 1928 issues of the Marine Corps Gazette Major Edwin H. Brainard, USMC, presented his views on "Marine Corps Aviation." Both articles were based upon lectures he gave at the Marine Corps Schools and thus both discuss Marine aviation in general terms. Nevertheless, there were several points made which provide glimpses of the air-ground coordination which would come later. First, Major Brainard, an aviator himself, made it clear that Marine aviators had no desire "to be separated from the line or to be considered as anything but regular Marines." Thus, the early Marine aviators displayed a strong intellectual partiality toward closely working with the ground forces. Secondly, he stressed at numerous points in the articles the importance of cooperation between the air and ground forces. For example, communication procedures had to be worked out in detail before the mission was flown. He even went so far as to recommend that all Marine officers do what has since become infeasible. "Go up yourself and learn what disadvantages the aviator works under, see how necessary it is for cooperation from the ground, and also see what advantages can accrue when this force is used properly." His third important point was that attack aviation was just being recognized as a new branch of the aviation service and

"that a landing of troops could be covered with a squadron of planes of this type very successfully." Unfortunately, he mentions nothing about how such action would be coordinated between the pilot and the ground commander or how close this support would be to the ground troops. Finally, Major Brainard recognized that the radio would ultimately be the solution to air-ground coordination and that more attention needed to be paid to this neglected aspect of aviation.¹²

This last aspect of aviation coordination was discussed by Captain Francis E. Pierce, USMC, in the December, 1928 issue of the Gazette. In his article, "Infantry- Air Communications", he wrote about the means to be employed in communications between ground troops and supporting aircraft. He considered the coordination of aircraft with ground maneuver to be important as he stated that "Infantry troops...frequently control aerial attacks by use of radio telegraphy or visual signals to the attacking plane." These two means of communication, radio telegraphy and visual signals, were then discussed. Captain Pierce also described the types of radios used by aircraft and ground forces and how the sets were made compatible for transmissions. It is clear, however, that he considered the use of visual signals, particularly ground panels, as the principle means of communication. These panels were to be used by units down to company size for communications by

code with the aircraft. The pilot would give his reply or information to the ground unit by merely dropping a weighted message. Thus, the aviators already realized that to be truly effective they must be able to communicate with not only the ground force commander, but also with his subordinate, smaller units.¹³

An extensive article on the "Uses of Aircraft in Naval Warfare" by Lieutenant Commander C.T. Gladden, USN, in the February, 1929 Naval Institute Proceedings gives some understanding of how navy pilots viewed their missions at the time. In his article he listed the principal functions of naval aircraft, in order of importance. Of the nine functions listed, "operations to support military landings" was number eight. While other functions were discussed in detail, this one was not mentioned anywhere else in the article. Clearly, the author considered this mission as an adjunct, rather than primary mission.¹⁴

Based upon his experiences in Nicaragua, Major Ross E. Rowell, USMC, discussed "Aircraft in Bush Warfare" in the September, 1929 Marine Corps Gazette. Although much of the article was a description of the use of aircraft in counter-insurgency warfare, it provided a look at how aviation support could be coordinated with the ground forces. He briefly described the signal panel air-ground communications system mentioned above. Major Rowell then stated that aircraft had considerable success in supporting

troops in a defensive position. However, because of the problems of synchronizing the ground commander's time of attack with the air commander far to the rear, coordination in an offensive situation had been very difficult. Merely synchronizing time in the field, fundamental to coordination, was difficult. He suggested a system of dropping message from an aircraft to solve this problem. When a pyrotechnic signal was fired by the pilot, the time was as specified in the message. For the liaison function, he recommended that the senior air officer not only command the air organization, but also be the advisor to the force commander on aviation matters. Furthermore, the air commander "is called upon to exercise initiative to a marked degree and must be imbued with the spirit of cooperation." Major Rowell even went so far as to say that in special situations airplanes might be attached temporarily to ground units.¹⁵

Major Rowell wrote another article on experiences in Nicaragua, "The Air Service in Minor Warfare," in the October, 1929 issue of the Naval Institute Proceedings. This article was also a chronology of events during the Nicaraguan campaign. Since the infantry patrols were often far out into the roadless tracts, and radios were unreliable, the only means of communications between ground units was by aircraft liaison patrols. These patrols would visit daily all the ground units in an area and the ground personnel and message drop communication system was found to be

very effective. This liason also provided a means of requesting air support and Major Rowell stated, "we operated in much the same manner as the artillery supports the infantry. It was soon found that planes could effectively support our infantry columns in time of need." He then related the story of a patrol which requested air support against an enemy force hidden in thick jungle by designating, with panels, the direction and range to the enemy. Such operations and coordination would lead to a bonding between ground and air, but such coordination procedures would not suffice for a large scale amphibious operation.¹⁶

The lead article of the November, 1929 Proceedings was "Joint Overseas Operations" by Major General Eli K. Cole, USMC. General Cole had been the Marine landing force commander during the landing exercises in the early 1920's and thus had extensive experience in such operations. Joint overseas operations was the term used at the time to describe not only amphibious operations but also the movement of ground forces by the Navy to an overseas theater. Consequently, his article dealt with a very large topic. A discussion of amphibious operations did, however, constitute most of the article and the fire support for such operations received extensive coverage. He considered naval gunfire and aviation support as a responsibility of the Navy. These "must be performed in close coordination with

the landing forces and consequently must be determined after consideration by both the naval and military commands." He unfortunately described no mechanism or technique for ensuring this happened. While the Navy was providing the aviation support he believed that the best way to ensure coordination of this supporting arm was for the landing force commander to place observers in these planes. This was a unique idea and was useful in 1929 when most aircraft were two-seat models. Prior to World War II, however, this system became unusable because of the extensive use of single-seat aircraft. The duties he prescribed for the naval air force included using "machine-gun fire and fragmentation bombs against land defenses" and providing "fire control for naval guns against land positions."

This latter aspect of naval gunfire support was considered to be "one of the most difficult features of the operation" by General Cole. Other than the use of spotters in biplanes he made no mention of any other means of requesting or adjusting these fires. Additionally, he believed that naval gunfire would only be a replacement for artillery until it could get ashore. Thus, his primary concern was with the pre-D-Day designation of targets and the destruction of these targets prior to, and immediately after, H-Hour. A grid system of locating these known and suspected targets would be used. Subsequently, "the military commander must consider how these defenses can be

overcome or neutralized and he will eventually draw up tables of fire."¹⁷

Lieutenant Commander E.W. Broadbent, USN, wrote a pair of articles for the Proceedings in 1931 which discussed "The Fleet and the Marines" (March, 1931) and "Aircraft in Joint Military-Naval Operations" (August, 1931). Both articles discussed the importance of landing forces: the first about the use of Marines specifically and the second about ground forces in general. Both articles emphasized the importance of close cooperation and coordination between the Navy and the landing force; but, neither provided specific methods for implementing these requirements. However, the second article provides some insight into how aviation was to be used as a supporting arm and a little on how it would be coordinated with the ground forces. Commander Broadbent first stated that it "is [the Navy's] duty to provide security for the attacking forces from the air attack, and to assist the attacking forces by reduction of hostile resistance." The majority of the article was then devoted to the air superiority role. Nevertheless, he does subsequently discuss the three phases of air attacks. The third phase was "the period of the main attack in which air operations are predominantly directed by the operations of the landing force on shore." This meant that landing force aviation assets would be ashore and, in conjunction with available naval aircraft, they would assume the role of

"support of troops as in any other military operation." No mention is made of how aircraft from the two services would be controlled or how they would cooperate with the ground forces. He concluded that:

greater confusion of air conditions can scarcely be imagined . . . the resourcefulness of the air services will be tested to the utmost . . . aviation has indeed added new difficulties to an operation that already possessed so many difficulties as to render it almost impossible.

He further stated that aviation provided an opportunity for success if properly used. Thus the problem was stated, but no solution was offered.¹⁸

An in-depth look at "Naval Gun Fire in Support of a Landing" was made by Lieutenant Walter C. Ansel, USN, in the May, 1932 Marine Corps Gazette. He began his article by saying that the technical aspects of naval gunfire support was not critical from the perspective of the Marine Corps. What the landing force had to realize was that providing naval gunfire "is a tactical matter, as it is with artillery support in a land attack of a position." Among the weaknesses he listed for this support were the difficulty of indirect fire and "indifferent" communications between the landing force and the supporting ships. The problem of indirect fire could be solved by the use of aircraft as spotting planes. The second problem he believed could only be solved as the technology of communications equipment

improved. Until it was, fire could not be obtained where and when needed. He then related how gunfire support for the British at Gallipoli did not become effective until cables were laid from the shore to the supporting ships. Lieutenant Ansel believed that indirect fire against targets inland from the beach would be impossible to coordinate closely with ground maneuver, even with the use of spotter planes. Finally, he organized the supporting ships into three groups, one of which was "direct support ships." He does not elaborate further as to whether direct support ship meant direct coordination between the ship and the ground forces.¹⁹

The September, 1932 Proceedings contained an article which, by historical example, provided numerous ideas on how to properly coordinate naval gunfire. Beda von Berchem wrote "Naval Artillery in Support of an Infantry Attack" which was an account of the Austrian Navy's support of the Austrian XIX Army Corps drive to capture Montenegro in 1916. Significantly, the Navy "received orders to cooperate with the XIX Corps, especially its artillery groups, in the reduction of the enemy artillery positions and in the support of the infantry attacks." Thus, the relationship between the supporting ships and the ground forces was clearly delineated and this cooperation was tied to the principle fire support means of the Corps, its artillery. This relationship worked particularly well in the case of

one of the cruisers in support of an infantry attack. A plane was detailed from the ground forces to act as spotter for the ship and a detachment was sent from the ship to an artillery post for liaison. As the attack started the ship fired slowly but then increased its rate of fire on orders from the artillery post. Throughout the battle requests for, and adjustment of, naval gunfire was done from artillery observation posts, naval observation posts in church spires, and even directly from an infantry commander. Several naval observation posts were established and they were always connected by telephone and visual signal with both the nearby artillery post and their ship. This system worked so well that on several occasions Navy officers in these posts were allowed to request and adjust artillery fire. As another example of this effective system, a cruiser had its fires placed under the direction of an army artillery group. The artillery group then decided which targets would be engaged by the ship and which would be engaged by the artillery. All of this was done in consonance with the ground commander's plans and thus a simple, but effective, coordination center was set up. In his conclusion von Berchem stated that liaison with the

land forces, especially the artillery, was always kept up. In this manner each vessel was fully informed about the progress made by the infantry and, in turn, received current information about the shifting of enemy troops.

Although this was not an amphibious operation there were many lessons which could have been learned. It is surprising that this model was not utilized during the 1930's to devise a system for American landing operations.²⁰

Lectures

The first lecture delivered during this period which there is a record of, "Naval Gun Fire in Support of a Landing," was given at the Marine Corps Schools in April, 1927. The lecturer, Commander G.L. Schuyler, USN, admitted in his introduction that he had no personal experience in landing under fire and that very little specific had been written on the subject. However, he had been with the British at Zeebrugge and had worked with the American naval railway guns during World War I. Unfortunately, he believed that historical example could not provide "illustrations of the kind needed for prophesizing what our naval gun fire can do in support of landing operations." He even dismissed the Gallipoli campaign since there was "opposition much greater than I can see any possibility of our encountering." In short, he did not foresee the usefulness of the study of Gallipoli or the tremendous opposition which American forces would face during World War II on beaches around the world. Since Commander Schuyler was assigned to the Navy Bureau of Ordnance at the time, his talk was predominantly about the technical aspects of naval gunfire, particularly trajectory

problems and shell configuration. Nothing was said in the lecture about planning, coordinating, or controlling these fires. However, during the question and answer period following the lecture several points were made about such matters. There was a discussion on how exacting the staff planning should be prior to the operation. Commander Schuyler stated that nothing should be prescribed beyond the initial landing to allow flexibility. In contrast, a Marine general present stated that the Navy's responsibilities should include having all methods and plans for support worked out in advance so that the landing force commander would know beforehand what support to expect. Commander Schuyler replied that the tactical details of fire "have to be prescribed for the Navy rather than by the Navy." This significant difference of opinion of the concept of naval gunfire support was not discussed further and a chance to solve a doctrinal disagreement was missed.²¹

The following year Commander H.M. Lammers, USN, gave another lecture of the same title, again at the Marine Corps Schools. In his introduction he stated that his purpose was to give the students "a resume of ideas so far evolved at the War College with respect to naval supporting gunfire during landing." Further, such support for landing operations "interlocks somewhat with questions of command, communications, and . . . operations on shore." The Naval War College was studying this problem as part of a planning

exercise involving naval gunfire support for the landing of an Army corps. The majority of the lecture was about the relative disadvantages of naval gunfire to field artillery. Those disadvantages discussed which are of concern here were the difficulty of observation of fire, communications, and control. He stated that observation of fire could be done from shipboard, planes, or shore. He believed the latter would be the most effective within the limits of the spotter's range of observation and the potential difficulties of communications. In looking at the problems of communications he noted that the overriding factor was that the support task must be carried out "in the way decided by the troops commander. This includes not only those matters planned in advance but also the matters that may arise during action." The communications from shore to ship was necessary for the adjustment and ceasing of fires and for the shifting to new targets. He believed that radio was the best means of communication but that visual signals should be provided for as a backup. No mention is made of who would man these communication links ashore.²²

The next lecture at the Marine Corps Schools on naval gunfire support was delivered by Lieutenant Commander A.E. Schrader, USN, in May, 1929. He approached his description of the problem differently than the previous two lectures. At the beginning of his lecture he discussed the characteristics of artillery and how these characteristics

related to the infantry. Of particular note for this study is that he recognized that understanding and cooperation was excellent between infantry and artillery units when a designated artillery unit supported a designated infantry unit. Additionally, liaison was close between these units since an artillery officer from the supporting unit was assigned to the infantry unit for communication and liaison purposes. What is surprising about the lecture is that even after mentioning these obvious strengths of artillery support he did not recommend similar procedures for naval gunfire support. Instead, most of his lecture covered the more technical aspects of naval gunnery and shells. He did mention air spotting of naval gunfire and that communications would have to be established between shore and ship. A lecture which started out with a promise of addressing the pressing problems of coordination of naval gunfire lapsed into a technical discussion of the problems of providing this support.²³

This emphasis on the technical nature of naval gunfire was also evident in the next years lecture at the Marine Corps Schools. Lieutenant Commander H.A. Flanigan, USN, a gunnery officer, utilized his presentation to give the capabilities of guns, ammunition, and ships fire control systems. Significantly, he admitted that the Navy was basing most of its data on theory and that actual fires against land targets had not been conducted to test these

theories. He concluded his lecture by outlining plans for experiments with naval gunfire. The last phase of these experiments was to "test the accuracy of our own fire, our methods of communication between the landing forces and the ships, and our ability to shift the fire in accordance with [the] plan and communications from the landing forces." He hoped that these experiments would allow the Navy to substitute facts for theories and provide better coordination between the fleet and the landing force. As we will see, the last part of these experiments, the shifting of fires, the essence of coordination, would receive scant attention during exercises.²⁴

An extensive, and remarkable, lecture was delivered to the Naval War College in January, 1932 by Colonel E.B. Miller, USMC. Titled "A Naval Expedition Involving the Landing of a Marine Expeditionary Force," the lecture was published almost verbatim in 1934 as a Marine Corps Schools pamphlet titled The Marine Corps in Support of the Fleet. All that was added to the lecture was a chapter on the mission of the Marine Corps and its relationship to the fleet. Colonel Miller began his lecture by reviewing the status of the Navy and Marine Corps in this area. He further stated that "doctrine does not provide for the co-ordination of effort so essential in operations of this nature." It was this lack of cooperative doctrine which he hoped to provide. From the very beginning of his lecture he

recognized the importance of communications in this effort. Communications between beach and ship "must be established at the earliest possible moment and signal parties . . . must be in the first landing group . . . to give quick communication to flagships, covering fire groups and transport groups."25

The subject of naval gunfire support received extensive coverage in Colonel Miller's lecture. He used the historical example of the Gallipoli campaign for his analysis and he devoted an entire section to "what if" the army and navy commanders had coordinated their actions on fire support. He believed that fire control was a function of the navy officer but that fire distribution should be the function first of a pre-arranged schedule and then of the landing force commander. To carry out this latter function the troop commander would have with him a "naval gunnery officer" who advanced with him and would be able to communicate with his "forward observer." Who would perform these functions and at what level of command they would be stationed was not discussed. Additionally, plans would have to include a:

1. Map system providing for designation of targets and control of fire from a common map...
2. Responsibility for and methods to be employed in initiation, control, distribution lifting, shifting or ceasing fire.
3. Designation of objectives, time schedule and volume of fire required.

4. Spotting methods, including means for identification of fire, gunnery reconnaissance by planes and shore observation posts . . .
8. Communication plan for control of gun fire-between OTC [Officer in Tactical Command], firing group commanders, firing ships, ships and planes, and all of the former with certain designated headquarters ashore. A most important item.

Although Colonel Miller did not discuss the coordination means required, he did recommend fire missions for each ship which would require coordination between ships. The three missions to be assigned to each ship were direct support of a particular unit, providing fires to adjacent units if fires were available and requested, and emergency support of any part of the beach within range of the ship's guns. In his final analysis of naval gunfire support he stated that he did not believe it was a replacement for, or equal in efficiency to, artillery. However, he did contend "that it is a good substitute and can produce effective fire support if properly controlled." As a reminder to his audience about how important coordination was he stated "that it is not the ship behind the advancing troops that supports them but the shells in front."

In his elaboration of the required communications plan for fire support, Colonel Miller placed extensive requirements on the Navy. He first stated that since the communications sections must go ashore with the first wave they could expect casualties and ample replacements had to

be provided in subsequent waves. A second point was that the landing force "must have a naval communication group, or a marine group, solely assigned to gunnery messages, which goes forward with the leading troops." He did not specifically define what was meant by "leading troops." However, he did state that if the group could not properly function at the battalion headquarters, then it must be placed even farther forward with communications provided back to this commander. A third requirement was that a "gunnery - communication" officer was required in addition to the naval gunnery liaison officer. The commander requiring naval gunfire support would give his requirements to his liaison officer who would then ensure that the proper ships were notified by the gunnery communications officer. Since the unit and landing force headquarters message centers could be severely overworked this communications officer had to have direct communications with the supporting ships. It is not clear from the lecture whether these two officers could operate apart from each other to assist more units or, if they did, how they would coordinate their requests. Finally, to emphasize how important communications were to coordination he closed his discussion of this subject with, "we may then conclude that gunnery - communication is a most important essential in the establishment of a beach head."

In his concluding remarks Colonel Miller stated not only his conclusions but gave a short description of the uses of aircraft. Although his discussion was short, he emphasized the importance aircraft would have in the landing operation. He then listed fourteen tasks that could be assigned to the air forces. These included "spotting for naval and landing artillery . . . supporting troops by combat action with machine gun fire and bombs . . . [and] coordination and control" of the other activities. What means would be used to coordinate and control he did not say. The remainder of his conclusion contained two important points. First, weaknesses in all naval support was not due only to a lack of material resources. It was due, in large measure, to a lack of understanding and comprehension of the details essential to preparing for and executing an amphibious operation. Second, he pointed out that

experimental exercises with . . . aircraft, bombs, smoke . . . fire control, observation, spotting, communications, by day and by night, with present and newly developed equipment and material, should be made a part of the fleet major training schedule and not relegated to an occasional investigation.

The next decade would see this last point come to fruition.

Manuals

Between 1920 and 1932, there were very few manuals available which discussed amphibious operations, much less

the fire support coordination for such operations. Advanced Base Operations in Micronesia has already been discussed but it was not a true doctrinal manual. Another manual of the period was The Marine Corps in Support of the Fleet which was discussed above as Colonel Miller's lecture. Nevertheless, four manuals were found which at least presented a rudimentary discussion of amphibious operations.

The first two of these four manuals gave very little information on such operations. The Landing Force Manual-U.S. Navy of 1927 contained only eighteen pages on the landing force. Emphasized was organization, embarkation, landing plans, training, and equipment; even the number of rounds to carry ashore. There was no mention of fire support or fire support coordination. Another section of the manual covered field artillery, but while spotting and adjusting of fires was discussed, nothing was stated about requesting or coordinating these fires. Additionally, field artillery was discussed in a purely land warfare situation with nothing about its relationship to landing operations. The final section of the manual was taken entirely from U.S. Army manuals and covered combat principles for units up to regimental size. There was little discussion on fire support or its coordination and no reference was made to landing operations.²⁶ The second manual of the period was Joint Action of the Army and Navy published in 1927. While it was an admirable attempt at

Joint doctrine, it unfortunately covered Joint overseas operations and mission of the Marine Corps in such general terms that it is not useful for this thesis.²⁷

The third manual, published in 1925, was Suggested Doctrine for Joint A & N Operations; Landing of Troops From Ships. Rear Admiral M.M. Taylor, USN, prepared the manual for the Naval War College based upon his experiences during the annual fleet exercises. Although only seventeen pages long and a tentative manual, it contained an extensive description of the major aspects of a landing operation. For coordination between the landing force and the ships "communication must be established . . . at the earliest moment and parties from ship signal forces should be in first boats to land." This task would be the responsibility of the Navy while communications from the beach inland was the responsibility of the landing force. There was a section of the manual titled "Communications to Regulate Firing From Ships" which stated that beach stations would control these fires until the movement inland began. A Navy officer would be assigned to control the fire of the ships in all cases and he would advance with the troops. Because of the lack of proper radios at the time a "telephone connection must be carried forward as advance takes place to connect Forward Observing Officer with shore station." Who the officer would coordinate with, at which level of command he would be, and how many officers there would be with the

landing force was not set forth. In keeping with the generally accepted opinion of the period on the relative merits of artillery and naval gunfire, this controlling officer would be withdrawn and naval fires placed on areas away from the troops once the artillery was ashore. The landing force and the Navy would have to work off of common, detailed maps which would have similar systems for coordinates. Aircraft would be used to spot for naval gunfire and to strike the enemy. How the aircraft would be controlled or coordinated was also not stated. Finally, fire support was not to be rendered unless it was under the positive control of someone with the landing force. Again, nothing specific was given on how to carry out this task.²⁸

In January 1933 The Joint Board prepared the fourth manual to be discussed, a short treatise titled Joint Overseas Expeditions. Its purpose was to present a set of general principles which would ensure cooperation and coordination between Army and Navy forces conducting such operations. As the publication was only 43 pages the goal of being general was assured. Joint planning for naval gunfire and air support was called for as was communications support for the operation. The authors recognized that given the lack of suitable land air bases "the Navy air forces will be prepared to take over, or at least to assist in other missions usually assigned to the Army air units." How Navy aviation would be coordinated with Army ground

forces and how Navy and Army aviation would be coordinated as the latter began operations was not indicated. There was only the suggestion that Army observers be placed aboard Navy aircraft to assist in the liason, coordination, and control functions. Additionally, nowhere in the pamphlet was it mentioned who would have airspace control in the objective area. Naval gunfire received more extensive coverage than did air support. Liason and communications between the advancing troops and supporting ships had to be provided. The manual recommended that Army artillery officers perform the liason function aboard ship for the Army. These officers had to be familiar with the other service and they needed to report to their assigned headquarters "probably prior to embarkation." One would think they would report early in the planning phase and would train with their headquarters. The plan for naval gunfire was discussed, in general terms, in one short paragraph and communications for such support was discussed in two sentences. The only provision for these communications was that "each naval liason officer should have direct communication with his commander whom he represents." The communications section of the pamphlet was only one half page long. A key weakness of the planned communications system was that all communications between ship and shore had to be funneled through the Navy's

facilities on the beach. Thus, for example, a landing force unit would not communicate directly with its supporting naval gunfire ship. Such a system would clearly be a communications bottleneck and would make fire support coordination very difficult.²⁹

Exercises

The United States Navy conducted annual Fleet Exercises from 1923 until 1940. For many of these exercises the Marine Corps, and sometimes the Army, participated as the landing force, or the expeditionary force as it was called prior to 1933. Additionally, the Marine Corps occasionally conducted landing exercises with part of the fleet, not as part of these major Fleet Exercises. During the period under study in this chapter participation was very limited because of the Marine Corps commitment to Nicaragua from 1927 to 1933. Nevertheless, these exercises provide some insight into what was being done operationally to coordinate fire support means. This is in spite of the limited orders and after-action reports which were prepared for these exercises.

As part of Fleet Exercise III, a Marine Expeditionary Force conducted an amphibious assault to seize Fort Randolph and Coco Solo, Canal Zone, on January 17-18, 1924. Commanded by Brigadier General Eli K. Cole, the landing

force was regimental size and, because of a lack of air superiority, the force was landed at night. The Navy planned an extensive, simulated pre-invasion bombardment, including illumination shells, smoke shells, and progressive bombardments into designated areas with high explosive and shrapnel shell. These areas were designated and the firing times staggered so as to deceive the defenders as to the landing site. Upon completion of the landing and after daylight "ships fire should only be delivered in our area upon radio request from Force or Regimental Commander." These plans were later amended and the ships were directed not to open fire until the landing was discovered. Fire was then to continue for one-half hour or until the Marines fired "three red Very's stars followed by two green Very's stars." As there was no agency ashore to control the fires of the different naval gunfire ships, i.e., which ship would fire a particular mission, this task was assigned to one of the battleships.³⁰ Because the naval air forces were "decidedly inferior" the use of aircraft was not addressed. There was, however, an expression of hope that they would be able to limit damage to the landing force by hostile aircraft and that they could be used for air spotting of naval gunfire. As for coordination means between the landing force and the Navy, only two frequencies were assigned to the Expeditionary Force. One was for use by the force commander to communicate to the fleet commander and

the other was for the him to communicate with his subordinates. In his after-action report General Cole does not specifically address fire support or even communications in general. He did state, however, that "none of us realized the full extent of the technical difficulties that were bound to be encountered in an expedition of this sort."³¹

Fleet Problem IV, in February 1924, was a continuation of III with the Marine Expeditionary Force utilized to seize an advance base near the enemy homeland. In this case the target was Culebra, Puerto Rico and the landing would be opposed by another Marine force. Again, the landing was conducted at night and the ship-to-shore movement was a disaster. Consequently, the entire after-action report was devoted to the discussion of solving problems of debarkation from ships and to the control of the waves of landing craft. Fire support was not mentioned. One of the innovative techniques which the landing force tried was to land artillery on an offshore island on D-1. This artillery was to provide fire support for the main landing and its fires were to be controlled by the Force Headquarters. There was, unfortunately, no discussion of whether this was successful or how these fires were controlled and coordinated with other fires by the Force Headquarters. As in the previous landing only one radio frequency was assigned to the landing force with which it

could communicate back to the naval force and again a battleship was assigned the task of deciding which ship would fire a particular mission.

Under the section "Navy Assistance" in Field Order No. 5, Expeditionary Force, naval gunfire and aviation support were discussed. Naval gunfire would provide "harassing gunfire" to cover the initial landing. Subsequently, it would be "laid down upon request of Force Commander; when such fire is desired; locations of target should be given in latitude and longitude . . . or by direction and estimated distance from some prominent point shown on Chart 914." Navy aviation, in a fire support role, was tasked to attack enemy troop formations and gun positions. Since the ground units could not communicate with the aircraft, requests for support and control had to go through the Force Headquarters, to the naval commander, and then to the airplane.³² Finally, aircraft were assigned the mission of spotting naval gunfire, but as these aircraft also could not communicate with the landing force, coordination of this spotting with ground maneuver had to be done aboard ship by the naval commander. Initially, this was not a large problem since the landing force commander and the naval commander were aboard the same ship. There is no evidence of any means of coordinating these fires once the Force Headquarters moved ashore.³³

The landing exercise conducted during the Joint Army and Navy Exercise of 1925 was discussed by Brigadier General Dion Williams, USMC, in an article in the September, 1925 issue of the Marine Corps Gazette. Although the Marine Expeditionary Force which made the landing included only 2,500 Marines, the landing force was constructively composed of two divisions with supporting troops; more than 42,000 Marines. Even though the majority of units were constructive, the staffs were not. For example, the landing force chief of staff was the Commandant of the Marine Corps Schools. Students and instructors filled various positions on the staffs of the force, division, and supporting unit headquarters. Naval gunfire was provided for the landing on a pre-arranged schedule by having the ships fire into a zone of terrain. Since the entire beachhead had been so divided, subsequent fire support from the ships was also fired into the requested zone. These requests were again directed through the Force Headquarters. Aviation support of ground maneuver was never practiced as the enemy forces had air superiority throughout the exercise. Thus, the Navy aircraft were utilized throughout the operation in the air defense role exclusively. General Williams's lessons learned section of the article continued to emphasize the tremendous problems with the ship-to-shore movement, especially the inadequate landing craft. He noted that the exercise "clearly demonstrated the necessity of carrying

with the Fleet a larger air force which would be immediately available for supporting a landing force." He also recommended that communications equipment be designated for better use in the field and on the beach so that better coordination could be effected. Finally, he stated that without "frequent training of the personnel in such operations there will inevitably be great confusion." The training required to coordinate these fire support means was not stated.³⁴

Conclusion

The period of 1918 to 1933 did not involve the systematic study of amphibious operations in general, but many of the problems had been recognized. As for fire support coordination for these operations, the other problems, such as the ship-to-shore movement and the technical weaknesses of naval gunfire, loomed so large that coordination was only mentioned incidentally. With the formation of the Fleet Marine Force and the return of the Marines from Nicaragua, both in 1933, a clear mission was given to the Marine Corps. Thus more energy could be devoted toward studying doctrinal problems. However, time and a mission did not guarantee that fire support coordination problems would be solved, especially given the challenges of the other problems.

ENDNOTES CHAPTER 2

¹Anthony A. Frances, History of the Marine Corps Schools (Quantico: Marine Corps Schools, 1945), p. 26.

²Ibid., p. 31.

³Ibid., p. 25.

⁴Ibid., p. 41.

⁵Ibid., p. 99.

⁶Major Earl H. Ellis, "Advanced Base Operations in Micronesia," 23 July, 1921.

⁷Commander Walter S. Anderson, "Indirect Fire for Naval Guns," U.S. Naval Institute Proceedings 47 (January 1921): 61-66.

⁸Captain W.S. Pye, "Joint Army and Navy Operations," U.S. Naval Institute Proceedings 51 (March 1925): 238 and (June 1925): 996.

⁹Captain Ridley McLean, "Naval Communications," Marine Corps Gazette 11 (March 1926): 18-23.

¹⁰"Professional Notes," Marine Corps Gazette, 14 (September 1929): 226-227.

¹¹Captain G.E. Cole, "Marine Corps Communications," Marine Corps Gazette 14 (September 1929): 221-225.

¹²Major Edwin H. Brainard, "Marine Aviation," Marine Corps Gazette 11 (September 1926): 192-198 and "Marine Corps Aviation," Marine Corps Gazette 13 (March 1928): 25-36.

¹³Captain Francis E. Pierce, "Infantry-Air Communications," Marine Corps Gazette 13 (December 1928): 266-270.

¹⁴Lieutenant Commander C.T. Gladden, "Uses of Aircraft in Naval Warfare," U.S. Naval Institute Proceedings 55 (February 1929): 123.

¹⁵Major Ross E. Rowell, "Aircraft in Bush Warfare," Marine Corps Gazette 14 (September 1929): 184-203.

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CHAPTER 3
DEVELOPMENT FROM
1934 TO 1941

Introduction

By the end of 1933 all the ingredients necessary for producing a doctrine had come together. First, the services recognized the need for such a doctrine. The Army and Navy had examined basic landing operations doctrine through the joint production of Joint Overseas Operations. The Navy and Marine Corps had conducted landing operations over the years and found the current doctrine, what little there was, lacking. Second, the organizations capable of producing and testing doctrine, the Marine Corps Schools and the Fleet Marine Force, now had clearly established missions. Third, the time was available as the Marine Corps was no longer involved in Nicaragua. Finally, as the Japanese threat became clearer during the decade of the 1930's, there was the stimulus of a potential adversary to drive this doctrinal work. The consequences of these factors coming together was the systematic study, experimentation, writing of amphibious warfare doctrine. Committees of the Marine Corps Schools and the Naval War College undertook the study

and writing. Both services conducted the experimentation during the annual Fleet Landing Exercises of 1935 to 1941 and the Joint Exercises of 1941 and early 1942. A study of fire support coordination development during the period 1934 to 1941 must start with the basic document, the Tentative Manual for Landing Operations.

The Tentative Manual for Landing Operations

The Tentative Manual for Landing Operations was prepared by a committee of officers at the Marine Corps Schools between November, 1933 and June, 1934. Before examining the contents of the manual relating to fire support coordination, it is necessary to look at the background behind the preparation of the manual. As stated in the previous chapter both the Navy and the Marine Corps recognized by the early 1930's that doctrine needed to be prepared for amphibious operations. In October, 1931 the Commandant of the Marine Corps Schools sent a letter to the Commandant of the Marine Corps informing him that a board had been formed to write a text on landing operations.¹ The Commandant of the Marine Corps concurred with this approach² and the work done by this first board would become part of the effort of late 1933 and early 1934. The head of this board, Major Charles D. Barrett, would also be instrumental in the preparation of the tentative manual. The only recorded output of the special board was in the form of a

letter to the Commandant of the Marine Corps Schools, entitled "Naval Gunfire in Support of Landings." The largest part of the letter was a discussion of the essential differences between a landing operation and a land attack. Their conclusion was "that the real and fundamental differences between a landing against opposition and an attack on land lies in the character and amount of the artillery support." Naval gunfire would have to replace the artillery, while air support was not mentioned. Another part of the letter recommended naval gunfire support experiments. Emphasis was placed on the technical aspects of naval gunfire, such as the precision of fires and destructive effects. Also prescribed was the objective of training fire-control personnel and developing "instruments and methods for the control" of these fires. Nevertheless, in examining the procedures for the experiments it is clear that these latter objectives would not be adequately analyzed.³

The Joint Overseas Expeditions, published by the Joint Army and Navy Board in 1933, contained general principles, but it still did not tell the Navy and the landing force how to conduct such operations. Thus, there was good reason, in October, 1933, for the Commandant of the Marine Corps to order the suspension of classes at the Marine Corps Schools for the preparation of the required manual.

The authors of the manual recognized that the preparation of this manual would require the efforts of both the Marine Corps and the Navy. As the Commandant of the Marine Corps Schools noted:

While the nature of this type of operation necessarily demands the participation of the two services, each in its own sphere, it is believed that the assigned tasks of the two services are inextricably interlocked and that, in the formation of doctrine, the subject must be considered as a whole, rather than as two independent operations. The failure to fully appreciate this fact and plan accordingly may account for many difficulties encountered in this type of operation.⁴

In his reply, the Commandant of the Marine Corps pointed out that since one of the members of this board was a Navy officer, the board would be able to obtain the Navy's doctrinal thinking on the subject. Consequently, "a reasonably complete doctrine including both Marine Corps and Naval duties can be evolved."⁵

At a conference during the preparation of the manual in January, 1934, the Commandant of the Marine Corps Schools indicated, by message to the conference, that he "wanted a manual that would indicate to the Navy the broad general part that we should play in Landing Operations so that the Naval Officer who would read this manual... would realize the necessity for preparation and training and the things that the Navy should provide." The participants also realized that the Joint Board pamphlet on overseas operations, as official doctrine, would have to be the

starting point. However, this was not to limit the authors in writing the manual or recommending changes to the pamphlet. Finally, the authors understood that the operation was not a Joint operation as envisioned by the Joint Board pamphlet. It was instead a Navy-Marine effort in which the Marine Corps "represented a part of a unified Naval force."⁶

The Tentative Manual for Landing Operations was approved by the Commandant of the Marine Corps in June 1934 for instructional use at all Marine Corps Schools. In July, changes were made to the manual, none of which impact on this thesis, and it was printed by the Navy as the Tentative Manual for Overseas Operations. Comprised of seven chapters, the manual had no section dedicated to fire support. Instead, the doctrine on fire support was scattered throughout the manual. The terms fire support, fire support coordination, supporting arms, or related terms were either not used or were not addressed. What was addressed was the functional uses of naval gunfire, artillery, aviation, and communications. Additionally, the importance of coordination and liaison in landing operations was stressed in the introductory chapter.

A landing operation as discussed in this manual is a type of naval effort the success of which depends to an unusual degree upon the closest collaboration, coordination and mutual support of the several arms of the naval service engaged. During the entire preliminary period of preparation for the effort, no means should

be omitted to develop cooperation to its highest perfection. Not only should the commanders of the various units clearly understand the plans and orders for associated units, but they should be familiar with the motives back of those directives.⁷

This was further emphasized by requiring the Naval commander, as the overall commander, to ensure that there was proper liason between Navy and Marine Corps staffs. The functional areas that this liason should be in was not stated.⁸

The manual stressed the criticality of naval gunfire by Navy fire support ships during the ship-to-shore movement. To be effective it would require "very careful planning and coordination as to amount, time and place."⁹ From the standpoint of the Navy, this phase of support continued up through the establishment of the landing force on the beach and it was concerned with beach neutralization, counterbattery, and isolation of the beachhead. Consequently, it had to be carefully regulated by a firing schedule which in turn was coordinated with the landing diagram and the scheme of maneuver ashore. The authors of the manual recognized that the effectiveness of the naval gunfire would decrease "in direct proportion to the increase in time required for the assaulting troops to gain their positions after the fire lifts." As this timing was so critical the use of an H-hour and synchronized clocks was directed. Additionally, the line of departure for the boat

waves was important since the time of crossing was the last opportunity to coordinate the timing of movement with fire support.¹⁰

It was during the second recognized phase of naval gunfire support, the advance inland, that the support had to be more flexible and thus coordinated by means other than a time schedule. Fires would already have been lifted to deeper targets as the boats approached the beach and the current thinking was, given the range dispersion of naval guns, that ships could not fire close to troops. Additionally, as the advance proceeded, "ship's gunfire should gradually diminish as it is progressively supplanted by field artillery." How this transition was to be effected was not stated. Nevertheless, naval gunfire would still be required to provide three kinds of fire on call: support, counterbattery, and interdiction.¹¹ The calling for and adjusting of these fires would be accomplished by air spot and by fire control parties. These parties would be provided by the supporting ships and were to function from observation posts much like the field artillery. The field artillery would provide liaison officers to these posts which were to be manned by specially trained naval personnel.

Fire control is the function of the naval officer. Fire distribution initially is the function of the prearranged firing schedule, and later that of the troop commander. The troop commander designates to the senior naval officer of the fire control party the area and location to be fired on, the time to commence

and the time to lift or cease firing. This information is then transmitted to the firing ship or group in accordance with the communication plan for control of gunfire.

To properly coordinate and control the ships fire with the landing force meant that the party would need to be provided with extensive plans. These would include:

- * a common map system with common scale and grids
- * the responsibility and methods for the initiation of control, distribution, shifting, and ceasing of fires
- * the landing force objectives and time schedule
- * spotting methods, including that of aircraft
- * redistribution of fire if a ship was lost or absent
- * the communication plan for controlling naval gunfire
- * the "air plan of naval and landing force aircraft . . . and its combat action in direct support and defense of the naval supporting groups, the landing of troops, and their subsequent operations."

All of the above would require an overall plan for the delivery of naval gunfire, prepared in advance. This plan would coordinate these fires with the maneuver of the landing force, field artillery fires, and aviation support. How this would be done and who would do it was not discussed. The final requirement for flexible coordination

and control of naval gunfire was that the landing force and the firing ships needed a common language of technical terms.¹²

Aviation, particularly the control and coordination of its fires, did not receive extensive coverage in the manual. Reconnaissance, air superiority, and the problems of setting up air bases received more attention. Nevertheless, the manual did stress continuous air support from the time of arrival off shore until the landing force was established ashore. Air support required close cooperation between air units and between these units and the ground forces, regardless of whether the support came from naval air or landing force air. Consequently, the manual stated that much "liason and careful planning is required to insure proper air support under the difficulties to be encountered in these operations."¹³ How the above would be carried out is not specifically addressed. Aviation assets would be used to reduce enemy defenses, neutralize the beach when gunfire lifted, provide air spotting for naval gunfire and artillery, and "assist the advance of the infantry." Significantly, at least for future doctrinal thinking, the manual did mention that aircraft may be shifted from their normal role to that of the artillery. Nothing else was said about this subject or whether the air would replace or complement the artillery.¹⁴

The manual discussed aviation communications in both the aviation and communications section. Aircraft were to be equipped with air-ground and inter-plane radios. The air-ground aspects of communications were stressed since it was believed that the aviators should be able to converse directly with the ground unit. The notional communications plan of the manual did not assign a frequency for this; it merely directed that supporting aircraft would be on the command frequency of the supported unit. Backup means of communications were also stressed with searchlight code signals, panels, message pick-up and drops, and pyrotechnics offered as alternatives to the radio.¹⁵

The study of a communications system can provide insight into how a military organization intends to conduct coordination functions. For these functions the communications section of the Tentative Manual for Landing Operations provided extensive coverage, particularly for the ship-to-shore movement. The naval gunfire control parties would establish radio communications with the ship or ships whose fires they controlled. They would have wire communications provided to them by the units (depicted as battalions) that they were supporting. Established between their observation post and the supported unit headquarters, this wire communication provided for liason with the supported unit. Another wire was to be layed to the beach as alternate communications, via relay, back to the

supporting ship if the radios failed. It is also significant that the communications diagrams of the manual show the control party observation post midway between the two lead battalions of the supported regiment. They are not forward with the lead elements of the battalions. Additionally, this section stated that a naval gunfire liaison officer would be provided to each of these battalions by the control party while the naval support section of the manual does not mention this. There was also no provision made for radio communications with spotting aircraft, although this could have been accomplished by wire back to the ground unit headquarters and then by radio to the aircraft. Panels, message drops, and flashing light communication by the control party was mentioned.¹⁶

Another indicator of how coordination functions were to be handled was in the organization and tasking of the staff and in the formats for operations orders. At the time the manual was written the Marine Corps designated the four principle staff officers as F-1 through F-4. Their functions were much the same as in staffs today. The function of the F-3 was to supervise and control the organization, operations, and training of all units. Fire support coordination was not specifically mentioned; however, the F-3 was tasked with the "employment and cooperation of all tactical units." On the landing force staff an assistant F-3, Naval Gunnery, was provided for. He

was to be the tactical and technical advisor on naval gunnery. Significantly, one of his tasks was to recommend "plans for the coordination of ships' fire with artillery and infantry fire." This was the only place in the manual that coordination between different types of fire support is mentioned. There was no provision for an air officer.¹⁷

The formats for operations orders and plans directed that the following areas must be addressed:

- * gunfire support and aviation - plans to be prepared by the naval commander with recommendations from the landing force commander
- * fire control parties - plans to be prepared by the naval commander
- * liaison between the field artillery and the naval gunfire support groups and fire control parties; part of the artillery section of the order
- * the communication plan
- * aviation plans including liaison with ground forces (including codes), air fire-control codes, and communications.¹⁸

As a final note on the Tentative Manual for Landing Operations, no requirement was levied in the training chapter to specifically train for fire support coordination.¹⁹ This was a serious oversight.

Manuals

The majority of this section will be a discussion of the landing operations manuals which superseded the tentative manual. Only changes from the basic manual will be examined as much of the doctrine remained constant throughout the period. There were, however, significant changes between the tentative manual of 1934 and the Tentative Landing Operations Manual of 1935. In fact, the most significant changes of the period occurred during this one year.

The greatest changes were in the naval gunfire section. First, an extensive section was added on the types of missions which could be assigned to ships such as supporting fires, counterbattery, interdiction, etc. This was followed by a section which discussed in detail the requirements (ammunition types, amount of each type for coverage, etc.) for each of these missions. Equally important, a section describing in detail the execution of these fires was added. Although these were not direct discussions of coordination, they made much clearer to the reader the basics of naval gunfire support. With this understanding the requirements for coordination were subsequently clearer. Secondly, the section on coordination with the ship-to-shore movement was expanded. This coordination was to be effected by the standard time

schedule. However, a requirement was levied upon the attack force commander that if the ship-to-shore movement was off schedule then provisions must be made to alter the ship's firing schedule. Third, the relationship between fire support groups of ships and subordinate units of the landing force was discussed. The manual stated:

In order to insure proper planning and coordination and to permit direct transmission of requests for fire, it is desirable that fire support groups executing close and deep supporting fires be assigned the task of supporting a specific unit, such as a battalion, regiment, or brigade, of the Fleet Marine Force.

This would allow the two commanders, supporting and supported, to plan fires jointly, before the attack.

A fourth change, and the most important, was the addition of a section on the coordination of naval gunfire with artillery and air support. The main emphasis, however, for coordination with artillery was to facilitate the rapid, and complete, relief of naval gunfire missions by artillery. Nevertheless, for the first time, the authors stated that consideration must be given in the assignment of missions "to the number, characteristics, powers, and limitations of the types of weapons available." This was a rudimentary understanding of how to coordinate different weapons systems so they complement each other. Unfortunately, very little was given on carrying out this task. All that was mentioned was the possibility of assigning artillery officers to each

naval gunfire ship and for artillery units to put all their agencies, such as communication facilities and observation posts, at the disposal of the naval gunfire control parties. Naval gunfire coordination with aircraft was much less extensive. This section was merely a discussion of those fire support missions which could more profitably be conducted by aviation. As an example, deep counterbattery fires could be executed by aircraft quicker and thus more effectively as the pilot could spot the enemy unit and take immediate action. Naval gunfire could only conduct these missions after the delay of working through the communication system. Although neither of these two discussions provided for true coordination between supporting arms, at least the subject had been broached.

The aviation and communication sections of the manual contained few changes. The only change in the aviation section was that support for the ship-to-shore movement, between the lifting of naval gunfire and landing, was discussed in greater detail. The aviation communications section was precisely the same. The communications section of the manual specifically addressed those channels which should be distinct and separate from those that go to the naval task force via the beachmaster. One of these was naval gunfire. Aviation support was not. Additionally, naval gunfire control communications were discussed in more detail. Most importantly, the spot team, the supporting

ship, and the observation/spotting plane, as opposed to just the team and ship, were all the same frequency to facilitate coordination. Surprisingly, the naval gunfire liaison officer at the battalion or regimental command post was not on this net. This would have made coordination with higher headquarters difficult. As a final note on the 1935 manual, the section on plans, orders, and staffs was dropped as a separate section. There was, however, a short one page section in the introductory chapter. This portion gave some generalities on how plans should be detailed and further stated that plans and orders would be covered in each separate chapter of the manual. This was not done, however, in this manual, or in the subsequent manuals before World War II. The only exception was the 1938 version which contained a short section on the naval gunfire annex and an illustrative naval gunfire problem. This change, of course, speaks volumes about how important these functions were considered. It certainly had a significant impact on coordination procedures.²⁰

Two other versions of the manual on landing operations were published prior to World War II. The first, Landing Operations Doctrine U.S. Navy (Fleet Training Publication 167), was promulgated in 1938. The second was change one to this manual. This change was so extensive that all pages of the original manual were ordered replaced by the new pages. Nevertheless, a review of both these

revisions reveals that no changes were made in the area of fire support coordination. Thus, the doctrine described above is the doctrine with which we entered the war.²¹

In 1935 the Marine Corps Schools published A Text on the Employment of Marine Corps Aviation. The manual was meant to establish doctrine for aviation both during landing operations and during sustained ground combat operations. The majority of the text was directed toward the missions and uses of the various types of aircraft. However, there was a section on landing operations which began by noting the differences between these operations and "normal" ones. The authors saw that there would usually be a division of responsibility between the Navy and Marine aircraft, but that all aviation forces would be under the air commander of the naval force. How these two air forces would be coordinated with their respective service and between each other was not stated. During the landing phase air support would have to be continuous until the landing force was well established ashore. This air support was considered critical as the landing craft covered the last few hundred yards since naval gunfire would have to lift during this period. The attack aircraft would provide covering fires by bombing, smoking, and strafing enemy positions on the beach. Pilots would also have to be capable of acting as spotters for both naval gunfire and artillery. All of this meant that there had to be close cooperation between aviation

units and between these units and ground forces. "Much liaison and careful planning is required to ensure proper air support under the difficulties to be encountered in these operations." How this liaison and careful planning was to be effected was not discussed.

The text made a clear distinction between aviation support for the landing phase and for the advance inland. During the former it was possible that aircraft "may be shifted from its normal uses to assume the role of artillery." This was an important difference from normal missions. In the section on attack aviation the text stated that the fundamental principle of employment of this type of aircraft during the advance inland was that

its firepower does not replace the firepower of ground weapons. It is properly employed only against those objectives, usually beyond the range of ground weapons, which have an immediate and vital bearing on the situation. The use of attack aviation against hostile front line troops must be considered as an emergency measure, to be undertaken only when every other means fails to gain the decided end.

The section on dive bombing stated the same premise, that is, it does not replace ground fires and "its employment against front line objectives will seldom have any tactical justification." In spite of the experiences in Nicaragua, close air support was not considered a viable mission and thus there was no discussion of an extensive system for the control and coordination of aircraft. The communications

section of the text is only one page and merely states that radio, panels, message pickup and drops, and pyrotechnics be used, as appropriate, for air-ground, air-ship, and inter-plane communications.²²

The Landing Force Manual-U.S. Navy(1938), when compared to the 1927 edition, contained no increase in the discussion of landing operations. However, it did add a section on supporting weapons which discussed, in general terms, the employment of these weapons. There was also a sub-section on control and coordination but it was only four lines long. It stated, in part, that the "battalion commander is responsible for the coordination of the fires of his supporting weapons." There was no discussion on the technique or means by which this might be carried out.²³

Articles

Few articles were published in professional journals between 1934 and 1941 on fire support coordination for amphibious operations. The first three, "The Infantry-Artillery Team" by First Lieutenant R.M. Victory, USMC (February, 1936), "Pack Howitzer Battery in Landing Attack" by Major C.W. LeGette, USMC (February, 1936), and "Light Artillery Support in Landing Operations" by First Lieutenant A.L. Bowser, Jr., USMC (June, 1938), all appeared in the Marine Corps Gazette. The articles discussed how artillery should be brought ashore early in the operation

and the technical means of doing so. The limited utility of close naval gunfire and aviation after the landing was emphasized and such close support could be given "only by artillery working in close liason with the troops." Naval gunfire and aviation were thus viewed as replacements for artillery until the artillery came ashore. Once ashore the artillery would become the fire support means of choice and the other means would be assigned missions other than close support.

Lieutenant Bowser described in detail the coordination system to be used by the artillery as it was phased ashore. An artillery liason officer with his liason section and communications equipment would land with the supported battalion and subsequently establish communications with the supporting artillery battery when it moved ashore. When the artillery battalion headquarters was ashore all communications were to be routed from the liason officers to this headquarters. The artillery battalion would then decide priorities of missions and which battery or batteries would fire a particular mission. Thus control and coordination functions were given to higher headquarters as they moved ashore. A system such as this could have served as a model for naval gunfire and aviation. No mention was made of how this system interfaced with the other supporting arms. However, since these other fire support means would not be in close support of the infantry

at this time, such coordination was probably not deemed necessary.²⁴

The November, 1939 issue of the Marine Corps Gazette contained one of the first articles on a fire support coordination agency for the landing force. "Counterbattery in a Landing Operation," by First Lieutenant F.P. Henderson, USMC, dealt specifically with the problems of counterbattery fires in amphibious operations. However, his recommended coordination procedures should have had wider implications than this one aspect of fire support. He recommended that an artilleryman be placed on the staff of the landing force and each subordinate brigade as the counterbattery officer. This officer's position would be within the operations section of the staff to ensure that these fires were coordinated with maneuver. He would have no specific fire support means assigned to him for this mission, but his task would be to coordinate all available means with the plans of the landing force. "While he will in no sense exercise any command over the ships or aviation units assigned the counterbattery missions, he will direct and coordinate their efforts," acting through the operations officer. Thus Lieutenant Henderson saw the counterbattery officer as a clearing house for information. He would act as a "coordinating agency to prevent duplication of effort and to see that targets are attacked expeditiously with the best means available."

Once this officer had gathered and evaluated all information available on counterbattery targets he would prepare a counterbattery plan. Coordination would be difficult because a mission would probably involve aircraft to locate these dangerous targets. This information would have to be passed to the counterbattery officer who would assign the mission to available naval gunfire ships, aviation, or artillery units. The observation aircraft would then have to act as the observer as these targets would probably be deep in enemy territory. To accomplish this mission he would need an independent communications system with which he could communicate with all the fire support forces that might be assigned a counterbattery mission.²⁵ Although Lieutenant Henderson's article dealt only with a specific fire support mission, Lieutenant Colonel R.D. Heintz was correct when he stated in a later Gazette article that Lieutenant Henderson "may lay claim to fathering the concepts of fire support coordination (or at least to recognizing the major elements in a system of fire support coordination)."²⁶ Unfortunately, these ideas would not be implemented until well into World War II.

This concept of coordinating fire support for counterbattery missions was discussed from a naval gunfire standpoint in the November, 1941 issue of the Gazette by Lieutenant R.C.D. Hunt, USN. He believed that counterbattery was one of the most effective and efficient

uses of naval gunfire since such targets are vulnerable to such highly destructive fires and because they are usually not in close proximity to friendly forces. The Naval Attack Force Commander would designate a counterbattery officer whose task it would be to coordinate counterbattery fires for the entire beachhead and to prepare a counterbattery plan.

The plan should include: (1) Zones of responsibility; (2) Ships' position areas; (3) Types of ships and their batteries to be employed; (4) Assignment of the specific fire mission; (5) Communication system to be installed; (6) Coordination of information to include arranging for airplane . . . observers.

A "Counterbattery Central" would be established aboard the command ship to assist this officer in coordinating observers (both land and air) and the fires of the various ships. Lieutenant Hunt believed aerial spotting was required for these missions but that Shore Fire Control Parties on the ground would have to be capable of substituting. Thus the Navy was establishing the seaward equivalent of Lieutenant Henderson's idea. However, the coordination of naval gunfire with aviation fires and the coordination of the Navy system with the landing force system was not discussed.²⁷

Exercises

Between 1935 and 1941 the Marine Corps and Navy conducted annual Fleet Landing Exercises (FLEX) to test and

develop amphibious doctrine and to train forces in this type of operation. In 1939 Rear Admiral A.W. Johnson, USN, Commanding the Atlantic Squadron, directed that a history of the first five FLEX's be prepared. Lieutenant Commander D.L. Nutter, USN, subsequently prepared a portion of that history, "Gunfire Support in Fleet Landing Exercises." Throughout these exercises it was the technical capabilities and limitations of naval guns that was the primary concern. As Lieutenant Commander Nutter observed about FLEX 1:

The conception governing the exercise was that, in view of the lack of reliable data as to the efficiency of naval gunfire against irregular shore terrain, it was essential for future progress to secure data without wasting ammunition. Artificialities of necessity were introduced in location of targets for firing. This artificiality of establishing identification marks for the various target areas was deliberately accepted in order that spotters, observers and firing ships would be in no doubt as to the firing objectives.

Lieutenant Commander Nutter's description of the naval gunfire practice for FLEX 1 continued with a detailed account of the effects of various shells. However, in the recommendations section of the report there were three items of note. First, the report recommended that the problems of naval gunfire be tested step by step, looking at only one feature per experiment. Second, in the future artificialities should be dropped and air and ground spotters should be trained in selecting and adjusting fires using only maps. Finally, fire control parties needed to be

trained in conducting fire from forward observation posts with communication links back to the ship, via the beach.

FLEX 2 was held in 1936 off Culebra Island, Virgin Islands. Although much of the naval gunfire training was again done to secure technical data, the firing program was expanded. There was a practice firing which determined that it was possible for an aerial spotter to locate a target selected from a gridded map and to call for and adjust fire from this map. Experiments also showed that the ships could rapidly fire on targets designated by grids on a map and then quickly shift their fires to another target. For ground observation of fires, the individual ships provided control parties and equipment. These parties were found to be effective but no mention was made of how they interacted with the landing forces. Another experiment was done to observe the value of combined fires, ship and aircraft, against beach defenses while the landing force moved toward the beach. It was very successful as the report stated that it was an "excellent example of perfect coordination of planes, firing ships, transports and troop movements on a strict time schedule."

For FLEX 3 naval gunfire experimentation was expanded further. One of the practices was designated to test the ability of a ship to fire on a reverse slope target, with adjustment, by an air spotter. These tests were successful, including a test of the ship to rapidly shift to another

reverse slope target. This type of firing required much more control than previous tests, given that the ships could not see the targets and the problems associated with firing on a reverse slope. Again, only the ships' fire control parties were used for ground observation. One of the conclusions of the report was that spotting, both air and ground, was effective. This was still meant only in a technical sense as there was no experimentation which included the landing force. Finally, the recommendations were that subsequent exercises include more advanced problems and that artificialities, such as knowing exact target locations before firing, be eliminated.

The naval gunfire support for FLEX 4 and 5 continued the experiments of the previous three exercises. Training of the ship's fire control parties continued and more practices were held to "develop technique[s] for rendering naval gunfire support for the initial landing of the assault subwave against opposition." Thus, experiments were done to control the fire of the ships. There is no evidence in the report that these fires were coordinated with the landing force, other than for the ship-to-shore movement, or that they were coordinated with other fires. This last point is true about all the exercises, that is, the experiments were concerned mostly with the technical and control aspects of placing naval shells on a target. Through FLEX 5 the experiments had not progressed to the point of addressing

the larger issue of fully coordinating naval gunfire with the maneuver of the landing force.²⁸

The remaining discussion of the exercises held before the war will be presented by functional area. Naval gunfire, aviation support, and coordination functions, including communications, will be examined. This is done because many of the same lessons were relearned many times over throughout the successive exercises and because other exercises were held in addition to the Fleet Landing Exercises. In fact, an excellent record exists of the two exercises held in August, 1941 and January, 1942. These exercises, designated 1st Joint Training Force Landing Exercises and Joint Army Navy Exercise (JANEX)-1 respectively, involved the participation of a substantial Army force, the 1st Infantry Division. The orders and after-action reports provide insight into the fire support coordination doctrine with which we entered World War II.

The doctrinal testing of naval gunfire during the first five FLEX's has been reviewed above. There is, however, much more evidence available which gives a clearer picture of the progress in this area. In comparing the naval gunfire schedules for FLEX 5 (1939) and that of the August 1941 joint exercise, one finds the latter to be much more complete. It also included a provision for on-call missions whereas the 1939 exercise only provided a time schedule for fires. Even so, the after-action report of the

1941 exercise noted that since naval gunfire was still simulated, concrete conclusions could not be reached. The plan for JANEX-1 was even more extensive since it assigned missions of direct support (for battalions) and general support (for divisions) to the six naval gunfire support groups. The schedule also listed supporting units and respective supported units. However, only a single ship represented each group and fires were again simulated. Thus, the required realism was still not present, even though the war had come to America the previous month. The after-action report finally noted that spotters needed more practice in indirect fire since they lacked confidence in this procedure. The recommended remedy, and also for the inadequate training of ships crews, was to procure a suitable training area and to commence very intensive training.²⁹

The shore fire control party underwent several important changes during this period of experimentation. The parties were originally drawn from the ship's company of the individual fire support ship. A party would thus call for and adjust the fires of its own ship. This arrangement worked fine as long as the majority of experimentation was with the technical aspects of naval gunfire. However, as experimentation became more sophisticated and fires were closely integrated with maneuver ashore it became clear that, for the spotter, "knowledge of the gunnery

capabilities of his ship was not enough."³⁰ During FLEX 6 (1940) the artillery officer of the 1st Marine Brigade trained navy officers in the subject.³¹ This would improve only marginally the effectiveness of the parties as the after-action report of the August 1941 joint exercise noted they were "untrained and inexperienced." Additionally, six of the parties were reported as not having proper communications equipment. JANEX-1 was not much better. Control parties were assigned to each battalion but only four were able to establish communications with their ship. Nevertheless, the report concluded that the composition and equipment of the parties was adequate.

The composition of the parties had changed during the early part of 1941. This was caused by the fortuitous teaming of Admiral Ernest J. King as the commander of the Atlantic Naval Forces and Major General Holland M. Smith as the commanding general of the 1st Marine Brigade. Smith presented King the problem of navy officers not having the expertise to integrate naval gunfire with maneuver. Admiral King immediately saw the validity of the proposed solution and ordered it implemented without delay. The parties thus formed were composed of Marine communicators, Marine artillery officers to do the actual spotting of fires, and navy officers to perform the liaison functions at battalion and regimental headquarters. An extensive training program

was also instituted; but, as discussed above, it had not yielded many positive results by the beginning of the war.³²

Coordination of aviation support was much less satisfactory than naval gunfire during these exercises. 1939 saw the first attempt to formally integrate aviation closely with ground maneuver when an Air Liaison Officer was assigned to the 1st Marine Brigade.³³ During the same year an aviation squadron sent a liaison officer up in the rear seat of a plane. From here he could keep abreast of the ground situation and direct the strikes of aircraft by radio.³⁴ However, there was still no control of the aircraft by front-line units. The operations order for FLEX 5 included a schedule for aviation support, much like that for naval gunfire. The key mission was for aircraft to strafe the beach from H-6 to H-hour. The naval gunfire schedule called for these fires to cease during this period. Thus a rudimentary form of coordination was effected by separating the fires by a schedule. Aviation units were then given the mission of general support of the landing force. Provision for communications was marginal as there was only one frequency for the control of aircraft and all aviation support requests were to go through the force headquarters.

The joint exercise of August, 1941 had several innovative techniques for coordinating aviation support. As was becoming standard practice, air requests were funneled

through command channels and aircraft strafed the beach for the five minutes prior to landing. However, the first innovation was that twelve aircraft were to be airborne at all times to answer requests directly from the landing force commander. Secondly, unique communications nets were set up to coordinate aircraft fires. The first was the Force Air-Command Net which included the Force command post, the Force command plane, the Force reconnaissance plane, and both division CP's. The other net was a Close Air Support Net for each division. On this net was the division command post, a reconnaissance plane, and the close air support aircraft. Although this did not mean front-line units would control aircraft, it did move control down one echelon of command below the Force headquarters. The Marine Corps after-action report did not mention how well this idea functioned, but the report of the Army 1st Infantry Division did. This report stated that the "results were most commendable." Unfortunately, the record does not show whether this method was used at JANEX-1; at least, the after-action report does not mention it.

In reviewing the available evidence contained in both original documents and secondary sources there is nothing to suggest that any doctrinal examination was made of an overall coordinating agency or function for fire support means. What is even more perplexing is that there is also no indication that this was considered a problem during

these exercises. The only coordination effected, and it was not discussed as a coordination measure, was the use of schedules for air and naval gunfire mentioned above. Thus a form of coordination was created by separating the arms. What the record does suggest, however, is that the means of coordination were still so poor that this problem was merely too far down on the list. For example, the operations order for the Joint exercise of August, 1941 contained instructions for placing an arbitrary grid system on the maps used for the exercise. This surely did nothing to enhance the participant's confidence in their ability to coordinate fires. Additionally, the after-action report noted that the communications platoon was much too small to support the landing force. This would make command and control so difficult that fire support coordination was the least of the force commander's problems. There is finally the overwhelming problems with the basic execution of the amphibious operation as indicated by the JANEX-1 final report. One month after the outbreak of the war, the "execution of the ship-to-shore movement during this exercise, from a tactical viewpoint, was a complete failure." The report goes on to note that the amphibious force must train as an integrated and balanced team. Unfortunately, "the training to date has involved a small fraction of the naval components (except Marines) and, in football parlance, is equivalent to training the backfield

without the line.'" One wonders how much progress had been made in the execution of amphibious operations since these same comments were made in 1923.

Oral Histories and Interviews

General Vernon E. Megee, USMC, participated in much of the development of aviation support for the Marine Corps during his career. He worked on the Tentative Manual for Landing Operations and was instrumental in developing close air support doctrine during World War II. When General Megee was interviewed for the Marine Corps Oral History Collection, he provided a number of insights into the control and coordination of aircraft. In 1936 he attended the Army Air Corps Tactical School where he was impressed by the work being done there on attack aviation. It appealed to him because he knew that "it was applicable to what we were trying to develop in the Marine Corps." The next year, while assigned to the Marine Corps Schools, he incorporated many of these concepts into the aviation manual that was then being prepared. Another significant problem General Megee commented on was the lack of staff training and techniques for Marine officers. He noted that Marine Corps officers had, except for World War I, always worked with small organizations in which staff functioning was not as important. Thus there were few staff officers in the landing force commands who were available to coordinate fire

support. General Megee stated that it was "about the mid 1930's before we began to see a full staff set-up in the Marine Corps." This was about the time the Marine Corps began conducting large - unit landing exercises. He also believed that these landing exercises immediately before World War II were very important. During these exercises the aviators were able to perfect their application of flying techniques for supporting ground troops. However, not much was done about the control of aircraft other than an aviator being added to the brigade staff. His task was only to provide advice and do planning for the ground unit commander and no mention was made of him actually controlling the aircraft.

The largest problem with the control of aircraft was the inadequate communications equipment of the time. Until World War II, the Marine Corps "never had any way for the front lines position and forward air controllers to contact a supporting air patrol and talk him on the target." Lack of adequate equipment also meant that most aviation support was pre-scheduled and pre-arranged. Thus supporting aircraft did not "have much flexibility because the communications were so unreliable" and "we went into the Pacific war without . . . adequate air-ground communication." All of the above problems led General Megee to conclude that for aviation support "we foresaw the naval tactical employment but didn't foresee or make any provision

for the control of these things." Consequently, the Marine Corps "went into World War II without ever having established a proper air support control."³⁵

Lieutenant General E.W. Snedeker, USMC, was a communications officer during the period under study. In 1937 he participated in Fleet Landing Exercise Four, held on San Clemente Island, California. He described the requirements for communications as not great for the exercise. Nevertheless, the training benefits were "very limited" and "the success of communications was only moderate." This was because of the inadequate equipment and the inadequate training (none before the landing) of the communications personnel. Nevertheless, the exercise did prove that communications doctrine was "essentially correct, but that much needed to be done" about equipment and training before communications could be successful under operational conditions. He was subsequently assigned to the Navy's Bureau of Engineering as the Marine Corps communications liaison officer. He found his tour there very interesting as extensive work was done on the procurement of communications equipment to meet the requirements of the evolving amphibious doctrine. Since the Navy had not paid much attention to their communications requirements for amphibious operations, his tour served to acquaint Navy officers with these problems. Later General Snedeker would

use these experiences to assist in writing the communications doctrine for amphibious operations.³⁶

Nevertheless, in a telephone interview General Snedeker stated that the Marine Corps and the Navy entered World War II with inadequate communications equipment for coordinating supporting arms. He based this observation on the above experiences and those as the Communications Officer of the 1st Marine Division on Guadalcanal.³⁷ This view was also expressed by Colonel E.J. Driscoll Jr., USMC (Ret.), during a telephone interview. Colonel Driscoll enlisted in the Marine Corps in 1941 as a communicator and subsequently participated in the Tarawa operation.³⁸

Seven additional interviews of general officers who participated in the preparation of amphibious doctrine were examined. Most did not discuss the subject of fire support coordination or they spoke of fire support in very general terms. However, two of the interviews presented items of relevance. Lieutenant General C.H. Hayes was an early aviator who later went on to be the Assistant Commandant of the Marine Corps. His first point was about progress in Marine aviation during the 1930's. Although the progress was always there, it was slow; "due not to a lack of professional interest but almost entirely to fiscal restraints." When these restraints were lifted just prior to the war improvement was rapid. During the FLEX's the operational units did not do much work with the formulation

of doctrine but, instead, "were more or less working as the School Troops to test and evaluate doctrine." The Marine Corps Schools and the Naval War College designed the doctrine. His last point was about the control of close support aircraft. These aircraft were not truly controlled by ground units, but were assigned tasks by higher echelons. Control would come later since this problem was always overshadowed "by the technical feasibility of what the aircraft of that generation could do."³⁹

General A.F. Noble was on the committee which wrote the first landing operations manual and later was a battalion commander during the FLEX's. He pointed out that during these exercises the writing of plans was very difficult. So difficult that they were too complex for the staffs of the period. General Noble also stated that the doctrine which was prepared was fundamental and only prescribed that something be accomplished. This meant that all techniques, including fire support coordination measures, were to be worked out later in consonance with the doctrine. The doctrine guided the techniques and changes in technique did not change doctrine. Clearly, by starting with such new basic doctrine, it would take time to develop the techniques.

Conclusion

The period of 1934 to 1941 involved a systematic study of and experimentation with amphibious doctrine. The key event and the focal point of all deliberations was the production of the Tentative Manual for Landing Operations in 1934. This manual guided all doctrinal efforts as it provided the framework and impetus for this work. Additionally, the clear mandate of the Marine Corps Schools provided coordination and cohesion to the process. Nevertheless, the doctrine for fire support coordination was rudimentary, except for naval gunfire, at best. This was particularly true for aviation support and for an overall coordination system. The doctrinal planners did not realize a serious deficiency in doctrine existed until the early battles of World War II. Only then would the fire support coordination problems be adequately addressed.

ENDNOTES CHAPTER 3

¹Commandant, Marine Corps Schools to Major General Commandant, Subject: Text for Landing Operations, 5 October 1931.

²Major General Commandant to Commandant, Marine Corps Schools, Subject: Text for Landing Operations, 20 October 1931.

³Special Board, Marine Corps Schools to Commandant, Marine Corps Schools, Subject: Naval Gunfire in Support of Landings, 18 Feb 1931.

⁴Commandant, Marine Corps Schools ltr of 5 Oct 1931.

⁵Major General Commandant ltr of 20 Oct 1931.

⁶Proceedings of the conference held at the Marine Corps Schools to discuss the Tentative Manual for Landing Operations.

⁷Marine Corps Schools, Tentative Manual for Landing Operations (1934), par. 1-28.

⁸*ibid.*, par. 1-37.

⁹*ibid.*, par. 2-105.

¹⁰*ibid.*, par. 2-318.

¹¹*ibid.*, par. 2-322.

¹²*ibid.*, par. 2-323.

¹³*ibid.*, par. 2-406.

¹⁴*ibid.*, par. 2-418.

¹⁵*ibid.*, pars. 2-424 and 2-604.

¹⁶*ibid.*, Chapter 2, Section 7.

¹⁷*ibid.*, Chapter 4, Section 1.

¹⁸*ibid.*, Chapter 7, Section 2.

¹⁹*ibid.*, Chapter 6.

²⁰Navy Department, Tentative Landing Operations Manual (1935).

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²⁷Lieutenant R.C.D. Hunt, "Naval Gunfire Support in Counterbattery," Marine Corps Gazette 26 (November 1941): 21-22, 74.

²⁸Lieutenant Commander D.L. Nutter, "Gunfire Support in Fleet Landing Exercises," report prepared for the Commander, Atlantic Squadron, September, 1939.

²⁹The information on these exercises, except as indicated in subsequent endnotes, was taken from HQ, 1st Marine Brigade, Operation Plan 2-38 (FLEX 5); HQ, Atlantic Amphibious Force, Operation Plan ROGER 1-41 of July 16, 1941; Commanding General, Atlantic Amphibious Force to CINC, US LANTFLT, Subject: Final Report on 1st Joint Training Force Landing Exercises at New River, North Carolina, 4-12 August 1941, September 9, 1941; FPT 210-1, Reports of Gunnery Exercises 1940-41 (New River Manuevers), Historical Amphibious File 129; HQ, Atlantic Amphibious Force, Operation Plan NEGAT 7-41, 15 December 1941; Commanding General, Atlantic Amphibious Force to CINC, US LANTFLT, Subject: Final Report of JANEX-1, February 10, 1942; and Colonel A.T. Mason, "Special Monograph on Amphibious Warfare," December 1949.

³⁰Donald M. Weller, "Salvo Splash! The Development of Naval Gunfire Support in World War Two," USNIP 80 (August 1954): 842.

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³⁴Frank O. Hough, Verle E. Ludwig, and Henry I. Shaw, Jr., History of U.S. Marine Corps Operations in World War II, Vol. I: Pearl Harbor to Guadalcanal, 5 vols. (Washington: Government Printing Office, 1958), 18.

³⁵General V.E. Megee interview, 1967, Marine Corps Oral History Collection.

³⁶General E.W. Snedeker interview, 1968, Marine Corps Oral History Collection.

³⁷Telephone interview with General Snedeker by author, 10 December 1986.

³⁸Telephone interview with Colonel Driscoll by author, 11 November, 1986.

³⁹Lieutenant General C.H. Hayes interview, 1970, Marine Corps Oral History Collection.

⁴⁰General A.F. Noble interview, 1968, Marine Corps Oral History Collection.

CHAPTER 4

CONCLUSION

INTRODUCTION

The purpose of this chapter is to examine the facts which have been presented in the previous two chapters. The intent is to tie together all that has been discussed to answer the research question, What improvements were made in the coordination of fire support for amphibious operations between the world wars? This will be done by first presenting a short summary of the course of doctrinal development. The answer to the research question will then be examined, followed by an analysis of each of the functional areas - naval gunfire, aviation support, communications, and coordination of the various fire support means. As part of this analysis command and control and staff functioning, as well as the reasons behind the status of a particular functional area, will be discussed. Finally, the lessons for current doctrinal development will be examined. Consequently, this chapter will be organized to progress from the general to the specific.

THE COURSE OF DOCTRINAL DEVELOPMENT

Before reaching any conclusions about the thesis question, the path of doctrinal development for the period needs to be examined. This section is meant as a short summary of the facts presented in the previous chapters. Essentially there was no general amphibious doctrine available at the beginning of the period of study and thus there was no doctrine for coordinating fire support. The word essentially is used here because successful amphibious operations had been conducted by various forces, including US and British, and lessons were drawn from them. However, these lessons were only evident to the student of military history and no formal study and doctrinal development had been done on the subject. This problem of no systematic study and development would continue through the early 1930's when the Marine Corps Schools began examining and writing such doctrine.

Ellis's work of 1921 contained minimal doctrine on the problems of formal fire support coordination requirements and procedures since his work was only a general war plan. During the remainder of the decade of the 1920's the intellectual effort was disjointed and haphazard. This is not surprising given that the requirement for the ability to even conduct amphibious operations was still evolving. Indeed, it was not until 1927 that the formal

requirement was levied for any service to be capable of conducting these operations. Additionally, there was no agency which could coordinate study such as the Marine Corps Schools would do later. Thus the articles and lectures of the period discuss the need for fire support and the need to ensure that it somehow works in conjunction with the maneuver of forces ashore. The thinking remained at the level of generalities and what is particularly striking about these discussions is that they talk more about problems and requirements than about solutions. The intellectual process was consequently still in first step of problem-solving, that of defining the problem.

It is difficult to ascertain the contribution of the landing exercises during the 1920's as they were random in both implementation and scheduling. The problem of merely getting the landing force ashore was so overwhelming that fire support was a peripheral issue. The most that can be said for these exercises is that they further helped to define the problem and they provided raw data for the ultimate solution. Thus the decade of the 1920's ended with only a statement of the problems associated with, and the requirement for, fire support coordination. Equally important, there was available some data based upon practical experience and a few pieces of a coordination system, such as aerial and ground spotters and rudimentary communications equipment.

The studies of the Marine Corps Schools in the 1930's provided cohesion and coordination to doctrinal development. Interestingly, the initial studies did not truly examine fire support from the aspect of the coordination of these fires. They merely looked at the implementation of the separate fires and how they could be used by the landing forces. Consequently, the Tentative Manual for Landing Operations of 1934 discussed naval gunfire, aviation support, communications, maneuver, and staff functioning as separate issues. They were not discussed in a manner which would cause a planner of amphibious operations to necessarily put these pieces together in a coordinated system. Nevertheless, a communications system was provided for naval gunfire support, which was a start. The writing of a manual also forced a systematic study of the problem as doctrinal writers now had something more than a disjointed body of knowledge to work with. The intellectual work for the remainder of the period was dedicated to upgrading the basic manual; but it again appears that fire support coordination did not receive extensive consideration. The output of articles in professional magazines, in fact, dropped off. Still, there was a rising consciousness, albeit limited, that more specific doctrine needed to be prepared on fire support coordination. This was based mostly upon input from the annual Fleet Landing Exercises. These exercises had the same shortcomings as those of the

1920's. They were concerned mostly with the ship-to-shore movement and the technical problems of fire support means. But progress was being made in fire support coordination as the exercises became more elaborate and the other problems were partially solved.

THESIS QUESTIONS

The answer to the basic thesis question is that, while extensive work was done on fire support means and control, fire support coordination was not addressed adequately prior to World War II. This is especially true from the perspective of fire support coordination being an important part of amphibious operations in and of itself. There is very little evidence to suggest that coordination was viewed as a package. Rather, the coordination issue was resolved by first coordinating the various fire support means alone and then by slowly pulling these parts together into a system. Thus, some of the basic pieces of a coordination system had been put in place, such as the control of naval gunfire. However, very little was done to insure naval gunfire was coordinated with air support other than by time schedule. This was, in essence, coordination by separation. The details of the status of each functional area will be discussed later in the chapter. But it is clear, in general, that a complete and formal fire support

coordination system was not developed prior to World War II and that little work was done to develop such a system.

There are many reasons why the Navy and Marine Corps failed to devise an adequate system. First, and most important, amphibious warfare doctrine was in its infancy and there were more pressing problems which needed to be solved. Among these problems were the ship-to-shore movement, landing craft, communications equipment, experimentation with general doctrine, and such technical problems as shell effectiveness and fusing for naval gunfire. Second, the period of 1920 through 1933 was one of intellectual turmoil for both the Navy and the Marine Corps. Given the reduced number of ships available, the Marine Corps' search for a mission, and the use of the Navy and Marine Corps in Latin America it is not surprising that interest was not paid to the specifics of amphibious doctrine until the mid to late 1930's. Indeed, it is remarkable that there was much accomplished at all by 1934. A third reason that fire support coordination was not recognized as a problem was that new weapons (close support aircraft) and new techniques (close naval gunfire support) were developed during the period. These greatly expanded the types of fire support available to the commander; where, previously, he had only to consider artillery and infantry weapons.¹ Consequently, it was natural for a time lag to exist between the development and the requisite doctrine for

control and coordination. Finally, although not called joint operations at the time, the developing amphibious doctrine caused, for the first time, a ground commander to have to rely upon support external to his force, such as naval gunfire and naval aviation. Again, it took time for the realization of coordination requirements to emerge and to be written into doctrine.

Nevertheless, there was a growing awareness, however uneven, of the problems of coordinating fire support. The evidence examined clearly shows increasing sophistication in solving the problem. It started with the recognition of the need for such fire support and progressed through the placement of naval gunfire spot teams in battalions ashore and, in 1940, air liaison officers on brigade staffs. Unfortunately, the doctrinal planners did not realize, because of the constrained experiments, that serious doctrinal deficiencies still existed. Consequently, a complete system had not evolved by the outbreak of World War II. Whether such a system would have been developed in peacetime if the war had started several years later can only be speculated. However, the record shows that amphibious doctrine was moving in that direction and that the war merely gave impetus to the movement.

In viewing this progress, the importance of the Marine Corps Schools and the publication of the Tentative Manual for Landing Operations cannot be overemphasized. The

schools served as an intellectual focal point for developing doctrine. It was here that information was collected, discussed, debated, and then dispensed in the classroom and in doctrinal writing. The manual produced by the schools was important because the publication of basic doctrine served to focus the debate and the research. Any organization has great difficulty in discussing esoteric subjects and the original manual presented a clear statement of the problem, and potential solutions, for discussion.

The record is very clear as to why fire support coordination became a Navy/Marine Corps problem. The historical relationship of the two services, exemplified by landing force operations and advanced base work, dictated that they would consider amphibious operations as a mutual problem. War plans for the Pacific theater also required that a landing force be available to carry out the naval campaign. Thus any doctrine prepared would have to be mutually agreed upon. Commander Lammar, in his lecture of 1928 at the Marine Corps Schools, described the work that the Naval War College was doing on naval gunfire support. Hence, the intellectual centers of both services were working on the problem. Manifest in the preparation of the tentative manual was the belief that the problems of amphibious operations would have to be, as the Commandant of the Marine Corps Schools stated, "considered as a whole." The Marines who wrote the manual did not consider the

doctrine to be Joint, however, since the Marine forces would be part of a unified Naval force. Instead, the doctrine was written by the Marine Corps with direct participation by the Navy. It was subsequently published as a Navy manual with applicability for the Marine Corps. Thus the problem of coordination of doctrine was solved by writing amphibious doctrine for both services as opposed to imposing Joint doctrine on top of service doctrine. The preparation of doctrine in this manner ensured that the problems of fire support coordination would be mutual problems and that they would be solved to the mutual satisfaction of both services. Additionally, the Fleet Landing Exercises also ensured that problem-solving would remain compatible for both throughout the inter-war period.

Functional Areas

The first area to be examined, naval gunfire, was the best developed of the functional areas at the beginning of World War II. This is not startling given that naval gunfire was not a new weapon like aircraft or a new concept like fire support coordination. Commander Flanigan's lecture of 1930 had listed three phases for testing and developing adequate naval gunfire. The last phase, testing coordination/communication procedures, was not conducted adequately. The chief reasons were the requirement to solve first the technical problems, the Navy's imperative to train

In other elements of naval warfare, and the general shortage of funds. Nevertheless, the control portion of a coordination system, target identification and information flow, had been established. These parts were represented by the naval gunfire spot teams and the established communication links. However, the marginal communication equipment still made this latter part tenuous. Although naval gunfire was requested and adjusted tolerably during the FLEX's by air and ground spotters, there were many artificialities present in the experiments. This meant that a good look at the combat requirements for spotting was not possible until just before the war. Additionally, with the detailing of Navy officers to battalion headquarters as liaison officers, a part of a planning and coordinating staff was in place. His responsibilities and functioning within the staffs was still, unfortunately, ill-defined.

Nevertheless, the technical experiments with naval gunfire on shell types, fuzes, and dispersion patterns had been successfully conducted. An outgrowth of these experiments was that the Navy still held to the belief, as did many Army and Marine officers, that pinpoint, destructive fires with naval guns, especially close to troops, was not possible. This belief stemmed from the requirement for ships to steam at high speeds while firing and because ammunition resupply limitations would mean a large weight of shell would have to be quickly delivered

Just prior to the landing. Slow, methodical, and extensive fire plans were not thought possible, nor required. If area neutralization fires were the order of the day, it was logical for amphibious planners to conclude that detailed integration with maneuver ashore was not necessary. Thus an elaborate coordination system was not set up. In fact, the doctrine of the period continually stressed the importance of getting artillery ashore quickly so that it could replace naval gunfire. It would not be until the middle of World War II that methodical, pinpoint destructive fire would be used and a complete coordination system would be designed to implement these fires.

The state of affairs for the coordination of air support was a much more mixed situation than with naval gunfire. Although there was general consensus on using aviation as a fire support means for amphibious operations, there were differences over how close this support would be provided to the troops. Thus there were differences on how closely it would have to be coordinated with ground maneuver. These differences would have a significant impact on the design of a coordination system. Consequently, there were two conflicting currents of thought on close support prevalent prior to World War II. The first position was based upon the experience of Marine aviators in Nicaragua. Here close air support and liaison with ground forces was required because aviation was usually the only means of fire

support available. Thus, close air support, in a rudimentary form, was practiced extensively. Amphibious warfare doctrine writers recognized that the principle means of fire support, artillery, would also not be available early in an amphibious operation. Consequently, aviation would have to partially take over that role. Given this line of thought it is surprising that an extensive coordination and control system was not devised.

The reason lies with the second position of the period and the one espoused in aviation doctrine. This line of thought was most prevalent in the Army Air Corps but was also written into Marine Corps doctrine. It held that aircraft were best utilized beyond the reach of ground weapons. Given such problems as communications, aviation was not a viable replacement for ground weapons, except in an emergency. If this was true then an extensive coordination system with the infantry was not required. Thus most missions were pre-planned, as during the ship-to-shore movement, and these missions could be easily handled via normal command channels. They only needed to be coordinated at the very highest levels. In spite of the enthusiasm for the close air support net established during the 1941 joint exercise, the latter view would hold sway into World War II. It would gradually be replaced by the first position when it became clear that an "emergency" situation prevailed at Guadalcanal and Tarawa. It is also

interesting that once the close support view took hold the Marine Corps philosophy on aviation support became one of control from the ground up and of priority of support from close to deep. In conclusion, for the reasons outlined above, an adequate coordination system for aircraft was not developed prior to World War II. Furthermore, the system which had been put in place was far less developed than the one for naval gunfire support.

Although the problem of communications impinged on all of the other functional areas, the subject needs to be addressed by itself. Clearly, the technical capabilities of communications equipment created tremendous problems for doctrinal planners. It would not be until the end of the pre-war period that adequate equipment was available in sufficient quantities. Consequently, most of the fire support coordination was done through normal command channels as this system was the best developed. Such a manner of coordination would lead to massive problems since these channels would already be overloaded. This was especially true when all communications were funneled through the Navy beach group for retransmission to the ships. Direct communication by units ashore with their headquarters, supporting ships, and air agencies was not possible. Later, as better equipment became available in sufficient quantities to allow direct communications, the doctrine to go along with the new capabilities would have to

be developed. This would not happen, except for naval gunfire, until World War II.

An effective coordination system to tie all the fire support means together was the least developed part of the system prior to World War II. In fact, there was not even an outline of such a system until well into the war. This was in spite of the excellent example in von Bercham's 1932 article in which the artillery group was used to perform the coordination function. What is also surprising is that the well developed artillery system was not transposed, with modifications, to create a system for all fire support means. In short, the commander was expected to carry out this function since doctrine did not specify a member of his staff, including the operations officer, to perform this coordination. It was not until Guadalcanal that the divisional table of organization even provided for an "Artillery and Naval Gunfire Coordinator."² Hence, planners finally recognized the importance of what Lieutenants Henderson and Hunt had proposed in their articles immediately prior to the war. For fire support to be truly effective it must not only be coordinated with maneuver, but also the various means must be coordinated with each other.

The poor record of staff work in the Marine Corps up until World War II certainly contributed to the lack of recognition that this problem existed. The manuals of the period, as a result, stressed the control aspect of fire

support means, but not their coordination with each other. To illustrate, the Fire Support Coordination Center was not instituted until 1945. Additionally, the phasing ashore of fire support coordination was never addressed prior to the war. One does not see a study of how to go from sole reliance on sea-based fire support (coordination at sea) to limited support ashore (coordination still at sea) to more support ashore (certain coordination functions ashore) to, finally, most support ashore (coordination ashore).

Equally important, the Navy did not recognize this as a problem until Admiral Kelly Turner watched a spotter plane shot down at Kwajalein in 1944 as it flew inattentively into a cone of artillery fire.³ Doctrinal planners and writers had assumed that the mere separation of naval gunfire, artillery, and air would be sufficient. It would also be required. They did not yet recognize the additional capabilities of fire support if the various means were used in conjunction with each other. In short, coordination was effected at various centers throughout the amphibious force to ensure control of fires and a modicum of coordination with maneuver. There was no overall agency, until well into World War II, to coordinate all means of fire support with the landing force ashore.

LESSONS

The lessons which can be drawn from this study do not directly apply to fire support coordination. They are general in nature and thus will probe more important questions. First, and most important, there is a lesson here on the preparation of joint doctrine. The Navy and Marine Corps prepared this doctrine jointly, with each service integrating its portion of the doctrine with the other. This is a much more effective system than having each service prepare its own doctrine and then imposing another set of joint doctrine over the top in an attempt to tie the doctrines together. The question is, would it not be more effective today to have service doctrines prepared in consonance with the other services? This could mean a minimum imposition of that fifth set of doctrine, purely joint doctrine. Should not AirLand battle fit with Maritime Strategy at the tactical and operational levels without joint doctrine written at the strategic level?

A second lesson shown by this thesis is that doctrinal opportunities can be missed very easily. This is not meant as a criticism of the authors of amphibious doctrine since they could not have possibly foreseen what World War II would be like in such specific areas as fire support coordination. Nevertheless, it should give us pause to think about our situation and what opportunities we are

missing. You must go to war with the doctrine you have on the books and it is enormously difficult, deadly, and, possibly, too late to change doctrine once war comes.

Third, the problems with communications highlights the interaction of technology and doctrine. It was very difficult to imagine the coordination system without adequate equipment available. However, it was just as difficult to develop equipment without doctrinal necessity. If doctrine should drive technical developments then it will require foresight on our part to take account of this interaction and still take advantage of new developments. Finally, the intellectual basis of doctrine can be tenuous at best. If it had not been for a relatively small group of officers sitting down in 1933 to write a tentative manual, doctrinal development might have drifted into World War II. Instead, the tentative manual focused the debate and thus writing doctrine, any doctrine, is better than having none at all. That this doctrine was well prepared displays the intellect of the men involved and the importance of having the principal service schools involved.

AREAS FOR FURTHER RESEARCH

There are three areas which are suggested as areas for further research. First, the actual exercise reports of the Fleet Landing Exercises could be examined. As these records are maintained in the National Archives and this

thesis was prepared at Fort Leavenworth they were not available. Thus, many secondary sources had to be used when examining the FLEX's. Second, more research could be done into the contributions and doctrinal work of the Navy. This research could be done on the Navy's work with doctrine for naval gunfire ships and carrier aviation support. Finally, the contributions and interaction with the Army could be researched. The Army copied the Navy/Marine Corps manuals prior to the war and used their basic doctrine throughout the war. However, did the Army have input through students and liaison officers? Further, what doctrinal work was done, and taught, at Army schools?

Conclusion

After examining all of the evidence as presented in Chapters Two and Three, the chief conclusion of this thesis is that prior to World War II suitable doctrine had not been prepared for coordinating fire support in amphibious operations. Although a basic system for requesting and adjusting fires had been devised, particularly for naval gunfire, the staff coordination of these fires had not been provided. Recognition of the problem had begun in the period immediately prior to World War II but it was not acted upon until well into the war. Consequently, it took the crucible of war, with all its difficulties, to finally compel the completion of the system.

ENDNOTES CHAPTER FOUR

¹Hein!, "FJCC: Two Schools of Thought," 41.

²Ibid., 42.

³Ibid.

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