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NAVAL GUNFIRE SUPPORT:
AN ARMY ROLE IN A NEW WORLD ORDER

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

MASTER OF MILITARY ART AND SCIENCE

by

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B.G.S., University of Kentucky, Lexington, Kentucky, 1977

Fort Leavenworth, Kansas
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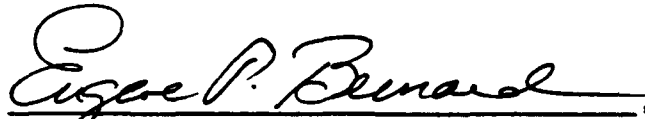
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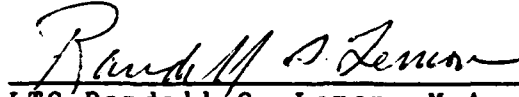
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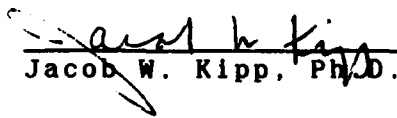
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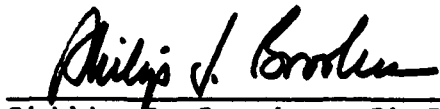


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include the foregoing statement.)

ABSTRACT

NAVAL GUNFIRE SUPPORT: AN ARMY ROLE IN A NEW WORLD ORDER by
MAJ Zachary P. Hubbard, USA, 166 pages.

This study investigates the Army's role in naval gunfire support, in light of the current force reductions and changing military missions. The discussion focuses upon naval gunfire training and pre-deployment planning and coordination for naval gunfire support of contingency operations.

During the initial stages of a contingency operation, the Army relies upon other services for fire support until sufficient Army field artillery and aviation attack assets are available. Fixed-wing air support and naval gunfire provide this initial support. Naval gunfire for the Army was not coordinated during pre-deployment planning for operations *Urgent Fury*, *Just Cause*, or *Desert Shield*.

This study explains the Army's dependance upon the Marine Corps for the planning and coordination of naval gunfire support. It promotes methods to decrease this dependance by improving the field artillery community's naval gunfire training and awareness. The analysis addresses institutional training in the Army and Navy; naval gunfire training at Army CTCs and in the BCTP; Army-Marine Corps joint naval gunfire training; and joint cooperation in developing Army operations plans requiring naval gunfire support.

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GLOSSARY

AAW - Anti-air Warfare
AEW - Airborne Early Warning
AFSO - Aerial Fire Support Observer
AIT - Advanced Individual Training
ANCOC - Advanced Noncommissioned Officer Course
ANGLICO - Air and Naval Gunfire Liaison Company
AOR - Area of Responsibility
ASW - Anti-submarine Warfare
ASuW - Anti-surface Warfare
BCTP - Battle Command Training Program
BFCG - Battle Force Combatant Group
BG - Brigadier General
BNCOC - Basic Noncommissioned Officer Course
CATIES - Combined Arms Training Integrated Evaluation System
CENTCOM - U. S. Central Command
CEOI - Communications and Electronics Operating Instructions
CINC - Commander-in-Chief
CINCFOR - Commander-in-Chief Forces Command
CINCLANT - U. S. Commander-in-Chief Atlantic
CINCLANTFLT - Commander-in-Chief Atlantic Fleet
CINCPAC - U. S. Commander-in-Chief Pacific
CINCSOUTH - U. S. Commander-in-Chief South
CIS - Commonwealth of Independent States
CIWS - Close-in Weapon System
COL - Colonel
COMSEC - Communications Security
CONUS - Continental United States
CP - Command Post
CPL - Corporal
CPT - Captain (Army)
CTC - Combat Training Center
FA - Field Artillery
FAIO - Field Artillery Intelligence Officer
FAOAC - Field Artillery Officer Advanced Course
FAOBC - Field Artillery Officer Basic Course
FCT - Firepower Control Team
FM - Field Manual (referring to a publication); Frequency Modulation (referring to radio wave propagation).
FMF - Fleet Marine Force
FMFLANT - Fleet Marine Force Atlantic
FMFPAC - Fleet Marine Force Pacific
FORSCOM - U. S. Forces Command
FSCC - Fire Support Coordination Center
FSCoord - Fire Support Coordinator
FSNCO - Fire Support Noncommissioned Officer
FSE - Fire Support Element
FSO - Fire Support Officer
HF - High Frequency

HIMARS - High Mobility Artillery Rocket System
 HMMWV - High Mobility Multi-purpose Wheeled Vehicle
 I MEF - 1st Marine Expeditionary Force
 II MEF - 2d Marine Expeditionary Force
 ISSA - Inter-service Support Agreement
 JASCO - Joint Assault Signal Company
 JCS - Joint Chiefs of Staff
 JRTC - Joint Readiness Training Center
 JTF - Joint Task Force
 LCPL - Lance Corporal
 LIC - Low Intensity Conflict
 LSMR - Landing Ship Medium Rocket
 LTC - Lieutenant Colonel
 MAGTF - Marine Air Ground Task Force
 MAJ - Major
 MCLWG - Major Caliber Lightweight Gun
 MEB - Marine Expeditionary Brigade (formerly Marine Amphibious Brigade)
 MEF - Marine Expeditionary Force (formerly Marine Amphibious Force)
 MEU - Marine Expeditionary Unit (formerly Marine Amphibious Unit)
 MLRS - Multiple Launch Rocket System
 MOS - Military Occupational Specialty
 NCO - Noncommissioned Officer
 NTC - National Training Center
 OPLAN - Operations Plan
 OPSEC - Operational Security
 OTH - Over-the-Horizon
 PFC - Private First Class
 PGM - Precision Guided Munition
 RAP - Rocket Assisted Projectile
 RPV - Remotely Piloted Vehicle
 SALT - Supporting Arms Liaison Team
 SFC - Sergeant First Class
 SGM - Sergeant Major
 SPOTEX - Spotting Exercise
 SRI - Surveillance, Reconnaissance and Intelligence
 SSG - Staff Sergeant
 SS-83 - Solid Shield 1983
 TPFDD - Time Phased Force Deployment Data
 TRADOC - (Army) Training and Doctrine Command
 TSFO - Training Set Fire Observation
 TTP - Tactics, Techniques and Procedures
 TVLS - Tactical Vertical Launch System
 UAV - Unmanned Aerial Vehicle
 UNAAF - Unified Action Armed Forces
 USCINCLANT - United States Commander in Chief Atlantic
 USMC - United States Marine Corps
 USS - United States' Ship
 VHF - Very High Frequency

1LT - First Lieutenant

5"/38 - Five-inch, Thirty-eight Caliber [naval gun]

5"/54 - Five-inch, Fifty-four Caliber [naval gun]

16"/50 - Sixteen-inch, Fifty Caliber [naval gun]

CHAPTER ONE

INTRODUCTION

This thesis will address the question, "What role should the U. S. Army take in the field of naval gunfire support?" The question is particularly significant today as a result of the rapidly changing structures of America's Army and Navy. The future role of naval gunfire is not entirely clear. The collapse of the Soviet Union is causing the United States to reevaluate its military force structure and mission. A general reduction in forces is occurring across the U. S. military. Of particular concern to advocates of naval gunfire is the retirement of the *Iowa* class battleships, an action that eliminates sixteen-inch guns from the U. S. arsenal.

With a superpower confrontation unlikely in the foreseeable future, the focus of U. S. military planning is shifting toward potential regional conflicts, such as occurred during Operation *Desert Storm*.¹ One might argue that with the Soviet Union no longer an adversary, America has no need for a capability to support ground forces with naval gunfire--that the Soviets were her only potential enemy with a credible military threat. On the other hand, the United States' conducted three major, regional, wartime contingencies over the last ten years--*Urgent Fury*, *Just*

Cause, and Desert Shield/Storm. The geographic areas in which these operations occurred and the nature of the fighting that took place suggest that naval gunfire may still have a place in the fire support arena. This thesis will address these issues in detail.

The U. S. is entering a period where the dangers to its national security are more difficult to define than in past years. Regional instability, as demonstrated during the recent Gulf War, may call for a rapid projection of U. S. military power into a distant location. The United States' emerging military strategy calls for a relatively small forward deployed military presence, as opposed to its former practice of stationing large numbers of combat forces on foreign soil.²

Forward presence means significantly reducing the number of troops stationed overseas and basing them in the Continental United States (CONUS), ready to rapidly deploy to crisis areas around the world. America is already withdrawing large numbers of military forces from Germany and other overseas locations, including air and naval bases in the Philippines. Its new strategy relies upon the nation's ability to project combat power quickly from CONUS to any global location, using its strategic airlift and sealift capabilities. Additionally, Navy and Marine forces afloat remain a part of the American crisis response capability.

A credible, rapid response requires that all services have the capability to quickly project combat power around the globe. The Army's portion of this responsibility dictates that it have the capability to execute contingency operations, as described in chapter twelve of Army Field Manual (FM) 100-5, (Operations). For the purpose of this thesis, a contingency operation involves a situation where combat is imminent or has already occurred. The discussion does not apply to peacetime contingency operations as described in chapter five of FM 100-20 (Military Operations in Low Intensity Conflict). Likewise, it does not include contingency operations as described in Joint Publication 3-00.1 (Joint Doctrine for Contingency Operations), which is currently in draft form and not official doctrine.

The U. S. Operations *Urgent Fury*, *Just Cause*, and the initial response during Operation *Desert Shield* all were contingency operations. One problem the Army suffers in contingency operations (or any forced entry operation) is the initial inadequacy of organic fire support. This is due to its inability to rapidly establish sufficient field artillery or attack helicopter support in the contingency area, because of airlift limitations and/or enemy resistance. Air Force or Navy fixed wing aircraft and, when available, naval gunfire provide the initial fire support.³ Naval power projection, one key to achieving the forward presence required by this

emerging military strategy, can help to reduce the Army's initial firepower deficiencies during the early stages of contingency operations. This study will limit its analysis to the U. S. Army's role in contingency operations at the tactical level of warfare, where the corps is the largest ground force deployed.

The research presented in this thesis is built around the assumption that the Army, in the foreseeable future, will not participate as the landing force in an amphibious operation, but may find itself in the situation of a ground force working in a coastal area within the range of U. S. naval gunfire support. The last three major military ground operations conducted by the United States--*Urgent Fury* in 1983, *Just Cause* in 1989, and *Desert Shield/Storm* in 1990--found the Army in just such a position.

This assumption is based upon the contents of the Joint Chiefs of Staff Publication 2 (JCS Pub. 2), (Unified Action Armed Forces (UNAAF)). Chapter 2 of UNAAF charges the U. S. Marine Corps with the responsibility for developing the doctrine, tactics, techniques, and equipment for the landing forces in amphibious operations. Modern amphibious operations include the insertion of heliborne forces from amphibious ships. The Marine Corps' proponency for amphibious operations, together with the Navy's limited amphibious sealift capability, make the probability of an

Army landing force operation unlikely. The significance of this is that any action or position the Army takes in the field of naval gunfire support (part of amphibious warfare doctrine) must complement the Marine Corps' position. For this reason, the thesis must answer the secondary question, "In what direction is the Marine Corps going in the areas of tactics and force structure in the field of naval gunfire support?"

The primary mission of the U. S. Navy, in accordance with UNAAF, is sea control.⁴ Likewise, UNAAF ties naval support of ground operations to the conduct of naval campaigns. This suggests that naval gunfire support to Army ground operations is, at best, an incidental mission of the Navy. Consequently, the thesis must answer the secondary question, "In what direction is the Navy going in the areas of weapons and doctrine in the field of naval gunfire support?"

The World War II era is often referred to as the halcyon days of naval gunfire. During this period, battleships, cruisers and hosts of other naval vessels played a tremendous and often decisive role by providing fire support to U. S. military ground operations. This was particularly the case in the island-hopping campaigns against Japanese forces in the Pacific. Since that time, the role of naval gunfire support to U. S. ground forces has so changed

and so declined that its future value to ground operations is questionable.

Operation *Desert Storm* marked a slight resurgence in American naval gunfire support. However, its contribution to the overall fire support of the ground war (speaking strictly at the tactical level) was slight.⁵ Additionally, the paucity of forces that made it impossible for the Navy to provide naval gunfire support to the 82d Airborne Division during Operation *Desert Shield*, prior to the arrival of the *USS Wisconsin* on station in the Persian Gulf, sheds doubt upon the value and availability of naval gunfire during contingency operations. Army FM 6-20 (Fire Support in the Airland Battle), the capstone manual for fire support, does not address naval gunfire support to contingency operations similar to *Desert Shield*. It discusses only support for amphibious operations. This is typical of most Army and Joint Chiefs of Staff publications. Having already established that it is unlikely that the Army will perform operations as an amphibious landing force, this raises a secondary question, "Is conventional naval gunfire still a viable means of fire support?" Conceding that the Marine Corps still has a need for naval gunfire to support landing operations, this question is posed strictly from the perspective of an Army force planning to conduct a contingency operation.

Part of the Navy's tendency to shy away from providing naval gunfire support is the relative vulnerability of modern surface combatants to anti-ship missiles. The frightful punishment inflicted upon the British Royal Navy in the Falklands War still looms in the minds of Navy leaders, not to mention the *USS Stark* incident. Additionally, the proliferation of missile technology in third world nations calls for increased caution, even against relatively weak military opponents. Just examine the Navy's concern over *Silkworm* missiles during the recent Gulf War.

World War II marked the pinnacle of naval gunfire support in U. S. military operations. The research for this thesis is limited to the period from the United States' entry into World War II until the present. It will examine the naval gunfire lessons learned from military operations during this period, seeking insight into how the Army should approach naval gunfire today.

Today's Army is almost totally dependant upon the Marine Corps to plan and control naval gunfire. What if the Marine Corps is not available? Chapters four, five, and seven address the secondary question, "Based upon its current force structure and training, is the Army capable of planning and controlling naval gunfire support?"

In summary, this study is limited as follows: 1) It will address only the tactical level of warfare; 2) It will

focus primarily upon contingency operations as defined in FM 100-15; 3) The research will cover only the period from the United States' entry into World War II until present.

The following secondary questions are addressed: 1) "In what direction is the Marine Corps going in the areas of tactics and force structure in the field of naval gunfire support?"; 2) "In what direction is the Navy going in the areas of weapons and doctrine in the field of naval gunfire support?"; 3) "Is conventional naval gunfire still a viable means of fire support?"; 4) "What insight do naval gunfire historical lessons learned since the beginning of World War II provide into how the Army should approach naval gunfire today?"; 5) "Based upon its current force structure and training, is the Army capable of planning and controlling naval gunfire support?"

The author limited his research to unclassified material only. The cut-off date for information contained in this thesis is 1 April 1992.

CHAPTER 1 NOTES

¹ Dick Cheney, Annual Report to the President and Congress, (Washington: U.S. Government Printing Office, 1991), v.

² [George Bush], National Security Strategy of the United States, (Washington: U.S. Government Printing Office, 1991), 27.

³ U.S. Army, FM 100-15: Corps Operations, (Washington: U.S. Government Printing Office, 1989), 8-4.

⁴ Joint Chiefs of Staff, JCS Publication 2: Unified Action Armed Forces (UNAAF), (Washington: U.S. Government Printing Office, 1986), 2-7.

⁵ Denise L. Almond, ed., Desert Score, (Washington: Carroll Publishing Company, 1991), 229.

CHAPTER TWO

LITERATURE REVIEW

A review of naval gunfire literature, from World War II to the present, reveals an interesting, albeit not unexpected trend. The literature abounds during the World War II era. Books, professional journals, and doctrinal manuals give extensive coverage of every facet of naval gunfire operations. Moving into the Korean War and beyond, where no significant naval war occurred, the literature becomes less plentiful until we reach the Falklands War. The important role of British naval gunfire in the Falklands caused a brief revival in the popularity of the subject. Most recently, Operation *Desert Shield/Storm* produced some interesting articles in the field. Current literature is limited primarily to professional journals and magazines.

Not surprisingly, World War II offers us a wealth of lessons. A close look at our present way of conducting naval gunfire affairs reveals that we have forgotten many of those lessons which were, more often than not, paid for in blood. At the forefront of the most frequently recurring subjects are communications, the structure and training of the fire support organizations involved in naval gunfire operations, and weaponry. This review of literature addresses all of these areas.

An appropriate place to begin a review of naval gunfire literature is with Army FM 31-5 (Landing Operations on Hostile Shores) dated June 1941. The United States entered World War II with a basic distrust for amphibious operations, largely due to the Gallipoli disaster of World War I.¹ This field manual documents the Army's first serious approach towards amphibious operations and, consequently, its first serious look at naval gunfire support.

Field Manual 31-5 repeatedly stresses the need for detailed joint planning of naval gunfire support, particularly in the areas of signal communications and the exchange of liaison between advancing Army troops and their supporting artillery [naval guns]. The need to conduct these actions early in the planning phases of an operation is also stressed. Our failure to adhere to these guidelines during the planning and execution of Operation *Urgent Fury* played a significant role in the naval gunfire problems that occurred during that operation, as chapter seven discusses.²

One particularly interesting discussion in FM 31-5 deals with a technique for providing direct support and general support fires from the same ship by dividing support according to gun caliber.³ Using this technique, a ship could provide direct support to a maneuvering infantry battalion(s) using its secondary battery guns, while providing general support to the force using its main battery

guns. This rarely discussed method of support is indicative of the great utility of battleships (also gun cruisers) in the naval gunfire support role. The retirement of the Navy's *Iowa* class battleships, with their dual caliber gunfire capability, makes this method of support impossible for future operations.

The FM 31-5 revision of November 1944 incorporates nearly three and one-half years of wartime experience and sheds even greater light on the role of naval gunfire. This manual, as its predecessor, stresses the significance of signal communications planning and the exchange of liaison officers between the Army and Navy, early in the operational planning period. A significant new concept, not found in the 1941 edition, is that the naval gunfire support plan for Army operations should be included as an annex to the naval task force operations order. This simple, yet not previously addressed concept, serves to further emphasize the significance of advance planning of naval gunfire support and cooperation between the services.

This revision of FM 31-5 also introduces the Joint Assault Signal Company (JASCO), which standardized the organization for coordinating naval gunfire support.⁴ This is an extremely significant development. Prior to the creation of the JASCOs, ground forces experienced great difficulty when attempting to coordinate naval gunfire with

ad hoc signal organizations. The standardized JASCOs were assigned one per assault infantry division. They were the forerunners of today's ANGLICOs. This subject is discussed in greater depth later.

FM 31-5 gives an excellent illustration of the significance naval gunfire support played during Army landing operations when one looks at the illustrative assignment of fire support ships to a regiment. In support of a regiment (Army infantry brigade equivalent) one would expect to find a destroyer squadron (8 or 9 ships), two cruisers, and one battleship.⁵

A fascinating study of the development of naval gunfire support is found in the article "Salvo-Splash! The Development of Naval Gunfire in World War II," (Naval Institute Proceedings, August/September 1954). The author, Marine Colonel (later Major General) Donald M. Weller, devised the Marine Corps' basic doctrine and tactics for naval gunfire employment in the 1930's and is referred to as the father of modern naval gunfire support.

Weller attributes the high casualties at Gallipoli in World War I and at Tarawa and Omaha Beach in World War II to the failure to integrate naval gunfire support into ship to shore movement. The integration of supporting fires still poses a significant challenge today.

One learns from Weller that the U. S. Navy of the 1930's was so preoccupied with air defense and surface gunnery that it paid little attention to the possibility of employing naval gunfire against shore targets. Weller stresses that the Navy's initial approach to naval gunfire was significantly driven by ships' vulnerability to coastal batteries, a situation not unlike the shore-launched anti-ship missile threat today.⁸ It appears that today's Navy has come full circle since the 1930's and finds itself facing similar problems.

For anyone who has adjusted naval gunfire, it quickly becomes obvious that there is a significant difference between adjusting naval guns and adjusting artillery. The added dimension of ship movement, a constantly changing gun-target line, and the relatively flat trajectory of naval guns makes adjusting the fall of shot more difficult. There are many other differences between naval "artillery" and field artillery. Weller stresses the importance of a naval gunfire liaison officer knowing the gunnery capabilities and intricacies of the supporting ship. If one believes Weller, he must question whether the Army field artillery community has the expertise to coordinate and control naval gunfire today.

Weller discusses using artillery to simulate naval guns during spotting practice. The method entails firing

high charges (replicating the flat trajectory of naval guns) and simulating naval gunfire communications from the artillery fire direction center. While not a total answer to the shortage of naval gunfire live fire training today, the technique still has significant merit. It is further discussed in the October 1990 edition of Field Artillery, in an article entitled, "How Soon We Forget."

Weller stresses the need for a well organized naval gunfire team, which was embodied in the JASCO. He notes the payoff gained by the training and cooperation of this team through an illustration from the Marine Corps landing at Tarawa. Prior to this operation, naval gunfire control organizations were ad hoc teams established to support a particular operation. The training and proficiency displayed at Tarawa by the recently formed JASCOs enabled the employment of naval gunfire to within 50 yards of friendly positions, an impressive feat even with modern, precision guided munitions. Weller's description of naval gunfire training makes one wonder if our forces can hope to attain the same level of proficiency today, in light of the severe resource constraints they face.

Marine Corps Lieutenant Colonel R. D. Heintz's article, "Naval Gunfire Support in the Pacific," (Field Artillery Journal, October 1945), gives an excellent description of the level to which naval gunfire support evolved during the

course of World War II. Heini, who later became director of the Marine Corps Historical Society (1958-1963), discusses the initial problems that plagued naval gunfire during the early operations in Europe and how those were overcome. He stresses the significance that the JASCOs played in the evolution of naval gunfire support during World War II. This holds special significance today in light of the Marine Corps' current consideration to reduce the ANGLICO from an operational unit to a strictly liaison organization, a total reversal of the evolution Heini describes.⁷ Chapter seven discusses this issue.

Heini declares communications and continuous drill as the key to naval gunfire success. He places great significance on the value of naval gunfire training during joint exercises, a lesson that today's Army would do well to note. The discussion of the United States Commander in Chief Atlantic (USCINCLANT) Exercise *Solid Shield*, in chapter four, addresses this topic further.

This article clearly illustrates the evolution of fire support coordination during World War II. Heini compares the coordination of naval gunfire spotter teams to the same type coordination an infantry battalion commander exercises over his rifle companies. His discussion of cooperation between the field artillery, naval gunfire, and air arms shows an awareness of fire support coordination that is lacking in

early writings of the war, particularly from the 1941 edition of FM 31-5.

A short, but significant article appeared in the Field Artillery Journal, August 1945 edition. "An Artilleryman in a Joint Assault Signal Company," gives an excellent description of the organization and mission of a JASCO. The author places special emphasis on the naval gunfire shore fire control party organization in the company. Of particular note is the fact that the JASCO was commanded by a signal officer, clearly emphasizing the significance communications played in naval gunfire operations. Interestingly enough, today's ANGLICO is commanded by an infantry officer who is neither a communicator nor a fire support coordinator. The ANGLICO has a Marine signal officer in the grade of captain as the communications platoon leader.

Marine Corps Major General Donald M. Weller's book, Naval Gunfire Support for Amphibious Operations: Past, Present, and Future, is perhaps most comprehensive study of modern naval gunfire available. The book, published in 1977 as a study for the Naval Surface Weapons Center in Dahlgren, Virginia, traces the development and application of naval gunfire support from the beginning of World War II through the Korean and Vietnam wars. Weller presents an extremely detailed analysis of the application of naval gunfire in numerous battles; including Normandy, the largest amphibious

operation in history; Iwo Jima, the most heavily defended objective of World War II; and Inchon, the masterful amphibious operation that helped restore American initiative early in the Korean War.

The thorough battle analysis compares the effectiveness of naval gunfire by caliber, volume of fire, and target damage inflicted. Weller's book, written before the Navy recommissioned the *Iowa* class battleships, argues that the five-inch, fifty-four caliber (5"/54) gun, the standard weapon in the U. S. Navy today, would be inadequate in a fire support role similar to the three wars mentioned. Weller's data indicates a need for a system able to deliver fires at ranges in excess of 30,000 yards, well beyond the capability of the 5"/54 gun. The concept for the Marine Corps' new over-the-horizon (OTH) amphibious assault tactics suggests that, by today's standards, even 30,000 yards is an extremely conservative estimate.⁸ Chapter eight discusses this.

Major General Weller argues vehemently for fielding the eight-inch Major Caliber Light Weight Gun System (MCLWGS). With the retirement of the Navy's battleships, there is a need to fill the range gap created by the loss of the sixteen-inch, fifty caliber (16"/50) gun. He stresses the destructive capability of major caliber guns, which turned back armored counterattacks at Normandy, pulverized

hardened Japanese defenses at Iwo Jima, and offered an all weather capability and continuous suppression capability that was not available from air support. Weller also encourages further research into laser guided munitions and discarding sabot munitions as possible answers to the current accuracy and range requirements for naval guns. Chapter eight discusses this. Weller sadly concludes that Korea and Vietnam provided few useful naval gunfire developments or lessons learned beyond those that were achieved in World War II.

"Executing Operation Anvil-Dragoon," appeared in the Naval Institute Proceedings in July 1954. The author, Admiral H. Kent Hewitt, was naval commander of this amphibious assault on the southern coast of France that served as a supporting attack for the Normandy invasion. The article may be unique in naval gunfire literature of the day in its discussion of the necessity for cooperation between minesweeping units and naval gunfire support groups. This topic is particularly significant today in light of the degree to which minesweeping has been long neglected in the U. S. Navy.⁹ The degree of neglect was evident during Operation *Desert Storm*, where the Navy relied heavily upon allied minesweeping to assist clearing the coastal waters of Kuwait and sustained mine damage to several vessels.

Robert D. Heintl reappears on the scene with his book, Victory at High Tide, published in 1968. This thorough study of the Inchon landing during the Korean war is significant for a number of reasons.

Heintl discusses the utility of naval gunfire after the ground force establishes its field artillery support ashore. The ability to maneuver ships along the coast gives them the capability to range targets that are well beyond the range of field artillery. He emphasizes the staying power of naval gunfire by pointing out that destroyers supported the landing force for three full days, while eight-inch fires from cruisers provided support for a considerably longer period, engaging targets up to 15 miles inland. Heintl strongly advocates the use of aerial naval gunfire spotters to obtain more accurate effects and to reduce collateral damage, a significant idea considering the great effort put into avoiding collateral damage during Operations *Just Cause* and *Desert Storm*.

The author gives an interesting description of the Landing Ship Medium Rocket (LSMR). This shallow draft ship provided tremendous volumes of five-inch rocket fire in support of the assault forces. The misfortune of the LSMR was the short range of its weapons, which required it to work well within the range of coastal defenses. The problem was compounded by the light design of the ship, which offered

little protection to the vast stores of ammunition it carried, much of which was exposed above decks. Having abandoned rockets as a fire support weapon after the Vietnam War, the Army recently fielded the Multiple Launch Rocket System (MLRS). The value of this extremely accurate and destructive system was clearly demonstrated during Operation *Desert Storm*. The Navy is now looking at a deck-mounted version of the MLRS. Chapter eight discusses this.

The Falklands War, in 1982, stimulated a short revival of naval gunfire related literature. The Falklands caused much debate about the utility of naval guns, which up to that time appeared doomed to eventually be totally replaced by missile systems.

David Brown, head of the United Kingdom Naval Historical Branch, gives a detailed account of the Falklands War in his book, The Royal Navy and the Falklands War. His discussion of naval gunfire support to ground forces and the cooperation between naval gunfire and the field artillery demonstrates the utility of using naval gunfire at every opportunity. Of significance was the ability of naval gunfire to interdict use of the Goose Green airfield from a range of 22,000 yards and its role in the advance of the 2d Parachute Regiment through Darwin, the success of which was attributed directly to the effectiveness of naval gunfire support.¹⁰ The Royal Navy accomplished this support using

its standard, relatively small, 4.5 inch naval guns, firing from a variety of frigates, destroyers, and guided missile cruisers.

Neville Cately's article, "Airborne Early Warning: A Primary Requirement," appears in the January 1983 edition of Navy International. This is a thought provoking article addressing the British loss of four combatants and one transport ship during the short (less than 60 days) conflict. All British ship losses were attributable to *Exocet*, sea-skimming missiles or conventional iron bombs dropped by aircraft. Many skeptics believed that these staggering losses proved that seapower could no longer match airpower. Cately argues convincingly that the British lack of an adequate airborne early warning (AEW) system was the key factor to explain British ship losses in the Falklands.

AEW increases attack warning times from under a minute to up to several minutes, allowing ships to assess the threat and respond accordingly. The U. S. Navy's E2-C AEW aircraft, combined with surface radar picket ships and various new close in weapons systems (CIWS), give its carrier task forces the capability to defeat the type threat that caught the Royal Navy unprepared in the Falklands.

"After Grenada: Joint Operations in the 82d Airborne Division," appeared in the February 1988 edition of Field Artillery. The author, a Field Artillery Intelligence

Officer in the 82d Airborne Division Fire Support Element (FSE), presents some thought provoking recommendations for the planning of joint fire support and in particular, naval gunfire support for joint operations. The article is particularly noteworthy in that, albeit it an unofficial publication, it contains a rare suggestion by a member of the U. S. Army, that ANGLICO teams may not be available when needed. The author even suggests that the Army should consider how it might control and coordinate naval gunfire in the absence of ANGLICO teams. He gives some interesting examples of training initiatives to improve joint fire support training in the division.

Much of the article reflects upon the 82d Airborne Division's experiences in *Operation Urgent Fury*. Of particular note are the problems caused by the late arrival of the 2d ANGLICO into the operation. This was due to no fault of 2d ANGLICO, but rather to the Army's late decision to bring ANGLICO planners into the picture. This resulted in naval gunfire coordination failures during the operation and in difficulty deploying ANGLICO teams in a timely manner. Looking at more recent history, 2d ANGLICO, which is located only 95 miles from the 82d Airborne Division Headquarters, was never brought into the planning for *Operation Just Cause* and was not notified of the division's impending deployment to Saudi Arabia for *Operation Desert Shield* until

approximately eighteen hours after the division was alerted. He who fails to learn from history is doomed to repeat it! Chapter seven discusses this in depth.

Perhaps the best discussion of contemporary naval gunfire available today is in the book, Command of the Seas, by former Secretary of the Navy John F. Lehman Jr.. His discussions cover the Falklands War, Grenada, the Marine Corps intervention in Beirut after the 1982 Lebanon War, and the *USS Stark* incident in May 1987.

Lehman questions the economy of building smaller, cheaper, lightly armed surface combatants that lack survivability. He stresses that none of the sixteen Argentine hits that accounted for British combatant losses in the Falkland could have put a U. S. battleship or carrier out of action. The problems he identifies in the newer ships are their lack of double hulls, armor, and redundant damage control systems. To further illustrate his point, he notes that numerous, heavily constructed, modern oil tankers have experienced missile hits in the Persian Gulf, yet none has been put out of commission.

British naval gunfire support in the Falklands receives great praise from Lehman, particularly in light of their relatively small 4.5 inch guns. He goes on to laud the recommissioning of the U. S. Navy's *Iowa* class battleships, noting that one battleship can, in thirty minutes, deliver

more tons of naval gunfire ammunition than the British delivered in the nearly two month long Falklands War. Lehman fails to stress the *Tomahawk* cruise missile capability of the battleships, which was so clearly demonstrated during Operation *Desert Storm*.

In his discussion of Operation *Urgent Fury*, Lehman acknowledges that the Army had problems controlling naval gunfire, but does not mention ANGLICO as a player in the situation. He does, however, concede that advance planning for naval gunfire support was botched and discusses the problem of ideologically ignoring interoperability in joint operations.

Lehman's discussion of naval gunfire support to Marine Corps forces in Beirut centers around the utility of the battleships. He describes the decision to position the *USS New Jersey* off the coast of Beirut as, first and foremost, a political decision emphasizing the president's determination to stabilize the situation. He goes on to credit effective naval gunfire support and the arrival of the *New Jersey* in September 1983 with halting escalation of what was becoming a difficult situation for the Marines. One key to the battleship's success in Beirut was its ability to operate close to shore, its heavy armor alleviating concern over hostile artillery or missile fire. In a show of rare cooperation between the Army and the Navy, Lehman describes

the great success the *New Jersey* enjoyed destroying eight Syrian artillery batteries while under the direction of an Army target acquisition battery radar.¹¹ This is a lesson worth remembering.

Taking Lehman's conclusions about the value of naval gunfire strictly at face value, one must question the Navy's decision to decommission the *Iowa* class battleships when there is no suitable weapon system to fill the 16"/50 gunfire role. A look below decks reveals some interesting information Lehman does not discuss. In his role as champion of the battleship refit program, it is likely that Lehman's oversight was no accident. The refit program for the *Iowa* class battleships focused mainly above decks; the antiquated, steam power plants were modernized but not replaced.¹² The combination of the intensive manpower required to operate the massive steam plants, the enormous maintenance requirements, and a lack of critical repair parts makes the continued operation of these ships impossible in a Navy with shrinking manpower and budgets.

Naval Forces (issues III and IV, 1990) contains a fascinating, two-part article entitled, "Tactical Vertical Launch Systems: Key to Naval Forces' Surface Revolution at Sea." Though not dealing specifically with naval gunfire, knowledge of the Tactical Vertical Launch System (TVLS) is essential for anyone interested in naval gunfire's future.

The TVLS weapon system consists of missile launch pods, mounted below decks, capable of firing multiple type missiles supporting naval operations. What is interesting to this study is that the TVLS mounts no missiles designed to support ground warfare at the tactical level. One school of thought in ship design would eliminate deck mounted naval guns, making more space for TVLS. This issue will undoubtedly make for some heated debate within the Navy in the coming years. The final outcome may seal the fate of naval gunfire in the U. S. Navy. This thorough article provides an excellent background in TVLS development.

For anyone desiring to do research in the field of naval gunfire, Naval Institute Proceedings, the World War II era editions of Field Artillery Journal, Naval Forces, NATO's Sixteen Nations, and Marine Corps Gazette are recommended as excellent periodicals with which to begin. For an initial book on naval gunfire, Weller's Naval Gunfire Support of Amphibious Operations: Past, Present, and Future, is a masterful work.

CHAPTER 2 NOTES

¹ Donald M. Weller, "Salvo-Splash! The Development of Naval Gunfire in World War II, Part I," Naval Institute Proceedings 80 (August 1954): 841.

² Jay F. Grandin, "After Grenada: Joint Operations in the 82d Airborne Division," Field Artillery (February 1988): 45.

³ U.S. Army, FM 31-5: Landing Operations on Hostile Shores, (Washington: U.S. Government Printing Office, 1941), 105.

⁴ Donald M. Weller, "Salvo-Splash! The Development of Naval Gunfire in World War II, Part II," Naval Institute Proceedings 80 (September 1954): 1018.

⁵ U.S. Army, FM 31-5: Landing Operations on Hostile Shores, (Washington: U.S. Government Printing Office, 1944): 164.

⁶ Weller, "Salvo-Splash, Part I," 844.

⁷ S. J. Labadie, interviewed by author, telephonic, Camp Lejeune, NC, 18 Oct 1991.

⁸ Jerome F. Bierly and Thomas E. Seal, "Over-the-Horizon Amphibious Operations," Marine Corps Gazette 75 (July 1991): 41.

⁹ Richard Sharp, ed., Jane's Fighting Ships 1989-1990, (Alexandria, VA: Jane's Information Group, 1989), 97.

¹⁰ David Brown, The Royal Navy and the Falklands War, (London: Naval Institute Press, 1987), 245.

¹¹ John F. Lehman Jr., Command of the Seas, (New York: Charles Scribner's Sons, 1988), 334.

¹² Denise L. Almond, ed., Desert Score, (Washington: Carroll Publishing Company, 1991), 228.

CHAPTER THREE

RESEARCH DESIGN

This thesis focuses on five major areas--training; personnel; weapon systems and equipment; the U. S. Navy's direction in the field of naval gunfire; and tactics, techniques, and procedures (TTP) for naval gunfire support. The following discussion addresses each of these areas.

"Training," to quote former Army Chief of Staff General Carl Vuono in his introduction to FM 25-100 (Training the Force), "is the cornerstone of combat readiness." Budgetary constraints frequently limit the quality of today's training. Trainers must search for cost-effective, quality training. After action comments from the recent Gulf War heaped boundless praise upon the significant role that training at the Army's National Training Center (NTC) and Joint Readiness Training Center (JRTC) played in preparing Army forces for the challenges they encountered in the war.

This study will include a look at the Army's integration of naval gunfire into its combat training center exercises and how it can improve this training. It will address the use of ANGLICO teams in training at these centers. Much of the discussion will relate to the problems encountered when the 2d ANGLICO provided support to the Tiger Brigade of the Army's 2d Armored Division during Operation

Desert Storm. This mixture of heavy and light forces, with the associated problems of such a relationship, bears some examination.

The Battle Command Training Program (BCTP) has gained the reputation as equating to a virtual report card for Army division and corps commanders. The BCTP is a computer-driven battle simulation that measures the ability of a division or corps commander and his staff to train in a realistic wartime scenario. Some units have made efforts to integrate naval gunfire into the BCTP evaluations, but they have enjoyed little success. This thesis will look at the problems involved with naval gunfire integration in the BCTP. The discussion will center on software deficiencies in the BCTP system and problems with integration of ANGLICO teams into the training process.

No study of training would be complete without a look into the institutional training process in the Army. The Field Artillery, as the proponent for fire support, has the primary responsibility for the integration of naval gunfire into Army training and operations. Chapter four looks at the approach of Field Artillery School at Fort Sill, Oklahoma, toward naval gunfire training. The discussion focuses upon the Field Artillery Officer Basic and Advanced Courses, the Military Occupational Specialty (MOS) 13F (Fire Support Specialist) Advanced Individual Training (AIT), and the

subsequent MOS 13F training in schools of the Noncommissioned Officer Education System (NCOES).

This study focuses upon contingency operations. Many of the recommendations center on the Army's XVIII Airborne Corps. The XVIII Airborne Corps is sometimes referred to as the CONUS contingency corps.

The Navy offers a number of naval gunfire related courses. Amongst these are the Naval Gunfire Liaison Officers Course, the Naval Gunfire Spotters Course, the Naval Gunfire Spotters Special Course, and the Naval Gunfire Air Spotters Course. This thesis discusses the Army's use of these courses and what role they can play in its fire support training.

This study includes a look at how the Marine Corps ANGLICOs conduct naval gunfire training. The problems involved with availability of training resources (primarily live naval gunfire exercises) and how the Marine Corps copes with these problems lend insight into how the Army should approach naval gunfire training.

The Field Artillery community is responsible for integrating naval gunfire into Army training and operations and into TTP manuals (field manuals). The primary vehicle used to integrate naval gunfire into training and operations is the Marine Corps ANGLICO. Virtually without exception, where Army field manuals address naval gunfire support, they

assume away problems by asserting that ANGLICO personnel will provide naval gunfire planning and coordination for Army operations. Chapter seven discusses this dangerous assumption in depth.

The ANGLICO is designed to support a U. S. Army or allied light division. There is no provision for support at the corps level. Two active duty ANGLICOs, an insufficient number to support Army training or contingency operations, are consistently over-committed and are currently involved in a struggle for their very existence. Additionally, problems occurred with the reserve ANGLICO mobilization during Operation *Desert Shield*. Chapter seven addresses these issues.

The Navy, like other services, is currently faced with reducing the size of its force, both in personnel and equipment. It has, once again, placed the *Iowa* class battleships into retirement. The loss of these workhorses creates a firepower gap for which there is no immediate remedy. Chapter six will discuss the impact of the battleship retirement and what direction the Navy is taking to meet its future naval gunfire requirements. It will also discuss some possible changes in the Navy's surface warfare organization.

Marine Corps ANGLICOs evolved from Assault Signal Companies of World War II. These were specially configured

signal companies that supported beach operations during amphibious landings. Communications was and still is the essence of naval gunfire operations. Currently, the Army depends upon ANGLICO to provide the necessary communications links to coordinate naval gunfire operations. This study will look at the Army's ability to provide naval gunfire communications and the potential problems involved. Operation *Urgent Fury* lends some insight into the potential problems in this area.

Emerging technology in naval gunfire weaponry is extensive. Chapter eight looks at some of the technology the navy is currently considering. Keeping in mind that any naval gunfire system must satisfy the primary requirement of providing for a ship's self-defense against small surface threats, the discussion looks at some technology that satisfies the self-defense requirement and is suitable for ground support. Chapter eight discusses what sort of naval gunfire support the Army might expect to receive in future operations and some possible areas for cooperation in joint weapons development. The analysis includes a discussion of the Tactical Vertical Launch System (TVLS), a new system that is competing with guns for space onboard modern combatants. Chapter eight also discusses developments in naval gunfire projectiles and weapons, including laser guided

munitions, discarding sabot rounds, base-bleed projectiles, and the role of naval rockets.

The Marine Corps, as the U. S. military's proponent for amphibious operations, has a vested interest in the preservation of naval gunfire support in some form. There are currently major changes under consideration in U. S. amphibious warfare doctrine. The OTH assault is perhaps the greatest departure from current doctrine. Some emerging thoughts in the field of amphibious warfare doctrine and an analysis of their potential effects upon the role of naval gunfire support are included in the study.

The OTH assault, while initially protecting Navy ships from hostile fires, also creates difficulty in providing adequate fire support during the early stages of the assault, due to excessive ranges. Chapter eight will discuss naval gunfire role in the OTH assault and the technology required to support the assault. Developments to provide naval gunfire support the OTH assault will impact upon the type of support available to the Army for contingency operations.

In 1988, the Army and Marine Corps entered an agreement for an exchange of fire support officers. The main reason for the exchange was the dismal joint cooperation they demonstrated during Operation *Urgent Fury*. The original exchange was a unit-to-unit agreement, that has since been modified because all billets involved were designated joint

in 1990. Under the terms of the exchange, an Army field artillery major from the XVIII Airborne Corps Artillery was placed in the 10th Marine Artillery Regiment headquarters as an assistant fire support coordinator. The Marine Corps placed a field artillery major in the XVIII Airborne Corps Artillery Fire Support Element (FSE). The other exchange placed an Army field artillery major as the operations officer of the 2d ANGLICO, while a Marine Corps field artillery major became a liaison officer in the Army's 75th Ranger Regiment FSE. Chapter five discusses the success of these exchanges.

Chapter nine draws conclusions and makes some recommendations for an Army approach to naval gunfire support in the future. It also proposes topics for further research. The author hopes that this thesis will stimulate the discussion of naval gunfire within the Army fire support community. Additionally, it should encourage a dialogue between the Army and the Marine Corps, as both search for new ways to provide fire support for their changing missions.

As the American national military strategy evolves and the military budget declines, the fire support community must remain on the lookout for any effective method to support the ground forces. Naval gunfire is a potent fire support system. Fire support doctrine dictates that it should be planned for and used when available. The challenge to the

Army is to determine if and when naval gunfire support is needed, how to acquire the support, and how to integrate naval gunfire into its operations.

CHAPTER FOUR

TRAINING

Army FM 25-100 (Training the Force), calls training "...the cornerstone of combat readiness."¹ During the decade of the eighties, the Army placed ever increasing emphasis on tough, realistic training as a key to winning in combat. Many senior Army leaders, including Major General Fred W. Marty, the Chief of Field Artillery, credited this training as a major factor in the Army's overwhelming success against Iraqi forces in Operation *Desert Storm*.² During this period, the Army spent billions of dollars developing high-tech maneuver training centers, computer battle simulations, and revising its formal education system. This section discusses training specifically related to naval gunfire support for the Army. The analysis reveals some weaknesses in the Army's capability to plan and control naval gunfire support.

The Field Artillery branch has a doctrinal charter to provide fire support coordination for the U. S. Army. The Commanding General of the Army Field Artillery Center and School at Fort Sill, Oklahoma, is designated as the Chief of Field Artillery. As such, he is the overseer for the training and doctrine of the Army fire support community.

The fire support community is responsible for providing ground combat forces with supporting fires

delivered from the air, land, or sea. The community receives its education through formalized institutional training, unit training, joint training with other services, and individual self-development study. The following paragraphs discuss naval gunfire training in the first three categories described above. The analysis in this chapter helps answer the secondary thesis question: "Based upon its current force structure and training, is the Army capable of planning and controlling naval gunfire support?"

The most formal type of naval gunfire instruction is presented through Army and Navy institutional training. Navy institutional training includes instruction presented by and for U. S. Marines. Institutional training is mostly in the form of classroom lecture and discussions followed by practical exercises geared toward reinforcing the learning. The primary institutions presenting this instruction are the Army Field Artillery School and the Naval Amphibious Schools at Little Creek, Virginia, and Coronado, California. Both Army and Marine officers attend the Army Field Artillery School, as the Marine Corps has no basic or advanced field artillery courses for officers.

An Army field artillery officer's first exposure to naval gunfire instruction is at the Field Artillery Officer Basic Course (FAOBC) at the Field Artillery School. This course, lasting slightly under five months, devotes a mere

two hours to naval gunfire instruction.³ The instruction covers the characteristics and capabilities of naval gunfire and a familiarization with the capabilities and employment of the Marine Corps ANGLICO. There is no practical exercise involving naval gunfire during the FAOBC.

The next mandatory schooling for an Army field artillery officer is the Field Artillery Officer Advanced Course (FAOAC). An officer usually attends this course between his fourth and sixth year of commissioned service. This is usually the last mandatory institutional instruction that the Field Artillery School gives an officer during his career. FAOAC lasts about five months. The students are given a two hour block of naval gunfire instruction that is essentially the same as that presented in the FAOBC. Additionally, one student is selected to play the role of an ANGLICO team during a two day practical exercise that includes naval gunfire.⁴

Thus, by the time a field artillery officer has completed the mandatory training for his military occupational specialty (MOS), the Army has given him a total of four hours of formal instruction on naval gunfire. This may be his last encounter with naval gunfire until he is required to integrate it into actual combat operations, hopefully with the assistance of a U. S. Marine Corps ANGLICO team.

The enlisted members of the fire support community who are responsible for controlling and coordinating the application of naval gunfire possess the MOS 13F (Fire Support Specialist). After completing Army basic training, soldiers designated to receive the 13F MOS attend advanced individual training (AIT). Graduates of 13F AIT are qualified to perform duties as artillery forward observers in infantry platoons. Currently, the 13F AIT curricula does not include naval gunfire instruction. There is presently insufficient time in the course to present all of the instruction the school desires. If the course were lengthened, there are other more important subjects that would be added before naval gunfire, the most significant of which is the recognition and identification of combat vehicles.⁵ Consequently, a field artillery forward observer receives no institutional instruction on naval gunfire.

The only institutional naval gunfire instruction the Army gives its enlisted field artillerymen is at the Basic Noncommissioned Officer Course (BNCOC) and the Advanced Noncommissioned Officer Course (ANCOC). These courses teach naval gunfire planning and coordination at the maneuver company and battalion/brigade levels respectively. Currently, the naval gunfire instruction at each of these schools consists of four hours of classroom lecture and discussion. There is no naval gunfire practical exercise.⁶

Following a trend throughout the Army, both the ANCOC and BNCOC have recently gone to all small group instruction.⁷ Rather than receiving lectures from various instructors in a large classroom environment, small groups of students (usually 12 or less) have one instructor who presents the entire program of instruction for the course. This type of instruction capitalizes on group discussion, as opposed to purely lecture. One drawback this has created for the ANCOC and BNCOC is that naval gunfire training is now presented by small group instructors who may have little or no practical experience in the field. Previously, this instruction was presented by Marines possessing naval gunfire experience.⁸

The Fire Support Instructor Branch at the Field Artillery School is currently conducting a review of its naval gunfire instruction. This review is a Marine Corps initiative; it began because many of the naval gunfire experienced Marine Corps instructors at the school were disappointed over the scant amount of information being presented.⁹ Any changes resulting from this review may entail increased naval gunfire training for Army personnel or special extra instruction given only to Marine Corps officers attending the FAOBC and FAOAC.

To obtain institutional training beyond that described in the preceding paragraphs, the Army must rely upon the Navy.¹⁰ The Navy Amphibious School (hereafter referred to

as Amphibious School) offerings to the Army are on a space-available basis. However, numbers indicate that the Army is enjoying success obtaining instruction from these schools. The fiscal year 1990 statistics at the Amphibious School, Little Creek, (the last full year of instruction due to Operations *Desert Shield/Storm*), indicate that 35 percent (179 of 509) of the naval gunfire students were from the Army, a significant increase over past years. Most of these students were from units of the XVIII Airborne Corps. This is a clear indication that even though the Field Artillery School has not officially acknowledged a deficiency in naval gunfire training, the Army's CONUS contingency corps recognizes a training deficiency and is attempting to correct it.

The Amphibious School at Little Creek offers four courses which are suited to naval gunfire training for Army personnel. The Naval Gunfire Spotter Course is a ten-day course for enlisted and junior officers. It provides basic instruction on calls for fire, tactical naval gunfire communications, and employment of radar beacons as ship navigational aids. The course includes lecture, practical exercises on a computerized naval gunfire terrain board, and live naval gunfire exercise on the Navy range at Vieques, Puerto Rico, during the second week. The live fire exercise is conducted based upon ship availability. The school offers

a resident and an exportable version of this course, called the Naval Gunfire Spotter Special Course.

The Naval Gunfire Spotter Special Course deserves particular attention from the Army, due to its potential for saving money and handling a high volume of students. This course is presented in both a resident and an exportable version which is given by a mobile training team (MTT). The MTT requires a forward observation simulator facility, such as the Army Training Set Fire Observation (TSFO) system. This course is identical to the Naval Gunfire Spotter Course, with the exception that it does not include a live fire exercise. The MTT version of the course offers the Army great money savings, in that the only cost incurred is for the travel and per diem expenses for two or three instructors. Competing for school quotas is unnecessary and the expense of a live fire exercise in Puerto Rico is avoided. What the students receive is detailed naval gunfire instruction from a group of instructors who are highly experienced in the field. The 10th Mountain and the 24th Mechanized Divisions of the XVIII Airborne Corps have taken advantage of the Naval Gunfire Spotter Special Course in the past.

To offset the lack of a naval gunfire live fire exercise in the Naval Gunfire Spotter Special Course, the Amphibious School has relearned a lesson of World War II.

Using a technique described by former Marine Major General Donald Weller, the school places a controller in a field artillery battery fire direction center to simulate the communications from a naval gunfire ship.¹¹ This is a low cost solution to otherwise expensive training.

The Amphibious School at Little Creek, also offers a five-day Naval Gunfire Air Spotter Course that uses a computerized naval gunfire terrain board to train aerial observers. The course is geared for trained field artillery observers operating from both rotary and fixed-wing aircraft. It is well suited to the mission of Army attack helicopter battalions and crews of OH-58D helicopters, both of which have fire support responsibilities. The instruction covers naval gunfire capabilities and limitations, calls for fire, and adjustment procedures for impact and illumination projectiles. There is no practical application training from aircraft. The course is exportable in an MTT to units having access to a forward observation simulator facility, such as the Army TSFO system. The utility of aerial observers for controlling naval gunfire is a common theme in naval gunfire literature. This subject is discussed later in the thesis.

The Fire Supportman Course provides ten days of naval gunfire training to qualify enlisted Marines as naval gunfire spotters for shore fire control parties. This course includes a live fire exercise in Puerto Rico. It provides

the naval gunfire training at a skill level equivalent to that of Army AIT. It is noteworthy that this training supplements a Marine Fire Supportman's basic fire support training. Only Marines designated for duty on a shore fire control party or ANGLICO duty attend the school. This fact supports the Army's decision not to present naval gunfire instruction in the MOS 13F AIT. Army students may attend the course, but the Army does not use it frequently.

The Amphibious School at Coronado, California, offers a resident Fire Supportman Course, a Naval Gunfire Liaison Officer (NGLO) Course, and the same exportable Naval Gunfire Spotter Special Course offered by the Amphibious School, Little Creek.¹² The NGLO course is geared for Navy officers designated for duty in a shore fire control party or ANGLICO. The course requires a naval background and is not generally suited for Army personnel. The Amphibious School, Coronado has presented the MTT spotters course to units of the 7th Infantry Division and has assisted the 2d Battalion, 75th Ranger Regiment with naval gunfire spotting exercises at the Navy range on San Clemente Island, California.

Clearly, the Navy has a great deal to offer the Army in terms of naval gunfire training. Unfortunately, the Field Artillery School has not officially recognized the need for the training. Consequently, there has been no formal, inter-service action to coordinate school requirements for the

XVIII Airborne Corps or the 75th Ranger Regiment--the CONUS Army units most likely to see expeditionary duty in a contingency operation. Therefore, institutional naval gunfire training for the Army continues to occur on a catch-as-catch-can basis, driven not by planners at the top, but by users at the bottom of the force structure.

The Army has three Combat Training Centers (CTCs) where units engage in extremely realistic, simulated combat against live opposing forces. The facilities feature high-tech instrumentation for tracking the flow of battles and for assessing the outcome of combat engagements. Opponents battle with eye-safe lasers instead of conventional ammunition. Two of the centers are located in CONUS and are used extensively by the CONUS contingency forces. The third is in Germany.

The training received at the CTCs is considered by some as a unit's ultimate test, short of actual combat. The Army considers CTC experience so valuable that it records it on the Officer Record Brief (ORB) of each officer who participates in a CTC training rotation. The ORB is the official record of an officer's professional qualifications, education, and assignment history. Major General Fred F. Marty, the Chief of Field Artillery, has stated that, "Our mission of providing accurate and timely fires must be practiced and integrated with the combined arms teams during

rotations at the CTCs."¹³ The following paragraphs will discuss the integration of naval gunfire support into training at the CONUS CTCs--the National Training Center (NTC), at Fort Irwin, California and the Joint Readiness Training Center (JRTC), at Fort Chaffee, Arkansas.

The NTC, located in California's Mojave desert, played a significant role in preparing the Army's forces that participated in Operation *Desert Storm*. The desert environment closely replicates the battlefields of Southwest Asia.¹⁴ It was designed as a training center for heavy forces, a term used to describe both armored and mechanized infantry forces.

The NTC's vast desert expanses offer a unique opportunity to integrate fire support with realistic maneuver, combining the realism of a fast-moving battle with the associated communications and coordination problems that always accompany it. The recent addition of a sophisticated electronic system called CATIES allows for a realistic portrayal of the effect of indirect fires (artillery, mortars, and naval gunfire) on the battlefield.¹⁵ To date, there has been no attempt to integrate naval gunfire into NTC training rotations.¹⁶ Integration of naval gunfire is not impossible, simply untried. Clearly, if the Army acknowledges a deficiency in naval gunfire training, the NTC should be included in any plan to correct the deficiency.

(Likewise, the NTC presents an opportunity to include live, naval air support in Army training.) The integration of ANGLICO teams with heavy forces training at the NTC presents some unique problems. Similar problems occurred during Operation *Desert Storm*, when the 2d ANGLICO supported an Army heavy brigade. Chapter seven discusses this subject further.

The JRTC is the CTC for light forces. Light is a generic term referring to infantry, light infantry, airborne infantry, and airmobile (helicopter transported) infantry. The JRTC offers the same high-tech environment as the NTC, but on a smaller scale suited to dismounted infantry operations. The environment consists of heavily wooded, Arkansas hills. To some degree, it replicates the type of environment Army forces could expect to encounter in the Caribbean, Central America, or South America. Complete infantry battalions, including their fire support personnel, participate in the training rotations.

The staff of the JRTC, recognizing that the Army has a limited ability to coordinate its own naval gunfire support, includes naval gunfire in its training scenarios only when the U. S. Marine Corps ANGLICO personnel augment the Army unit conducting training.¹⁷ This training deficiency appears to have drawn no attention from the Field Artillery School, even though only four battalion JRTC rotations for calendar year 1992 have ANGLICO support scheduled.¹⁸ The requirement

for ANGLICO teams to integrate naval gunfire support at the JRTC serves to perpetuate an Army dependency on ANGLICO support. Chapter seven discusses this subject in greater detail.

The JRTC has neither the expertise nor the personnel to operate a naval gunfire cell in the Exercise Maneuver Control Center (EMCC) without ANGLICO augmentation. When a naval gunfire control cell operates out of the EMCC, it role plays both the naval gunfire support ships and division level naval gunfire coordination.¹⁹ This system provides a significant training experience for the evaluated unit. The naval gunfire control cell used at the EMCC of the JRTC offers a proven model for naval gunfire integration at CTCs and could be incorporated at the NTC. Unfortunately, only four battalions in the Army will benefit from the experience of naval gunfire training at the JRTC in 1992.

Amongst the Army training innovations that received great praise following Operation *Desert Storm* is the Battle Command Training Program (BCTP). The BCTP is a computer-driven battle simulation designed to test corps and division commanders, their staff, and their subordinate commanders. The scenarios can test actual war plans of the evaluated corps or division. The evaluation is extremely intense, moving at a rapid pace and requiring decision making under stressful conditions. The BCTP evaluation team is headed by

a retired Army four-star general. Some regard a BCTP evaluation as a virtual report card for the corps or division commander.

The BCTP does not evaluate the coordination of naval gunfire support, even though the given war plan scenario may lend itself to such considerations, due to its geographic location. The BCTP evaluation team does not include a naval gunfire control cell in its structure. Units have attempted to use naval gunfire in past BCTP evaluations, but they must provide their own control cell (usually Marine ANGLICO personnel) and use artillery target engagement criteria to assess naval gunfire results. There is no plan to include naval gunfire engagement criteria in the next software update for the BCTP.²⁰

If a war plan lends itself to the use of naval fire support, either naval gunfire or air support, should that fire support not be included in an exercise of the war plan? Clearly, the BCTP is a training vehicle where naval gunfire planning and coordination could be easily integrated. "First Battle," an older battle simulation developed by the Army, has comprehensive rules for the integration of naval gunfire into the wargame, including combat results tables for assessing the effects of naval gunfire bombardment.²¹

As with the NTC, a model for integration of naval gunfire into the BCTP system already exists and is in use at

the JRTC. If the Army acknowledges a deficiency in naval gunfire training, the BCTP is a logical vehicle to help solve the problem.

Today's armed forces are geared for joint operations involving participation of two or more services. Recent examples of joint, combat operations include Operation *Urgent Fury* (Grenada, 1983), Operation *Just Cause* (Panama, 1989), and Operation *Desert Shield/Storm* (Middle East, 1990-91). The downsizing of the U. S. armed forces will require even greater cooperation between the services than in the past. Unlike the questionable performance in *Urgent Fury*, Operation *Desert Storm* demonstrated the United States' ability for inter-service cooperation. With a focus on joint operations, joint training is essential to successful execution in combat. The following paragraphs discuss the Army's joint training as it pertains to naval gunfire.

One of the primary vehicles by which Army units may obtain naval gunfire training is through the Marine Corps ANGLICO. This discussion will focus on ANGLICO training capabilities. Later chapters discuss the wartime mission and organization of the ANGLICO.

There are four ANGLICOs in the Marine Corps force structure, two active and two reserve component. The active units are the 1st and the 2d ANGLICOs, located at Camp Pendleton, California, and Camp Lejeune, North Carolina,

respectively. These active units are the most capable of providing training support to the Army. Though not specifically organized to provide exportable training, given sufficient lead time, ANGLICOs can provide MTTs to conduct naval gunfire training at Army units.²² Instruction is tailored to fit the needs of the training unit.

ANGLICOs possess all required personnel and equipment to conduct naval gunfire operations, making it easy to integrate them into Army field training exercises. Because it has NGLOs assigned, they may be used in artillery fire direction centers to simulate communications with a naval gunfire support ship, as discussed previously.

As with any fire support organization, the success or failure of an ANGLICO rides upon its ability to communicate.²³ So important is communications that 2d ANGLICO has published its own communications handbook, listed in the bibliography section of this thesis. Naval gunfire communications are dependant upon high frequency (HF) radio in the spectrum that civilians call shortwave. High Frequency radio waves are reflected by the atmosphere, giving them the ability to travel long distances around the Earth's curvature.²⁴ The ability to reflect off of the atmosphere also makes HF radio very susceptible to atmospheric disturbances.

Army tactical communications depend upon Very High Frequency (VHF) line of sight communications, which are not sensitive to atmospheric disturbances. In general, the fire support community does not use HF communications and is untrained in HF antenna theory. ANGLICO team members routinely train in HF communications and in construction of field expedient antennas.²⁵ They rely upon the AN/PRC-104, man-portable HF radio, which is also found in the Army system, though not generally in artillery units. (This is a serious impediment to the Army's ability to become self-sufficient in naval gunfire operations.) The ANGLICO can provide Army units invaluable training in HF communications and naval gunfire communication nets.

The Navy has one active naval gunfire range in CONUS. Located on San Clemente Island, California, the range services west coast based ships. Ships based on the east coast conduct naval gunfire qualification on the range at Vieques, Puerto Rico. Use of the range is determined at a quarterly scheduling conference, where ships, the Navy Amphibious Schools, ANGLICOs, Marine artillery regiments, and any other agency desiring naval gunfire training on the range place their bids. Ships needing to requalify and Amphibious School classes take priority over tactical units, with Army requests falling near the bottom.²⁶ An ANGLICO may have three to four naval gunfire spotting exercises (SPOTEXs)

scheduled per year. Few Army units are fortunate enough to have a SPOTEX scheduled.

One way for Army units to gain the benefits of live naval gunfire training is to accompany an ANGLICO team on a scheduled SPOTEX. The number of personnel that may accompany an ANGLICO is limited, so key personnel are generally chosen, such as brigade and battalion fire support officers (FSOs) and fire support noncommissioned officers (FSNCOs). Sending key personnel to a SPOTEX allows these leaders to return to their units and train subordinates on the lessons learned.

Both the 82d Airborne Division and the 75th Ranger Regiment have enjoyed a degree of success in receiving training from ANGLICO units. The 82d Airborne Division has participated in SPOTEXs in Puerto Rico, has integrated ANGLICO teams into battalion training during Army Training and Evaluation Program exercises, and has included ANGLICO teams in numerous brigade and division exercises.²⁷ The 75th Ranger Regiment has used ANGLICO MTTs and has participated in ANGLICO SPOTEXs.²⁸ Additionally, the regiment participated in a joint fire support exchange with the 2d ANGLICO. Chapter five discusses this program.

Another potential source for Army naval gunfire training is through joint exercises conducted under the national unified command structure, by the unified Commanders-in-Chief (CINCs). These CINCs, who are

responsible for the wartime employment of forces of all of the armed services, periodically hold large joint exercises to train their forces, test their command and control structure, and assess the command's ability to execute the war plans for which it is responsible.

The United States Commander in Chief Atlantic (USCINCLANT) conducts Exercise *Solid Shield*. It is cited here because the Army's XVIII Airborne Corps is a participant. The participants may include ground elements of the II Marine Expeditionary Force (MEF), the Army's XVIII Airborne Corps and 75th Ranger Regiment and a host of Air Force, Marine Corps and Navy aviation and special warfare units. The typical scenario involves an operation where elements of the 75th Rangers or 82d Airborne Division conduct a parachute assault to seize an airfield to support Army follow-on forces; other Army airborne forces perform a parachute assault and conduct ground combat operations against enemy forces; and the Marines conduct an amphibious landing, secure a beachhead, and push forward through the enemy to link-up with the Army. A look at Exercise *Solid Shield '83* (SS-83) reveals some room for improvement in joint fire support training. It is used as an example for several reasons: the exercise has been declassified; it is representative of a typical *Solid Shield* exercise; and it occurred just five months before Operation *Urgent Fury*, with

many of the same units participating. Chapter seven discusses the problems with naval gunfire coordination and integration of ANGLICO teams into Army planning for *Urgent Fury*.

The ground forces in SS-83 included elements of the II Marine Amphibious Force (now called Marine Expeditionary Force), the XVIII Airborne headquarters, and elements of its 82d Airborne and 24th Mechanized divisions. Airborne units had ANGLICO teams attached to control naval gunfire and naval close air support. Unfortunately, the list of significant naval events found in the SS-83 Exercise Control Plan did not include providing joint fire support to participating Army units.²⁹ Typically, the Army-ANGLICO interface is overlooked in planning joint exercises because the ANGLICO is only a company-sized unit, a level of command well below that which normally concerns joint exercise planners. Consequently, training opportunities are sometimes lost in these exercises.

To take advantage of the opportunity for naval gunfire and other joint fire support training during joint exercises, Army planners must request that joint fire support be designated as one of the exercise objectives. This desire must be made known at the initial planning conference that always precedes the exercise. The Army representatives to the conference should be able to discuss their joint fire support training objectives in detail. For this reason, they

may need to consult with ANGLICO planners prior to the conference. Designating joint (Army-Navy) fire support as an exercise objective gives the Army justification to request ANGLICO support for the participating Army units. The Army submits this request through the CINC sponsoring the exercise.

As the leaders of the fire support community, field artillery officers and NCOs bears the responsibility for fire support training in the Army. Inherent in this is the requirement to coordinate ANGLICO training support. This requires a thorough knowledge of the mission, capabilities, and limitations of the ANGLICOs. Without this knowledge, an FSO cannot properly determine the size and composition of the ANGLICO teams required to support a given training event. Unfortunately, this information receives only cursory attention during the institutional training of a field artillery officer or NCO, as previously discussed. The following paragraphs briefly describe the mission and capabilities of an ANGLICO and the peculiarities of obtaining ANGLICO training support.

Stated simply, the ANGLICO mission is to plan, coordinate, and control naval fire support (naval gunfire and close air support) for the U. S. Army and allied units participating in joint or combined operations with the Navy and Marine Corps.³⁰ Inherent in this mission is the

requirement to perform the same functions during training. To meet its support obligation to allied forces, an ANGLICO may have several teams deployed around the world at any given time, supporting Marine Expeditionary Units (MEUs) at sea and other Marine Air Ground Task Forces (MAGTFs) training with American allies. With only two active duty and two reserve component ANGLICOs in the Marine Corps, teams to support Army training are a scarce commodity requiring close management.

A significant obstacle to obtaining ANGLICO support for Army training is that there is no central agency within the Marine Corps through which ANGLICO support requests are directed. Requests for training support from active component ANGLICOs are submitted through the appropriate Fleet Marine Force (FMF) Headquarters. Requests for 1st ANGLICO go through the Fleet Marine Force Pacific (FMFPAC) at Camp Smith, Hawaii; support from 2d ANGLICO is obtained through the Fleet Marine Force Atlantic (FMFLANT) at Norfolk, Virginia. Support from the 3d and 4th ANGLICOs, both in the reserve component, is requested through the 4th Marine Division headquarters in New Orleans, Louisiana. It is not uncommon for an active duty ANGLICO to require augmentation from a reserve component company in order to support an Army training exercise. Due to the complexity of requesting ANGLICO training support, requests that are submitted late in the planning process may receive a negative response.

To ease some of the coordination problems, the ANGLICOs hold an annual working conference during which they consolidate Army training requests and attempt to divide support requirements between the four companies. Most Army training support is coordinated at this conference.³¹ Requests from the 75th Ranger Regiment, the XVIII Airborne Corps, and other agencies desiring ANGLICO training support are reviewed and deconflicted. The Rangers and the 82d Airborne Division tend to receive the majority of support. A large percentage of the requests receive a negative response due to the paucity of ANGLICO teams. Consequently, the Army's dependance on ANGLICO support for naval gunfire training frequently results in lost opportunities, as mentioned earlier in the discussion on ANGLICO support to units training at the JRTC.

In summary, the Army is heavily dependant upon the Navy and Marine Corps to provide institutional naval gunfire training and to plan and coordinate naval gunfire support for training exercises. It has little capability to conduct autonomous naval gunfire training, either at its training institutions or at unit level. Although the Navy Amphibious Schools open their doors to Army students, seats for the courses are on a space-available basis. The Field Artillery School does not officially acknowledge a need for Army quotas

to the Amphibious School naval gunfire courses; Army units desiring quotas coordinate directly with the schools.

With the exception of the JRTC, the Army does not integrate naval gunfire training into its CTCs or the BCTP. Likewise, the integration of naval gunfire support into the training of Army units participating in joint exercises under the warfighting CINCs is lacking.

With ample lead time, Marine Corps ANGLICOs can provide naval gunfire MTTs to Army units. Given proper planning and coordination, ANGLICO teams can support any variety of Army training exercises. There is no single source in the Marine Corps to which ANGLICO training support requests are directed. Consequently, Army units should forecast annual ANGLICO support requirements and forward them to both active duty ANGLICOs through their respective chains of command. The requests are reviewed and support scheduled, if available, during the annual ANGLICO conference. Army field artillery officers require a working knowledge of the ANGLICOs in order to properly formulate these support requests.

CHAPTER 4 NOTES

¹ U.S. Army, FM 25-100: Training the Force.
(Washington: U. S. Government Printing Office, 1988), ii.

² Fred F. Marty, "State-of-the-Branch Address," Field Artillery (December 1991): 1.

³ Kris Aspen, interviewed by the author, telephonic, Fort Sill, OK, 2 Dec 1991. [Major Aspen is an instructor in the Advanced Fire Support Branch of the U.S. Army Field Artillery School.]

⁴ Kris Aspen interview.

⁵ Clifton Carper, interviewed by the author, telephonic, Fort Sill, OK, 23 Dec 1991. [Sergeant First Class Carper is an instructor in the Basic Fire Support Branch of the U.S. Army Field Artillery School.]

⁶ Gary McAtee, interviewed by the author, telephonic, Fort Sill, Ok, 23 Dec 1991. [Sergeant First Class McAtee works in the Advanced Fire Support Branch of the U.S. Army Field Artillery School and helped develop the 13F ANCOC.]

⁷ Fred F. Marty, "State-of-the-Branch Address," 3.

⁸ Gary McAtee interview.

⁹ Mark Adams, interviewed by the author, telephonic, Fort Sill, OK, 2 Dec 1991. [Lieutenant Colonel Adams is Chief of the Fire Support Instructor Branch, U.S. Army Field Artillery School.]

¹⁰ Hank Gobar, interviewed by the author, telephonic, Little Creek, VA, 3 Dec 1991. [Lieutenant Colonel Gobar is Director of the Supporting Arms Department, Naval Amphibious School, Little Creek, VA. All information pertaining to courses at the Navy Amphibious School was provided by Lieutenant Colonel Gobar.]

¹¹ Donald M. Weller, "Salvo-Splash! The Development of Naval Gunfire in World War II, Part I," Naval Institute Proceedings 80 (August 1954): 844.

¹² Roy Jones, interviewed by the author, telephonic, Coronado, CA, 5 Dec 1991. [Major Jones is Director of the

Supporting Arms Department, Naval Amphibious School,
Coronado, CA.]

¹³ Fred F. Marty, "State-of-the-Branch Address," 1.

¹⁴ James Blackwell, Thunder in the Desert, (New York: Bantam Books, 1991), 83.

¹⁵ Fred F. Marty, "State-of-the-Branch Address," 1.

¹⁶ Roger C. Fiske, interviewed by the author, telephonic, Fort Irwin, CA, 23 Dec 1991. [Colonel Fiske is the Deputy Commander of the Operations Group, NTC.]

¹⁷ Craig Rosten, interviewed by the author, telephonic, Fort Leavenworth, KS, 2 Dec 1991. [Captain Rosten is a controller in the Exercise Maneuver Control Center at the JRTC.]

¹⁸ Thomas Liptak, interviewed by the author, telephonic, Camp Lejeune, NC, 23 Dec 91. [Major Liptak is the Operations Officer of the 2d ANGLICO.]

¹⁹ Craid Rosten interview.

²⁰ Jack Silvers, interviewed by the author, telephonic, Fort Leavenworth, KS, 12 Nov 1991. [Captain Silvers is a Field Artillery Operations Officer, OPFOR Branch, BCTP.]

²¹ Pamphlet, "Naval Gunfire--First Battle", March 1986, N-20604.8, Combined Arms Research Library, Fort Leavenworth, KS.

²² Zachary P. Hubbard, "How Soon We Forget," Field Artillery (October 1990): 4.

²³ Zachary P. Hubbard, "The ANGLICO Edge," Field Artillery (April 1990): 25.

²⁴ U.S. Marine Corps, ANGLICO Communications Handbook, (Camp Lejeune, NC: 2d ANGLICO), 28.

²⁵ Zachary P. Hubbard, "The ANGLICO Edge," 25.

²⁶ Thomas E. Crabtree, interviewed by the author, telephonic, Swansboro, NC, 11 Jan 1991. [Lieutenant Commander Crabtree's last assignment before retirement in July 1991 was as the senior Naval Gunfire Liaison Officer for the 2d ANGLICO.]

²⁷ Jay F. Grandin, "After Grenada: Joint Operations in the 82d Airborne Division," Field Artillery (February 1988): 46.

²⁸ Jeff Schaefer, interviewed by the author, telephonic, Fort Benning, GA, 18 Dec 1991. [Major Schaefer is the Regimental Fire Support Officer for the 75th Ranger Regiment.]

²⁹ U.S. Commander-in-Chief Atlantic, Joint Control Group Exercise Control Plan--Solid Shield '83, (Norfolk, VA: USCINCLANT, 1983), C-11-1.

³⁰ Talking Paper, 2d ANGLICO Operations Officer, 13 March 1989. Subject: The Marine Air and Naval Gunfire Liaison Company (ANGLICO).

³¹ Thomas Liptak interview.

CHAPTER FIVE

PERSONNEL

"Wars are fought and won by men, not machines. The human dimension of war will be decisive in the battles and campaigns of the future, just as it has been in the past."¹ This passage, from the Army's capstone field manual, clearly expresses the value placed on the human element of the Army. The reports of the three Service Secretaries contained in Secretary of Defense Dick Cheney's 1991 Annual Report to the President and the Congress, all praise the quality of the individuals and the leadership in today's armed forces.²

This chapter discusses the Army, Navy, and Marine Corps personnel that perform coordination and liaison functions in providing naval gunfire support to the Army. The analysis presented helps answer the secondary thesis questions: 1) "In what direction is the Marine Corps going in the areas of tactics and force structure in the field of naval gunfire support?"; 2) "Based upon its current force structure and training, is the Army capable of planning and controlling naval gunfire support?" Chapter four already addressed the issue of training, contained in the second question.

Army FMs on fire support tactics and techniques typically look to the Marine Corps ANGLICO when discussing

naval gunfire support for the Army. The possibility of Army personnel coordinating and controlling naval gunfire is rarely mentioned. The FM 6-20-30 (Fire Support for Corps and Division Operations) is no exception.³ The following discussion, by a comparison of ANGLICO teams with typical Army fire support teams, examines the Army's capabilities to control and coordinate naval gunfire based upon its current fire support personnel structure.

A comparison of Marine Corps and Army fire support structures reveals, surprisingly, that in some respects the Army is better organized to coordinate and control naval gunfire than the Marine Corps. The following discussion is a comparison of the fire support structure from the corps/MEF down to company level.

The Army corps artillery headquarters is responsible for planning and coordinating fire support for the corps. The Corps Artillery Commander, a brigadier general, is designated as the Corps Fire Support Coordinator (FSCoord). His headquarters is organized with cells to support the corps tactical and main command posts (figure 5-1). These cells are staffed to manage fire support in current operations and plan for future operations respectively. The corps artillery headquarters has no NGLO in its structure.

The Marine Corps MEF headquarters is roughly the equivalent of an Army corps headquarters. There is no

CORPS FIRE SUPPORT ELEMENT KEY PERSONNEL

TITLE	RANK	BREAKDOWN OF ASSETS	
		TACTICAL CP	MAIN CP
Corps Artillery Commander	BG		1
Deputy Commander	COL	1	
Deputy FSCoord	LTC		1
Assistant FSCoord	MAJ	2	2
Fire Support Officer	MAJ	1	1
FA Intelligence Officer	MAJ		1
FA Intelligence Officer	CPT		2
FA Operations Officer	CPT	2	2
Target Analyst	CPT		2
Operations Sergeant	SGM		1
Intelligence Sergeant	MSG		1
Fire Support Sergeant	SFC	1	
Fire Support Sergeant	SSG	1	

(Note: All officer positions are filled by field artillery officers.)

FIGURE 5-1

(FM 6-20-30, p. A-12)

doctrinal fire support structure in the MEF headquarters. Consequently, the MEF must assemble an ad hoc fire support coordination center (FSCC) when employed tactically.⁴ This creates a multitude of problems. One serious consequence is that the personnel to man this FSCC must be taken from other organizations, creating shortages elsewhere. Another, perhaps more serious consequence, is that the FSCC personnel do not enjoy the advantage of working together on a regular basis.

Clearly, at the corps level, the Army fire support structure is better organized and manned to handle the planning and control of naval gunfire than the Marine Corps. The one notable exception is that the MEF has access to Naval Gunfire Liaison Officers (NGLOs) from the field artillery regiment in its subordinate infantry division. The absence, in the Army corps artillery headquarters, of an officer knowledgeable of naval gunfire procedures is as much a training deficiency as a personnel or manning deficiency.

At the division level and below, the naval gunfire organization of the Army rates no comparison with that of the Marine Corps. This is attributable to the Marine Corps' doctrinal amphibious mission and its traditional reliance upon naval gunfire. To give the Army a comparable naval gunfire planning and control capability, the ANGLICO exists.

The following discussion compares ANGLICO teams with the Army FSEs they support.

Marine Corps ANGLICO teams augment Army FSEs at the division, brigade, battalion, and company levels.⁵ They provide the supported Army unit the capability to plan for and control naval gunfire and close air support. This discussion will address only the naval gunfire capabilities of the ANGLICO.

The most significant personnel difference, giving ANGLICO teams a naval gunfire planning and coordination advantage over their supported Army FSEs, is the presence of a Navy officer designated as NGLO in the division liaison team and each brigade liaison teams (Figures 5-2). With the exception of the NGLO, the Army FSEs at division and brigade level are better manned to plan and coordinate naval gunfire, as the ANGLICO teams at these levels have few field artillery personnel assigned as fire support coordinators (FSCCOORDs) or in key positions (Figures 5-3 and 5-4).⁶

ANGLICO teams have field artillery FSCCOORDs only at the battalion and company level. In terms of personnel, ANGLICO teams at the battalion and company level have no significant advantage over their Army counterparts where naval gunfire is concerned (Figures 5-5 through 5-7). This is not to say that the Army battalion and company FSEs are as capable as their ANGLICO counterparts. The Army suffers a

ANGLICO KEY PERSONNEL (DIVISION AND BRIGADE)

<u>POSITION</u>	<u>RANK</u>	<u>SUPPORTED FSE</u>
Commanding Officer	LTC	Division
Executive Officer/Air Officer	MAJ	Division
Sergeant Major	SGM	Division
Operations Officer	MAJ	Division
Senior NGLO (U. S. Navy)	LCDR	Division
<i>Plans Officer</i>	<i>CPT</i>	<i>Division</i>
<i>Operations Chief</i>	<i>MSG</i>	<i>Division</i>
Communications Officer	CPT	Division
Communications Chief	MSG	Division
Radio Chief (x2)	SSG	Division

Brigade Platoon Commander	MAJ	Brigade
NGLO (U. S. Navy)	LCDR	Brigade
<i>Team Chief</i>	<i>SSG</i>	<i>Brigade</i>
Radio Chief	SSG	Brigade

(Note: *Italics* identify field artillery personnel.)

FIGURE 5-2
(USMC Table of Organization 4854C)

ARMY TYPE DIVISION FSE KEY PERSONNEL

PERSONNEL	RANK	TYPE OF DIVISION		
		HEAVY	LIGHT	AIRBORNE/ASSAULT
<i>FSCoord</i>	<i>COL</i>	1	1	1
<i>Deputy FSCoord</i>	<i>LTC</i>	1	1	1
<i>Assistant FSCoord</i>	<i>MAJ</i>	4	2	2
<i>FAIO</i>	<i>MAJ</i>	1	1	1
<i>FAIO</i>	<i>CPT</i>	1	1	1
Target Analyst	CPT	2	2	2
Intelligence Sgt.	MSG	1	0	0
<i>Operations Sgt.</i>	<i>MSG</i>	1	1	1
<i>Fire Support Sgt.</i>	<i>SFC</i>	1	1	1
<i>Fire Support Sgt.</i>	<i>SSG</i>	2	1	2

(Note: *Italics* identify field artillery personnel.)

FIGURE 5-3

(FM 6-20-30, p. A-7)

ARMY HEAVY AND LIGHT BRIGADE FSE PERSONNEL

<u>TITLE</u>	<u>RANK</u>	<u>TYPE DIVISION</u>	
		<u>HEAVY</u>	<u>LIGHT</u>
Fire Support Officer	MAJ	1	1
Plans/Targeting Officer	CPT/1LT	1	1
Fire Support Sergeant	SFC	1	1
Fire Support Specialist	SPC	2	2
AM Radio Operator*	PFC	1	0

(Note: *Authorized in armored cavalry regiment only. All are field artillery personnel except the AM radio operator.)

FIGURE 5-4

(FM 6-20-40, p. 1-10; FM 6-20-50, p. 1-9)

ANGLICO KEY PERSONNEL (BATTALION AND COMPANY)

<u>POSITION</u>	<u>RANK</u>	<u>SUPPORTED FSE</u>
SALT Team Officer	CPT	Battalion
<i>FSCoord</i>	<i>CPT</i>	<i>Battalion</i>
Team Chief	SSG	Battalion
<i>Fire Support Man</i>	<i>SGT</i>	<i>Battalion</i>
<i>Fire Support Man</i>	<i>CPL</i>	<i>Battalion</i>
Radio Man	CPL	Battalion
Radio Man	LCPL	Battalion
<i>FCT Team Officer</i>	<i>1LT</i>	<i>Company</i>
<i>Fire Support Man</i>	<i>SGT</i>	<i>Company</i>
Radio Man	SGT	Company
Radio Man	CPL	Company
Radio Man	PFC	Company

(Note: *Italics* identify field artillery personnel.)

FIGURE 5-5
(USMC Table of Organization 4854C)

ARMY HEAVY AND LIGHT BATTALION FSE PERSONNEL

TITLE	RANK	TYPE OF DIVISION	
		HEAVY	LIGHT
Fire Support Officer	CPT	1	1
Plans/Targeting Officer	1LT	1	0
Fire Support Sergeant	SFC	1	1
Fire Support Specialist	SPC	2	2
AM Radio Operator*	PFC	2	0

(Note: *Authorized in armored cavalry regiment only. All are field artillery personnel except the AM radio operator.)

FIGURE 5-6

(FM 6-20-40, p. 1-6; FM 6-20-50, p. 1-7)

ARMY HEAVY AND LIGHT COMPANY FSE PERSONNEL

<u>TITLE</u>	<u>RANK</u>	<u>TYPE OF DIVISION</u>	
		<u>HEAVY</u>	<u>LIGHT</u>
Fire Support Officer	1LT	1	1
Fire Support Sergeant	SSG	1	1
Fire Support Specialist	SPC	1	1
Radiotelephone Operator*	PFC	1	1

(Note: *None in airborne and air assault divisions. All are field artillery personnel)

FIGURE 5-7

(FM 6-20-40, p. 1-3; FM 6-20-50, p. 1-3)

great disadvantage, not in its fire support personnel structure, but in naval gunfire training, as discussed in chapter four. To a lesser degree, the Army also suffers equipment disadvantages. Chapter seven discusses this.

One particular Army personnel initiative made a great impact in the field of naval gunfire support--the fire support personnel exchange begun with the Marine Corps in 1988. The exchange program's creation was, in part, a result of the difficulties the Army and Marine Corps experienced in joint fire support coordination during the invasion of Grenada in Operation *Urgent Fury*. (Chapter seven discusses some of these problems). All personnel positions in the exchange program were designated joint duty billets in 1990.

Amongst the exchanges, Marine field artillery majors serve in the FSEs of the Army's 75th Ranger Regiment and XVIII Airborne Corps. An Army field artillery major serves in the 2d Marine Division FSCC as an assistant division FSCCOORD and another serves as the operations officer of the 2d ANGLICO, part of the II MEF. Brigadier General Richard W. Tragemann, commanding general of the XVIII Airborne Corps Artillery during Operations *Just Cause* and *Desert Storm*, heaped praise upon the program, citing improvements in training, planning joint fire support for contingency operations, and the control and synchronization of joint fire support during combat.⁷ In all probability, this thesis

would not have been written were it not for the influence of the exchange program.

Since the program began, Marine exchange officers served as the senior fire support officers for their units during Operation *Just Cause*. Additionally, Army exchange officers served as the Assistant Division Fire Support Coordinator for the 2d Marine Division and as the Operations Officer for the 2d ANGLICO in Operation *Desert Storm*.⁸ Unfortunately, the exchange does not include the 1st ANGLICO.

The exchange program has allowed the Army to begin developing, on a modest scale, a base of field artillery officers experienced in naval gunfire support. It has also raised the awareness of naval gunfire operations within the Army fire support community. This was accomplished by a variety of means. In the winter of 1988-89, a briefing team from the 2d ANGLICO conducted a series of ANGLICO briefings and naval gunfire classes for fire support personnel in every subordinate division of the XVIII Airborne Corps.

A briefing on the ANGLICO mission, organization, and capabilities was presented to the 1989 Fire Support Conference at the Field Artillery School in Fort Sill. Amongst the attendees were the Chief of Field Artillery and senior fire support representatives from every corps, division and maneuver brigade in the Army.

The Army operations officer at the 2d ANGLICO published an article on the ANGLICO capabilities and employment in the April 1990 edition of the Field Artillery Journal.⁹ Another article was published in the October 1990 edition.¹⁰

On 8 October 1990, a detachment from the 2d ANGLICO began deploying to Saudi Arabia in support of the 82d Airborne Division in Operation *Desert Shield*. The ANGLICO's Army operations officer worked in the ANGLICO division liaison team supporting the 82d Airborne Division's main fire support element. Amongst the support provided to the 82d Airborne Division during the initial days of *Desert Shield* was coordinating with the Joint Task Force Middle East to arrange for naval gunfire support from the battleship *USS Wisconsin* in the event of an Iraqi incursion into Saudi Arabia.¹¹ This was accomplished at a time during the U. S. force build-up when the organic fire support available to the division was meager. The exchange gave the 82d Airborne a marked advantage in naval gunfire that it did not enjoy during its deployment with 2d ANGLICO during Operation *Urgent Fury*--an Army officer in the ANGLICO who was knowledgeable of both Army operations and with the employment of ANGLICO teams.

To summarize, the Army is better organized at the corps level to coordinate and control naval gunfire than is

the Marine Corps. This is where all comparison ends. The divisional naval gunfire support structure of the Marine Corps, developed as a result of its amphibious mission, is incomparable.

The Marine Corps ANGLICO exists to provide the Army the same naval gunfire capabilities as the Marine Corps. The significant difference in the personnel structure of the Army division and brigade FSEs and the ANGLICO teams supporting them is the presence of a NGLO in the ANGLICO teams. Otherwise, the Army FSEs at these levels are better organized for naval gunfire operations than their ANGLICO counterparts, due to the high volume of field artillery personnel (trained fire support coordinators) in the Army structure.

The Army-Marine Corps fire support exchange, begun in 1988, has improved naval gunfire awareness in the Army. It has allowed the Army to slowly begin building a base of officers knowledgeable in naval gunfire operations and has given ANGLICO personnel, particularly for the members of the 2d ANGLICO, a better understanding of how the Army operates.

CHAPTER 5 NOTES

¹ U.S. Army, FM 100-5: Operations, (Washington: U.S. Government Printing Office, 1986), 5.

² Dick Cheney, Report of the Secretary of Defense to the President and Congress, (Washington: U.S. Government Printing Office, 1991), 99, 102-103, 105.

³ U.S. Army, FM 6-20-30: Fire Support for Corps and Division Operations, (Washington: U.S. Government Printing Office, 1989), 1-10.

⁴ William H. Schoffel, interviewed by author, telephonic, Camp Lejuene, NC, 23 Dec 1991. [Colonel Schoffel was the Fire Support Coordinator for the I MEF, USMC during Operation Desert Storm. He organized and led the I MEF FSCC.]

⁵ U. S. Army, FM 6-20-30, 1-11.

⁶ U.S. Marine Corps, Table of Organization 4854C, (Washington: Headquarters United States Marine Corps, 1988), 1.

⁷ Memo, Commanding General, XVIII Airborne Corps Artillery to Commandant, U.S. Army Field Artillery School, 31 May 1990, Subject: Army/Marine Corps Officer Exchange Program.

⁸ [The author served as the operations officer for the 2d ANGLICO from August 1988 until June 1991.]

⁹ Zachary P. Hubbard, "The ANGLICO Edge," Field Artillery (April 1990): 22.

¹⁰ Zachary P. Hubbard, "How Soon We Forget," Field Artillery (October 1990): 3.

¹¹ Thomas E. Crabtree, interviewed by the author, telephonic, Swansboro, NC, 11 Jan 1992. [Lieutenant Commander Crabtree was the division NGLO for the 82d Airborne Division during the first two months of Operation Desert Shield.]

CHAPTER SIX

THE NAVY'S DIRECTION IN NAVAL GUNFIRE

Argentina and the United Kingdom went to war in 1982 over a relatively unknown group of islands called the Falklands. Though fairly unremarkable in terms of its global impact, the short Falklands War had a significant influence upon trends in naval gunfire development. Beginning with a look at naval gunfire employment during the Falklands War, this chapter examines the current state of naval gunfire.

The analysis discusses the significance of the retirement of the *Iowa* class battleships and some recent developments that indicate the direction the U. S. Navy is taking in the field. This chapter addresses the secondary thesis questions: 1) "Is conventional naval gunfire still a viable means of fire support?"; 2) "In what direction is the Navy going in the areas of weapons and doctrine in the field of naval gunfire support?"

Missile technology came of age during the Cold War. Along with this technology came a new lethality in conventional weapons. Precision guidance, improved warheads, and long ranges, combined with accurate target acquisition systems, allowed navies to equip small combatant vessels with extremely potent firepower capabilities. As missiles on naval vessels became more prevalent, major caliber gun

systems suffered a decline. Small, relatively inexpensive ships, requiring less manpower and money to operate than massive cruisers and battleships, could be armed with potent missile systems. It was under these circumstances that the British Royal Navy entered the Falklands War in 1982.

The Falklands War found the United Kingdom in the precarious position of a contingency operation, conducted halfway around the world, with supporting firepower bordering on inadequate. Without the benefit of a U. S. style supercarrier, Harrier jump jets were the only fixed wing aircraft available for direct support to ground forces. Naval gunfire support was available from a mix of 14 destroyers and frigates equipped with eighteen naval guns suitable for providing support to ground forces.¹ These vessels all mounted a relatively small, 4.5 inch gun system.

The official Falklands War lessons learned, published by the United Kingdom Secretary of State for Defence, gives a clear indication of the role naval gunfire played. "Task force ships fired 8,000 rounds of ammunition in accurate naval gunfire support on ground targets."² This equates to nearly 600 rounds of ammunition expended per naval gunfire support ship, a relatively high figure given the duration and intensity of the war.

David Brown, head of the United Kingdom Naval Historical Society, gives numerous examples of the

versatility of naval gunfire in all phases of a contingency operation, as demonstrated in the Falklands. Naval gunfire provided support not only during the initial stages of the operation, but also continued once the field artillery was established ashore, supporting the advance of the Parachute Regiment through Darwin.³ The British used naval gunfire to interdict the Goose Green airport from a range of 22,000 yards.⁴ Additionally, it was used liberally for diversionary purposes in the three-week precursor stage of the operation, with 1500 rounds of 4.5 inch ammunition fired to deceive the Argentines of British intentions and to disrupt their operations.⁵

One direct consequence of the Falklands War was that the United Kingdom ordered three new batch III, type 22 frigates, equipped with 4.5 inch guns, to replace ships lost in combat.⁶ Not surprisingly, the Soviets, in a reversal of direction, equipped their Slava class cruisers, commissioned between 1982 and 1989, with 130 millimeter guns.⁷ At about the same time, the U. S. was refitting the *Iowa* class battleships, as is discussed later. The Falklands War stimulated a revival of naval gunfire literature, debate, and development, reaffirming naval gunfire's traditional role as a viable, even decisive means of fire support in a high-tech world.

The British victory in the Falklands was not obtained without a price. Four combatants and one commercial vessel were lost in action as a result of only sixteen Argentine hits.⁸ The attacks were all conducted with *Exocet* sea-skimming missiles or conventional iron bombs. One of the losses, the destroyer *Sheffield*, was sunk by an *Exocet*, delivered by a *Super Etendard* naval strike aircraft from a range of 20-26 miles; the missile failed to detonate, but set off secondary explosions onboard the ship.⁹

Prior to the Falklands War, many skeptics of sea power professed that surface fleets could not operate against superior airpower. Edward N. Luttwak discusses this theory in his book, The Political Use of Sea Power.¹⁰ The performance of the Royal Navy in the Falklands tends to dispel the theory. In spite of losing over a quarter of their naval gunfire ships, they were able to provide decisive naval gunfire throughout the war.

The staggering British losses were due, in part, to an inadequate airborne early warning (AEW) system. Airborne Early Warning, combined with radar picket ships, alerts ships to an impending attack up to twenty minutes before it occurs; without AEW, warnings may occur less than a minute before an attack.¹¹ The British light aircraft carrier deployed to the Falklands afforded the fleet none of the protection that the

E-2C AEW aircraft and F-14 and F-18 air superiority fighters provide from U. S. supercarriers.¹²

With the superior AEW system of the U. S. Navy, ships operating under similar circumstances would likely have suffered fewer losses than the British. Rather than silencing British naval gunfire support, the superior airpower that the Argentines enjoyed in the Falklands simply demonstrated that AEW is essential to the protection of the fleet.

History has numerous accounts of ships sustaining tremendous hits from enemy fires, yet continuing to operate. In one engagement in World War II, the battleship *South Dakota* sustained 45 hits from eight-inch from naval guns and still maintained full operations.¹³ Noted naval gunfire authority Robert Heintz describes one instance, during the U. S. invasion at Inchon in the Korean War, where a destroyer force was used to draw the fires of a coastal artillery battery. Coming as close as 1300 yards from the hostile guns, the destroyers intentionally exposed themselves to enemy fire, enabling supporting cruisers to locate and silence the battery.¹⁴ One obvious lesson of the Falklands is that smaller, cheaper ships used in the naval gunfire support role cannot withstand the punishment that the heavy ships of the World War II era endured. This was not a new lesson, simply one that resurfaced and gained attention.

The United States decision to reactivate the *Iowa* class battleships originated in the late 1970's. Amongst other reasons, the reactivation recognized a Marine Corps requirement for all weather, long range fire support.¹⁵ The battleship reactivation of the 1980's represents but a single chapter in a historical roller coaster of active service and retirements, dating to World War II, the Korean War, and the war in Vietnam. The Falklands War simply validated the latest requirement for battleships in the U. S. inventory.

The *USS Stark* incident further bolstered support for the battleships. On 17 May 1987, the *Stark*, a modern *Perry* class frigate, was struck and nearly sunk by two *Exocet* missiles fired from an Iraqi aircraft.¹⁶ The tragedy aroused memories of the British experience in the Falklands and caused a great controversy. Just over a year later, on 22 October 1988, the *USS Wisconsin* became the last *Iowa* class battleship reactivated, marking the first time that four battleships were in active service since 1955.¹⁷

Adding yet another controversial chapter to the history of the battleships, the U. S. Navy has retired them all once again. The recent Gulf War delayed the decommissioning process somewhat, but the decision stood. The naval gunfire literature of the past several years is replete with arguments for and against the continued service of the dreadnoughts. This analysis has already addressed the

ability of these ships to sustain hits from enemy fires and continue operating. The following paragraphs discuss some of the advantages and disadvantages of the battleships, attempting to convey the capabilities that are lost with their retirement.

When discussing the disadvantages of a battleship, one must keep in mind the massive reductions in personnel and equipment the U. S. military is undergoing as a result of the Soviet Union's collapse. Simply standing alongside an almost 900 foot long battleship gives some indications as to its disadvantages. The massive ships require 60 million dollars a year to operate and require a complement of 1,600 men, enough to man four *Aegis* missile cruisers or eight anti-submarine frigates.¹⁸ When recommissioned, the ships received limited modernization that did not include replacing their antiquated steam driven power plants.¹⁹ The manpower intensive boilers are a decided liability in a navy striving to cut personnel. Another argument against the battleships is that they lack a credible air defense system, requiring them to have escort ships. The fact that the Navy rarely sends any surface ship into harms way without escort weakens this argument, as it does another argument that battleships have no anti-submarine capability.

The disadvantages to naval gunfire support created by retiring the battleships have been a matter of record for

years. Donald M. Weller described the sixteen-inch "gunfire gap" in 1977, in his book Naval Gunfire Support of Amphibious Operations: Past, Present and Future.²⁰ This term suggests the need for a major caliber naval gun, somewhere in size between the 5"/54 gun and the 16"/50 gun. Written before the recommissioning of the *Iowa* class battleships in the 1980's, Weller's data demonstrates that the 5"/54 gun system in use today is unable to provide the same type of support that was required during World War II, Korea, and Vietnam.

The sixteen-inch gunfire gap was recently demonstrated in Operations *Desert Shield/Storm*. Five-inch guns were never brought into action in support of ground operations.²¹ This was due to a combination of factors, including Iraqi mine warfare and the relatively shallow coastal waters off Saudi Arabia and Kuwait--along much of the coastline, the five-inch guns could range only a few kilometers inland due to the inability of the ships to steam close to the shoreline in the shallow waters. In the early days of Operation *Desert Shield*, when the *USS Wisconsin* was earmarked to provide naval gunfire support to the 82d Airborne Division defending near the Saudi Arabia coast, the hydrography rendered her five-inch guns useless, with even the long shooting sixteen-inch guns able to fully support only the easternmost brigade of the division.²²

The U. S. Central Command Chief of Naval Forces, Admiral Stanley R. Arthur, in perhaps the final memorial to the *Iowa* class battleships, lauds their performance in the Gulf War. But even amongst the praise, the admiral readily admits that their day has passed.²³ The passing of these legendary ships leaves the Navy wondering about the future of naval gunfire. Many critics argue that *Desert Storm* demonstrated that airpower is the key to future success in warfare--that naval gunfire has no future. The following discussion addresses the U. S. Navy's direction in the field of naval gunfire support.

In November 1991, the Naval Surface Warfare Center in Dahlgren, Virginia published a two volume, classified study identifying the future role and needs for naval gunfire support. The Naval Amphibious School at Little Creek, Virginia, published an unclassified summary of the findings. The summary indicates that naval gunfire for support of ground forces is still a requirement for the future. It cites naval gunfire's all weather capability, cost effectiveness, and high magazine capacity and identifies the requirement for a gun of eight-inch size or larger.²⁴

There is considerable congressional interest in filling the 16"/50 gunfire gap for the Marine Corps, but no short term solution to the retirement of the battleships exists.²⁵ The eight-inch MCLWGS that Donald Weller proposed

as a solution to the gunfire gap in 1977 will not satisfy the classified range requirements the Marine Corps has set forth to support their emerging OTH assault tactics.²⁶ Even with the Navy's support for a new, major caliber gun system, the outlook for quickly developing a new weapon system, given the current condition of the Department of Defense budget, is grim. Nevertheless, research and development continues. Chapter eight discusses some of the possible technological solutions to the current naval gunfire support problems.

For the immediate future, the Navy must look toward satisfying its naval gunfire support responsibilities using the assets that are currently at its disposal. What this means is relying upon frigates, destroyers, and perhaps even guided missile cruisers for naval gunfire support. This situation creates some dilemmas for the Navy.

The *USS Ticonderoga*, an *Aegis* guided missile cruiser equipped with two 5"/54 guns, was used in Lebanon to provide naval gunfire support.²⁷ Jane's rates the *Ticonderoga* class as the most capable U. S. ships for handling the anti-ship missile threat.²⁸ Still, given the proven inability of modern surface combatants to withstand punishment, one must question the wisdom of sending a billion dollar ship into harm's way to loft 70 pound, dumb projectiles at ground targets. Even with the *Aegis* fire control system's effectiveness against missiles, shore based artillery still

poses a serious threat to the newer, lightly armored ships when they work close to land.

"The Way Ahead," an article published jointly by the Secretary of the Navy, the Chief of Naval Operations, and the Commandant of the Marine Corps appeared in the April 1991 edition of the Naval Institute Proceedings. The article, though verifying the requirement for naval guns, speaks only in general terms.²⁹ It leaves doubt as to what direction the Navy will take in the naval gunfire field for the immediate future. Another article appearing in the same edition of Proceedings suggests some possibilities.

"Surfacing a New Battle Group," though not representing an official Navy position, bears some looking at. The article was co-authored by Dr. Scott C. Truver and Commander James A. Hazlett. Dr. Truver, a widely published writer on naval subjects, is Director of National Security Studies, Information Spectrum, Inc., Arlington, Virginia; Commander Hazlett is a member of the Strategic Concepts Group in the office of the Deputy Chief of Naval Operations for Plans, Policy and Operations.³⁰

Though written before the decision to retire the remaining *Iowa* class battleships, the article predicts their retirement. The future battle group described by the authors is based upon the assumption of a reduced number of aircraft carriers and no battleships in the inventory.³¹ A further

assumption is that the most likely military activity for the U. S., in the foreseeable future, will involve regional contingency operations and low intensity conflict.³² This is completely in line with the President Bush's current National Security Strategy. The article emphasizes the spread of sophisticated weapons technology to third world nations and predicts that, "In the near future, there will be very few low-threat regions of the world."³³ It is within this setting that Truver and Hazlett describe their new battle group.

The authors' Battle Force Combatant Group (BFCG) could consist of a single *Ticonderoga* class *Aegis* guided missile cruiser, two or three *Arleigh Burke* class *Aegis* guided missile destroyers, and a number of *Spruance* class antisubmarine warfare (ASW) destroyers to fulfill the ASW mission of a given deployment.³⁴ The *Spruance* class, with two 5"/54 guns, is more capable as a naval gunfire platform than the one-gunned *Arleigh Burke* class. However, the BFCG configuration the authors describe appears to suggest that the latter would fulfill the naval gunfire support mission. While there is no arguing the naval gunfire capability of any of these ships, the question of ship vulnerability versus cost remains. Technological developments during the next decade may alter the look of the BFCG described in this article. Chapter eight discusses these developments.

A different perspective of future ship employment appears in the January 1992 edition of Naval Institute Proceedings. "Nobody's Square Peg," discusses possible roles for the state-of-the-art, *Oliver Hazard Perry* class guided-missile frigate during its expected 30 year service life. The author, a former commanding officer of a *Perry* class frigate, presents a plethora of suggestions for the possible employment of these high-tech vessels in a post-Soviet world. He stresses the capability of the *Perry* class to perform a myriad of missions, including ASW, escort operations, combat operations in third world areas, drug interdiction, and flag-waving support of international diplomatic initiatives.³⁵ Naval gunfire support of ground forces is conspicuously absent from the list. This view of surface warfare may give some indication of how a typical Navy line officer regard naval gunfire. The *Perry* class mounts only a single, three-inch *OTO Melara* gun that is not practical for support of ground forces due to its small caliber and limited range of 16 kilometers.³⁶ The author's failure to mention this shortcoming is an indication that he may not consider it significant. It is this line of thinking that the Army and Marine Corps must overcome if they hope to retain naval gunfire as a ground fire support system.

This chapter discussed the future of naval gunfire as a means of fire support in modern warfare. The Falklands War

helped to reaffirm the viability of naval gunfire. Naval gunfire support provided by the battleships *USS Wisconsin* and *USS Missouri* made important contributions to Operation *Desert Storm*. A recent study published by the Naval Surface Warfare Center validated the requirement for naval gunfire support for the foreseeable future.

The current reductions occurring throughout the Department of Defense and the retirement of the *Iowa* class battleships, make the future of naval gunfire support unclear. While the Navy desires to improve its capabilities in order to meet the naval gunfire requirements of the Marine Corps' OTH amphibious assault tactics, funding for new weapons programs remains uncertain.

Numerous classes of modern U. S. Navy combatants are capable of providing naval gunfire support, but all are extremely expensive, lightly armored, and suffer the range limitations of the 5"/54 gun system. If nothing else is certain, the Navy faces a difficult, albeit interesting task in determining how to satisfy its future naval gunfire support requirements. We can expect the *Arleigh Burke* and *Spruance* class destroyers to remain in service well beyond the year 2000, meaning that capable naval gunfire platforms will be available for contingency operations, within the limitations discussed.

CHAPTER 6 NOTES

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² Secretary of State for Defence, The Falklands Campaign: The Lessons, (London: Her Majesty's Stationery Office, 1983), 23.

³ David Brown, The Royal Navy and the Falklands War, (London: Naval Institute Press, 1987), 245. [The author is head of the UK Naval Historical Branch.]

⁴ David Brown, Royal Navy, 184.

⁵ David Brown, Royal Navy, 174.

⁶ Secretary of State for Defence, Falklands, 23.

⁷ Richard Sharpe, ed., Jane's Fighting Ships, (Alexandria, VA: Jane's Information Group, 1989), 583.

⁸ John F. Lehman, Jr., Command, 281.

⁹ Charles W. Koburger, Jr., Sea Power in the Falklands, (New York: Praeger Publishers, 1983), 71.

¹⁰ Edward N. Luttwak, The Political Use of Sea Power, (Baltimore: Johns Hopkins University Press, 1974), 49-51.

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¹² C.W. Koburger, Jr., "Lessons in Modern Naval Warfare," Navy International 88 (January 1983): 10.

¹³ John F. Lehman, Jr., Command, 282.

¹⁴ Robert D. Heintz, Victory at High Tide, (New York: J. B. Lippencott Company, 1968), 83. [The author is a noted USMC historian and was director of the Marine Corps Historical Program from 1958-1963.]

¹⁵ Eric J. Grove, "U. S. Navy Battleship Reactivation-- A Commentary," Naval Forces III (1987): 85. [The author is a senior lecturer at the Royal Naval College, Dartmouth, England.]

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- ¹⁷Denise L. Almond, ed., Desert Score, (Washington: Carroll Publishing Company, 1989) 228.
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- ¹⁹Denise L. Almond, ed., Score, 229.
- ²⁰Donald M. Weller, Naval Gunfire Support of Amphibious Operations: Past Present, and Future, (Dahlgren, VA: Naval Surface Weapons Center, 1977), 7. [The author is a retired Marine Corps Major General and noted naval gunfire authority.]
- ²¹Michael C. Braunbeck, "Front Line Lessons," Naval Institute Proceedings 117 (May 1991): 90.
- ²²Thomas E. Crabtree, interviewed by the author, telephonic, Swansboro, NC, 11 Jan 1991. [Lieutenant Commander Crabtree, assigned to the 2d ANGLICO, served as the Division NGLO for the 82d Airborne Division during the early days of Operation Desert Shield.]
- ²³Stanley R. Arthur and Marvin Putnam, "Desert Storm at Sea," Naval Institute Proceedings 117 (May 1991): 86.
- ²⁴Memo, U. S. Navy Amphibious School, Little Creek, VA, 3 December 1991, Subject: Naval Gunfire Future Developments, 1.
- ²⁵Cary Hithon, interviewed by the author, telephonic, Washington, D.C., 21 Nov 1991. [Lieutenant Commander Hithon is assigned to U.S. Navy Operations, Surface Strike and Antisurface Warfare Division, the Pentagon.]
- ²⁶Cary Hithon interview.
- ²⁷Michael P. Ley, "Naval Gunfire Support: What We Need to Understand," Field Artillery (February 1988): 40.
- ²⁸Richard Sharpe, ed., Jane's, 722.
- ²⁹Lawrence H. Garrett, III, Frank B. Kelso, and A. M. Gray, "The Way Ahead," Naval Institute Proceedings 117 (April 1991): 42. [At the time of publication, the authors were the Secretary of the Navy, Chief of Naval Operations and Commandant of the Marine Corps respectively.]

³⁰ Scott C. Truver and James C. Hazlett, "Surfacing a New Battle Group," Naval Institute Proceedings 117 (April 1991): 88.

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³² Scott C. Truver and James C. Hazlett, "Battle Group," 84.

³³ Scott C. Truver and James C. Hazlett, "Battle Group," 84.

³⁴ Scott C. Truver and James C. Hazlett, "Battle Group," 86-87.

³⁵ Bruce R. Linder, "Nobody's Square Peg," Naval Institute Proceedings 118 (January 1992): 41.

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CHAPTER SEVEN

TACTICS, TECHNIQUES, AND PROCEDURES

The experiences of World War II account for the largest portion of our base of knowledge in naval gunfire support. The U. S. Marine Corps, historically an amphibious force, was too small to conduct all of the amphibious operations required to wage a global war. Consequently, the Army was compelled to develop TTP for landing operations. It published editions of FM 31-5 (Landing Operations on Hostile Shores), in June 1941 and November 1944.

The literature from the late and post-war years reveals an Army highly experienced in landing operations, including the coordination and control of naval gunfire support. Unfortunately time has erased many of the difficult lessons learned. This chapter discusses the current TTP for naval gunfire support to the Army, with an eye toward historical lessons that are still applicable today. It includes a look at joint planning for naval gunfire support and fire support for the initial stages of contingency operations. The chapter will also discuss how the Army became dependant upon the ANGLICO and the implications of that dependance for the future. The analysis addresses the following secondary thesis questions: 1) "What insight do naval gunfire historical lessons learned since the beginning

of World War II provide into how the Army should approach naval gunfire today?"; 2) "In what direction is the Marine Corps going in the area of tactics and force structure in the field of naval gunfire support?"; and 3) "Based upon its current force structure and training, is the Army capable of planning and controlling naval gunfire support?"

Most of the naval gunfire lessons learned were derived from amphibious operations. Fortunately, many of these are applicable to Army forces in a contingency operation. The following discussion compares the fire support of an amphibious landing with that of an Army force inserted by parachute assault or air-landing into an area of conflict during the initial stages of a contingency operation. This discussion serves as a basis for other analysis in the chapter.

Contingency operations may be divided into two distinct types. The first type, peacetime contingency operations, involve activities such as disaster relief, noncombatant evacuations strikes and raids, peacemaking, and unconventional warfare.¹ These operations, as discussed in FM 100-20 (Military Operations in Low Intensity Conflict), are actions short of war and do not apply to this discussion. The following discussion deals with the second type of contingency operation, as described in FM 100-15 (Corps Operations), where the corps is the largest ground force

employed, and military conflict is imminent or has already occurred.

Contingency operations consist of five phases:

1) pre-deployment/crisis action; 2) deployment/initial combat actions; 3) Force buildup/combat operations; 4) decisive combat operations; and 5) redeployment.² This discussion will focus on the actions during phases two and three.

Amphibious landings and Army deployments to contingency operation areas are conducted either as unopposed landings or by forced entry against enemy resistance. Each operation requires establishing a secure lodgement and conducting a rapid build-up of forces. Friendly forces are most vulnerable at this stage of the operation (phase two), due to limited or non-existent organic fire support. (For the purpose of this discussion, USMC fixed-wing air support is considered non-organic to the landing force.) A Marine landing force may have organic attack helicopter support available, operating from a supporting amphibious ship.

For the Army, attack helicopter support is available only if an intermediate staging base is located close to the contingency area. Otherwise, the force is totally dependant upon air and naval gunfire support until organic field artillery is landed and becomes operational. As was the case with Operation *Desert Shield*, attack helicopters had to be disassembled and packaged for shipment, airlifted from CONUS

into the contingency area, and reassembled in Saudi Arabia once a secure lodgement was established (phase three).

The time required to establish field artillery support depends upon the level of enemy resistance and the amount of airlift available to move artillery into the area of operations. Space restrictions within aircraft will usually limit the preponderance of the initial artillery to light, 105 millimeter howitzers. As the maneuver force is built-up (phase three) and additional airframes become available, more capable 155 millimeter howitzers will follow in the airflow. Still, the organic fire support may be limited by the availability of ammunition until stockpiles are established in the contingency area. For these reasons, support from air and naval gunfire will remain essential to the ground force during this time. Careful planning is required during phase one to ensure that the support is available when needed. Normally, the time between the decision to conduct the operation and the execution order is limited, with little time to coordinate non-organic fire support. This is the background against which the following discussions is set.

A study of naval gunfire literature since the beginning of World War II reveals a number of frequently recurring subjects. At the forefront of these are communications, the structure and training of the fire support organizations involved in naval gunfire operations.

and weaponry. Chapter six discussed weaponry with respect to the retirement of the Iowa class battleships and the vulnerability of modern combatants; chapter eight discusses weaponry in greater depth. The following discussion addresses some historical themes in communications, naval gunfire support organization, and several lesser subjects. It then looks at the Army's application of these lessons during the contingency operations *Urgent Fury*, *Just Cause*, and *Desert Shield*.

With the development of indirect fires, when gunners no longer could look directly upon the targets they were attempting to destroy, communications became vital to effective fire support. It is no surprise then, that communications occupy considerable space in naval gunfire literature. The best naval gunfire systems in the world are of little value if target information cannot be conveyed from observer to ship, whether the observer is a soldier in a foxhole or a remotely piloted vehicle orbiting high above the target area.

"The Signal Company Special was activated in 1942 to reinforce the [amphibious] assault division strength in communications."³ It was already recognized that the complexity of landing operations required more than the organic communications capability of the units involved. The Signal Company Special evolved into the JASCO.⁴ The strength

of the JASCO was the presence of all services--the joint nature of its organization. This jointness included the use of different communications equipment and procedures, a situation still existing today between the Army and Navy. The JASCO evolved into today's ANGLICO. The many responsibilities of the ANGLICO include providing the communications equipment and operators to coordinate and control naval gunfire for the supported unit. Amongst the units supported today are Army airborne forces, namely the 82d Airborne Division and the 75th Ranger Regiment.

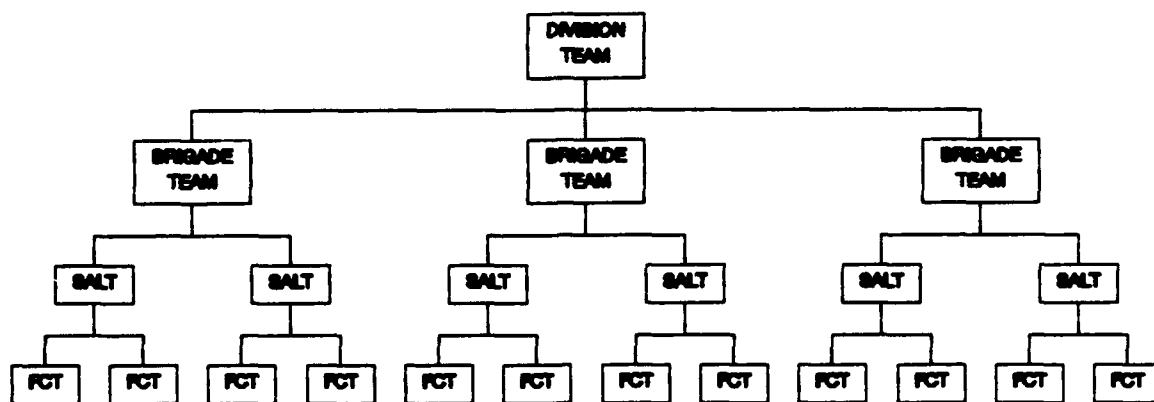
During World War II, the amphibious assaults against Normandy, Southern France, and Anzio all were supported by parachute assaults of various sizes, with scenarios not unlike today's Solid Shield training exercises described in chapter four. A study by the Joint Airborne Troop Board, conducted in 1952 in response to questions posed by the Field Artillery School, addressed some of the unique requirements in providing naval fire support to airborne forces. The study states that there was difficulty in finding Navy personnel qualified to perform fire support functions while operating with an airborne force. It concluded that there were two possible solutions to the problem: 1) Qualifying Navy personnel in parachute operations and assigning them as liaison officers to the airborne forces; or 2) Training Army personnel in the techniques of naval fire support.⁵ The

board concluded that the complexity of naval fire support techniques made the first solution more desirable. Today's ANGLICO, which includes the Navy personnel that coordinate naval gunfire support for the Army, attend Army basic airborne training as part of their initial qualification in the unit.⁶

The naval gunfire community within the Navy and Marine Corps has its own unique procedures, equipment, and professional jargon. Just as the ANGLICO adopted airborne training to support the Army, the Army adopted ANGLICO as a member of its fire support community. The Army has come to depend almost totally upon the ANGLICO for supporting naval gunfire operations. The Army tactics, techniques, and procedures (TTP) manuals for fire support all assume that ANGLICO teams will be available to support Army operations. This following discussion will demonstrate the invalidity of this assumption.

The tactical configuration of an ANGLICO is shown in figure 7-1. Ideally, the ANGLICO can support an entire Army division. The division team co-locates with the supported Army division FSE. Besides coordinating air and naval gunfire support, the division team provides command and control, administration, and logistics support to its subordinate teams. The three subordinate brigade platoons each support an Army ground maneuver brigade. The platoons

USMC Air and Naval Gunfire Liaison Co. Tactical Organization



SALT-SUPPORTING ARMS LIAISON TEAM
FCT-SUPPORTING ARMS LIAISON TEAM

KeyChart 2000

ANGLICO

FIGURE 7-1
(USMC Table of Organization 4854C)

position a brigade team with the brigade FSE and Supporting Arms Liaison Teams (SALTs) with two of the maneuver battalions in each brigade. Each SALT has two subordinate Firepower Control Teams (FCTs), which support companies of a supported maneuver battalion.

Even when operating at full strength, the organization of an ANGLICO does not complement the structure of a supported Army division. The two SALTs per brigade platoon and two FCTs per SALT do not support an Army divisional structure that operates on a normal basis of three maneuver battalions per ground maneuver brigade and three maneuver companies per battalion. With these shortages in mind, an example of the deployment of 2d ANGLICO to operation *Desert Shield* in August 1990 reveals great problems for the Army.⁷

The U. S. Central Command (CENTCOM) area of responsibility (AOR) is supported by the I MEF, located on the U. S. west coast. Normally, the 1st ANGLICO would support this AOR. Due to the short notice between the alert notification and deployment of the 82d Airborne Division, the 1st ANGLICO was unable to deploy from Camp Pendleton, California to meet the 82d Airborne's time requirements. (The 1st ANGLICO eventually deployed with the 7th MEB and arrived in Saudi Arabia in late August. Once their equipment arrived in country, they were placed in support of Saudi Arabian Army and National Guard forces.) Consequently, the

2d ANGLICO, located at Camp Lejeune, North Carolina--only 90 miles from the 82d Airborne's home base at Fort Bragg--was alerted for deployment on 7 August. Deployment to the contingency area began on 8 August.

The team availability for the 2d ANGLICO when alerted was as follows: the division team was available and ready for deployment; the first brigade platoon was training 200 miles away in the mountains of Pisgah National Forest, preparing for a deployment to Norway with the 4th MEB--it could only be contacted by HF radio communications or telephone messages left at the park ranger station; the second brigade platoon was ready and available for deployment; the third brigade platoon, due to personnel shortages and support to other operations was not available.

The company had one SALT and one FCT deployed supporting a MEU in the Mediterranean. Another SALT and FCT were detached and out of company control, training in CONUS to replace the teams supporting the deployed MEU. What remained of the third brigade platoon consisted only of recently assigned replacements and a small cadre to train the replacements for eventual assignment to operational ANGLICO teams.

On 8 August, a tailored division team and the second brigade platoon began deploying with the 82d Airborne division to Saudi Arabia. The second brigade platoon was

augmented by the SALT and FCT that had been training to relieve the teams deployed to the Mediterranean. The 1st Brigade platoon was enroute to its home base from Pisgah National Forest, planning to prepare for overseas movement and deployment with the 82d Airborne Division. Upon arrival at its home base, the platoon was alerted for possible deployment with the 75th Ranger Regiment, but not before providing a SALT and a FCT to replace the teams which were earmarked to relieve the teams in the Mediterranean.

As a result of this somewhat confusing situation, the 82d Airborne ANGLICO support for the initial sixty days of *Desert Shield* consisted of a tailored ANGLICO division team and one brigade platoon in support of the entire division. The personnel shortages, support to MEU deployments, and high tempo of training described in the preceding example are the norm for an ANGLICO. To expect a full ANGLICO in support of an Army division is clearly unfounded. This leaves the Army in a position having to fend for itself where naval gunfire is concerned. This particular situation was exacerbated by the fact that the 82d Airborne's higher headquarters, the XVIII Airborne Corps, was without any form of naval gunfire planner; there was no ANGLICO team in support of the headquarters and the Marine exchange officer working in the corps FSE had departed the command the previous month, while his replacement had yet to arrive.

The military services of the United States, driven by economic problems and the end of the Cold War, are beginning a significant reduction in force. Every branch of the military will be forced to make difficult decisions on reduction in the next few years. One of the reductions under consideration by the Marine Corps would reduce the ANGLICO mission to a strictly liaison function.⁸ This consideration is being made in spite of the fact that the Marine Corps has identified ANGLICO as a tier one unit; tier one units are critical combat units with manning requirements of 94-100% and for which, "the likelihood of employment as a unit across the spectrum of conflict is high."⁹ Besides illustrating the severity of proposed military personnel cuts, the situation poses some significant problems for the Army.

Currently, the ANGLICO provides both the manpower and equipment to control and coordinate naval gunfire for the Army. Chapter four has already asserted that the level of training in the Army today is inadequate to support naval gunfire operations without ANGLICO spotters. The ANGLICO personnel structure has already been addressed in chapter five. The following discussion of the equipment support ANGLICO teams provide to the Army.

The equipment provided by the ANGLICO is largely communications gear, consisting of HF, VHF and UHF radios. ANGLICO teams use the same VHF radios as the Army FSEs they

augment. The AN/PRC-104 HF radios and the AN/PRC-113 radios the ANGLICO teams depend upon are not normally found in the authorized tables of equipment of their Army counterparts. Both radios are in the Army inventory, however. The AN/PRC-104 is the primary radio for naval gunfire communications, while the AN/PRC-113 radio is used for back-up naval gunfire communications under line-of-sight conditions. Both radios require unique communications security (COMSEC) ancillary hardware for secure mode communications.

An Army FSE desiring to coordinate naval gunfire without an ANGLICO team would have to coordinate, through its communications officer, to arrange for loan of both the radios and the COMSEC hardware. This is not only time consuming, but draws precious communications assets from elsewhere. Additionally, the training requirements for HF radio communications, as discussed in chapter four, must be taken into account. If the ANGLICO is reduced to a strictly liaison function, the Army will require additional radio assets in the tables of equipment for fire support organizations expected to conduct naval gunfire operations.

Besides radios, ANGLICO teams provide AN/PPN-19 radar beacons which are used as navigational aids for both naval gunfire ships and numerous aircraft. The ships use the signal from the radar beacon as a fixed reference point, allowing accurate adjustment of naval gunfire rounds while

the ship is in motion. This is yet another expensive piece of equipment the Army would require to conduct autonomous naval gunfire operations. As always, with new equipment comes additional training requirements to make an Army naval gunfire system functional.

In any discussion of the ANGLICO, one must remember that in addition to naval gunfire, ANGLICO teams provide their supported Army units control of Navy and Marine Corps close air support. With this in mind, changing the ANGLICO to a strictly liaison organization takes on greater significance.

The key to attaining proper fire support for a contingency operation is the joint planning that occurs prior to the operation. The 1944 edition of FM 31-5 (Landing Operations on Hostile Shores) stresses the need for detailed joint planning between the landing force commander (the equivalent of our Army contingency force commander) and the naval force commander.¹⁰ It goes on to explain that the Army fire support plan should be included as an annex to the naval task force operations order.¹¹ One author of the same era indicates that, during World War II, liaison officers from the ground force were placed on the flagship of the naval gunfire support force.¹² There is nothing to suggest that the same liaison requirement does not exist today.

Joint Publication 3-09 (Doctrine for Joint Fire

Support) is currently in the final draft form. Though not yet officially doctrine, it represents the current thoughts on joint fire support. The publication indicates that the Navy will provide fire support advisors to the Army corps "as the mission requires and as resources permit."¹³ With no ANGLICO support available at the corps level, the onus is upon the Army to ensure that the proper liaison is established with the Navy for both naval gunfire support and other joint operations.

When attempting to integrate ANGLICO teams into Army war plans, several problems occur. First, there is no central agency within the Marine Corps with which to deal. The Army planner must first determine the CINC AOR in which the plan will be executed and then determine which MEF is responsible for that AOR. Ideally, 1st ANGLICO would support plans for an AOR covered by I MEF and 2d ANGLICO would support plans for an AOR covered by II MEF. However, the example of the 2d ANGLICO's deployment to Operation *Desert Shield* indicates two things: the physical location of 1st ANGLICO in California may make it impossible for the company to respond quickly enough to meet the initial support requirements of an Army contingency force; and it is unlikely that one ANGLICO will be sufficient to meet all of the support requirements of an Army corps. The physical

proximity of 2d ANGLICO to Fort Bragg makes it the logical unit to deploy in any situation requiring the 82d Airborne Division, as 2d ANGLICO's vehicles can self-deploy to Fort Bragg in just a few hours.

The next question an Army planner must ask is whether a Marine Corps MAGTF will participate in the planned operation. If a MEF is involved, unique fire support planning problems exist due to the lack of a doctrinal FSE in the headquarters, as chapter five discussed. Proper coordination with the MAGTF is required for both fire support and for service-unique administrative and logistics support to ANGLICO teams accompanying the Army forces.

When no MAGTF is involved in the contingency operation, a failure of a service-unique piece of ANGLICO equipment, beyond the ability of the supported Army unit to repair, could have serious effects upon accomplishing the ANGLICO mission. A situation like this requires that the ANGLICO tailor a heavier than normal support structure for the deploying teams. This must be taken into account when Army planners develop the Time Phased Force Deployment Data (TPFDD) for the ANGLICO teams supporting their operations.

Planning for naval gunfire support when no MAGTF is participating in the operation presents unique problems for the Army planner. Neither FM 6-20, the Army capstone manual for fire support, nor Joint Publication 3-09 (Final Draft)

acknowledges that the Army could receive naval gunfire support in a situation other than an amphibious operation. However, such a situation clearly existed in the early days of Operation *Desert Shield*, when the 82d Airborne Division, supported by 2d ANGLICO, was air-landed in Saudi Arabia as the initial American ground force in theater. There is clearly a need for the current literature to address this situation.

There is no TTP manual available to the Army planner that addresses, in the detail required, the employment of ANGLICO teams. The best way to determine the requirements is direct coordination with an ANGLICO. Fire support coordinators at each level in a contingency corps should be an expert on the capabilities, limitations, and employment of his ANGLICO counterpart. Some unique planning considerations for ANGLICO employment are discussed in the following paragraphs.

As always, communications is the first consideration for naval gunfire planning. A thorough understanding of the communications architecture of the supporting naval gunfire force is essential to receiving timely fire support. When an ANGLICO team is coordinating that support, additional communications requirements must be considered. The primary means of command and control communications for an ANGLICO is HF radio. The communications officer of the supported force

must plan to allocate HF frequencies to his supporting ANGLICO.

High Frequency communications are highly susceptible to solar and atmospheric conditions. Ideally three frequencies are allocated: one each in the upper, medium, and lower range of the HF spectrum. This allows for twenty-four hour HF radio operations under any sort of atmospheric or solar conditions. A minimum of two frequencies are required. The allocation of HF frequencies, which are generally closely managed in a theater, may cause considerable problems for the Army communications officer, who has only a limited number of frequencies with which to work.

The ANGLICO is also equipped with man-packed satellite communications systems. Like HF frequencies, satellite channels are usually very limited in number. The Army communications officer may have to arrange for channel sharing for his supporting ANGLICO.

An ANGLICO team deploying in support of the Army will bring its basic load of COMSEC material, normally enough for a thirty day period. After that time, the Army communications officer must have arranged to provide COMSEC material to his supporting ANGLICO teams. If the ANGLICO parent unit has also deployed, arrangements can be made to obtain the necessary materials through that unit. If not, the supported Army unit must add its ANGLICO teams to its

COMSEC account. As this sort of transaction cannot be accomplished quickly, it is essential that COMSEC planning for ANGLICO teams be accomplished in conjunction with the development of an Army operations plan.

Integrating ANGLICO support into an operations plan requires a complete understanding of ANGLICO employment. The Army planner must be able to identify ANGLICO requirements in terms of mission (close air support, naval gunfire support, or both), type and number of teams required, airlift space availability, method of entry into the theater of operations, estimated duration of the mission, command and control, and any special coordinating instructions.

Proper planning will enable the ANGLICO commander to tailor his teams, his support, and his command and control to fit the situation. Ideally, this type of information is discussed at a planning meeting. Under less than ideal circumstances, this information may be conveyed by a secure telephone call directly to the ANGLICO unit. Advance planning will enable the ANGLICO to develop detailed supporting plans, thus facilitating their easy integration into the supported Army operations plan. Of all planning considerations, the proper integration of ANGLICO teams into the Army TPFDD is critical. Chapter five of the initial draft of Joint Publication 3-00.1 (Joint Doctrine for Contingency Operations), though far from complete, addresses

some of the broader joint considerations that must be considered by joint fire support planners.

Despite its reputation for inaccuracy, naval gunfire has been used quite effectively in close proximity to friendly troops. Noted authority Donald M. Weller explains that proper training and cooperation between shore parties and naval gunfire ships allowed effective five inch fires placed within fifty yards of friendly troops during the Marine Corps landing at Tarawa during World War II.¹⁴ One way to achieve accuracy was through the use of aerial spotters to adjust the fall of shot for the naval gunfire projectiles. Many of the battleships in World War II had float planes which were catapulted aloft to conduct reconnaissance and spot for naval gunfire missions.¹⁵ When the mission was over, the planes landed in the vicinity of the battleship and were recovered with a crane.

During the Korean War, Army units provided aerial fire support observers (AFSO) to spot for naval gunfire missions.¹⁶ The advent of the helicopter in military operations made aerial spotting even more effective, as the helicopter offered a relatively stable platform for the spotter. The value of naval gunfire spotters in helicopters was most recently validated in the Falklands war. During the Vietnam War, QH-50 drone helicopter, affectionately referred to as *Snoopy*, provided naval gunfire spotting via an onboard

television camera that relayed images to the supporting ship.¹⁷ *Snoopy* was the forerunner of the remotely piloted vehicles (RPV), commonly referred to today as unmanned aerial vehicles (UAV).

The decade of the 1970's saw the beginning of a determined movement to integrate RPVs into U. S. military operations. An RPV offers the advantages of being cheaper than a manned aircraft, less susceptible to enemy air defenses, and does not place human life at risk. While the Army struggled with its *Aquila* RPV system, the Marine Corps fielded and validated its own RPV system, called *Pioneer*. Currently, the Marine Corps has an RPV company in the Surveillance, Reconnaissance, and Intelligence (SRI) Group of each MEF. (The SRI Group is also the parent unit of the ANGLICO).

In 1984, a Marine Corps detachment tested RPVs in Lebanon, seeking a method to spot sixteen-inch naval gunfire from the *USS New Jersey* for the Joint Task Force (JTF) Lebanon. The RPVs, flying from a land base, were able to spot for naval gunfire missions from a distance in excess of 100 nautical miles.¹⁸ The Navy subsequently fielded a battleship based version of the *Pioneer* RPV, launched from a catapult and retrieved with a net mounted next to the number three (rear) turret. This version of the *Pioneer* RPV was employed successfully in Operation *Desert Storm* not only to

provide valid targets for naval gunfire missions, but also to provide critical battle damage assessments at the end of missions.¹⁹ With the retirement of the *Iowa* class battleships, the Navy will lose this capability, at least temporarily.

Army interest in UAVs is steadily increasing. Future systems, with sophisticated sensor packages, will provide detailed target information on the enemy. The Joint Chiefs of Staff are currently developing Joint Publication 355.1 (Joint Tactics, Techniques and Procedures for Unmanned Aerial Vehicles). Chapter nine proposes some naval gunfire related recommendations for the Army's UAV program.

The Army is currently developing a High Mobility Artillery Rocket System (HIMARS) to support forced entry counterfire and deep fires requirements in a regional contingency operation.²⁰ Chapter eight discusses the HIMARS system. The purpose of counterfire is to attack enemy indirect fire (artillery and mortar) systems before they are able to affect friendly forces. Deep fires are used to delay or disrupt the enemy by attacking critical tactical targets lying well beyond the area of the close battle. As was the case with cannon artillery support, the counterfire and deep fires capability of HIMARS fires will not be available to the contingency force during the initial stages of deployment. Naval gunfire can help the Army with both of these missions.

A recurring theme in naval gunfire literature is the ability of ships to deliver deep fires that are well beyond the range of field artillery. This is more a result of maneuverability than of the weapon systems' capability. In some circumstances, a ship will be able to maneuver parallel to enemy forces, well into the enemy rear area. This was the case in *Desert Storm*. While the Marine Corps front lines ran along the Kuwait-Saudi Arabia border, battleships were able to steam well up the Kuwaiti coastline to deliver their sixteen-inch fires. This capability can prove even more effective in a small island scenario, where it is may be possible to deliver fires against the enemy from many directions.

The role of naval gunfire in counterfire has long been recognized. Donald M. Weller lauds its success during World War II, where it was used to destroy both field artillery and massive coastal artillery fortifications.²¹ The key to effective counterfire is the ability to locate hostile firing positions. The role of the UAV in this was previously discussed. A noteworthy lesson stems from the American intervention in Lebanon during the 1980's. Firing under the direction of a U. S. Army target acquisition battery (TAB), the battleship *USS New Jersey* destroyed eight Syrian artillery batteries with its sixteen-inch guns.²² This sort of cooperation, though limited by the battleship

retirement, is still possible. Chapter nine contains some recommendations in this area.

With the preceding lessons in mind, the topic will now turn to a brief analysis of naval gunfire support in the contingency operations *Urgent Fury*, *Just Cause* and *Desert Shield/Storm*. A look at these operations raises some serious fire support questions today that should have been answered before Operation *Urgent Fury* in October 1983.

On 25 October 1983, Joint Task Force 120, operating under the U. S. Commander in Chief Atlantic (CINCLANT), invaded the Caribbean island of Grenada with the mission of halting the spread of communism and rescuing American medical students from a deteriorating situation. Operation *Urgent Fury* was conducted using rapid planning, multiple services, and a shroud of secrecy--a typical contingency operation. Perhaps the most detailed unclassified description of the fire support planning for *Urgent Fury* is an article written by Major Scott R. McMichael, who served as a research fellow in the Combat Studies Institute, U. S. Army Command and General Staff College.²³

Though certainly not as thorough as a classified after action report, McMichael's article presents a strong indictment of American joint fire support planning. It addresses several deficiencies in communications and fire support planning for naval gunfire and the integration of

ANGLICO teams into the Army operations plan. His conclusions are echoed by former Secretary of the Navy John F. Lehman Jr. in his book Command of the Seas.²⁴ A brief summary of the problems follows.

Ranger elements made the initial forced entry operation and seized Port Salines airfield for follow-on forces. The Navy was not represented at any of the ranger planning sessions so no coordination for destroyer or naval air support was possible.²⁵ The ranger plan relied upon their own organic mortars and Air Force AC-130 *Specter* gunships for fire support. The AC-130 requires a permissive enemy air defense situation in order to provide effective support.

For the 82d Airborne Division, the initial plan called for only the 2d brigade to participate. Consequently, the division FSE personnel and the Division Artillery Commander (the division's FSCoord) were not included in the planning, due to operational security (OPSEC) considerations, until the division was alerted on 24 October--one day before the invasion began.²⁶ The division eventually deployed the 2d and 3d brigades. Artillery support for the operation consisted of two batteries of 105mm howitzers per brigade. The batteries were split into two three-gun increments and spread throughout the airfield.²⁷

During the period 22-24 October, while 2d brigade planners met with planners at CINCLANT headquarters, no fire support representatives were included in the planning. Consequently, information pertaining to the availability of naval fire support was not obtained; specifically, procedures for obtaining naval gunfire, communications channels for coordinating fire support with the Navy Supporting Arms Coordination Center (SACC), and other key fire support issues were neglected. Consequently, these had to be worked out on the ground once the operation was under way.²⁸

Once the division was alerted, the 2d ANGLICO was alerted for deployment, but could not arrive at Fort Bragg in time to deploy with the initial wave of forces. Once deployed, it was discovered that the ANGLICO did not have the proper COMSEC materials to communicate with the supporting naval ships. This had to be worked out face-to-face with the Navy in Grenada.²⁹ Once able to conduct naval gunfire missions, collateral damage restrictions severely limited the use of naval gunfire; the Commander of JTF 120 directed that all naval gunfire missions be personally approved by himself, virtually eliminating the use of naval gunfire against targets of opportunity.³⁰

McMichael points to three problems in pre-deployment planning: operations security restrictions imposed by the JCS kept key fire support personnel from participating in the

planning; planners suffered from a severe shortage of time owing to the rapid manner in which the operation was mounted; the lack of Army and joint staff planners possessing joint fire support expertise when the 82d Airborne 2d brigade met with planners from CINCLANT headquarters.³¹

Communications and fire support planning failures in the pre-deployment/crisis action phase of Operation *Urgent Fury* caused a breakdown in naval gunfire support. As is typical of most contingency operations, artillery support was extremely limited during the initial stages of the deployment, due to the airflow restrictions that created the requirement to split artillery batteries into three gun sections. Fortunately, the AC-130 gunships and other air support was effective. Had the weather turned foul, this may not have been the case. Severe weather could have made naval gunfire the only reliable fire support system in the battle.

The 75th Ranger Regiment has since added a Marine officer to its FSE, as discussed in chapter five. The rangers should never again suffer the same sort of planning problems described above. With the preceding lessons in mind, the analysis will now turn to Operation *Just Cause*, the U. S. invasion of Panama.

In December 1989, U. S. forces invaded Panama with the mission to oust the drug trafficking dictator Manuel Noriega and install the duly elected government to power. The

isthmus of Panama, forming the strategic link between the Atlantic and Pacific oceans, offered the ideal arena for the application of naval gunfire support--there was no credible naval threat to U. S. naval gunfire operations, hydrography was favorable, and many of the operational targets were within naval gunfire range. Naval gunfire was never used!

Why naval gunfire was not used remains a mystery. Some claim that it was due to collateral damage considerations. Others contend it was refused due to Army parochialism at a time when the Army and Marine Corps/Navy amphibious team were competing fiercely for the role as the nations supreme expeditionary force. The only certainty is that, as in Grenada, the Army ground forces relied almost totally upon air support, particularly fires from Air Force AC-130 *Specter* gunships and O/A-37 attack aircraft. As was the case in Grenada, over-reliance upon air support could have proven disastrous had the weather not cooperated.

The following account was provided by the FSCoord for JTF South, the land component commander for the operation.³² JTF South was comprised primarily of the XVIII Airborne Corps Headquarters and elements of the 82d Airborne Division, the 7th Infantry Division and a small Marine Corps task force. The Marine Corps exchange officer assigned to the XVIII Airborne Corps FSE ultimately became the JTF South FSCoord by default--the Army colonel who would have normally had the job

had transferred to Korea the month before and his replacement had not yet arrived when Operation *Just Cause* occurred.

From the beginning of the operation, naval gunfire was not considered, due to the concern over possible collateral damage. Consequently, no ANGLICO teams deployed with either the 75th Ranger Regiment or the 82d Airborne Division, as would have normally been the case. Well into the operation, JTF South was required to conduct an attack on the island of Boca Del Torro. This was a remote island that was believed to be manned by a Panamanian jungle warfare training unit and some Cuban advisors. The island was reportedly used, amongst other things, for training Nicaraguan Sandanista forces. With the exception of military forces, the island area of operations was virtually uninhabited.

The decision was made for a daylight attack against Boca del Torro. Due to its offshore range, only U. S. Army UH-60 helicopters were able to reach the island with sufficient fuel remaining for a return trip. Consequently, attack helicopter support was not available to the infantry task force assigned the mission of securing the island. AC-130 gunship support was not available due to the reluctance of the Air Force to employ the aircraft during daylight.

By chance, a U. S. Navy *Knox* class frigate, the *USS Vreeland*, was in the area and available to provide naval gunfire support for the operation. The ship was an asset

belonging to the U. S. Commander-in-Chief Atlantic Fleet (CINCLANTFLT). Initial coordination indicated that the CINCLANTFLT was agreeable to allowing JTF South to use the *Vreeland*. The XVIII Airborne Corps FSE went so far as to contact the 75th Ranger Regiment FSE in order to borrow an ANGLICO team to spot for the *Vreeland*. When informed that the Rangers had no ANGLICO teams to lend, the corps FSE built an ad hoc team from radios borrowed from the 7th Infantry Division and from several corps FSE members who had attended the Naval Gunfire Spotters Course at Little Creek, Virginia.

Unfortunately, the CINC of the U. S. Southern Command (CINCSOUTH) refused to allow JTF South to use naval gunfire. The reported reason for the refusal was fear of collateral damage by naval gunfire, even though the Boca Del Torro area of operations was remote and had only military targets. Consequently, the infantry task force assaulting the island did so without fire support. Fortunately, the enemy gave up with minimal resistance.

Many problems arising during Operation *Just Cause* were repeats of the problems encountered during Operation *Urgent Fury*. Once again, the pre-deployment planning at the joint level was lacking. In the particular instance of Boca del Torro, had the situation been made clear to the CINCSOUTH during the pre-deployment/crisis action phase, it is arguable that the CINC would have authorized naval gunfire support for

the operation. Under no circumstances should a conventional ground operation proceed without adequate fire support.

In August 1990, barely seven months after the end of hostilities in Panama, the XVIII Airborne Corps headquarters and the 82d Airborne Division were headed into harms way in Saudi Arabia for Operation *Desert Shield*. The beginning of this chapter related how the 2d ANGLICO came to support the 82d Airborne division for *Desert Shield* and the circumstances of its deployment to Saudi Arabia. The following paragraphs will address some problems peculiar to naval gunfire support for *Desert Shield*.

The 82d Airborne Division was the first U. S. ground combat force in theater. Across the border in Kuwait, approximately fifteen Iraqi divisions were positioned to drive into Saudi Arabia at a moments notice. At least nine of these divisions were armored, mechanized, or motorized infantry.³³ President Bush's line in the sand was, as least initially, composed mostly of infantry soldiers with very little supporting equipment and little supporting fires except from the air. The initial aircraft deployed had only the ordnance they carried into theater with them.

The 82d Airborne pushed plane load after plane load of soldiers into theater, each load raising the political ante against Saddam Hussein. The senior NGLO for the 2d ANGLICO was one of the first ANGLICO planners to deploy to Saudi

Arabia with the 82d Airborne, arriving in country on 9 August.³⁴ At that time, the fire support for the 82d Airborne division was inadequate, with only a battalion of 105mm howitzers in theater and a meager supply of ammunition available.

One of the initial missions of the 82d Airborne Division was to secure the port of Al Jubail to facilitate the landing of Marine Corps maritime prepositioning ships. Still suffering from a fire support drought, the 82d Airborne attempted to acquire some naval gunfire support from the Middle East Task Force. The task force was operating in the Persian Gulf, fully involved in the maritime interdiction of Iraqi shipping. There were in excess of a dozen ships in the task force capable of providing naval gunfire support to the 82d Airborne.

A team from 2d ANGLICO, headed by the senior NGLO, travelled to Bahrain during the second week of August to coordinate naval gunfire support with the task force and to determine what communications procedures to use, as there was no communications plan available prior to deployment. A visit to the task force flagship, the *USS LaSalle*, met with only partial success. The task force was unwilling to provide support using any of the ships involved in the maritime interdiction mission, but promised support as soon as the battleship *USS Wisconsin* arrived in the Gulf.

The *Wisconsin* arrived on station during the last week of August. Another coordination visit to Bahrain yielded the desired results and arrangements for naval gunfire support were made. Although no tactical mission (i.e. general support) was assigned to the *Wisconsin*, it was agreed that 2d ANGLICO would maintain continuous HF radio communications with her and fire support was promised in the event the Iraqi forces crossed the border into Saudi Arabia.

Satisfied with this arrangement, 2d ANGLICO teams conducted training with the battleship over the next month until the 82d Airborne was relieved of its mission by the Marine Corps 7th MEB in the end of September. The training included practice naval gunfire missions with the battleship and rotating firepower control teams out to the *Wisconsin* for naval gunfire orientation training. At the same time, ANGLICO teams conducted naval gunfire classes for fire support personnel of the 82d Airborne Division.

Fortunately, the 2d ANGLICO never had to use the services of the *Wisconsin* during *Desert Shield*. The hydrography in the area rendered the 5"/38 guns of the battleship virtually useless, as the *Wisconsin* could come no closer to shore than about 10 kilometers in the Al Jubail area, due to shallow water. The 5"/38 guns, from that distance, could range only about five kilometers inland. The 16"/50 guns, on the other hand, were able to cover the full

sector of the 82d Airborne's right brigade and approximately half of the sector of the left brigade, which were both oriented northward, parallel to the coastline. A ship with 5"/54 guns could have covered most of the right brigade's sector, but would have been of little use to the left brigade.

The preceding illustration, once again, shows a breakdown in pre-deployment/crisis action planning. The short-fuzed notification allowed the 2d ANGLICO virtually no planning time in CONUS. Once again, planning at the joint level did not anticipate the fire support requirements for the 82d Airborne Division. The situation clearly warranted dedicated naval gunfire support for the division, but it was somehow overlooked. Had Saddam Hussein pushed into Saudi Arabia, the 82d Airborne division, with inadequate fire support, might have become a sacrificial lamb.

Two platoons from the reserve component augmented the 2d ANGLICO for Operation *Desert Storm*. The platoons were activated in late November, trained at Camp Lejeune during December, and deployed into theater during the first week of January. These platoons performed superbly, but they would have been unavailable had hostilities occurred during the early days of *Desert Shield*, prior to the reserve component call-up by President Bush. For the purpose of contingency operations, the Army can only depend upon the two ANGLICOs

from the active component. The limitations of the active companies were discussed previously. The reserve ANGLICO platoons deployed to *Desert Storm* suffering from severe equipment shortages, particularly in radios and COMSEC hardware. Had they been required to operate the full doctrinal range of radio nets an ANGLICO normally uses, they could not have complied.

An illustration from Operation *Desert Storm* lends some insight into heavy-light force mixtures involving ANGLICO teams.³⁵ The basic transportation for ANGLICO teams is by foot or in High Mobility Multi-purpose Wheeled Vehicles (HMMWV). The HMMWV is a light truck, offering virtually no crew protection. Accustomed to working with light forces, the 2d ANGLICO learned early in *Desert Shield*, while attached to the 7th (British) Armored Brigade (Desert Rats), that the HMMWV was not suitable for working within tank or mechanized infantry battle formations. The HMMWV could not keep up with tanks, was a hazard operating within the armored vehicle formations, and offered the crew no protection while the armored vehicles were involved in direct fire engagements with the enemy. The 2d ANGLICO was finally driven to try putting forward air controllers inside tanks, but never fully solved the problem.

On 19 January 1990, two days after the *Desert Storm* air war began, the 2d ANGLICO was ordered to support the

Army's Tiger Brigade, an armored brigade of the 2d Armored Division. The Tiger Brigade was under the operational control of the 2d Marine Division for the drive into Kuwait City. Facing the same problems encountered while supporting the Desert Rats, a stroke of good fortune saved the day for the 2d ANGLICO. During the first week of February, the Tiger Brigade exchanged its old Bradley infantry fighting vehicles for new ones. Each ANGLICO SALT and FCT was issued one of the old Bradleys, along with an intense training course on how to operate it. The Tiger Brigade provided drivers, while ANGLICO team members became the crews. The ANGLICO communications platoon worked frantically to devise makeshift mounts for the man-packed HF and UHF radios and their associated COMSEC hardware. In a matter of 72 hours, the radios were installed, the crews were trained, and the 2d ANGLICO, now part of an armored force, rode off to make history with the Tiger Brigade.

The success of the preceding illustration was largely due to the serendipitous availability of Bradley infantry fighting vehicles for the ANGLICO teams. Were the Bradleys not available, the situation would have been very different. With the 24th Mechanized Division as part of the XVIII Airborne Corps, a similar situation could exist in a future contingency operation. Finding a solution for this problem poses a significant challenge for the fire support community.

This chapter focused on some of the basic problems the Army faces in the field of naval gunfire support. The Army has become almost totally dependant upon the Marine Corps ANGLICO to control and coordinate naval gunfire support. It is foolish to assume that an ANGLICO will always be available to perform this mission, yet the Army has not developed the skills to perform the mission itself.

History has taught us a common set of problems associated with naval gunfire. Amongst the most significant are communications and joint planning. Naval gunfire communications and joint planning problems plagued the U. S. Army during Operations *Urgent Fury*, *Just Cause*, and *Desert Shield*. Operation *Desert Storm* raised yet another issue, the mixture of heavy and light forces in naval gunfire support operations. The Army fire support community has a difficult task ahead if it chooses to pursue naval gunfire as a means of fire support for future contingency operations.

CHAPTER 7 NOTES

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²⁹ Scott R. McMichael, "Urgent Fury," 10.

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CHAPTER EIGHT

EMERGING TECHNOLOGY

Today's Navy faces a dilemma--how to support the naval gunfire requirements of the Marine Corps' over-the-horizon (OTH) amphibious tactics while coping with a shrinking budget and a reduced force. The problem is exacerbated by the retirement of the *Iowa* class battleships, an action that removes the longest shooting guns (16"/50) from the Navy's inventory when the new Marine Corps tactics demand even greater ranges than the 16"/50 could deliver.

This chapter will discuss some emerging technology in weapons systems and projectiles that could hold the answer to future naval gunfire requirements. The technology discussed here presents a broad view of systems which may be available to support the Army and the Marine Corps by the end of this century. The fielding of any of the systems will impact upon how the Army should approach naval gunfire in the future.

The analysis will address the secondary thesis questions: 1) "In what direction is the Navy going in areas of weapons and doctrine in the field of naval gunfire support?"; and 2) "In what direction is the Marine Corps going in the areas of tactics and force structure in the field of naval gunfire support?"

The OTH operational concept document was signed by the commanding general of the Marine Corps Combat Development Command on 15 March 1991.¹ This action set the stage for much debate within the U. S. Navy and Marine Corps. Over-the-horizon calls for an extremely mobile amphibious force, capable of placing a regimental-sized landing team up to 40 kilometers deep into the enemy's rear by helicopter and with support provided by surface assault. Its success depends upon operating from a distance in excess of 25 miles [ca. 40 kilometers] from the hostile shore, beyond visual and radar range.²

The requirement to operate up to 40 kilometers deep into the enemy rear, while beginning an assault from a 40 kilometer stand-off range, gives some indication of the range requirements for naval gunfire support. Assuming that no naval gunfire bombardment is fired prior to commencing the OTH assault, a gunfire support ships may begin moving towards the shore with the first wave of surface assault vessels. If the gunfire support ships were able to come as close to the shore as five kilometers, they would still require an effective range in excess of 45 kilometers to support a deep insertion of heliborne troops into the enemy rear. This range virtually doubles the current capability of the current 5"/54 guns. Given today's budgetary constraints, the Marine Corps may have to adjust its tactics rather than expect the

Navy to field a new system to provide the necessary fire support.

This chapter will discuss four possible approaches to improve naval gunfire support and facilitate OTH tactics: improving the range of the current 5"/54 gun systems using new projectiles and propelling charges; fielding entirely new gun systems that will mount on existing ships; developing deck-mounted rockets for close support of ground troops; and developing deck-mounted missiles for close support of ground troops. Each of these approaches is discussed below.

Noted naval writer Charles W. Koburger stated after the Falklands war that no readily acceptable substitute for gunfire support has yet been found.³ Little has changed in the ensuing years to suggest otherwise today. There are a number of arguments in favor of choosing gun systems over rockets or missiles to provide close support for ground troops.

The foremost argument for guns today deals with cost. A projectile for a naval gun cost just a fraction of the price of the simplest rocket or guided missile. Amongst the other significant advantages is the relatively limited magazine capacity most ships have for carrying missiles as compared to gun projectiles.⁴ Likewise, guns are more responsive to the immediate needs of a spotter, being better

suitied to the frequent ammunition changes needed to support ground operations.⁵

Improving the range of the current 5"/54 gun systems is attractive for two obvious reasons--it promises the fastest results and is probably the cheapest method. The battleship retirement creates a gunfire gap that needs a fast solution. However, this approach to improving gunfire support is limited by the technology of the current 5"/54 gun. Gun breeches and barrels have a finite limit as to the weight of projectile and internal pressures of propellant combustion they can withstand before suffering a catastrophic failure.

Increasing gun range through improved propellants and projectiles is more easily attainable by producing an entirely new gun system, built to the specifications needed to meet the range requirements of OTH. The obvious problems with this solution are the cost and the time required to field a new system. If the entire project were fully funded and development began immediately, the process of research and development, operational testing, and fielding could easily last five years or more. Under current budgetary conditions, a solution nearer the end of the decade is a more reasonable expectation.⁶ In the meantime, the OTH naval gunfire requirements of the Marine Corps go unanswered. Ship-mounted rocket systems offer a compromise somewhere

between guns and guided missiles. Rockets, which follow a ballistic path after launch, are much less expensive than guided missiles. The U. S. Navy successfully supported ground forces with rockets during World War II, Korea, and Vietnam. The Navy's last ground support rocket used in combat was carried on inshore fire support ships known as the LFR.

The LFR boasted a 5"/38 gun and eight twin launchers for five-inch rockets. It could fire up to 48 rockets per minute to a maximum range of nine kilometers--a short range even for the Vietnam war era. The LFR secondary armament consisted of two twin 40 millimeter guns, two 50 caliber machine guns, and four 30 caliber machine guns.⁷ These ships were virtual floating ammunition magazines, making them very vulnerable and requiring destroyer or tactical aircraft escort.⁸

Conventional rocket projectiles are generally less accurate than comparable gun projectiles. They are also less responsive to the spotter due to the greater handling difficulty associated with rocket ammunition. Many modern rockets are pre-packaged in discardable pods carrying several rockets each. The pods require more ship magazine storage space and offer less of a variety of ammunition than naval gun ammunition. Rockets are, however, capable of achieving

greater ranges than the current 5"/54 gun firing a conventional projectile.

Guided missiles, though first in accuracy, arguably offer the least desirable alternative to guns, the primary drawback being cost. Operation *Desert Storm* demonstrated that, "... [the] absolute dollar cost of a weapon or weapon system is not a critical factor once hostilities commence....," during a regional contingency operation.⁹ This is true enough for operational and strategic weapons systems, but not necessarily true for close support of ground troops. *Tomahawk* land attack cruise missiles and *Patriot* air defense missiles do not require actual firing to train their crews. For a close support weapon, one must factor in the ability to conduct training with the system. Unlike guns or rockets, the prohibitively high cost of missiles limits their use in training. For close battles, with moving targets and often inaccurate target locations, missiles do not offer the required responsiveness. Like rockets, missiles require an inordinate amount of magazine storage space compared to gun projectiles. Likewise, missiles do not offer the variety of ammunition required for the close battle.

The inescapable conclusion is that a gun system is the best answer for the close support of ground troops. The analysis now turns to technological developments that will

allow greater ranges with naval guns than is currently possible.

The technology for extended projectile ranges currently exists in the field artillery. Amongst the possibilities are rocket assisted, base bleed, and sabot projectiles. Additionally, to remain viable in the future, naval gunfire must improve its accuracy. The following paragraphs will discuss each of these topics.

Rocket assisted projectiles (RAP) are a mature technology in the field artillery. A rocket motor, fitted to the base of a conventional projectile, ignites during flight, altering the ballistic arc of the projectile and increasing the range. Conventional naval gun RAPs could easily achieve greater ranges than are possible firing conventional projectiles. However, for RAPs or conventional rockets, increased range is a function of decreased warhead weight. Each pound of rocket propellant added to the weight of a projectile requires an equal decrease in warhead weight. At some point, increased range reaches a point of diminishing returns when measured against warhead weight.

Base bleed projectiles offer an alternative to RAPs. A normal projectile has a flat base. As the projectile is in flight, a vacuum develops behind it, creating drag that slows the velocity and decreases the range of impact. Base bleed technology offers a 20 to 30 percent increase in range by

using a burning chemical compound attached to the base of the projectile to decrease the vacuum behind the round; with this technology, "the base-bleed element ignites upon firing and creates a positive pressure behind the projectile base, which decreases the atmospheric drag."¹⁰

Sabot technology offers another possibility for extending the range of naval guns. This is a mature technology that has been used for tank ammunition for over a decade. The idea is simple--a sleeve is fitted over a projectile, allowing it to fit into the barrel of a larger caliber gun. The sleeve is discarded in flight, allowing a relatively small projectile to take advantage of the higher internal pressure of combustion that the larger caliber gun breech can withstand.

Noted naval gunfire historian Donald M. Weller describes naval gunfire ranges in the order of 65,000 yards that were achieved in tests over fifteen years ago using sabot technology.¹¹ Similar to RAP projectiles, sabot projectiles reach a point of diminishing returns. This is particularly true with the relatively small caliber 5"/54 gun system--the larger, the sabot, the smaller the overall projectile. A sixteen-inch gun firing a thirteen-inch sabot projectile still offers credible support to the ground force. On the other hand, the value of a five-inch gun firing a 3.5 inch sabot round is debatable.

One requirement for regional contingency operations is a weapon system that can destroy enemy targets while minimizing collateral damage to non-military targets. Precision Guided Munitions (PGM), also called smart weapons, promise to improve the lethality of gun projectiles. These include systems requiring terminal guidance by a spotter using a laser designator and smart munitions that use sophisticated sensors to search for their targets.¹²

The *Copperhead* is a 155 millimeter artillery projectile that proved itself in combat during Operation *Desert Storm*. A semi-active laser seeker in the head of the projectile homes in on a laser spot projected onto the target by a laser designator used by an artillery forward observer. The projectile follows a ballistic path until the laser seeker locates the observer's laser spot, at which time the seeker alters the projectile's path and flies it to the target by manipulating small fins.

As early as 1977, Donald M. Weller suggested that laser guidance was needed to improve the accuracy of naval gunfire.¹³ The relatively inexpensive technology exists today. As with RAPs however, adding a laser guidance package to a naval gun projectile fired from the current 5"/54 system requires decreasing the warhead weight. Adding rocket assistance to a five-inch laser guided projectile would require an even greater decrease.

One promising possibility for the future is the electro-thermal gun. This technology uses an electrical arc to super-heat a propellant material. This material vaporizes, creating a high-pressure plasma to propel the projectile.¹⁴ A similar, but less sophisticated method would use the combustion of a liquid propellant, under extremely high pressure, to propel a projectile.¹⁵ Either of these methods, combined with RAP or base bleed technology, offers substantially increased ranges. However, the electro-thermal gun and the liquid propellant gun require development of totally new weapon systems.

To achieve an increase in range in the order required to support OTH tactics will probably require the development of an entirely new system, be it gun, rocket, or missile. High cost in developing a new gun system is virtually unavoidable. The problems in developing a new major caliber gun are compounded by the relatively light construction of today's ships. However, it is conceivable to develop a rocket or missile system for close support of ground troops by adapting an already fielded ground system to the task. The attractiveness of this method is the obvious savings in research and development dollars associated with developing an entirely new weapon system. The following discussion addresses some of the proposed new systems before the Navy today.¹⁶

The Tactical Vertical Launch System (TVLS) represents the current wave in naval weaponry. A part of the *AEGIS*, combat system, the TVLS performs the naval warfare functions of anti-air warfare, anti-submarine warfare, anti-surface warfare, and strike against land targets.¹⁷ The *Arleigh Burke* class destroyers, the most modern ships in the U. S. Navy inventory, are equipped with the TVLS system. Mounted below decks, the TVLS is a missile launching system, capable of loading a variety of pre-packaged guided missiles. Perhaps the most striking feature of the TVLS is its versatility.

Several close support weapon systems under review by the Navy today will be capable of launching from the TVLS system. While the development of such weapons is feasible, they would still suffer the responsiveness problems and ammunition storage problems associated with all missiles. Not the least of concerns is the cost associated with any missile system. Such problems exist with a system called the *Beachcomer*. It is a TVLS launched *Patriot* missile variant adapted for support of ground troops.

The Navy is also considering an eight-inch gun system that would mount on current ships. This system is totally new and not to be confused with the eight-inch MCLWG lauded by Donald M. Weller in his book, Naval Gunfire Support of Amphibious Operations: Past, Present and Future.¹⁸ In

addition to this gun, an electro-thermal gun is under consideration.

Amongst the variety of naval gun projectiles, the Navy is involved in research into RAPs, base bleed, and laser guided technology. Laser guided projectiles, with current costs up to \$50,000 per round, may prove cost prohibitive.¹⁹

One promising possibility is a ship-launched variant of the Army Multiple Launch Rocket System (MLRS). Proven in combat during Operation *Desert Storm*, the current MLRS fires rockets out to a range of 30 kilometers. (The Army Tactical Missile System (ATACMS), which is fired from the same launcher as the MLRS, is capable of ranges in excess of 100 kilometers). A ship-launched MLRS variant, though not a total solution for OTH fire support requirements, is a relatively low-cost system which has the potential for further development as a close support weapon system. When combined with the current 5"/54 gun system, MLRS represents one possible step toward filling the sixteen-inch gunfire gap.

This chapter discussed emerging technology in the field of naval gunfire support. Greater ranges than are currently possible with the 5"/54 gun system are needed to meet the fire support requirements of the Marine Corps OTH tactics. Possible solutions to the problem are improvements in the current 5"/54 gun system, the development of a totally

new gun system, or the development of rocket or missile systems for the close support of ground troops. Whatever direction the Navy chooses to pursue in attempting to provide fire support to OTH tactics will impact upon the support available for Army contingency operations. Chapter nine discusses some recommendations for Army-Navy cooperation in weapons development.

CHAPTER 8 NOTES

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¹⁹Cary Hithon interview.

CHAPTER NINE

CONCLUSIONS AND RECOMMENDATIONS

The U. S. Navy retired the last of the *Iowa* class battleships, the *USS Missouri*, in March 1992. Though signaling the close of an era in naval gunfire support, the departure of the battleships does not spell naval gunfire's end. The Navy is committed to its naval gunfire mission and intends to pursue improvements to support the Marine Corps' emerging OTH assault tactics.

Ticonderoga class cruisers, the very capable *Spruance* and *Arleigh Burke* classes of destroyer, and a variety of frigates will be available well into the next century to support both the Marine Corps and the Army with naval gunfire. Technological developments over the next decade promise to improve naval gunfire support, as more lethal weapon systems, boasting greater ranges, are fielded to support OTH. This chapter discusses conclusions and recommendations pertaining to the central thesis question, "What role should the U. S. Army take in the field of naval gunfire support?"

The author's response to the central thesis question is that the Army should take action to ensure that naval gunfire will remain available as a means of fire support for the future. The primary reasons for this conclusion are: the

possible changes in the ANGLICO mission; the overall paucity of ANGLICO support available to the Army; the limited ability of the Army to assume the ANGLICO mission; and an historical series of breakdowns in naval gunfire planning and coordination during Operations *Urgent Fury*, *Just Cause*, and *Desert Shield/Storm*.

The next three to five years promise a great deal of uncertainty for the military, as personnel cuts, equipment reductions, and changing missions will force strategic planners to attempt to do more with less. The situation dictates that any actions by the Army be measured against impending changes in the force structure and the national security strategy. Above all, shrinking budgets dictate an economical approach to improving the Army's ability to employ naval gunfire support. The following paragraphs will discuss the thesis' conclusions and the author's recommendations for the Army in the areas of training, joint fire support planning, and cooperation in the joint development of systems supporting naval gunfire operations.

Training will remain the cornerstone of Army readiness. As with virtually all military systems, successful training is a cyclical process, driven from the top down. The senior leadership must identify requirements, establish goals and objectives, and then provide the resources necessary to conduct the training. Finally, the

leadership must provide evaluation and feedback on the training in order to shape future training plans.

As the Army Training and Doctrine Command (TRADOC) element responsible for fire support training, the Field Artillery School must take the lead in implementing training changes. Foremost amongst the training requirements is the TRADOC recognition that training deficiencies exist. Emphasis from the commanding general of TRADOC will help facilitate the correction of problems. With TRADOC backing, the commanding general of the Field Artillery School is in the best position to oversee the implementation of corrective actions. Specific training recommendations are discussed below.

Additional naval gunfire instruction is needed as part of the institutional training of field artillery officers and NCOs. Training at the FAOAC and MOS 13F ANCOC is recommended. The training should focus upon pre-deployment coordination and planning for naval gunfire support, with particular attention to communications requirements, both equipment and COMSEC hardware and software. The addition of another four hours of instruction to the material already covered in these courses should suffice. This training is intended to create a body of fire support planners possessing at least a familiarity with the intricacies of naval gunfire support planning.

While practical application of naval gunfire spotting techniques is desirable, it is not critical. If possible, however, instruction on the naval gunfire call for fire and a practical application exercise should be presented during the FAOBC and the MOS 13F AIT. The practical application would consist of a graded fire mission, either live fire or conducted in the TSFO, using the naval gunfire call for fire and simulating realistic communications with a support ship. This would allow the soldiers attending the courses to gain an appreciation for the differences between conducting fire missions through field artillery fire direction centers versus naval gunfire support ships. Presenting this instruction at the FAOBC and the MOS 13F AIT would target the individuals most likely to actually call for naval gunfire during combat.

Beyond Army institutional training, the Navy Amphibious Schools should be used to present naval gunfire instruction to those Army units most likely to employ naval gunfire support during contingency operations--division artillery and separate brigade artillery units of the XVIII Airborne Corps and the 7th Infantry Division. Scheduling periodic MTTs through the Amphibious Schools would take advantage of the relatively low cost of MTTs as compared to sending individual students on temporary duty orders to the schools.

The Amphibious Schools can gear MTT training towards the specific needs of the individual soldiers, whether a forward observer, battalion/brigade FSO, or division/corps level fire support planner. The ultimate goal of this training should be to establish a small pool of naval gunfire trainers and planners within each division and separate brigade. At a minimum, they should be able to determine naval gunfire requirements for a given mission, identify potential sources of naval gunfire support for the operation, conduct pre-deployment planning with the navy, and coordinate the execution of naval gunfire support. Additionally, they should be capable of simulating naval gunfire communications procedures while working within a field artillery fire direction center during artillery training exercises.

History has clearly shown the value of using AFSOs to control naval gunfire. The AFSOs at division and corps level are prime candidates for the Naval Gunfire Air Spotter Course, described in chapter four. The course, while exportable in MTT form, is best taught through temporary duty at the Little Creek, Virginia Amphibious School, using their computerized terrain board. Only a few AFSOs in each organization need be trained, as the goal of the training should be to establish a small pool of personnel capable of controlling naval gunfire from the air.

The JRTC, NTC, and BCTP will continue to be capstone training exercises for the Army. Naval gunfire should be exercised, consistent with the tactical scenario, anytime an element of the XVIII Airborne Corps or the 7th Infantry Division participates in one of these evaluations. The JRTC has already accomplished this to a small degree. Adding naval gunfire to an NTC scenario (with an ANGLICO providing support to the exercising Army unit) would both improve naval gunfire capabilities and cause the exercising unit to address the heavy-light considerations encountered by the Tiger Brigade during Operation *Desert Storm*, as described in chapter seven.

Ideally, the training at the NTC, JRTC, and during the BCTP would test a unit's ability to plan and coordinate naval gunfire with and without the benefit of ANGLICO teams--the only way to break the Army's pattern of dependency upon ANGLICO support. Due to a paucity of forces, the ANGLICOs cannot be expected to provide control cells for all of this training. With the cooperation of the Navy and Marine corps, the Army should develop the capability to plan and control the naval gunfire scenario for these exercises.

Finally, naval gunfire planning and coordination for the Army should be established as an exercise objective for joint exercises, whenever possible. This is particularly true for the USCINCLANT Exercise *Solid Shield*. With the

XVIII Airborne Corps, the II MEF, and numerous Atlantic Fleet elements participating. *Solid Shield* presents a golden opportunity to exercise not only naval gunfire, but also joint fire support in general. When the CINC declares naval gunfire planning and coordination for the Army as an exercise objective, the joint exercise control group is obliged to develop naval gunfire events for the exercise scenario. This would improve the overall level of joint fire support planning and enhance pre-deployment planning in particular.

The Commandant of the Field Artillery School should actively support the Marine Corps ANGLICO and should work to enhance the status of ANGLICO within the fire support community. There are a number of methods to help accomplish this. First, the two active and two reserve ANGLICOs should be included in the summary_of_field_artillery_units_worldwide in Field Artillery magazine's annual "Red Book." Though not a purely field artillery unit, the ANGLICO is a bonafide fire support organization with a high volume of field artillery officers and NCOs. This small gesture will help raise naval gunfire awareness in the fire support community.

Second, the ANGLICOs should be routinely invited to Fort Sill's annual fire support conference. Brigadier General Richard W. Tragemann, then commanding general of the XVIII Airborne Corps Artillery, recognized the ANGLICOs' value to the fire support community and in 1990 began

inviting them to his fire support conferences. The ANGLICO support provided to the 82d Airborne Division during Operation *Desert Shield* and to the Tiger Brigade during Operation *Desert Storm* should have eliminated any doubts as to the ANGLICOs' worthiness.

The Commandant of the Field Artillery School and the Commander in Chief of U. S. Forces Command (CINCFOR) should express their support for the ANGLICO to the Commandant of the Marine Corps. As separate companies within the Fleet Marine Forces, the ANGLICOs are natural targets for force reduction planners. Oddly situated within the intelligence structure of the SRI Group, the ANGLICOs have few advocates, even within their parent headquarters. Although this thesis has focused upon the ANGLICOs' naval gunfire functions, they are of even greater potential service to the Army with their planning and control of Navy and Marine Corps close air support, as demonstrated with the Tiger Brigade during Operation *Desert Storm*.

Finally, coordination is needed to formalize the training relationship between the ANGLICOs and the Army. Currently, the 82d Airborne Division and the 75th Ranger Regiment have inter-service support agreements (ISSAs) with the 2d ANGLICO. The ISSAs should be expanded to include all ANGLICOs and all units of the XVIII Airborne Corps and the 7th Infantry Division. Inter-service Support Agreements

eliminate much of the coordination required to schedule both training and tactical operations. Forces Command (FORSCOM) is the logical headquarters to coordinate the ISSAs.

Additionally, FORSCOM should request the Commandant of the Marine Corps to appoint an office within Headquarters Marine Corps Policy, Plans, and Operations division to serve as a proponent for ANGLICO training and operational planning.

The Army and Marine Corps fire support exchange described in chapter five has enhanced joint fire support planning and training for the Army. The addition of a Marine Corps field artillery major in the FSE of the XVIII Airborne Corps Artillery was a step in the right direction. The corps' ability to plan naval gunfire support and other joint fire support could be further enhanced by addition of a Navy line officer, who is NGLO qualified, to the corps staff. Acting as a special staff officer, a naval officer would interface with the Navy for both naval gunfire and air support matters. Additionally, he would manage naval gunfire training within the corps and coordinate corps training support from the Naval Amphibious Schools.

The Army and Marine Corps fire support exchange described in chapter five should be expanded to include the 1st ANGLICO and the 7th Infantry Division. Located in Camp Pendleton, California, the 1st ANGLICO is best located to support the 7th Infantry Division, even after the division

completes its proposed move to Fort Lewis, Washington. The exchange would benefit the 7th Infantry Division in both naval gunfire and the joint fire support arena in general.

Pre-deployment planning for naval gunfire has proven problematic throughout the years, as discussed in chapter seven. There are several ways to enhance the Army's pre-deployment naval gunfire planning for contingency operations. Foremost, the XVIII Airborne Corps should conduct a review of existing operations plans (OPLANs) throughout the corps to determine which plans lend themselves to naval gunfire support. With this accomplished, the corps should then determine ANGLICO requirements for each plan and submit these requirements to Headquarters Marine Corps Policy, Plans, and Operations division in order to identify which ANGLICO(s) will support the plan and if there are any projected shortfalls in ANGLICO support.

Once a responsible ANGLICO is designated, the corps, working with the supporting ANGLICO, should determine its naval gunfire support requirements and submit them to the warfighting CINC responsible for the OPLAN. With this done, the last step is to develop the TPFDD for the ANGLICO teams supporting the OPLAN. In the event any of these OPLANs are exercised during BCTP training, naval gunfire should be included in the scenario.

Operational Security requirements can interfere with pre-deployment planning for contingency operations. The 2d ANGLICO has a CINCLANT approved planning cell to conduct top secret, compartmented planning with the Army. A similar planning cell, approved by the CINCPAC, is needed for the 1st ANGLICO. Each of these planning cells should be identified on access rosters for the G-3 plans and the force artillery headquarters of the XVIII Airborne Corps and its subordinate divisions. The ANGLICO planners should be included in the development of Army OPLANS and contingency operation pre-deployment planning.

With many JCS publications currently under development or revision, now is the time to address naval gunfire and joint fire support in general. Joint Publication 3-09 (Doctrine for Joint Fire Support) is already in final draft form. The publication addresses naval gunfire support to the Army only for amphibious operations. As discussed in chapter one, it is unlikely that the Army will participate as an amphibious landing force in the foreseeable future. Joint doctrine should address naval gunfire support to Army forces in contingency operations, both with and without a MAGTF participating in the operation.

Several Army FMs need revision, particularly the 6-20 (fire support) series. Rather than making a blanket assumption that the ANGLICO will handle all of the Army's

naval gunfire support problems, the FMs should be expanded to discuss procedures for naval gunfire support operations when no ANGLICO support is available. Field Manual 6-20-30 (Fire Support for Corps and Division Operations) is recommended as having the best basic description of naval gunfire to use as a starting point for revising the other FMs in the series. Of all of the official publications reviewed by the author, only FM 90-20 (J-Fire) contains the proper ANGLICO mission statement as found in the ANGLICO table of organization. While FM 90-20 provides good reference material for naval gunfire support, the Navy was not a signatory to the manual.

Faced with shrinking budgets and changing missions, the armed forces should attempt to increase joint cooperation whenever possible. With this in mind, the following discussion recommends areas which may offer the Army the possibility for joint cooperation on naval gunfire related projects and training.

Chapter eight discussed new weapon systems the Navy is considering in order to enhance its ability to support the Marine Corps OTH amphibious assault tactics. One of the most attractive possibilities is a ship-launched variant of the Army MLRS. It is recommended that the Army encourage development of this system and seek ways to share with the Marine Corps and Navy in its developments. The possibility for further improvements in current MLRS munitions and the

development of entirely new munitions is perhaps the most promising possibility for the Army. Extending the MLRS range to support OTH operations has the potential to improve the Army's ability to perform its counterfire mission with the MLRS.

Unmanned aerial vehicles displayed their worth during Operation *Desert Storm*, as discussed in chapter seven. Their value to naval gunfire operations was clearly demonstrated. As the Army pursues its own UAV program, it should consider ways to integrate its UAV capability with naval gunfire capabilities of the *Spruance* and *Arleigh Burke* classes of destroyer. These ships will take naval gunfire into the 21st century. Linking them with an Army UAV would allow the Army to reap the benefits of the long range naval gunfire systems that will be developed to support the Marine Corps OTH tactics.

Another possibility for Army and Navy cooperation is in counterfire for contingency operations. While the HIMARS system promises to provide counterfire support once deployed into theater, a naval gunfire support ship linked with a Firefinder radar could provide immediate counterfire support during the initial stages of the operation. The effectiveness of such a combination was discussed in chapter seven.

There are numerous possibilities for further research stemming from this thesis. The author would like to suggest the following: a study to determine possibilities for linking Army UAVs with naval gunfire support ships; methods for improving joint fire support training between the Army, Navy, and Marine Corps; methods for integrating naval gunfire (and joint fire support in general) into NTC, JRTC, and BCTP training; and techniques for integrating naval close air support into Army operations where no ANGLICO support is available.

Though slightly decreased in stature, naval gunfire remains alive and healthy. In areas with suitable geography and hydrography, it provides a viable alternative to air support during the initial stages of contingency operations. The advantages of naval gunfire over air support are its all weather capability, responsiveness, and the ability to deliver sustained fires. These make it the weapon of choice over air support in many instances.

The overwhelming success of the air operations in Operation *Desert Storm* could easily lead to over confidence in air power. It is important that joint planners consider every available means of fire support and that the best system be employed for a given mission. The price for a failure to plan is often paid in blood. It is important that the Army and the Marine Corps work together to insure that

naval gunfire remains a viable means of support to ground forces. The burden of integrating the power of naval gunfire into Army operations rests with the Field Artillery community. Every artilleryman must strive to become a master of naval gunfire and ensure that the "thunder from the sea" remains available for the Army of tomorrow.

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