THE VIABILITY OF LARGE SCALE AMPHIBIOUS OPERATIONS ON THE EVE OF THE TWENTY FIRST CENTURY IN LIGHT OF MILITARY OPERATIONS OTHER THAN WAR (MOOTW), HIGH AND LOW TECHNOLOGY WEAPONS, AND WEAPONS OF MASS DESTRUCTION

A thesis presented to the Faculty of the U.S. Army
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by

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B.A., Austin College, Sherman, Texas, 1984

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This study addresses the viability of large scale amphibious operations within the context of the missions required of amphibious forces in today's threat environment. In the past, massive fleets carrying tens of thousands troops characterized amphibious operations and emobied typical power projection images. Recent missions conducted by naval forces in Somalia and Rwanda are decidedly different in scope, practice, and intensity from those of Tarawa, Okinawa, and Inchon.

This study examines Somalia in particular and addresses the conditions leading to intervention and the conditions and problems that characterized the intervention. The study also highlights characteristics such as clan tensions and other factors of instability that threaten the stability of nations and would cause the introduction of American amphibious forces.

In the variety of missions amphibious forces are likely to conduct, a mix of high and low technology weapons are likely to be available to nation states. From mines to information warfare, this study examines those weapon systems amphibious forces are likely to encounter. It also examines the weapons, systems and doctrine amphibious forces have developed to operate safely in the littorals. This study concludes with the assertion that large scale amphibious forces and assaults are archaic and have been replaced by smaller more lethal forces using maneuver warfare.

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ABSTRACT

THE VIABILITY OF LARGE SCALE AMPHIBIOUS OPERATIONS ON THE EVE OF THE TWENTY FIRST CENTURY IN LIGHT OF MILITARY OPERATIONS OTHER THAN WAR AND HIGH AND LOW TECHNOLOGY WEAPONS by LCDR Dorian F. Jones, USN, 78 pages.

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The study examines Somalia in particular and addresses the conditions leading to intervention and the problems American forces faced. The study highlights those characteristics of instability nation states face that could cause the introduction of naval forces.

In the variety of missions amphibious forces conduct, a mix of high and low technology weapons are likely to be encountered. This study examines those weapons and weapons systems naval forces could face. It also examines the weapons, systems, and doctrine naval forces employ to enable them to operate more effectively in a littoral environment. The study concludes with the assertion that large scale amphibious forces and assaults are archaic and have been replaced by smaller more lethal forces operating under the tenets of maneuver warfare.

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LIST OF ABBREVIATIONS

AAAV	Advanced Amphibious Assault Vehicle
AAV	Amphibious Assault Vehicle
CEC	Cooperative Engagement Capability
ERGM	Extended Range Guided Munition
ESSM	Evolved Sea Sparrow Missile
LCAC	Landing Craft Air Cushion
IW	Information Warfare
JSTARS	Joint Surveillance Target Attack Radar System
LEAP	Light Exo-Atmospheric Projectile
MEF	Marine Expeditionary Force
MEU	Marine Expeditionary Unit
MOOTW	Military Operations Other Than War
OMFTS	Operational Maneuver From The Sea
PAC	Patriot Advanced Capability
SURTASS	Surveillance Towed Array Sensor
TBMD	Theater Ballistic Missile Defense
THAAD	Theater High Altitude Area Defense
UNITAF	Unified Task Force
WMD	Weapons of Mass Destructions
UNOSOM	United Nations Operations Somalia

CHAPTER 1

OVERVIEW OF AMPHIBIUS OPERATIONS

This thesis will examine traditional power projection: the relevance of large-scale amphibious operations on the eve of the twenty-first century in light of operations other than war and the emergence of weapons systems technologies and the proliferation of weapons of mass destruction. When Americans historically think of the Navy and Marine Corps team, amphibious operations in World War II, namely the Pacific campaigns including Guadalcanal, Tarawa, Guadalcanal, Iwo Jima, and Okinawa come to mind. Marines jumping out of landing craft into the water and running up on the beach under fire provides the most vivid image. This is buttressed by the image of battleships and cruisers providing naval gunfire support amongst a vast array of support ships ready to sail in and roll off tons of supplies onto the beach. The image also includes carrier aviation by task forces providing command of the air and close air support.

This is undoubtedly the heroic past in amphibious warfare, but does this image have a place in the future as well? Will bloody assaults into the teeth of the enemy be necessary or even practical? Will the weapons of today, with the capability for precision strikes, eliminate the need for amphibious assaults or render amphibious forces impotent through the threat of mass destruction which they pose to the invading force? Has amphibious assault been overtaken by technology as a means for the elimination of a robust, sophisticated enemy? Moreover, has amphibious assault gone the way of calvary charges, trench warfare, and crossing the "T"?

As the United States prepares to enter the twenty first-century, the world can recall its century long evolution from an emerging nation struggling to gain international status to a dominant world and global sea power. Relying on technological innovations like radar and landing craft in conjunction with the deft employment of battle tactics such as carrier aviation, convoy hunter-killer procedures in the Atlantic, and amphibious assault, the United States Navy, with vast industrial underpinnings, surged ahead of its maritime peers and competitors in lethality and sophistication. Today the U.S. enjoys an unchallenged capability to exercise command of the sea on a global scale. The challenge before its naval service now involves the effective projection of that power against the shore in littoral areas in support of U.S. national security strategy.

In an attempt to give background to the challenge facing current strategic planners and the practitioners of the amphibious art, a short review of key modern amphibious operations is necessary due to their notoriety or significance in the evolution of amphibious warfare tactics, procedures, and technology.

World War I

During World War I, Gallipoli denoted the first modern opposed landings of the century. Characterized as inept and lacking in proper prewar preparations and staff work, British and French forces attempted to insert a force of a quarter of a million men into the Dardanelles via the Gallipoli peninsula to strike at the Central Powers.[1] The initial landing force included sixteen battleships, a host of support vessels and minesweepers, and later a landing force of approximately 75, 000 men.[2] Beginning with ineffectual shore bombardment by British and French warships on Turkish shore batteries a month prior to and the day of the landing, the operation was in trouble at the outset.

The Turkish batteries prevented minesweepers from clearing the harbor. As a result, four capital ships were lost to mines, effectively ending fire support for the duration as the combined fleet withdrew. Troops still landed but were unable to mount an effective offensive to silence the Turkish guns. After nearly a year the troops were withdrawn. Vital lessons in logistics, Naval Gunfire Support (NGFS), and the importance of improved cooperation between the Army and Navy were gleaned from the debacle.[3]

World War II

Japan was among the most advanced naval powers in amphibious warfare capability of the major powers at the beginning of World War II. Having developed a landing ship and landing craft, Japan was preparing to pursue long held ambitions. The Americans, though not as advanced, were developing doctrine and fielding a primitive landing ship. Britain disbanded its amphibious warfare cell at the outset of the war due to more pressing priorities, but were in the forefront in the development of the key landing ship, the Landing Ship Tank (LST). Not surprisingly, given the limitations imposed by the Versailles Treaty on German naval forces, Germany had done little to develop her capability for amphibious warfare and although successful in using naval and air forces to invade Norway in the spring of 1940, paid a heavy price in warships and as a result was forced to stop at the channel after the conquest of France in 1940.[4]

The unsuccessful amphibious raid on the German held French port Dieppe in 1942 by Canadian forces produced valuable lessons for the Allies. It vividly illustrated the differences between the German lessons learned and the lessons the allies extracted. The Germans, as a result of Dieppe, focused coastal defenses around ports. On the other hand the Allies concluded that landings against beaches where manufactured harbors could be brought in were preferable to

landing against heavily fortified ports. The ports would be seized after the beaches were consolidated[5].

Normandy was the largest amphibious landing not only in the European theater, but for the entire war and its success depended upon overcoming a critical shortage of landing craft. It was not until the British shifted amphibious assets from the Mediterranean and the Americans delivered additional landing craft to the theater that the operation had all the landing craft neded to conduct the assault. In 1944, air, sea, and weather reconnaissance were practically nonexistent for the Germans, while the Allies used all three extensively. In conjunction with the elaborate and massive deception the Allies perpetrated at Pas de Calais, these factors combined to blind and mislead the Germans; preventing them from concentrating troops and massing defenses at the right time and place.[6] Reconnaissance and deception proved crucial to the success of Normandy and again in later amphibious operations. In all, over 70,000 troops and 5,300 ships participated in the establishment of a lodgement for follow-on forces.[7]

U.S. amphibious operations began with Guadalcanal in the Solomon Islands in 1942. Meeting only light resistance, the American invasion force suffered from poor reconnaissance, limited equipment, and inadequate training. The landing forces quickly secured the beaches, established lodgements, yet went on to wage a protracted campaign after the Japanese reinforced the island.[8] In 1943, Tarawa became the first fully equipped invasion force of over 200 ships using newly completed battleships, cruisers, carriers, and amphibious ships. In addition it marked the debut of the Amphtrac, a combined boat and tracked vehicle used as an armored infantry assault carrier that could float or run over ground and coral. This vehicle was the precursor to the Amphibious Assault Vehicle (AAV), its present day version which is one of the primary means of ship-to-shore movement of the Marine Corps.[9]

Iwo Jima delivered several hard lessons to American commanders in 1945. The Island was small, leaving little room for units to maneuver. The Japanese had fortified the entire Island with concrete gun emplacements and had created a network of interconnecting tunnels between emplacements and command posts. Reconnaissance had identified fortifications, and ground commanders had requested ten days of bombardment to destroy these fortifications and prepare the landing site for assault. The naval commander ordered three days of bombardment due to a shortage of ammunition because of a competing operation.[10] Naval gunfire failed to properly prepare the beach leaving the fortifications intact at significant cost to the three attacking Marine divisions in lives and material. As the Second Marine Division attacked, poor coordination with fire support left the first wave of the assault exposed to withering enemy fire. The Marines had to wade ashore over great distances due to erratic tides that defied predictions. Although some had accurately forecast this dilemma, the operation continued as planned. Heavy equipment, such as tanks and artillery, ended up stranded because of this problem. In taking the island, the Americans suffered heavy casualties stunning the commanders and the populace back home.[11]

The Japanese learned their own lessons from Tarawa and Iwo Jima. Okinawa saw the Japanese abandon beach defenses for defenses further inland and counted on their "divine wind" suicide units--aircraft, submarines, and even their greatest capital ship, the Yamata, to inflict serious casualties on the invading fleet. Okinawa delivered additional hard lessons for amphibious practitioners. The use of kamikazes marked the effectiveness of guided munitions against surface craft. Shintos--crash boats, Kaiten--human piloted torpedoes, and Ohkas rocket-powered piloted maneuverable bombs were other forms of guided munitions used with varying degrees of effectiveness during Okinawa.[12] Naval forces suffered unprecedented losses during this campaign: 4907 killed or missing, 4824 wounded.[13] Okinawa produced 20 percent of Navy

casualties and kamikazes caused 80 percent of the damage to the fleet.[14] The vulnerability of stationary ships off coastal waters had been exploited.

Korean War

As early as 1949, the idea of amphibious operations was obsolete in view of atomic weapons and the tremendous casualties inflicted on assaulting forces during the final stages of World War II was expressed by Chairman of the Joint Chiefs of Staff, General Omar Bradley, who said, "Large scale amphibious operations will never occur again."[15] But cold war conflicts soon demonstrated the possibility of limited war in distant theaters. North Korea invaded South Korea in June 1950. General MacArthur, U.S. and UN Theater Commander, chose an amphibious operation to regain the initiative and cut off the North Korean Army. Drawing on the lessons from World War II, the landing at Inchon demonstrated how naval forces can be decisive in regional wars and littoral operations. The invasion forced was comprised of 230 warships, amphibious ships, and auxiliaries from 9 nations along with 2 Marine divisions, and 21 aircraft squadrons. Deception and reconnaissance enabled UN forces to achieve strategic surprise with minimal loss of life. Air and sea supremacy in the Yellow Sea deterred Chinese and Soviet intervention, blinded the North Koreans to UN intentions, and provided unlimited strategic flexibility.[16] The subsequent amphibious assault on Wonson on the east coast of North Korea was the last large-scale amphibious landing executed by U.S. forces. Over 50,000 Marines in a 250 ship force were poised to land at Wonson but the primary and secondary approaches were heavily mined. By some accounts, thousands of mines impeded the invasion force. However, the landing took place only after the Army and South Korean forces had already occupied Wonson.[17]

Arab/Israeli War/Falklands Conflict

The 1973 Arab-Israeli War provided a unique contribution to naval warfare with implications for amphibious operations. In the contest for Latakia, five missile boats from Israel and three from Syria conducted the first missile battle in naval history. While not decisive in the Arab Israeli War, it portended sea battles of the future. The missile threat from inexpensive patrol boats against expensive warships provides the capability to any nation to mount a credible defense of its coastline.[18]

The next large-scale amphibious operation came four decades later. By the early 1980s there had been profound changes in warfare at sea and in the context of amphibious operations. The changes included the advent of advanced, precision-strike weapons. The Falkland Islands War between Argentina and Britain illustrates several key lessons that must be considered in the discussion of amphibious warfare in today's environment.

Frank Uhlig writes in Military Lessons of the Falklands Islands War: "If a power wishes to be sure it can achieve a military objective overseas, it must have a skilled amphibious capability."[19] He identifies significant lessons to be extracted from the conflict:

1. In light of the capabilities of modern weapons, landings must be made where the enemy is not.
2. Keep enemy away as long as possible
3. NGFS is important in the success of the operation
4. Missiles are ineffective against beach targets
5. Night offers more advantages over day
6. Landings should be made at night
7. Helicopters can go anywhere and land. Landing craft allow you to stay
8. Ships designed for command and control are needed

9. Ally oneself with the environment and the weather

10. All weather fighters or fighters capable of night operations needed to support landings at night

11. Amphibious ships must be capable of self defense

12. Nonspecialized ships can be used for amphibious operations provided they have a deck capable of heavy lift. Finally, one of the lessons learned in the conflict is there is no modern solution to opposed landings.[20]

Further lessons drawn from the Falklands conflict emphasizes the requirement for an integrated air defense systems capable of handling aircraft and cruise missiles with the ability to conduct active and passive electronic defense measures.[21] Modern landing craft, the pace of the operation, and the incorporation of the latest technologies into the land assault demonstrate the high level of operational cohesion required to conduct amphibious assault.[22]

Subsequent amphibious operations by the United States military have assumed humanitarian and peacekeeping dimensions. Operations within the past five years in Bangladesh, Liberia, Philippines, Cuba, Somalia, and Rwanda demonstrate the changing nature of missions as well as threats. Despite the humanitarian emphasis, political volatility begets mission change, and force protection can easily escalate to power projection as evidenced in Somalia. Because of the inability to categorize the new missions in traditional strategic roles, a new term for these missions evolved, MOOTW. As the frequency of these operations has increased, so does the awareness of the associated dangers and the need for flexible adaptable forces.

Current joint doctrine for amphibious operations asserts the purpose of amphibious operations are designed and conducted primarily to: (1) prosecute further combat operations; (2) obtain a site for an advanced naval, land, or air base; (3) deny use of an area or facilities to the

enemy; and (4) fix enemy forces and attention, providing opportunities for other combat operations. Joint Publication 3-02 delineates types of operations available to the commander: amphibious assault, amphibious withdrawal, amphibious demonstration, and amphibious raid. Amphibious assault involves establishing a force on a hostile or potentially hostile shore. An amphibious withdrawal involves the extraction of forces by sea from a hostile or potentially hostile shore. An amphibious demonstration is a deceptive show of force designed to mislead the enemy, and an amphibious raid is a swift incursion or temporary occupation of an objective followed by a planned withdrawal. Other operations defying classification into the above categories are considered as such and include noncombatant evacuation operations (NEO).[23]

To prepare for the various types of amphibious operations a process known as Planning, Embarkation, Rehearsal, Movement, and Assault (PERMA) exists describing the complete sequential process from beginning to end. During planning, objectives are identified by the commander's staff and the purpose and mission are decided. The concept of operation along with the scheme of maneuver is discussed and refined. Landing zones, landing areas, and landing beaches are selected, and finally, D-day and H-hour are determined. In all, thirteen basic decisions focus the planning effort and drive the process to its next phase.

Embarkation addresses the loading of material and personnel on selected shipping platforms based on mission and available shipping assets. Combat loading considers tactical requirements wherein space is not a major factor. Administrative loading maximizes available cargo space without considering tactical requirements.

Rehearsal tests the plan to ensure its adequacy in all phases and to familiarize personnel with the plan. This is where the timing of the operation, training of participants, and command and control coordination occurs. Separate, staff, and integrated rehearsals are conducted including actual assaults, war gaming, and logistic off-loads. The movement phase begins with

the departure of the amphibious task force from ports of embarkation and ends with the arrival of the force at the objective. The final phase of PERMA ends with the assault. At the objective area, the landing force moves ashore opposed or unopposed, in coordination with and support from air and sea assets.

The Commander AmphibiousTask Force (CATF), a Navy officer, exercises command of the amphibious force throughout this process and relinquishes command of the landing force to the Commander Landing Force (CLF), an Army or Marine Corps officer, when the following conditions have been met:

1. The Beachhead is secured

2. Sufficient tactical and supporting forces are established ashore to ensure the continuous landing of troops and material requisite for subsequent operations

3. Command, communications, and supporting arms coordination facilities are established ashore

4. CLF is ready to assume full responsibility for subsequent operations

Recent MOOTW operations have supplanted certain phases of the process and mandated new procedures be introduced. Because of escalating conflicts throughout the world, particularly in the littoral regions, there is increasing lethality in humanitarian and peacekeeping operations. In planning operation "Desert Storm," U.S. and coalition forces chose to use the threat of amphibious forces to tie down Iraqi units along the Gulf Coast. Even in this role, however, the cost to the amphibious forces, that is, USS Tripoli and USS Princeton, proved high because of Iraqi mines.

The evolution of amphibious operations since war has been primarily a result of technological advancement and to a lesser extent procedural improvements and refinements. The introduction of new technologies results in the adaptation of new procedures and the

development of doctrine and counter technologies. Just as war in general, this cycle repeats itself in amphibious warfare threatening the same dire consequences for those who fail to adapt and get it right during the so-called "age of peace." This age of peace, however, is marked with conflict that mandate the reassessment of current practices, doctrine, and technologies in use resulting from the last war.

The end of the cold war has ushered in a new era. This era is characterized by the breakdown of nation-states and the rise of ethnic and religious identities within these former nations. The breakup of the Soviet Union and the reorganization of countries along ethnic identities are examples of this trend. The former Yugoslavia's disparate enclaves of Serbia, Bosnia, Macedonia, and Croatia are another example. Ethnic turmoil in Central Africa threaten to destabilize and displace millions of inhabitants, leaving them vulnerable to famine and starvation. The widening gulf between the haves and the have-nots in terms of rich and poor individuals, economically proficient nations, and those struggling to develop, combined with increasing ethnic tensions fuel concerns of impending widespread continual conflict.

The British Army's Conflict Studies Research Center identified thirty-five active or potential disputes over borders and ethnic divisions throughout post-Communist Europe. From the Caucasus to Central Asia conflicts have already emerged involving relatively low technology combat. The urge for individual nations to shape their own destinies along with the emergence of terrorist gangs within nations and multinational corporations are emerging as the new powers in the coming age.[24]

The new era is also characterized by the emergence of economic systems predominant over political systems. Nations, regardless of indigenous political systems, seek to practice some form of capitalism. China's emergence as an economic world power is only third behind Japan and the U.S.[25] The growth of the Asian Pacific region economically is commensurate with a

growth in defense spending by countries of the region.[26] The availability of much of the military stockpile of the former Soviet Union and of the accompanying expertise at relatively cheap prices, because of the economic hardships faced by newly created nations, fuels military spending around the world.

This dynamic mix of economic growth and subsequent spread of military capability and the worldwide instability of nation states produces conditions that may threaten U.S. interests. The National Security Strategy insists that the U.S. remain engaged in the world to safeguard interests.[27] U.S. interests are protected by the military apparatus mainly by overseas presence and power projection. Naval forward presence is a major pillar of the Security Strategy according to the Navy Marine Corps posture statement. Noted strategist Julian Corbett argued that naval power is an instrument of statecraft.[28] Amphibious forces proved their suitability as early as 1991. The President's Global 2000 report states: "Third World regions will become maritime theaters and amphibious forces...will serve as the military instrument of choice." Basic facts confirm the need for a littoral presence. Some 125 cites with populations over one million are located in littorals and within ten years the number will rise to 300.[29]

About 70 percent of the planet is covered by water, and 80 percent of the worlds nations are in littorals. At least seven of ten people on earth live near the sea, and four of five national capitals are located within littorals. In 1993 alone, seventy nations have experienced some type of internal or external disorder.[30] These facts combine to suggest that amphibious doctrine, in light of its importance to U.S. diplomatic and strategic goals and the changing nature of crises and missions be reexamined.

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[1]Richard Natkiel, ed., Atlas of Maritime History (NY: Gallery Books, 1987), 158.

[2]Ibid.

[3]Ibid.

[4]Ibid.

[5]Gerhard Weinberg, A World at Arms: A Global History of World War II (Cambridge, MA: Cambridge University Press, 1994), 681.

[6]Ibid., 684.

[7]Edward Marolda, "Operation Neptune," D-Day Operation Overlord: From the Landing at Normandy to the Liberation of Paris, ed. Tony Hall (New York: Smithmark Publisher, 1994), 61.

[8]Larry Addington, The Patterns of War Since the Eighteenth Century (Bloomington, IN: Indiana University Press), 275.

[9]Weinberg, 647.

[10]Ronald Spector, Eagle Against the Sun (New York, NY: The Free Press, 1984), 495-496.

[11]Ibid.

[12]George Feifer, Tennozan (New York, NY: Ticknor & Fields, 1992), 208.

[13]Ibid., 229.

[14]Ibid.

[15]D. Clayton James, The Years of MacArthur, 1945-1954 3 (Boston, MA: Houghton Mifflin Co., 1985), 465.

[16]Curtis Utz, Assault From the Sea The Amphibious Landing at Inchon (Washington, DC: Naval Historical Center, U.S. Government Printing Office, 1994), 1.

[17]Ibid.

[18]Chaim Herzog, The Arab-Israeli War: War and Peace in the Middle East (New York, NY: Vintage Books, 1982), 312.

[19]Frank Ulig, Military Lessons of the Falkland Islands War: Views from the United States (Boulder, CO: Westview Press, 1984), 61-62.

[20]Ibid.

[21]Jacob W. Kipp, Naval Art and the Prism of Contemporaneity: Soviet Naval Officers and the Lessons of the Falklands Conflict (College Station, TX: Center for Strategic Technology of the Texas A&M University System, 1983), 25.

[22]Ibid., 28.

[23]Joint Chiefs Of Staff, Joint Publication 3-02 Joint Doctrine for Amphibious Operations (Washington, DC: Office of the Chairman, 1992).

[24]David Shukman, Tomorrows War The Threat of High Technology Weapons (NY: Harcourt Brace & Company, 1996), 16-19.

[25]Institute for National and Strategic Studies, Strategic Assessment 1995: US Security Challenges in Transition (Washington, DC: U.S. Government Printing Office, 1995), 18.

[26]Ibid., 20.

[27]The White House, National Security Strategy (Washington, DC: U.S. Government Printing Office, 1996), 7.

[28]Geoffrey Till, "Corbett and the 1990s," Paper presented at Corbett-Richmond Conference (Newport, RI: Naval War College, 28-29 September 1992).

[29]Charles Wilhelm, " Expeditionary Warfare," Marine Corps Gazette 79 (June 1995): 29.

[30]Ibid.

CHAPTER 2

AMPHIBIOUS OPERATIONS AFTER THE COLD WAR: FORWARD FROM THE SEA AND MILITARY OPERATIONS OTHER THAN WAR

With the end of the Cold War and the shift in the international system towards increased intervention in the internal affairs of states to provide humanitarian assistance, prevent conflicts, deter their escalation, and provide forces to assist conflict management resolution, amphibious operations have assumed a new importance, especially within the context of U.S. naval doctrine and it's emphasis upon "Forward . . . From the Sea." This has resulted in a shift from conventional employment of landing craft towards the peaceful insertion of craft and the troops it carries for humanitarian operations.

The demise of the Soviet Navy has shifted the focus of the U.S. Navy from sea control to power projection operations. In accordance with the National Security Strategy (NSS), February 1996, the objective of "enhancing U.S. security" is related to "maintaining a strong defense capability," by contributing to multilateral peace operations. The NSS further explains that the U.S. must be prepared to participate in peacekeeping and peace enforcement operations as part of a much larger attempt to remain engaged throughout the world exercising leadership commensurate with U.S. world economic, political, and military status.[1]

Through overseas presence and power projection, deterrence and conflict prevention result. Crisis response is a tenet of deterrence and conflict prevention.[2] Crisis response has resulted in the commitment of Marine Expeditionary Unit (MEU) forces at the onset of OPERATION PROVIDE COMFORT, OPERATION SUPPORT DEMOCRACY and

OPERATION UPHOLD DEMOCRACY, which were power-projection operations designed to rid Haiti of its non-elected military rulers. Another recent nontraditional operation, DISTANT THUNDER, provided safe passage of noncombatants form Rwanda to Burundi.[3]

With increased emphasis on power-projection operations, much doctrinal attention now goes to the problem of conducting amphibious maneuver from Over The Horizon (OTH) and relies upon existing technology, that is, Landing Craft Air Cushion (LCAC) and assault helicopters, and the procurement of advanced systems, that is, V-22 Osprey and AAVs. Hand in hand with greater emphasis upon maneuver from the sea, U.S. amphibious forces have undergone significant reductions in available assets in terms of landing craft and amphibious ships.

At the same time the risk of increased lethality in MOOTW became apparent in Somalia during peacekeeping OPERATIONS RESTORE HOPE, CONTINUE HOPE, and UNITED SHIELD. Over a three-year period, this series of operations encompassed a range of missions performed by the UN and U.S. forces including humanitarian assistance, security, and direct actions. Amphibious lift played a critical role in both the initial intervention and the extraction of the force. The operations in Somalia, while unique, possessed many characteristic common to MOOTW. Somalia forced U.S. planners to account for a multitude of threats and contingencies that may prove even more challenging when met again.

The Origins of the Intervention in Somalia

The overthrow of the Siad Barre government initiated an outbreak of clan fighting among the fifteen separate clans in 1991. The resultant civil war quickly brought famine and chaos to the country. The horrific consequences of the infighting and the breakdown of order produced hard hitting images and poignant stories of starvation and death that were broadcast to

the world by news agencies.[4] In November 1992 President Bush sent American troops in support of UN efforts to stabilize the country and set the conditions for humanitarian relief. Efforts centered around the capital city of Mogadishu in the southern region.[5]

Postcolonial Somalia is characterized by interclan strife. Originally, predominantly a pastoral society, Somalia possessed ethical cultural norms and rules that later became grounded in Islam, serving to regulate behavior and check clan rivalries.[6] Colonialism practiced primarily by Britain in the north and Italy in the south, and the influence of the international market weakened these societal institutions.[7] Whatever stabilizing influence colonialism brought were soon swept away by World War II and in the postwar era Somalia moved toward independence, which was granted in 1960.

Fractious groups in the country embraced newfound independence as the means to wealth provided by international monetary institutions. Concern for personal advantage undercut the nation-building motivation of the leaders of the independence movements. Regional rivalries between the north and south created internal tensions.[8] Political power was seen as a means to advance one's political party, reward patronage, and obtain personal wealth. In the first postindependence elections, the Somali Youth League (SYL) emerged as the majority party with significant numbers of the opposition parties switching to the SYL in postelection posturing for booty. During the 1969 elections, the SYL raided the national treasury in an attempt to buy votes to ensure its reelection. Unable to institute reforms and unresponsive to the people, the SYL, and its recently elected president were swept from power in a popular coup led by General Siad Barre.[9]

Barre's popularity quickly waned when his authoritarian regime failed to implement significant reforms and exploited clans against one another. Supported by certain clans, his secret police used terror and oppression to eliminate opposition.[10] Barre cultivated ties with the

Soviet Union down to the mid-1970s. However, when the Soviets supported Ethiopian radicals during the 1977-1978 Somalia-Ethiopian War, Barre began to look elsewhere for support. The failed war against Ethiopia between 1977 and 1978 set off a long series of catastrophic economic and political events. The military buildup, which had began under Soviet tutelage, continued with Western assistance in the 1980s.[11]

The Somalia national economy could not withstand the burden at a time of drought and famine throughout this region of Africa. During the 1980s, livestock accounted for 80 percent of Somalia's exports. Saudi Arabia received 90 percent of Somali exports. However, robust Australian beef exports to Saudi Arabia precipitated falling prices and a decline in the production of animals. This setback increased Somalia's dependence on international financial institutions. Suffering from 500-800 percent inflation, a Gross National Product (GNP) per capita of $175 and a debt per capita of $350, Somalia's debt to GNP ratio grew to 203 percent--one of the highest in Africa.[12] Severe economic failures and defeat by Ethiopia, resulted in coups attempts by rival clans throughout the country. The infighting left cities destroyed and prompted the unrestrained use of repression and violence by Barre in an attempt to subdue rebellion and maintain power.

The end of the Cold War brought the political crisis in Somalia to a fever pitch. Opposition groups formed around clan loyalties, and attempts to form broad based opposition failed. Siad Barre's regime collapsed when the national army fractured into clan-based factions in 1991. Agricultural communities were destroyed in the fighting when Barre's supporters adopted a scorched earth policy. In essence, armed gangs fought for control of the country. [13]

Chaos reigned with the onset of factional fighting;, economic collapse and the displacement of thousands of civilians resulted. Over 330,000 people faced imminent death. In

1992, the U.S. Agency for International Development Office of Foreign Disaster Assistance called Somalia "the greatest humanitarian emergency in the world.[14]

The crisis in Somalia prompted the UN Security Council to respond with Resolution 733, calling for an arms embargo. Resolution 751 directed the creation of United Nations Operations Somalia (UNOSOM I) in April of 1992 under the operational title RESTORE HOPE.[15] Consisting of 500 lightly-armed Pakistani soldiers, operating under the requirements for strict neutrality and the acquiescence of local leaders, their mandate was to monitor a UN-brokered cease-fire and humanitarian deliveries.[16] After landing in September 1992, their efforts were rendered ineffective by local warlord Mohamed Farah Aideed, whose forces had taken control of the airport and seaport in Mogadishu, controlling the entry points for all aid entering the country. Aideed went further and restricted the Pakistanis to their barracks. UNOSOM I lacked the weapons and proper Rules of Engagement (ROE) to enforce UN policy.[17]

Even as the UN began assistance, figures released by the U.S. Center for Disease Control and Prevention estimated by November of 1992, of six million Somalis, 350,000 died from malnutrition in 1992 with over one million in refugee camps.[18] The impotence of UNOSOM I stirred calls for the international community to do more to ameliorate the crisis. There was increasing pressure on the United States to play a role commensurate with its position as a world leader.

International Response and U.S. Involvement

After the elections of 1992, President Bush made U.S. troops available to lead a subsequent UN action stating to the American people: " Our mission is humanitarian, but we will not tolerate armed gangs ripping off their own people condemning them to death by starvation."[19] In late November 1992, UN Security Council approved Resolution 794 authorizing

U.S. troops to lead a Unified Task Force (UNITAF). The mission of UNITAF was to provide a secure environment and reestablish humanitarian aid flow to the Somali people.[20] The mission was named OPERATION RESTORE HOPE, and the first troops ashore were Marines from the Amphibious Ready Group (ARG) and the Marine Expeditionary Unit, Special Operations Capable (MEU(SOC)). The battalion-sized force went ashore under the glare of the international media. Its organic air wing of Cobra gun-ships, AV-8B Harriers, and CH-46 troop transports supported its missions.

UNITAF included over 38,000 troops from twenty-one coalition nations. Over 28,000 Americans were involved. Because of the size of the force, it succeeded in providing tons of relief supplies to the people of Somalia. Supplies were distributed throughout the country eliminating the threat of immediate starvation for significant portions of the population.[21]

The relief effort was successful because of the security provided by such a large force. UNITAF set a task of limited disarmament so that the peacekeeping forces could operate safely. Within the cities in the south, especially Mogadishu, where the focus of distribution occurred, heavy weapons would not be allowed and had to be moved to the countryside or confiscated. Other weapons such as "technicals," armed vehicles, were also confiscated while arms merchants in the cities were closed down. Despite American reluctance to become engaged in full-scale disarmament, the scope of what was considered necessary for security began to grow.[22]

The first mission of the 24th MEU was force display along the central region of the Somali coast to demonstrate resolve. Harriers, Cobra gunships, and CH-46 troop transports conducted aerial reconnaissance over suspected arms smuggling routes. It also was intended to show that forces could come from the sea without warning.[23]

Gradually U.S. policy shifted toward nationbuilding to be rebuild the failed Somali state and the military forces became engaged in operations to assist in that process. In the eyes of

U.S. officials the absence of a police force, prisons, and a judiciary risked greater U.S. involvement in civil administration if not undertaken on a limited scale. Marines provided security in the streets of Mogadishu while other units became involved in rebuilding the infrastructure.[24]

In a ongoing attempt to maintain security and reduce the power of the warlords, while simultaneously encouraging nonmilitia leaders to take a greater role in the political process, the U.S. during the January 1993 talks in Addis Ababa warned the factions that force would be used against them if they violated certain rules.[25] Violence involving foreign nationals as victims and Somalis as perpetrators continued, as the warlords jockeyed for political and military advantage.

In the next progression of peacekeeping operations, Security Council Resolution 814 passed in March 1993 establishing UNOSOM II. This created the first UN peacekeeping operation under the Chapter Seven, "Enforcement Provisions" of the UN Charter. Chapter VII provides the international legal justification for a host of measures the UN may undertake to ensure compliance with its mandates ranging form sanctions to the use of force deemed necessary.[26]

International in makeup and less robust in terms of manpower and firepower than UNITAF, UNOSOM II had the mandate to disarm the Somalis. The mandate also directed the rehabilitation of the political institutions and economy. Finally, it called for building a secure environment throughout the country including northern Somalia, which had declared its independence. These sweeping mandates eclipsed those of any previous UN operation and mandated the creation of OPERATION CONTINUE HOPE to supersede OPERATION RESTORE HOPE.[27]

In preparation for UNOSOM II, one of the preconditions required prior to turnover, was that each of the nine established Humanitarian Relief Sectors (HRS) be stable. The Kismayo

HRS suffered unrest and friction between two regional warlords. Under the responsibility of Belgian troops, the HRS centered on the coastal city Kismayo and covered over 150 square miles. The Belgians lacked the means to venture beyond the city and relying primarily on roadside checkpoints and motor patrolling throughout the city.[28]

The ARG-MEU, positioned off Kismayo, conducted a variety of successful military operations that kept the combatants apart. Backed by substantial airpower, the MEU initiated raids built around reinforced rifle companies and conducted cordon and search operations in force to the edge of the Kismayo HRS. Simultaneously, they conducted effective humanitarian medical and dental operations on the local population throughout the region.[29]

U.S. participation in UNOSOM II was primarily logistical support; however, a Quick Reaction Force (QRF) consisting of 1,100 soldiers from the 10th Mountain Division plus the ARG/MEU team augmented UNOSOM II. The "bite" contained in Resolution 814 and a second conference in Addis Ababa constructing a framework for the gradual restoration of order and the resolution of the Somali crisis, threatened the power of the warlords, particularly Aideed.[30]

The slow implementation of the agreements produced by Addis Ababa II provided the factions the opportunity to consolidate and expand their positions, spurring a new wave of confrontations.[31] In mid-May, the U.S. Liaison Office issued warnings that factions loyal to Aideed had threatened to kill Americans. On 5 June while conducting inspections at a feeding center and at an announced inspection at an UN-sanctioned arms depot, Pakistani peacekeepers were ambushed almost simultaneously at both locations, resulting in twenty-four killed.

The following day the Security Council, after condemning the attack and identifying Aideed as the culprit, adopted Resolution 837 authorizing "all necessary measures against all those responsible."[32]

A coordinated effort to capture Aideed began between UNOSOM II and QRF. U.S. forces began bombing and strafing sections of Mogadishu, alienating most of the population. Later, U.S. helicopter gunships destroyed Aideed's headquarters killing dozens of Somalis.[33]

A $25,000 bounty for Aideed was issued by the UN Special Representative and the Turkish commanding general of UNOSOM II. The U.S. Ambassador to the UN called Aideed a thug. Casualties resulted in the aggressive pursuit of Aideed and consequently, opposition to the Clinton administration's policies mounted in Washington.[34]

During the deadly hunt for Aideed, American field commanders requested armored Bradley fighting vehicles and increased air support. Although supported by the Chairman of the Joint Chiefs of Staffs, their request was denied by the Secretary of Defense who cited concern that the pursuit of a political solution would be compromised by the presence of armored vehicles which could be viewed as military posturing. [35]

While awaiting the arrival of the Delta Force and Army Rangers, the MEU, having already deployed special sniper teams, was directed by the U.S. commander in Mogadishu to deploy the Maritime Special Purpose Force (MSPF) in direct action against Aideed. After having pinpointed his location by intelligence sources, the MSPF launched from the ARG only to arrive at the site with the target gone.[36] Following that failed mission, higher military commanders denied the use of the MEU in this type of offensive operation. They were to be used in cases of extreme emergencies and authority to deploy them would not be delegated to the American commander in Mogadishu.[37]

Soon after the arrival in country of nearly one hundred Delta Force and Ranger veterans in October 1993, the U.S. commander in Mogadishu received a tip on the whereabouts of top Aideed lieutenants. A raid was quickly planned. Delta Force and the Rangers carried by sixteen helicopters from the 160th Special Aviation Regiment, converged on the location. After

securing their quarry, American forces were ambushed resulting in the loss of two helicopter gunships and their crews. [38]

The QRF, along with selected UNOSOM forces possessing some armor capability was eventually dispatched to rescue the teams trapped in the ambush. Unable to close the location of the teams, the QRF encountered multiple ambushes along the routes to the sites. They were delayed for hours unable to get through because of the ferocity of the Somali ambushes and their accompanying firepower. The QRF as well as the trapped teams suffered horrible casualties in the operation before escaping the well-conceived traps. In all, eighteen peacekeeping forces were killed and seventy-five were wounded.[39]

The American public was outraged. The powerful images of naked American bodies being dragged through the streets along with the battered face of a captured American pilot, eviscerated support for the administration's policies in Somalia and ultimately affected the withdrawal of American forces from the country in March 1994 with no improvement in the political and social conditions and little improvement in the economic status that prompted intervention.[40]

Conclusion

The operation in Somalia is significant to this discussion for two reasons. It illustrates the complexity of international intervention in cases of state collapse amidst unrestrained civil violence. It also represents new forms of multilateral peace operations in the post-cold war era.[41] It could be argued that the issues raised in Somalia are the problems of the next peacekeeping venture.

Factors, such as destabilized or nonexistent institutional infrastructure, ethnic divisions, unclear mandates for unspecified lengths of time, mission creep, weapons and weapons systems,

were problems in Somalia and could cause even greater problems in the next operations. The absence of any institutions, such as police, prisons, or a judiciary, often leads to deeper involvement in the daily functioning of a society so that extrication becomes more difficult and security concerns loom even larger. As UNITAF organized, it discovered it had to assume the role of police and other necessary institutions. Local forces either have to be trained up, taking some time, or additional forces must be brought in to assume that role.

Unclear mandates for unspecified lengths of time plagued UNOSOM I. In the face of a belligerent and uncooperative Aideed, the Pakistani forces were unable to implement the UN policy to ensure the control of relief shipments. Constricted by the peacekeeping mandate of maintaining strict neutrality while subject to the demands of local leaders, UNOSOM I was largely ineffective.

The mission of the peacekeepers expanded to deal with the mounting requirements uncovered in attempting to complete the original mission. The original mission was to control relief shipments (UNOSOM I). UNITAF's mission was to provide humanitarian assistance and restore order in the south. UNOSOM II's mission was to disarm the Somali people, rehabilitate political institutions and the economy, and build a secure environment throughout the country including the north. After the ambush of the Pakistani soldiers, their mission included capturing Aideed. This expansion of tasks was a clear example of the dangers of mission creep.

Ethnic and clan tensions are similar in this discussion. Volatile in nature, clan rivalries erupted with deadly consequences all around the peacekeepers mandating they exercise extreme vigilance and caution. Peacekeepers had to maintain the appearance and reality of impartiality during the operations. The Marines conducted maneuvers in the respective territories of rival warlords to impart their readiness to conduct operations against either one, should the need arise.

Interclan fighting could initiate mass retaliation from the opposition, similar to what was seen in Bosnia.

In the problematic context of weapons proliferation, the widespread availability of weapons, even after coordinated disarmament and interdiction efforts, places American forces on land and sea at significant risk. In an industrialized nation or a more technologically compatible society, or one with access to capital, the risks multiply. The most deadly of these peacekeeping factors found in Somalia by far, was the vulnerability of troops in country to a variety of attacks from hostile forces. Amphibious forces can exercise presence and suasion in peace operations with forces ashore but cannot hold ground. Further lessons indicate the need to address armored forces such as tanks and armored personnel carriers as part of the follow-on support forces during Military Operations Other Than War.

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[1]The White House, National Security Strategy (Washington, DC: U.S. Government Printing Office, 1996), 7.

[2]Chairman Joint Chiefs of Staff, "National Military Strategy" (Washington, DC: U.S. Government Printing Office, 1995), 11.

[3]Department of the Navy, Navy-Marine Corps Posture Statement (Washington, DC: U.S. Government Printing Office, 1995), 3 and 4.

[4]George P. Fenton, "Marine Expeditionary Units: On the Operational Level in MOOTW," Marine Corps Gazette 80, no. 3, (March 1996): 59.

[5]Ibid., 60.

[6]Terrence Lyons and Ahmed I. Samater, Somalia: State Collapse, Multilateral Intervention, and strategies for Political Reconstruction Brookings Occasional Papers (Washington, DC: Brookings Institution, 1995), 8.

[7]Ibid., 14.

[8]Ibid.

[9]Ibid.

[10]Ibid., 15.

[11]Ibid.

[12]Ibid.

[13]Ibid., 17.

[14]Ibid., 29.

[15]Ibid., 32.

[16]Ibid., 30.

[17]Ibid.

[18]Ibid., 33.

[19]Ibid.

[20]Fenton, 60.

[21]Kenneth Allard, Somalia Operations: Lessons Learned (Washington, DC: National Defense University Press, 1995), 17.

[22]Lyons and Samater, 40.

[23]Fenton, 60.

[24]Lyons and Samater, 48.

[25]Ibid.

[26]Ibid., 54.

[27]Allard, 18.

[28]Fenton, 62.

[29]Ibid.

[30]Allard, 20.

[31]Lyons and Samater, 57.

[32]Ibid.

[33]Ibid., 58.

[34]Ibid.

[35]Kent Delong and Steve Tuckey, Mogadishu! Heroism and Tragedy (Westport, CT: Praeger, 1994), xviii.

[36]Fenton, 64.

[37]Ibid.

[38]Delong and Tuckey, 81.

[39]Allard, 20.

[40]Lyons and Samater, 59.

[41]Ibid., 6.

CHAPTER 3

LITTORAL THREATS: WEAPONS OF MASS DESTRUCTION, HIGH TECHNOLOGY LOW TECHNOLOGY

This chapter will examine and identify the technologies and weapons that many nation-states can obtain or produce. The systems range from the sophisticated to the simple, the expensive to inexpensive. These systems might be directed against U.S. military capabilities, strengths, and weaknesses. These systems, in the hands of a determined enemy fueled by ethnic, cultural, and religious fever, pose a significant and lethal threat to amphibious forces prepared to act on behalf of U.S. interests.

The possibility of engaging in war and MOOTW exists with each deployment of American troops. Countries in turmoil or in crisis have access to a variety of weapons that boost military or political presence in their respective regions or on the international stage. The capacity to produce weapons expands with a countries' economic development and growth. The trend toward regionalization has accelerated desire, fueled by post-Cold War reductions in U.S. military forces various nation-states to exercise hegemony in their geographic areas in order to promote and protect their interests. Asian and Middle Eastern countries account for more than 94 percent of post-Cold War arms purchases.[1] These weapons have a wide range in sophistication and capabilities.

Ballistic Missiles

Germany's introduction of missiles during World War II signaled the dawn of missile attacks as a feature of war. London was attacked with V-2 rockets, resulting in significant

destruction and the spread of panic throughout the populace. The 1973 Arab-Israeli War first demonstrated the lethality of guided missiles against ships. The Falkland Islands War reenforced the vulnerability of ships to the air threat, specifically precision guided missiles, in the sinking of the HMS Sheffield and the Atlantic Conveyor. Ballistic missiles pose equally as great a threat to the ARG and its main battery (Marines) on the beach as the antiship missiles pose at sea.

Although used in many conflicts following World War II and prior to the Gulf War, the ballistic missile had its greatest impact during the conflict between Iran and Iraq. In a period that came to be known as the War of the Cities, both sides totaled over 3,000 casualties from ballistic missile exchanges. Just as important as the damage the attacks wrought, was the resultant panic it caused. Over one million people fled Tehran followed by another million a month later.[2] In actuality, SCUD attacks typically carry fewer tonnage than bombs from aircraft. However, the psychological shock on civilians and exposed troops over land and on the beach is significant.

During DESERT STORM, ballistic missiles were used by Iraq with near impunity primarily against civilians but also against military targets in the rear. Military leaders worried about the political implications of SCUDs as well as their military impact. Capable of carrying various warheads, the ballistic missiles forced commanders to prepare for worst-case scenarios involving the use of nuclear, chemical, and biological agents.

The potential for ballistic missile use against amphibious forces must be considered by any command apparatus when preparing for the missions required in today's threat environment. While the detailed planning requirement is obvious for any direct action operation, the increasing lethality of peacekeeping operations in a mature theater, such as Bosnia or a seemingly unsophisticated one in Somalia, mandates this threat be accounted for from insertion to

withdrawal. The widespread availability of ballistic missiles, aircraft, and cruise missiles as delivery systems for nuclear, chemical, and biological weapons exposes the amphibious operation to even more menacing threats.

By recent accounts, over twenty countries own or operate ballistic missiles.[3] Ranging from thirty to 300 kilometers, the primary uses are for geopolitical leverage as well as operational or tactical weapons of terror. A variety of capabilities accompanies ballistic missiles further complicating defensive efforts. They also carry submunitions.

They also have a wide array of selfprotection features that make destroying them extremely difficult. These features range from breakup upon reentry to confuse antiballistic missile systems, to those that maneuver and those that deploy decoys. The launching systems are generally highly mobile, reusable, and difficult to locate and destroy prior to launch.

The cost of acquiring missile systems is relatively cheap when compared to the cost of indigenously manufacturing warheads. Indigenously produced warheads require some infrastructure.[4] For example, Somalia had no such infrastructure; however, proliferation makes procurement possible.

Of the three WMD warhead threats the ARG could face, chemical appears most likely, followed by biological and nuclear warheads. In terms of cost resources and the possibility of discovery, the difficulties encountered obtaining plutonium or highly enriched uranium remain the single greatest obstacle facing countries in obtaining nuclear weapons. A small reactor requires a modest infrastructure and hundreds of millions of dollars to produce the required materials. If carried out openly, pressure from surrounding nations and the international community could make production untenable. A clandestine program costs ten-to-twenty times more than one pursued without regard for international and regional detection. A cheaper alternative would be to acquire weapons-grade material from an established nuclear power,

however, the Non Proliferation Treaty makes this unlikely unless it is acquired clandestinely from the former Soviet Union. Evidence does not exists to verify that this is the case.[5]

Technologies used to produce chemical weapons are harder to identify; however, the know-how is more widespread and available. Common pesticide plants and multipurpose chemical plants provide a pathway to production. A sophisticated production facility costs between $30 and $50 million; however, much of this costs includes expensive waste handling facilities. Countries can cut costs if it dispenses with these facilities and disregards procedures designed to safeguard workers. Even sophisticated plants are difficult to detect.[6]

Biological agents are easier to produce than nuclear or chemical weapons. Technology and know-how are widespread and easily accessible. A modest pharmaceutical industry provides the pathway to production and is more information intensive than capital intensive. The widely available published literature and the dual-use equipment capable of drug and weapons production suggest biological weapons may be the most likely warhead after conventional warheads to be encountered.[7]

The most effective means of deploying these weapons against the amphibious objective area remains via military conveyance. Civilian ships, planes , car bombs and suitcases, effective against civilian targets, do not offer the controllability, reliability, or the speed of ballistic missiles, cruise missiles, or combat aircraft, but still must be accounted for in the force protection equation.[8]

Cruise Missiles

Cruise missile proliferation is yet another concern for the ARG. The pace of ballistic missile proliferation is slowing due to the upsurge in cruise missiles that are less demanding technologically and significantly less expensive.[9] The purchase of cruise missiles is easier to

justify than ballistic missiles. States can claim legitimate self-defense requirements as the basis for procurement. [10] Little international and regional concern is expressed as nations acquire cruise missiles, especially when compared to the acquisition of ballistic missiles.

A cruise missile possesses four main characteristics: (1) it uses aerodynamic lift in the lower atmosphere--below thirty kilometers, (2) it can change altitude or direction several times at any time during its flight, (3) it carries a warhead on a one-way flight, and (4) its range exceeds fifty kilometers. There are 130 cruise missile variants in the world possessed by seventy five countries and produced by nineteen countries. Over fifty percent of cruise missiles are land attack variants. Smaller and less expensive than ballistic missiles, costing ten to twenty-five percent of a similar range and payload ballistic missile, cruise missiles have comparable range and payload with potentially better accuracy. [11]

Information Technology

Today's commanders must also account for the proliferation of information technologies within the services and around the world. Specific steps enhancing the forces' own capability and degrading or destroying the opponents abilities are included in any comprehensive operations plan. Information technology is no longer the exclusive domain of rich countries like the U.S. Information warfare is emerging as a multidimensional offensive and defensive concept. It is applicable across all levels of warfare ranging from weapons of mass destruction conflict to conflict resolution. To better understand information warfare and how it applies in this discussion, definitions of the still evolving form of warfare must be examined by uniformed military experts as well as civilians.

In the March 1996 issue of Proceedings, twenty-three commanders of the world's navies were asked: "What is the most important technology that your navy wants to acquire? Why?"

Fifteen of the twenty-three commanders answered information technology as the primary technology to acquire, even over weapons systems. Systems that promote command, control, and communications capability and enhance interoperability with other nations were the main reasons given as to why information technology was preferred. Information technology and the accompanying concept of information warfare encompasses a broad range of issues.

The directorate of Advance Concepts Technologies and Information Strategies (ACTIS) including the Center for Advanced Concepts Technology (ACT) at the National Defense University, conducted the sixth of a series of workshops and round tables to identify and examine aspects of command and control and information warfare of contemporary interest. In the executive summary, the authors argue that information warfare is a huge domain that includes media wars, electronic combat, and even economic competition and strategic conflict waged against civilian populations. [12]

Another definition of information warfare comes from Alvin and Heidi Toffler's War and Anti-War. In their book they list the myriad terms, such as cyber-war, info-doctrine, and C2 warfare, used to describe information warfare and information technology and use their own term of "knowledge strategy" as an overarching concept. In simple terms it means: "...trying to know all about an adversary while keeping it from knowing much about oneself. It means turning the balance of information and knowledge in one's favor, especially if the balance of forces is not." [13]

The Office of the Chairman of the Joint Chiefs of Staff defines information warfare as "actions taken to achieve information superiority by affecting adversary information, information based processes , information systems and computer based networks while defending ones own information , information based precesses, information systems, and computer based networks."[14]

It is helpful to look at information warfare as occurring on all three levels of war. The strategic level could include electronic and printed media manipulation along with economic systems, such as banking and air control systems. The operational level would focus on Command, Control, Communications, Computers (C4I)[15] Finally, the tactical level delves into battlefield intelligence and attacks on systems such as radars and communications networks.

Access to sophisticated information technologies is increasingly available to nation-states around the world. Technological dissemination throughout the world is made possible by the linkage of economies, the movement and exchange of skilled labor, the interconnection of communications and information systems, and the sale of advanced technologies with dual military and commercial applications.[16] For example, even a country in extreme disrepair like Somalia was able to exploit cellular telephones to construct an inexpensive communication system to exercise command and control and maintain contact with suppliers and intelligence sources outside Somalia.[17]

Mine Warfare

The advent of the Persian Gulf War in 1991 found the Navy's mine countermeasure organization outdated, poorly trained, unorganized, and unprepared for expeditionary deployment.[18] Because of the increasing threat to littoral operations, the Navy created Mine Warfare Command with overall responsibility for the training and organization of mine warfare assets. The damage to naval and merchant shipping ships as a result of Iran-Iraq War, the Persian Gulf War, and the potential threat to vessels during any conflict has lead to a new appreciation of the mine threat from nation-states interested in an inexpensive deterrent to power projection.

Called a poor man's weapon by some, mines are means for a nation to employ force multipliers cheaply and effectively.[19] During the Korean War a planned amphibious operation of

50,000 Marines and 250 ships at Wonson, North Korea, was thwarted by the discovery of thousands of mines.[20] The U.S. finds itself dangerously close to that position today. Mine proliferation is increasing, yet the technology remains fairly unsophisticated. There are two primary types of antishipping mines: contact and influence.

Contact mines must rely on physical contact between the mine and the target. These mines are either moored by an anchor on the bottom of the ocean floor or they drift until they contact a target. Cheap and easy to make, they are common. Influence mines sense the presence or passage of targets and detonate. Rising mines are a special category of influence, mines that can be employed at greater depths. They use acoustic sensors to hear and release a warhead when the target comes into range. The warhead is propelled by a torpedo or rocket or simply raised to the surface via buoyancy. This system is expensive, complicated, and not widely used.[21] Our ability to conduct forced entry from the sea is still deficient. Faced with an integrated mine defense, the ARG encounters significant impediments to conducting a successful amphibious landing.

Diesel Submarines

The ARG faces yet another formidable threat in conducting amphibious operations. The worldwide emphasis from blue water operations to littoral warfare has spurred the development of diesel submarines. During the Cold War only the Soviet Union and the U.S. exercised a significant blue water attack and missile submarine capability with the U.S. concentrating exclusively on nuclear-powered vessels. Post-cold war threat realities, doctrinal changes, and economic costs have led to shifts in focus to littoral environments by the U.S. and other nations. Because of costs, environmental concerns about Nuclear Submarines (SSN) and proven

performance of conventional diesel powered platforms (SSK), industries developed new quiet improved endurance platforms that now rival nuclear boats from the Cold War.

In 1993 Pavel Grachev, Russian Defense Minister, stated: "A nuclear submarine fleet is the future of Armed forces. The number of tanks and guns will be reduced as well as the infantry, but a modern navy is a totally different thing."[22] Improvements in conventional submarine technology threaten to guide the future towards diesel vice nuclear submarines. The most promising of the conventional technologies is Air Independent Propulsion (AIP). This new technology promises to reduce the traditional drawbacks of diesel submarines--the need to surface frequently to recharge batteries by increasing their submerged endurance fivefold or better.[23]

As technology progresses, so does proliferation. The conventionally-powered Russian Kilo class submarine is the most widely used in the world. The Kilo or the latest diesel boats are easily the platforms of choice of nations around the world, expanding their submarine capability or in the nascent stages of developing a submarine capability. A 1995 training exercise in the English Channel saw a twenty-year-old SSK successfully remain undetected by the most capable NATO antisubmarine platforms and fire five shots (five green flares) at the designated high-value units.[24]

Summary

The multitude of weapons available to complicate amphibious planning attest to the complex nature of amphibious warfare. Even without possessing a navy, determined nations can thwart operational landings with shrewd investments in a combination of the weapons systems mentioned. Employed together and effectively, they represent a tiered approach to littoral defense.

An ARG-CVBG (Carrier Battle Group) commander arriving off the coast of a hostile country as part of power projection, during a normal deployment, would have numerous and well founded concerns. Does the hostile country possess diesel submarines? If it does, where are they? What kind are they? If they are located near the coast, complicating detection, does the hostile country have the assets and enough of the right ones to detect and engage the subsurface threat? If it is known that this hostile country has cruise and ballistic missiles, what is the best posture for both undersea warfare and air defense? What are the possibilities of the NCA (National Command Authority) authorizing a preemptive strike of ballistic and cruise missile launch sights? Can the sites be located? Will CNN report the ARG's anticipated arrival date?

As the ARG closes the coast, the commander would have to now concern himself with mines. Does the hostile country have the capability for deep-water mining? Does he have any assets available to detect mines? CVBGs and ARGs usually do not deploy with a significant organic mine detection and clearance capability.

For even a modestly-armed country, there are a number of options available to achieve limited political and military objectives. Marine Commandant General Charles Krulak observes: "Weapons in the future will come with a VHS cassette to tell you how to use it." [25] Meaning forces previously considered ill-trained and primitive will be more capable from the outset. He goes on to say: " What I am saying is that the requirements for the lower end are going to become greater and greater." The reason is that nations...will experience economic growth and "are going to have the money to purchase systems they haven't been able to buy before." He concludes discussing Chechnya: "Here you had the Russian Army with tanks, attack helicopters, and jet aircraft: going against a rebel and not winning." Sometime in the near future "imagine someone located in Africa or Asia, with the same tenacity and guts of the Chechen rebel, but armed with a system which, if it can sense you, it can kill you."[26]

[1]Institute for National Strategic Studies, "Institute for National Strategic Studies, Rms Transfers and Export Controls," Strategic Assessment 1995: U.S. Security Challenges in Transition (Washington, DC: U.S. Government Printing Office, 1995), 139.

[2]David Shukman, Tomorrow's War: The Threat of High Technology Weapons (London: Harcourt Brace, 1995), 101-102.

[3]"A Silver Bullet," Air Defense, PB 44-95-6 (November-December): 27.

[4]Ibid., 28.

[5]U.S. Congress, Office of Technological Assessment, Technologies Underlying Weapons of Mass Destruction (Washington, DC: U.S. Government Printing Office, 1993), 11.

[6]Ibid., 17 and 19.

[7]Ibid.

[8]Ibid., 13.

[9]"Ballistic Missiles," Jane's Defence Weekly 25, no. 8 (21 February 1996): 40.

[10]"Cruise Missiles," Jane's Defence Weekly 25, no. 18 (1 May 1996): 19.

[11]Ibid.

[12]Office of Technological Assessment, 13-14.

[13]Alvin and Heidi Toffler, War and Anti-War (Boston, MA: Little, Brown and Company, 1993), 3.

[14]Thomas G. Mahnken, "War in the Information Age," Joint Forces Quarterly (Winter 1995/96): 40.

[15]The term C3I vice C4I with the omitted "C" meaning computers, is still widely used.

[16]Samuel P. Huntington, The Clash of Civilizations and the Remaking of World Order (NY: Simon & Schuster, 1996), 88.

[17]Thomas X. Hammes, "Don't Look Back, They're Not Behind You," Marine Corps Gazette 80, no. 5 (May 1996): 73.

[18]Jane's World of Defence (1995): 88.

[19]Dennis W. Boyles, "The Navy Marine Corps Team Takes a New Look at MCM," Marine Corps Gazette 80, no. 3 (March 1996): 34.

[20]Charles E. Wilhelm, "Forward...From the Sea the Mine Warfare Implications," Marine Corps Gazette 79, no. 7 (July 1995): 23.

[21]Boyles, 33.

[22]Pengelley, 50.

[23]"Submarines Make a Return to Convention," Jane's Defence Weekly 27, no. 7 (19 February 1997): 21.

[24]Joris Janssen Lok, "Conventional Submarines: At the Forefront of Naval Developments," Jane's Defence 96: The World in Conflict (1996): 126.

[25]"U.S. Marine Corps: Set for the New Age," Jane's Defence Weekly 26, no. 13 (25 September 1996): 34.

CHAPTER 4

COUNTER THREAT TECHNOLOGY, WEAPONS, AND DOCTRINE

This chapter examines the weapons systems and doctrinal concepts the Navy has developed or is developing to counter the littoral threat it may face in a contingency. Many of the systems discussed are not yet in service; however, many are in various stages of procurement and development.

The challenge of conducting amphibious operations in today's threat environment is as complex and evolving as the threat itself. The Navy's littoral emphasis still stresses the importance of power projection from the sea in critical regions of the world. Forward-deployed naval forces serve as a transition from an initial presence force to a more capable force to be brought forward later. Because the nature of operations now have a distinctly joint flavor, a full range of options are available to the commander in peace, crisis, regional conflict, and the subsequent restoration of peace.[1]

To counter the diverse threats the amphibious commander faces, the U.S. military has undertaken the development of various weapons systems to counter not only the littoral threat but a host of other threats the services face in their respective mediums. Shrinking budget dollars in conjunction with joint emphasis has driven the need for weapons interoperability and weapons system integration. New weapons have also emerged as the result of the last war fought or through the emergence of a new threat technology.

Ballistic Missile Defense

The Persian Gulf War highlighted the increasing use of ballistic missiles as a political weapon as well as a military threat. One of the major lessons learned was the need for antiballistic missile protection for deployed troops in a theater of war. This requirement is top be met by the upper and lower tier of Theater Ballistic Missile Defense (TBMD). The cutting edge of upper-tier support is THAAD (Theater High Altitude Area Defense). THAAD is an Army endo/exo-atmospheric intercept system used against Theater Ballistic Missiles (TBMs) whose coverage and range extends beyond the reach of lower tier systems like Patriot.[2] Its coverage consists of a large geopolitical area against short and medium range TBMs with hit to kill technology to ensure complete destruction.

THAAD is designed to be used in conjunction with Patriot batteries and other Surface Air Missile (SAM) assets.[3] Underscoring the importance of THAAD, the revised Fiscal Year (FY) 98 budget included $555 million dollars for the research and development phase of THAAD representing an increase of 82 million dollars from the original FY 98 submission. This will allow units to reach the field by 2004 instead of 2006.[4] Patriot PAC-2 (Patriot Advanced Capabilities) are in place now. The PAC-3 ERINT (Extended Range Interceptor) version is to be ready by 1998, also possessing hit to kill technology.[5] These assets are only effective if they are in theater. One of the most vulnerable periods for the ARG is arrival on station and the establishment of lodgement. TBMD is crucial during the critical arrival and buildup stage of deployment.

Perhaps the most intriguing component of TBMD, is the Air force's experimental Airborne Laser (ABL) concept. Flying aboard a 747, it is an high energy chemical laser, possessing multi-megawatt for thirty to forty engagements per twelve to eighteen hour missions. It engages missiles above the clouds hundreds of Kilometers from enemy territory. It can

conceivably engage up to three missiles simultaneously. It also possesses a limited capability against cruise missiles and high value air targets such as command and control aircraft. What is most important about ABL is that it can conduct boost phase intercepts.

Ballistic missile defense is best conducted over the enemy's territory so that fallout of WMD remains on the opponents soil. During the boost phase, missiles are extremely vulnerable because they are large, heavily stressed targets.[6]

Cruise Missile Defense

In July 1994, the late Chief of Naval Operations Admiral Jeremy M. Boorda, and Commandant of the Marine Corps, Carl E. Mundy, Jr., concluded the first priority for the Naval Service was to field a TBMD capability. One of its crucial missions would be to provide coverage until upper tier assets are in place. It also had to ease the demands on the strategic airlift assets, be world mobile, and not be constrained by politics of access to foreign land bases.[7] Lodgement forces must rely on the Aegis system and the SM-2(Standard Missile) block IV and LEAP (Light Exo-Atmospheric Projectile) for sole protection until other components of the TBMD system arrive. Block IVA variants are endo-atmospheric and; therefore, a part of the lower tier defense. LEAP is exo-atmospheric and would be a part of the upper tier system when fielded. Its strength is that it extends coverage from the sea to a considerable portion of land.[8]

Okinawa 1944 witnessed the nascent struggle between precision-guided munitions (kamikazes) and the concept of defense in depth. Picket ships with radar on the edge of the formation for early detection and close ship formations for mutually-supporting gunfire, signified the primitive development of a strategy to counter the lethality of Kamikazes.[9] The Battle of Latakia used maneuver to defeat Syrian gunboats. The Falklands Conflict demonstrated the need for surveillance aircraft like the E-2 Hawkeye and long legged all weather

CAP (Combat Air Patrol) aircraft. To counter cruise missile threats, the Navy is developing several measures. The Evolved Sea Sparrow Missile (ESSM) upgrade is directly aimed at improving the Navy's anti-cruise missile capability.

The Army is experimenting with aerostats as a defense measure against cruise missiles. Proceeding as ATD (Advanced Technology Demonstration), its mission will be to provide around the clock radar coverage in conjunction with other sensors, land or sea based, to provide enhanced over the horizon information to surveillance and targeting platforms. It was an aerostat that provided Kuwait with the first data of massing Iraqi troops in 1990.[10] Critics question the survivability of such a system but its supporters argue it would be protected by Aegis cruisers and the Patriot Pac-3 air defense missile system.

To better integrate sea weapons into a cohesive system, the navy has developed Cooperative Engagement Capability (CEC). CEC fuses information from multiple weapons systems into composite tracks of fire-control quality. A ship with a track near shore (seeing) can pass targeting quality information to a ship whose sensor range is exceeded (blinded) and can not see the target yet the "blind" ship can engage with its weapons. This, in effect, makes the battle group a single distributed weapons system.[11] Another system developed by the Navy consists of the Advanced Combat Direction System and the Ship Self Defense System/ Quick Reaction Combat Capability. They combine to make the Integrated Ship Defense System (ISDS). Respectively, it takes the Command and control and link processing functions of one and joins them with the real time sensor fusing and weapons direction functions of the other, and creates detect-control-engage capabilities.[12]

Fire Support

In an attempt to meet several shortfalls in operational support, the Arsenal ship concept has emerged and has provoked serious discussion. Its supporters stress the arsenal ship is the bridge to SC-21 (Surface Combatant, Twenty-First Century) and is the battleship of the Twenty-First century.[13] Its detractors claim its mission can be done by retired battleships and some even argue that submarines (the first four of the Ohio class) can accomplish its mission. The Aresenal ship's primary purpose will be to support the land battle. Possessing the latest strike weapons and long range gunfire support, it will be able to significantly influence the land battle.

One of the biggest complaints of the Marine Corps is that there is little fire support capability in the fleet today. There is only the five inch gun or the Tomahawk missile and no capability in between. Destroying relatively inexpensive missile sites with million dollar weapons is wasteful overkill. Placing a 155 mm gun on the arsenal ship would give it intermediate punch. The navy is pursuing the development of a vertical gun employing ERGM (Extended Range Guided Munition) technology to provide additional range. ERGM is a rocket assisted projectile using GPS/INS (Global Positioning System, Inertial Navigation System) for guidance, with a future capability to have a submunition warhead. Modifications will be made to the current 5 inch / mk 54 guns to provide a portion of the extended range that is expected to be between sixty-three and seventy-five nautical miles. This would also provide a means to supply precise sustained fire. Before precise meant either aircraft in harms way or an expensive cruise missile. And in actuality, sustained fire is doubtful at one million dollars per missile.[14]

Other weapons to be included on the Arsenal ship are the Tactical Missile System (TACM), the Tomahawk Land Attack Missile (TLAM), the Theater Ballistic Missile (TBM), probably SM-2 block IVA. Early TBMD would consist of arsenal ship inventories being controlled by Aegis platforms using CEC while allowing the Marine Corps ashore to prepare for

follow-on forces.[15] A 1993 Project Air force Study by the RAND corporation, The New Calculus, concluded, in a MRC(Major Regional Conflict) there would be 15, 000 mobile targets requiring 5500 armored kills to reach assured defense. The navy asserts that an arsenal ship with two 500 VLS (Vertical Launch System) cell launchers armed with strike missiles and Brilliant

Anti-Tank (BAT) munitions can achieve 2000 kills (of armored mobile targets) on the first day and would reach assured defense three days sooner than in a scenario not involving the arsenal ship.[16] The arsenal ship could be operational as early as 2001 with a demonstrator at sea by 2000. Initial planning only allows for five to six ships. Some envision a fleet of up to twelve ships to complement the twelve ARGs and twelve CVBGs.

Mine Countermeasure

Another component of the Navy's littoral strategy rest with an effective mine countermeasure capability. The Navy's best effort at countermeasure is the creation of two new classes of ships. MCM (Mine Counter Measure) 1, Avenger-class minesweeper. The fourteen ships in this class are wooden and have the ability to hunt and sweep mines. Carrying either the SQQ-30 or SQQ-32 variable depth sonar and the SLQ-48 Mine Neutralization Vehicle (MNV), this platform represents the ocean-going capability for deep-water mine sweeping and hunting. The fiberglass coastal MHC (Mine Hunter Craft) possesses the same sonar and MNV, but has no minesweeping capability. These twelve ships can be loaded onto sea lift ships for transport into theater.[17] The principle advantage over air units is longer on station time and the ability to go deeper with their equipment. The major problem with mine clearance (uncontested operation) and breaching (combat operation) is that it is done in shallow water and very shallow water. The Senior Technical Advisor to Mine Warfare Command states: "...30 feet and deeper we're very good. Its the shallow, and very shallow water where we need to make improvements."[18]

The shallow water mine problem lies in the ten foot water curve and moving inland to the high-water (tide) mark, and moving even further inland to the craft landing zone (on the beach). There is no ability to breach in stride (without stopping) at the thirty foot mark as well as the ten foot curve point. An LCAC (Landing Craft Air Cushion) is experimenting with kits that provide a MCM capability to LCACs converting them to MCACs. (Mine Craft Air Cushion). These craft would carry line charges that would serve as the initial "breacher" from the ten foot water curve to the high water mark. The MCAC would disembark a plow carrying M1A1 tank for clearing land mines and obstacles from the high water mark to the craft landing zone.[19]

However, this problem is far from solved. To configure an LCAC to MCAC requires the conversion of the limited number of LCACs carried in an ARG. The numbers of LCACs carried on a deployment is determined by lift requirements of the ARG. To eliminate LCAC for MCAC only trades mine clearing problems for lift problems, thus increasing the time it takes to get vital equipment ashore. Recent developments suggest the Navy may cancel this method altogether. This remains a critical unresolved problem in the littoral environment.

Diesel Submarine Defense

The advancements in diesel submarines allow them to operate submerged for longer times and with significantly reduced noise signatures, presenting a formidable challenge to littoral warriors. The Navy is enhancing the capabilities of the Integrated Underwater Surveillance System (IUSS) to detect non-nuclear powered submarine's. Coastal water have high ambient noise levels that can mask a submarines noise. The development of a twin line array for the Surveillance Towed Array Sensor (SURTASS), towed on T-AGOS platforms can detect all types of submarines and can detect in shallower depths providing bearings to a target.

Another improvement of IUSS is the development of an analytical acoustic-signature database covering all diesel submarines that is matched with electromagnetic signatures for rapid identification. In addition a low-frequency active acoustic sonar to detect quiet diesels is being added to T-AGOS platforms.[20]

Targeted undersea warfare improvements consist of passive detection improvement with wide aperture array for near instantaneous ranging and the TB-29 towed array. The conventional wisdom for detecting diesel submarines used to be "go active". Rear Admiral Edmund Giambastiani , director of submarine warfare,USN, believes: " Our view is that because of significant capabilities in processing, sensor apertures, and the ability to net sensors together, passive is not dead." "We feel there is still a lot of decibels out there that we can mine."[21]

The New Attack Submarine (NSSN) will be built with improvements in stealth including quieter propulsion and advanced hydrodynamic shapes. Another feature of Navy submarines is the Acoustic Rapid COTS (Commercial-Off-the Shelf) insertion program allowing for replacement of internal sonar processing systems with up-to-date technology. [22]

Information Warfare

A significant revolution in information technologies and information warfare (IW) is occurring. The key to success will be the ability to gather, fuse, and disseminate information. Admiral William Owens, former Vice Chairman of the Joint Chiefs of Staff, stresses the ability to integrate a myriad of systems into what he calls "a system of systems".[23] Still evolving and nebulous, information warfare includes many facets. As it struggles for definition, some components are now emerging for exploitation by opportunists. Barry Horton Deputy Secretary of Defense for C3I argues: "For example, we need to protect ourselves against biological warfare, yet of course we weren't participating in it in a offensive sense, but we have to know

about what's on the offensive to be able to prepare the defense.[24] Although DOD (Department of Defense) has not defined what offensive IW entails for the US, it could conceivably include short-circuiting a nation's financial system, or taking down its power grids. It could even go as far as morphing Saddam Hussein eating pork or ordering the Republican Guard to surrender.[25]

The same technology that allows Hollywood to create special effects and complete a film when midway through shooting the lead actor dies, empowers the manipulator, friend or foe. Defensive IW is combining GPS (Global Positioning System)and INS (Inertial Navigation System) into one for redundancy in the event one is disabled or jammed.

It is also differentiating between the individual hacker and a sophisticated attempt at sabotage into the national informational infrastructure. Assistant secretary Horton speaks of a new age of deterrence, once protections (fire-walls) are established: "this will then raise the threshold . . . so that only nation-states can find a way through.

We will know its you (foreign intelligence) because by raising the threshold, we've eliminated a lot of other potential players and we expect we will be able to recognize your foot print and we will come back and do as bad to you. Its back to the old deterrence." [26]

An IW on the operational level is best demonstrated by JSTARS (Joint Surveillance Target Attack Radar System). Providing commanders with twenty-four hour all weather continuous information on all vehicles moving on land and at sea. JSTARS possesses the capability to detect and locate vehicular movement throughout a large area. The expeditionary force will be able to observe coastal areas for mines and see last minute troop movements. JSTARS strength lies in its multi-mode radar with MTI (Moving Target Indicator) providing real time moving imagery and SAR supplying (Synthetic Aperture Radar) high resolution photo images. Inter-operability is provided by its onboard JTIDS (Joint Tactical Information System) terminal. The 707 plane can perform on station up to 20 hours with air refueling. For the first

time air and surface commanders see enemy imagery simultaneously.[27]

JTIDS is a all service system that is high-speed, secure, jam-resistant ,voice and tactical data communications network run over Link-16. It provides real-time information on friendly unidentified and hostile tracks. It will be the joint surveillance, warning, and command and control (C2) coordination net of 21st century.[28] JTIDS will be the common C2 link between the services in theater.

Another system in place to provide better information to the commander is JIVA (Joint Intelligence Virtual Architecture). JIVA is a computerized information distribution system that allows simultaneous collaborative input from around the world. JIVA can produce tactical dispositions of enemy forces, real time event assessment, electronic intelligence correlations of missile launches, imagery interpretation and graphic displays.[29]

Navy Doctrine

As systems are made over and improved to cope with the littoral threat current command structures are also confronted with change. In response to the Cold War blue water navy , a composite defensive system predicated on fighting Soviet threats was established. The commander of the CVBG assigns duties to platforms in the battle group primarily based on their capability. The most potent anti-air platform ,usually a cruiser because of its sensor or weapons suite, was assigned duties as the anti-air warfare commander . The remaining primary duties, being anti-surface and anti submarine warfare were distributed out to the rest of the ships..

This hierarchy does not account for amphibious platforms and their growing importance in the Navy's mission as defined in Forward . . . From the Sea. The organization did not account for Marines. As the mission shifted to the littorals and the CVBG and ARG increased combined operations, they also became increasingly joint in nature. The result is a new

command organization in place, based on the Naval Expeditionary Force (NEF) comprised of the CVBG, the ARG, and the Maritime Prepositioning Squadron (MPS). Some changes have already been defined. Anti-submarine warfare is now undersea warfare. Anti-surface warfare is now surface warfare, for example.[30]

The new structure incorporates the new threats and evolution of warfare. A theater ballistic missile commander is included, along with an amphibious warfare commander and a landing force commander. The term for the overall commander is the Naval Expeditionary Force Commander.[31]

Details over command and control structure and hierarchy have to be clearer. The role of CATF (Commander Amphibious Task Force)and CLF (Commander Landing Force) have to be further delineated. Resolution should present a viable organization reflecting contemporary realities and clearly defined roles and missions.

Operational Maneuver from the Sea

Finally one of the most important changes involves Operational Maneuver from the Sea (OMFTS). The Marine Corps' adoption of maneuver warfare has shifted from assault into the teeth of the enemy when possible to "a seamless operation extending from a secure sea base across a hostile shore to dominate . . . enemy center of gravity." OMFTS is the application of maneuver warfare principles to the maritime portion of a theater campaign. With the focus centered on the enemy and not on the terrain, the goal is the campaign objective.[32]

Previous amphibious operations were single stage exercises that appeared just off the shores of the objective and proceeded like an arrow to a point on the beach. It achieved little or no tactical or operational surprise. OMFTS is executed in two stages. Appearing twenty to thirty miles off the shores of the objective it proceeds like a fan to any of several different points

expanding the defensible coastline by miles. The adversary is now forced to defend several points vice one, thus diluting his defenses.[33] With the arrival of the Advanced Amphibious Assault Vehicle (AAAV) with ranges up to 85 km with speeds up to 25 lmpts and capable of operating in moderate to heavy seas, total OMFTS and Over The Horizon (OTH) assaults will become a reality.[34] The current AAV(Amphibious Assault Vehicle)does not possess the speed or seaworthiness to conduct such assaults. The potpourri of threats that can be brought to bear in the littorals presents serious challenges to amphibious planners. Because of the confining nature of the littorals and due to the reasonable expectation that US amphibious forces will arrive first on scene in crisis areas, an adversary will be able to concentrate his assets to achieve his objectives.

The arena has been defined and examined. Threat weapons systems have been identified along with US counter-threat technologies and systems that are in place or soon will be at the turn of the century. The impact on large scale amphibious operations is such that a new framework is being constructed just as quickly as the old is crumbling. Despite facing many of the same threats as those "gator" sailors that have gone before, practitioners of the amphibious art have a very different reality in which to ply their craft.

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[1]Department of the Navy, "Forward...From the Sea" (1994): 6-7.

[2]"A Silver Bullet-Conquering the Threat," ADA PB 44-95-6 (November-December 1995): 27.

[3]Ibid.

[4]"Headline News," Jane's Defence Weekly 27, no. 6 (12 February 1997): 34.

[5]"New Equipment: Air Defence, The Air Defense Evolution Takes Off," World of Defence (1995): 141.

[6]Ronald R. Fogleman, "Theater Ballistic Missile Defense," Joint Forces Quarterly (Autumn 1995): 78.

[7]John T. Hood, "Navy Theater Ballistic Missile Defense: Cornerstone for the 21st Century Joint Operations," Marine Corps Gazette 79, no. 7 (July 1995): 32.

[8]Alan G. Maiorano, Nevin P. Carr Jr., and Trevor J. Bender, "A Primer on Naval Theater Air Defense," Joint Forces Quarterly (Spring 96): 23.

[9]"Cruise Missiles: Aerostats Offer Defense Solution," Jane's Defence Weekly 25, no.18 (1 May 1996): 24.

[10]Joris Janssen Lok, "Three Thrusts for Naval Air Defense," Jane's Defence Weekly 25, no. 14 (3 April 1996): 25.

[11]Ibid., 27.

[12]Scott C. Truver, "Floating Arsenal to be 21st Century Battleship," Jane's International Defence Review no. 29 (July 1996): 44.

[13]Stacey Evers, "Interview with RADM Daniel Murphy, Director of Surface Warfare," Jane's Defence Weekly 26, no. 6 (13 November 1996): 48.

[13]Stacey Evers, "Interview with RADM Daniel Murphy, Director of Surface Warfare," Jane's Defence Weekly 26, no. 6 (13 November 1996): 48.

[14]Truver, 44.

[15]Ibid., 45.

[16]Dennis W. Boyles, "Navy/Marine Corps Team Takes a New Look at MCM," Marine Corps Gazette 80, no. 3 (March 1996): 34.

[17]Ibid., 35.

[18]Ibid., 34.

[19]"USN Seeks Better Submarine Detection in Shallow Waters," Jane's Defence Weekly 27, no. 7 (19 February 1997): 8.

[20]"USN Aims to Counter the Silent Threat," Jane's Defence Weekly 27, no. 7 (19 February 1997): 27.

[21]Ibid.

[22]Thomas G. Mahnken, "War in the Information Age," Joint Forces Quarterly (Winter 95/96): 40.

[23]Stacey Evers, "Interview with Barry Horton," Jane's Defense Weekly 25, no. 15 (10 April 1996): 32.

[24]Ibid.

[25]Ibid.

[26]Price T. Bingham, "Forward... From the Sea with Joint STARS," Marine Corps Gazette 80, no. 1 (January 1996): 28.

[27]Maiorano, Carr, and Bender, 27.

[28]Barbara Starr, "Interview With Lt. Gen. Kenneth Minihan," Jane's Defense Weekly 25, no. 3 (17 January 1996): 32.

[29]Burton C. Quist, "Naval Expeditionary Warfare Update," Marine Corps Gazette 80, no.3 (March 1996): 38.

[30]Ibid.

[31]Matthew M Aylward, "Mines in the Surf Zone: A Proposed Breaching Concept," Thesis, Naval Postgraduate School (September 1994), 3.

[32]Ibid., 5.

[33]"Littoral Warfare: Fighting From the Sea," Jane's World of Defence 95 (1995): 88-89.

CHAPTER 5

PROSPECTS FOR CONTEMPORARY AMPHIBIOUS OPERATIONS

Amphibious warfare is changing. The proliferation of new and old weapons technology, the accompanying tactics and doctrine combined with the post-cold war breakdown of nation-states, and the chaotic rise of ethnic and religious conflicts, result in a security environment vastly different from that which gave birth to the large-scale linear assaults that characterized modern amphibious operations. Other factors such as reduced resources further undercut the likelihood of large-scale assaults.

The Okinawa campaign in 1945 consisted of over 1,000 navy ships and merchant vessels.[1] The amphibious fleet during World War II is larger than the entire Navy is today. The resources that were available to wage a world war were the products of a wartime economy geared toward the overarching purpose of national-defense. In the post-cold war world, the Navy operates with a declining budget, shrinking infrastructure, and fewer personnel. Since the demise of the former Soviet Union effectively ended any competition for sea control, the primary emphasis of today's naval forces will be upon influencing events ashore.[2] The post-cold war force reductions, of 34 percent from a near 600-ship navy in the 1980s to the present 354 ships and an anticipated 335 ships in 1999, have dramatically altered naval strategy and the subsequent force structure.[3] Current plans call for twelve three-ship ARGs by the early century. Personnel have also been reduced by 40 percent from the 1988 peak.[4]

Amphibious ships in World War II and their counterparts in the Korean War were inexpensive and plentiful. Over time, improvements in troop habitability from almost nothing to

designated berthing areas and hotel services, that is, increased water capacities to reduce the need for water rationing, added significant cost to amphibious ships. Improvements in speed and size even at the tradeoff of some amphibious capability were even more costly. Later, the development of extended deployments ranging form six to nine months coupled with the retirement of the aged World War II amphibious fleet, served to reduce the size of the available expeditionary force. The deployment of ships between the Atlantic and Pacific fleets limits the number of ships available to a theater. It also prevents large, expensive, combined exercises that require one fleet to move from one coast another with embarked Marines. Planned overhauls and unscheduled maintenance also play a role in ship availability.[5]

In addition, the arrival of LPD-17, San Antonio-class amphibious, transport, dock ship, will replace four different amphibious ship classes totaling 41 ships.[6] The retirement of the LST class, LPH class, and LKA class ships have also reduced the sheer numbers of ships required to sustain large forces ashore for extended periods. The addition of Maritime Prepositioning Ships (MPS) assumes the sustainment role for maritime forces in theater beyond the force's own organic capability.

The theater is no longer an isolated island in the Pacific. The emergence of new nation-states has coincided with the resurgence of ethnic tensions and the spread religious fundamentalism. Not constrained by traditional form of conflict of the eighty wars since 1945 only twenty-eight have resembled conflict between traditional armies or states. Forty-six were civil wars or insurgencies. Former UN Secretary General Perez de Cueller called this the "new anarchy."[7] In 1993, forty-two countries experienced major conflicts and thirty-seven others experienced other forms of political violence. The developing world claimed sixty-five of these seventy-nine countries.[9] Samuel Huntington argues in the Clash of Civilizations and the Remaking of the New World Order, that culture and cultural identities are in actuality

civilization identities that shape patterns of cohesion, disintegration and conflict in the post-cold war world. [10]

Huntington further asserts the most important as well as the most dangerous clashes in the next century will be between peoples belonging to different cultural entities. Tribal wars and ethnic conflicts will occur between civilizations. Conflicts between civilizations carry with it the potential for escalation as other countries rally to support their "kin" countries. For example, the clan clashes in Somalia are localized and pose no threat for broader escalation. The tribal conflicts in Rwanda have implications for Zaire, Uganda, and Burundi. The civilization clashes in Bosnia, the Caucasus, Central Asia, or Kashmir could escalate into broader conflicts. In the Yugoslav crisis, Russia initially provided support to the Serbs. Saudi Arabia, Turkey, Iran and Libya provided funds and arms to the Bosnians because of cultural kinship.[11] The fall of the Soviet Union and the associated disorder, the disintegration of Yugoslavia, Somalia and Rwanda all portend nation states splintering along cultural lines. More so than the usual inter-and intra-national crises, a far greater degree of instability looms ahead. Vaclav Havel observes: "Cultural conflicts are increasing and are more dangerous today than at any time in history. Jacques Delors agrees: "Future conflicts will be sparked by cultural factors rather than economics or ideology."[12] Alvin and Heidi Toffler in War and Anti-War, believe we appear to be "plunging into a dark new age of tribal hate, planetary desolation, and wars multiplied by wars.[13]

International instability and regional chaos threatens U.S. interests. U.S. interests as defined in the National Security Strategy, is defense of U.S. territory and citizens, the defense of our allies and the preservation of our economic well-being. To defend these interests, the U.S. will act unilaterally and with military power. More than 30 percent of the U.S. economy is dependent on foreign markets and this share is increasing. Any threat to the global economy is subject to consideration for deployment of military power.[14]

While many nations experience chaos and instability, many others are witnessing soaring economic growth. By 2020, 80 percent of the worlds largest economies will be located along the Pacific And Indian Ocean rim. U.S. trade with Asia is larger than its trade with Europe. Economic growth fuels the need to respond to perceived insecurity by building military power and obtaining high technology weapons. These powerful economies require vast resources, such as oil, to sustain growth. The mix of booming economies, resource dependency, and military power is a volatile concoction.[15]

Volatility characterized by economic growth or volatility caused by ethnic and civilization conflicts shapes the strategic and operational environment in the upcoming century. Because 70% of the planet is covered by water and 80% of the worlds nations are located in the littorals, amphibious forces will be the instrument to act on behalf of U.S. interests.

At the conclusion of the Pacific Campaign in World War II, President Truman told the Joint chiefs of Staff, "no more Okinawas or Iwo Jimas."[16] This was acknowledgment of the heavy casualties encountered during the amphibious operations to liberate these islands. George Bradley's statement predicting the demise of amphibious landings prior to the Korean War because of the threat of nuclear warfare, is partially true. Amphibious warfare, in its evolved form, by the end of World War II, had changed. The existence of WMDs and the high cost of direct frontal attacks have altered the way amphibious warfare is conducted. The seeds of this new version of amphibious assault, according to the last two Commandants of the Marine Corps, can be found in the Korean War. Former Commandant Carl Mundy writes:

> This recital of Marine operations in the "maneuver period" of the Korean War is important, for it yields lessons that remain fundamental today. First, in these operations, all the concepts of operational maneuver from the sea are clearly displayed. The mobility differential, strategic agility, and flexibility inherent to expeditionary forces were all a part of operations in Korea. Second, Marines fought as an integrated air ground team during this period, with such great effect that they were the object of Army envy. For these reasons, Korea remains that defining moment for the modern-day Marine Corps. It was the birth of

> our strategic concept. Its lessons still have applicability; they are the tradition, the foundation, on which we build.[17]

Inchon is the model for operational Maneuver from the Sea. Korea is hailed as the prototypical naval expeditionary campaign. Because it originated from the U.S. and flowed through Sasebo and Pusan, the actual landing at Inchon and on to objectives inland, it possessed the characteristic of OMFTS. It centered on cutting North Korean lines of communication at Seoul and maintained aggressive operational tempo, resulting in decisive results--destruction of the North Korean army and the liberation of South Korea, and not just a tactical victory. Inchon signifies the transition period of an evolving form of warfare. Current Commandant Charles Krulak states:

> We have been actually been refining the amphibious art since the end of World War II, an many of the elements of "traditional" amphibious operations are still valid. Inchon demonstrated that there are benefits from landing where the enemy is weakest or does not anticipate a strike. That is the premise of modern day Operational Maneuver From the Sea (OMFTS). Shipping was the only means of getting ashore during amphibious operations in World War II and Korea. This limitation dictated operations that were basically ship-to-shore movements followed by land operations. Today's amphibious doctrine emphasizes that amphibious operations are ship-to-objective.[18]

OMFTS is comprised of basic principles:

1. Focused against a strategic objective.
2. Uses the sea as maneuver space
3. Generates overwhelming tempo and momentum
4. Pits strengths against weakness
5. Emphasizes intelligence, deception, and flexibility
6. Integrates all organic, joint and combined assets
7. Maneuver from ship to objective--the beach is merely a phase line or at most a linear obstacle within our avenue of approach. Focus is on the inland objective.

According to its proponents, OMFTS is largely a frame of mind that allows naval forces

to strike at an enemy center of gravity. It provides a foundation for skills, attitudes, techniques and equipment that enable those forces to adapt and improvise as the need arises. It attempts decisive action on enemy weaknesses to achieve decisive results. [19] The difference between OMFTS and maneuver warfare is the extensive use of the sea as a means to gain an advantage over enemy forces and to make the sea a barrier to enemy forces. A key characterization of the large scale amphibious landing is the tremendous amount of supplies and logistics that pile up on the beach and support the landing forces as they attempt to move inland after lodgement is attained. The need for items such as fuel, ammunition, and stores mandated large supply dumps be created and significant be directed toward establishing, protecting, and using these dumps.[20] Consequently opportunities for decisive action were missed as supplies built up on the beach.

The requirement to establish supply dumps and like facilities is diminishing. Improvements in fuel efficiency in military vehicles promise to reduce the fuel requirements ashore. Longer range weapons and sea-based fire support are contributing factors in the reduction of the logistics tail. As a result, ship-to-shore movement is faster and the logistics requirements smaller, and most importantly, the transition from landing to subsequent operations ashore will be virtually seamless. Likewise amphibious withdrawals will be conducted with more speed and flexibility than before.[21] This will enable forces to move from ships to objectives deep inland without the traditional buildup phase. Current literature in does not address depth or length of operations. This omission is important because it determines mission type and scope.

The transition from sea to land has limited the effectiveness of amphibious operation. The Normandy invasion in 1944, was limited to certain large shore areas with large air drop zones. Despite having virtually unlimited control of the seas, planners were forced to select landing sites to accommodate a large, relatively-static force. That severely limited the areas in

northern France to only a few that could support so large a force. The Germans were forced to choose from few sites to defend rather than from many. [22]

OMFTS seeks to exploit sea control. A common example of OMFTS used in military literature is one wherein a naval expeditionary force attacking from Spain across the Atlantic to the U.S. would not have to establish an intermediate logistical base. The entire east coast of the U.S. would be vulnerable to attack. Contemporary capabilities have enhanced the range of options available to the amphibious force. The commander of the NEF (Naval Expeditionary Force) would have the option at some decision point to choose his LPA (Littoral Penetration Area). The commander on the eastern- seaboard knowing this NEF is approaching, would have to spread his forces nearly the entire length of the coast in preparation for this assault. Instead of being able to mass his defenses based on a few areas most receptive to amphibious assault, he would even have to consider countless small beaches and shore areas that could be exploited by the NEF.

The assaulting marines choose a point (Littoral Penetration Point) and overwhelm thinly stretched coastal defenses and proceed inland to their objective leaving little or no forces on the beach, and without a large or lengthy buildup. The attack is reinforced by maritime prepositioning forces.[23]

OMFTS is credited for preparing naval forces for MOOTW because of the equipment and training associated with OMFTS.[24] Sea-basing of marines will eliminate the need for facilities ashore. Improvement in ship to objective movements i.e. AAAV, V-22 Osprey, will give greater mobility and range to marines ashore. The arrival of improved weapons afloat would provide ground forces greater support and protection and naval surface forces greater lethality. In Somalia 1992, the Marine Air Ground Task Force (MAGTAF) had to first establish a logistic base to support the advance of convoys and its organic helicopters before it could

proceed inland to its objective 240 miles away at Baidoa. Future OMFTS would allow a quicker movement inland and make the 240 miles less of an obstacle.[25]

OMFTS is touted as the marriage between maneuver warfare and naval warfare. Using the tenets from maneuver warfare such as high-tempo operations, decisive objectives, and dynamic nature of conflict, the originators have combined sea-borne movement and flexibility with the above to create OMFTS. In seeking a balance between technology and doctrine, OMFTS seeks to exploit and depend on both.

The principle Marine Corps war-fighting organization is the Marine Expeditionary Force. Its ground combat element consists of one to five divisions and it possess sixty days of accompanying supplies. The next size within the MEF is the MEF-FWD (Marine Expeditionary Force Forward), about the size of a division with a sustainment capability of thirty days. Today's Naval Expeditionary Force structure is usually made up of a ARG (Amphibious Ready Group) and a MEU (Marine Expeditionary Unit) outfitted and loaded on three amphibious ships: a big deck LHA amphibious assault ship, (Tarawa class) or LHD (Wasp class), a LSD Dock Landing Ship (Anchorage class, Whidbey Island class, or Harper's Ferry class), and an LPD Amphibious Transport Dock, (Austin class and the San Antonio class by Fiscal year 2002); as part of the routine requirements of forward deployed afloat forces. The MEU is a combat battalion with the organic capability for fifteen days sustainment and is the smallest of the expeditionary combat organizations. Providing immediate reaction capability, it is capable of combat operations of limited scope and short duration. Forward deployed, MEUs embark ARG shipping and achieve their designation as special operations capable only after extensive integration and training with navy forces.

The MEU (SOC) qualification process includes receiving certification in a number of mission areas expected to be performed by the MEU. The mission areas are:

1. Limited objective attacks
2. Security operations
3. Mobile training teams
4. Show of force operations
5. reinforcement operations
6. Civic operations
7. Deception operations
8. Fire support coordination
9. Counterintelligence
10. Initial terminal guidance
11. Signal intelligence and EW operations
12. Clandestine recovery operations
13. Specialized demolition operations
14. Military operations in urban terrain (MOUT)
15. Amphibious raid
16. Tactical recovery of aircraft and personnel (TRAP)
17. Protection/Evacuation of noncombatants and installations (NEO)
18. In-extremis hostage rescue

Commanded by a colonel, the MEU is composed of four elements. The Command Element (CE) consists of the staff and is organized to perform limited duration operations. The Ground Combat Element (GCE) is a reinforced battalion with a light armor capability consisting of only AAVs Amphibious Assault Vehicles) and LAV(Light Armored Vehicles). They also

possess howitzer and mortar batteries. Because of limited space, the GCE has no tanks. The MSSG (MEU Service Support Group) provides logistic and material support to the entire MEU in the form of portable generators, water purifiers, bulldozers, cranes and trucks. Finally, the ACE (Air Combat Element) is the organic MEU aviation required to conduct air defense, air control, and combat service support. Of the approximate 2200-2500 personnel in the MEU, only about 1000 are combat soldiers.

The ARG is commanded by a navy captain (0-6) and his staff and is designated Commander Amphibious Squadron (odd number west coast--even number east coast). The ARG is also comprised of other components. Naval Beach Group (NAVBEACHGRU)detachments are made up of the Assault Craft Unit (ACU) which is comprised of LCUs (Landing Craft Utility) and LCACs (Landing Craft Air Cushion).

The Beach Master Unit (BMU) detachment controls movements on the beach. The Amphibious Construction Battalion detachment is a component of NAVBEACHGRU. The Tactical Control Squadron (TACRON) controls the airspace in the Amphibious Objective Area (AOA) by establishing an air control center. These assets combine to perform a wide range of missions-most notably early and sometimes forcible entry to expedite the arrival of follow on forces.

As naval forces arrive in theater, the mission of local sea control is paramount. The primary threat to ships range from high tech cruise missiles, advanced diesel submarines, and mines. Okinawa and the Falklands Conflict demonstrated the vulnerability of ships to guided munitions. Frank Barnaby, in The Automated Battlefield, argues it is cheaper to destroy warships than to deploy them. Cruise missiles mounted on fast patrol craft are becoming a preferred and inexpensive way to modernize naval forces and defend against littoral encroachments, pose a serious threat to US shipping assets in littoral regions.[26] Large-scale ship

formations, mostly logistic ships, offer lucrative targets for fast moving boats. Fewer ships with greater stowage capacity and with better self defense capability surrounded by a greater number of cruisers and destroyers with new missions of protecting the amphibious fleet, vice blue water sea control, best describes the Amphibious Objective Area in today's environment.

Diesel submarines operating in the littoral environment also pose a significant threat to shipping. If Japanese submarines had not been negated during the earlier sea campaigns of the pacific war, they could have done even more damage at Okinawa and other Pacific island assaults. Damage in today's terms does not mean the sinking of multiple ships. The USS Stark, USS Princeton, and the USS Tripoli, are all ships damaged by instruments of war in the past 10 years, although not damaged by submarine attacks, but incurred multi-million dollar repair costs that can provide economic leverage along with the psychological leverage nation states can employ to deter naval activity and ultimately U.S. intervention. Blue water assets used previously to hunt soviet submarines now have a daunting littoral mission to protect amphibious shipping from a quieter threat in a difficult acoustical environment. Thousands of ships in a littoral environment serve only to complicate an already difficult mission.

An even more difficult problem is the threat of mines in the littorals. While minesweeping assets have been added to the fleet and even forward deployed to potential crisis regions, mine breaching still remains an undeveloped and potentially show-stopping capability. The existence of minefields or the perception they exist may cause naval forces to alter operations.[27] Wonson during the Korean War, and the Gulf War casualties suffered by USS Princeton and USS Tripoli serve as a stark lessons. At present the best deterrence is early targeting of mine storage facilities during a conflict and the development of OMFTS to confuse the enemy into spreading his assets thin between several potential landing sites.

Large-scale amphibious operations have evolved into a much smaller-scale power projection, forward deployed enabling force that can rapidly facilitate the insertion of larger-scale forces. The factor of a world war and the enormous resources such a conflict entails, in addition to the amphibious tactics that drove the concept of frontal assault of heavily fortified positions, served to mandate the need for the generation of massive assault forces and the shipping to deliver and sustain those forces. Today, given the absence of an immediate threat of another world war, improved shipping and sustainment doctrines, the nature of the threat and the weapons amphibious forces are likely to encounter, the immense assault force is largely archaic.

Doctrine has shifted so that the emphasis is on avoiding wasteful casualties by striking the enemy at his weakness and at his center of gravity vice his strength. The political climate most likely to induce the insertion of forward deployed troops is shaped by the disintegration of nations states by ethnic and religious strife. The breakdown of the social and political order of a state can leave that state's arsenal which is likely to be filled with state of the art weapons and weapons systems, in the hands of hostile entities that threaten the interests of the United States. Since the demise of the Cold War, the scale of the threat has reduced while the proliferation of threats has increased with a corresponding increase in the likelihood of threats around the world.

The Commandant of the Marine Corps concludes: "We need to be able to do everything from assistance through the major regional contingency."[28] In the near future, everything will be done smaller but with a more lethal version of the assault forces that have characterized amphibious operations and most likely, will be conducted in a more lethal environment than in the past. With the emergence of future threats and peer competitors, continuous professional guided evolution of the force in a joint amphibious environment offers the best answer to the challenges encountered.

[1]Frank W. Vannoy, "Where do the Gators go from Here," Assault From the Sea: Essays on the History of Amphibious Warfare (Annapolis, MD: Naval Institute Press, 1985), 399.

[2]William Owens, High Seas: The Naval Passage to an Unchartered World (Annapolis, MD: Naval Institute Press, 1995), 6.

[2]The Americas, Jane's Defence Weekly 27, no 6 (12 February 1997), 8.

[4]Deputy Chief of Naval Operations, Resources Warfare Requirements and Assessments, Force 2001 Vision...Presence...Power: A Program Guide to the U.S. Navy (Washington, DC: 1997).

[5]Robert S. Salzer, "The U.S. Navy's Clouded Amphibious Mission," Assault From the Sea: Essays on the History of Amphibious Warfare (Annapolis, MD: Naval Institute Press, 1985), 387-388.

[6]Headline News, Jane's Defence Weekly 27, no. 1 (8 January 1997), 3.

[7]Robert Kaplan, The Ends of the Earth: A Journey to the Frontiers of Anarchy (Vintage, NY: 1996), 8.

[9]Ibid.

[10]Samuel Huntington, The Clash of Civilizations and the Remaking of the World Order (Simon & Shuster, 1996), 14.

[11]Ibid., 28.

[12]Ibid.

[13]Alvin and Heidi Toffler, War and Anti-War (Boston, MA: Little, Brown and Company, 1993), 3.

[14]Charles C. Krulak, "Operational Maneuver From the Sea," Naval Institute Proceedings 123/1/1127 (January 1997), 26.

[15]Ibid., 27.

[16]Michael D. Pearlman, "Introduction to Lesson 27," The Evolution of Modern Warfare (Ft. Leavenworth, KS: USACGSC, 1996), 390.

[17]Carl E. Mundy, Jr., "Reflections on the Corps: Some Thoughts on Expeditionary Warfare," Marine Corps Gazette 79, no. 3 (March 1995).

[18]Charles C. Krulak, "Interview with the Commandant of the Marine Corps," Surface Warfare 21, no. 4 (July/August 1996).

[19] "Operational Maneuver From the Sea: A Concept for the Projection of Naval Power Ashore," Surface Warfare 21, no. 4 (July/August 1996), 9.

[20]Ibid., 10.

[21]Ibid.

[22]Ibid., 11.

[23]Ibid.

[24]Ibid.

[25]Ibid.

[26]"Cruise Missiles," Jane's Defence Weekly 25, no. 18 (1 May 1996), 18.

[27]Thomas L Bickenderfer, "Amphibious Mines: Silent Enemy of the Landing Force," Marine Corps Gazette 76, no. 11, 85.

[28]"US Marine Corps: Set for the New Age," Jane's Defence Weekly 26, no. 13 (25 September 1996), 33.

CHAPTER 6

CONCLUSION

As it stands, large-scale amphibious operations are becoming increasingly difficult in light of current high and low technology and weapons of mass destruction. In fact, considerable thought and reflection should be given to the conduct of these operations in combat prior to the full integration of the OMFTS capability to the ARG/MEU organization, and the development of in-stride mine-breaching technique.

Large-Scale Operations

Amphibious operations have changed in a number of different ways over the years since its apex toward the latter stages of World War II. The most obvious change is in force structure. Today's navy simply is not resourced like the World War II navy. The scale of operations in 1945 for Okinawa included over a thousand ships. Today the amphibious fleet numbers less than forty ships with its primary mission seen as enabling the introduction of follow-on forces from a lodgement point. The concept of forward deployment allows forces to be nearby in the event U.S. interest are threatened. Deployed ARGs and MEUs, approximately 2200-2500 marines and sailors, will likely be the first forces on scene to be leveraged for further involvement or limited participation.

Military Operations Other Than War and Amphibious Operations

Ethnic tensions, militant religious movements, and the confliet between cultures threaten the stability and the very existence of nation states. Uneven economic growth produces

volatility. The potential for volatility exists due to nations depending on resources to fuel growth and the perception that military power will help protect those resources to sustain growth. International stability and regional chaos threaten U.S. interests. The U.S. will act unilaterally and multilaterally with military power if need be to protect and preserve our interests. U.S. strategic policy seeks to engage as a world leader to promote ceratin objectives such as security enhancement. One of the ways to enhance security identified in the National Security Strategy is to contribute to multilateral peace operations. Somalia was a result of such collaboration. Somalia's is indicative of the breakdown of the nation state and the model for multilateral intervention with amphibious forces on the forefront of U.S. involvement.

Technology Threat in the Littorals

The threat to amphibious forces is significant. Ballistic and cruise missiles threats in the AOA (Amphibious Objective Area) has driven the development of credible theater ballistic missile defenses and anti cruise missiles defenses. SM-2 Block IVA and ESSM (Evolved Sea Sparrow Missile) combined with the Cooperative Engagement Capability are promising systems on the verge of implementation. However, the most dangerous and unresolved threat to amphibious operations continues to be mines. The shallow water mine problem, from the 10 foot water curve inland to the high water mark and further inland to the craft landing zone, is still unresolved and there is no capability to breach while on the way to the beach and onward to objectives further inland. The inability to clear mines poses a significant problem for a MEU/ARG and even a greater problem for a larger-sized MEF.

Diesel submarine technology is fast improving. Detection by even the most capable platforms is difficult. When diesel submarines are used in conjunction with mines acting as barriers to the beach, the problem of clearing the AOA and sea control is exacerbated.

Combined ARGs and MEUs increasing the force sized operating in theater serve to complicate the problem with increased ambient noise in the littoral environment that stifles diesel submarine detection.

U.S. Counter to Threats in the Littorals

The most effective answer to the threats encountered by the amphibious force is Operational Maneuver From the Sea (OMFTS). The ability to standoff and choose objective areas from many miles of coastlines limits the enemy's ability to prepare and concentrate his anti-amphibious force weapons systems. The ability to standoff from the coastline allows minesweepers to operate under the protection of distance and force. However, OMFTS is only a concept because the AAAV (Advanced Amphibious Assault Vehicle)and the V-22 Osprey, the heart of the concept, is still several years from introduction into the arsenal of the Marine Corps.

Until these counter threat concepts are introduced, amphibious operations will be an even more perilous undertaking. There remains the future challenge of a true peer competitor and the tasks of deep operations in large littoral theaters. Amphibious operations have evolved in the face of such challenges in the past and will in the future

BIBLIOGRAPHY

Books

Alexander, Bevin. The Future of Warfare. New York: W.W. Nortorn & Company, 1995.

Allard, Kenneth. Somalia Operations: Lessons Learned. Washington, DC: U.S. Government Printing Office, 1995.

Andriole, Stephen, ed. High Technology Issues in C3I: Communications, Artificial Intelligence, and Strategic Defense. Washington, DC: AFCEA International Press, 1986.

Barnaby, Frank. The Automated Battlefield. New York, NY: The Free Press, 1986.

Benis, Frank M. U.S. Marines in Lebanon, 1982-1984. Washington, DC: 1987.

Bartlett, Merrill L. Assault From the Sea, Essays on the History of Amphibious Warfare. Annapolis, MD: Naval Institute Press, 1985.

Cordesman, Anthony H. and Abraham R. Wagner. The Lessons of Modern War Volume III: The Afghan and Falklands Conflicts. Boulder, CO: Westview Press, 1991.

Dean, David J., ed. Low Intensity Conflict and Modern Technology. Maxwell Air Force Base, AL: Air University Press, 1986.

Evans, Michael. Amphibious Operations: The Projection of Sea Power Ashore. London: Brassey's, 1990.

Foster, Simon. Okinawa 1945 Final Assault on the Empire. London: Arms and Armour Press, 1994.

George, James L. The U.S. Navy in the 1990's: Alternatives for Action. Annapolis, MD: Naval Institute Press, 1992.

Greider, William. One World, Ready or Not: The Manic Logic of Global Capitalism. New York: Simon and Schuster, 1997.

Grove, Eric. The Future of Sea Power. Annapolis, MD: Naval Institute Press, 1990.

Herzog, Chaim. The Arab Israeli Wars: War and Peace in the Middle East. New York: Vintage Books, 1984.

Huntington, Samuel P. The Clash of Civilizations and the Remaking of World Order. New York: Simon & Schuster, 1996.

Kaplan, Robert D. The Ends of the Earth: A Journey to the Frontiers of Anarchy. New York: Vintage Books, 1996.

Lecke, Robert. Okinawa The Last Battle Of World War II. New York: Viking, 1995.

Lyons, Terrence, and Ahmed I. Samatar. Somalia, State Collapse, Multilateral Intervention, and Strategies for Political Reconstruction. Washington, DC: Brookings Institution, 1995.

Miller, Steven E. Naval Strategy and National Security. Princeton, NJ: Princeton University, 1988.

Owens, William A. High Seas. Annapolis, MD: Naval Institute Press, 1995.

Palmer, Michael A. Origins of the Maritime Strategy: The Development of American Naval Strategy. Annapolis, MD: Naval Institute, 1990.

Paulsen, Richard A. The Role of US Nuclear Weapons in the Post-Cold War Era. Maxwell Air Force Base, AL: Air University Press, 1994.

Salzer, Robert S. "The U.S. Navy's Clouded Amphibious Mission." Assault From the Sea: Essays on the History of Amphibious Warfare. Annapolis, MD: Naval Institute Press, 1985.

Schneider, Barry R., and Lawrence E. Grinter, Lawrence E. Battlefield of the Future, 21st Century Warfare Issues. Maxwell Air Force Base, AL: Air University Press, 1995.

Secretary of State for Defense. The Falklands Campaign: The Lessons. London: Her Majesty's Stationery Office, 1983.

Shukman, David. Tomorrow's War The Threat of High-Technology Weapons. New York: Harcourt Brace and Company, 1996.

Toffler, Alvin, and Heidi Toffler. War and Anti-War. New York: Little, Brown, and Company, 1993.

Vannoy, Frank W. "Where do the Gators go from Here?" Assault From the Sea: Essays on the History of Amphibious Warfare. Annapolis, MD: Naval Institute Press, 1985.

Watson, Bruce, and Peter M. Dunn. Military Lessons of the Falkland Islands War: Views From the United States. Boulder, CO: Westview Press, 1984.

Government Documents

Department of Defense. Defense Against Ballistic Missiles: An Assessment of Technologies and Policy Implications. Washington, DC: U.S. Government Printing Office, 1984.

Department of the Navy. "Forward...From the Sea." Washington, DC: Naval Doctrine Command, 1994.

_____. Highlights of the Department of the Navy FY 1996/FY 1997 Biennial Budget. Office of the Comptroller of the Navy, 1995.

_____. Navy-Marine Corps Posture Statement. Washington, DC: U.S. Government Printing Office, 1995.

Deputy Chief of Naval Operations, Resources Warfare Requirements and Assessments. Force 2001 Vision...Presence...Power: A Program Guide to the U.S. Navy. Washington, DC: 1997.

Institute for National Strategic Studies. Strategic Assessment 1995: Security Challenges in Transition. Washington, DC: U.S. Government Printing Office, 1995.

U.S. Congress Office of Technological Assessment. Technologies Underlying Weapons of Mass Destruction. Washington, DC: U.S. Government Printing Office, 1993.

The White House. National Security Strategy. Washington, DC: U.S. Government Printing Office, 1996.

Periodicals

"The America's." Jane's Defence Weekly 27, no. 6 (12 February 1997): 8.

"A Silver Bullet." ADA, PB44-95-6 (November-December, 1995): 27.

"Ballistic Missiles." Jane's Defence Weekly 25, no. 8 (21 February 1996): 40.

Bickenderfer, Thomas L. "Amphibious Mines: Silent Enemy of the Landing Force." Marine Corps Gazette 76, no. 11: 85.

Bingham, Price T. "Forward...From the sea with Joint STARS." Marine Corps Gazette 80, no. 1 (January 1996): 28.

Boyles, Dennis W. "The Navy Marine Corps Team Takes a New Look at MCM." Marine Corps Gazette 80, no. 32 (March 1996): 34.

"Cruise Missiles: Aerostats Offer Defense Solution." Jane's Defence Weekly 25, no. 8 (21 February 1996): 19.

Evers, Stacey. "Interview with Barry Horton." Jane's Defence Weekly 25, no. 15 (10 April 1996): 32.

_____. "Interview with RADM Daniel Murphy, Director of Surface Warfare." Jane's Defence Weekly 26, no. 6 (13 November 1996): 48.

Fogelman, Ronald R. "Theater Ballistic Missile Defense," Joint Forces Quarterly (Autumn 1995): 78.

Hammes, Thomas. "Don't Look Back, They're Not Behind You." Marine Corps Gazette 80 (5 May 1996): 73.

"Headline News." Jane's Defence Weekly 27, no. 6 (12 February 1997): 34.

Hood, John T. "Navy Theater Ballistic Missile Defense: Cornerstone for the 21st Century Joint Operations." Marine Corps Gazette 79, no. 7 (July 1995): 32.

Jane's World of Defence (1995): 88-89.

Krulak, Charles C. "Interview with the Commandant of the Marine Corps." Surface Warfare 21, no. 4 (July/August 1996).

Lok, Joris Janssen. "Conventional Submarines: At the Forefront of Naval Developments." Janes' Defence 96: The World in Conflict (1996): 126.

_____. "Three Thrusts for Naval Air Defense." Jane's Defence Weekly 25, no. 14 (3 April 1996): 25.

Mahnken, Thomas G. "War in the Information Age." Joint Forces Quarterly (Winter 1995/1996): 40.

Maiorano, Alan G., Nevin P. Carr, Jr., and Trevor J. Bender. "A Primer on Naval Theater Air Defense." Joint Forces Quarterly (Spring 1996): 23.

Mundy, Carl E. Jr. "Reflections on the Corps: Some Thoughts on Expeditionary Warfare." Marine Corps Gazette 79, no. 3 (March 1995).

"New Equipment: Air Defence, The Air Defense Evolution Takes Off." World of Defence (1995): 141.

"Operational Maneuver From the Sea: A Concept for the Projection of Naval Power Ashore." Surface Warfare 21, no. 4 (July/August 1996): 9.

Quist, Burton C. "Naval Expeditionary Warfare Update." Marine Corps Gazette 80, no. 3 (March 1996): 38.

Starr, Barbara. "Interview with Lt. Gen. Kenneth Minihan." Jane's Defence Weekly 25, no. 3 (17 January 1996): 32.

"Submarines Make a Return to Convention." Jane's Defence Weekly 27, no. 7 (19 February 1997): 21.

Truver, Scott C. "Floating Arsenal to be 21st Century Battleship." Jane's International Defence Review no. 29 (July 1996): 44.

"U.S. Marine Corps: Set for the New Age." Jane's Defence Weekly 26, no. 13 (25 September 1996): 34.

"USN Seeks Better Submarine Detection in Shallow Waters." Jane's Defence Weekly 27, no. 7 (19 February 1997): 8.

"USN Aims to Counter the Silent Threat." Jane's Defence Weekly 27, no. 7 (19 February 1997): 27.

Wilhelm, Charles E. "Forward . . . From the Sea the Mine Warfare Implications." Marine Corps Gazette 79, no. 7 (July 1995): 23.

Other Sources

Aylwards, Matthew M. "Mines in the Surf Zone." Master's Thesis, Naval Post Graduate School, 1994.

Fenton, George P. "Marine Expeditionary Units (Special Operations Capable) at the Operational Level in Military Operations Other Than War." Unclassified Paper, Naval War College, 1994.

Kipp, Jacob W. "Naval Art and the Prism of Contemporaneity: Soviet Naval Officers and the Lessons of the Falklands Conflict." Soviet Army Studies Office, U..S Army Combined Arms Center, 1983.

McMullen, William C. "The Falklands Islands War-Lessons for Middle East Contingency Forces." Final Report, Naval War College, 1987.

Otero, Humberto M. "Falkland Islands War: Roots Development, and Military Lessons." Student Report, Air Command and Staff College, 1983.

Pearlman, Michael D. "Introduction to Lesson 27." The Evolution of Modern Warfare. Fort Leavenworth, KS: USACGSC, 1996.

Pierson, Carl R. "JFACC: What it Means for the Amphibious Commander." Final Report, Naval War College, 1994.

Priddy, John R. "Desant From the Sea: An Option for the Operational Employment of a Marine Air Ground Task Force." School of Advanced Military Studies Monograph, U.S. Army Command and General Staff College, 1990.

Robison, Norman .J. "Operational Maneuver From the Sea: An evolving Concept." Final Report, Naval War College, 1995.

Strain, Patrick M. "Amphibious Operations in the 21st Century: A Viable Forced-Entry Capability for the Operational Commander." School of Advanced Military Studies Monograph, U.S. Army Command and General Staff College, 1993.

Vaughn, William H. "Mine Countermeasures in the Amphibious Objective Area." Final Report, Naval War College, 1988.

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