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NAVY TACTICS, DOCTRINE, AND TRAINING REQUIREMENTS FOR LITTORAL WARFARE

by

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June, 1996

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NAVY TACTICS, DOCTRINE, AND TRAINING REQUIREMENTS FOR LITTORAL WARFARE

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ABSTRACT

The White Papers "...From the Sea" and "Forward...From the Sea" have shifted the focus of U.S. maritime strategy from open-ocean (blue-water) operations to near-land (littoral) operations. U.S. naval strength lies in the capability to conduct sustained operations on the high seas, but the littoral environment and the potential enemy which may be encountered there impose new demands on our naval forces. It is imprudent to assume that the U.S. Navy can transfer their open-ocean proficiency into the littoral unmodified. This thesis evaluates the U.S. Navy's ability to conduct operations within this environment through its Littoral Warfare tactics, doctrine, and training. Then corrective actions for building littoral tactics and doctrine are recommended. It is intended that the recommendations will initiate a tactical debate to better prepare U.S. naval forces for operations within littoral regions throughout the world.

TABLE OF CONTENTS

I. INTRODUCTION 1
- A. PURPOSE OF THESIS 1
- B. SOURCE OF INTEREST IN TOPIC 1
- C. BACKGROUND 2
- D. SCOPE OF THESIS 3
- E. ASSUMPTIONS 4
- F. OUTLINE OF CHAPTERS 4
  - 1. Chapter II. Shift in U.S. Maritime Strategy 4
  - 2. Chapter III. The Littoral Environment and the Enemy 4
  - 3. Chapter IV. The Importance of Tactics, Doctrine, and Training for Command and Control 5
  - 4. Chapter V. Evaluation of U.S. Navy Tactics, Doctrine, and Training for Littoral Warfare 5
  - 5. Chapter VI. Building Effective Littoral Warfare Tactics, Doctrine, and Training 5

II. SHIFT IN U.S. MARITIME STRATEGY 7
- A. INTRODUCTION 7
- B. BACKGROUND 7
- C. DEVELOPMENT OF A NEW STRATEGIC CONCEPT 9
  - 1. Naval Forces Capabilities Planning Effort 9
  - 2. "...From the Sea" and "Forward...From the Sea" 16
- D. EVIDENCE WHICH SUPPORTS THE FINDINGS IN "...FROM THE SEA" 17
  - 1. Potential For Conflict Exists in Littoral Regions 17
  - 2. Actual Employment of Naval Forces Has Historically Taken Place Near-land 19
- E. CONCLUSION 20

III. THE LITTORAL ENVIRONMENT AND THE ENEMY 21
- A. LITTORAL ENVIRONMENT 21
  - 1. Definition 21
  - 2. Difficulties of Conducting Operations 21
- B. THE ENEMY 25
  - 1. Definition 25
  - 2. Assumption 26
  - 3. Characteristics 26
  - 4. Coastal Navy Roles and Missions 27
- C. CONCLUSION 28

IV. THE IMPORTANCE OF TACTICS, DOCTRINE, AND TRAINING FOR COMMAND AND CONTROL 29
A. INTRODUCTION 29
B. COMMAND AND CONTROL 29
1. Command and Control as a Function, Process, and System 30
2. Lawson-Moose Command and Control Cycle 30
3. Effect of Technological Improvements in Command and Control Support Systems 31
4. Building Effective Command and Control Through Tactics, Doctrine, and Training 32
C. CONCLUSION 35

V. EVALUATION OF U.S. NAVY LITTORAL WARFARE TACTICS, DOCTRINE, AND TRAINING 37
A. INTRODUCTION 37
B. TACTICS 38
1. People 38
2. Technology 39
3. Tactical Dissemination 41
4. Current Tactics 42
C. TACTICAL DOCTRINE 43
1. Campaign and Policy/Strategy Doctrine 44
2. Individual Unit and Fleet Doctrine 44
3. Naval Doctrine Command 45
D. TRAINING 46
1. Individual Unit Training 46
2. Fleet Training 47
E. CONCLUSION 49

VI. BUILDING EFFECTIVE LITTORAL TACTICS, DOCTRINE, AND TRAINING 51
A. PART I 51
1. Introduction 51
2. Historical Perspective 51
3. Israeli Operational Missile Boat Concept 53
4. Israeli Naval Engagements of the Yom Kippur War 55
5. Summary 56
B. PART II 57
1. Introduction 57
2. Recommendations Aimed to Initiate Sound Tactical Development 57
3. Transformation From Concept Into Reality 66
4. Conclusion 68

VII. CONCLUSIONS AND RECOMMENDATIONS 71
A. CONCLUSIONS 71
B. RECOMMENDATIONS 72

LIST OF REFERENCES 75

INITIAL DISTRIBUTION LIST 79

EXECUTIVE SUMMARY

The White Papers "...From the Sea" and "Forward...From the Sea" outline clearly the vision and strategy the U.S. Navy will carry into the 21st Century. They specify the continuance of several naval roles and missions such as sea control and maritime supremacy, but also call for readiness to conduct naval operations in littoral regions all around the world.

The littoral environment and the potential enemy which may be encountered there impose new demands on U.S. naval forces. Geographical constraints, limited battlespace, reduced reaction time to incoming threats, the lethality of enemy weapons, ambiguous threat bearings, clutter, congestion, uncertainty, restrictive ROEs, unrealistic and unattainable states of readiness, and the eventual degradation of weapon and sensor performance equate to greater vulnerabilities for naval forces which operate within these areas than in the open ocean.

The U.S. Navy is without question the strongest in the world. No other nation, at least in the foreseeable future, can challenge its ability to maintain sea control or threaten its maritime superiority. However, given the intricacies of the littoral environment, the fact that U.S. warships, aircraft, and submarines are designed and its personnel trained for operations on the high seas, it is imprudent to suppose that these seagoing forces can turn their open ocean proficiency to advantage in this setting.

Research and development programs are underway to enhance the capabilities of future naval forces for littoral warfare. These programs could be years away from fruition. Should the Navy be called upon to enter battle close to shore in the near future, we must be able to fight with what we have now. The Navy will fight as well or as

poorly as we are prepared, and that is highly dependent on current tactics, doctrine, and training.

Tactics and doctrine serve to enhance cohesion, mutual understanding, and support, thereby creating the potential to achieve prompt and harmonious action among forces in battle. Given the complexities, limited battlespace, and reduced reaction time within the littoral environment, having the right tactics is extremely important. With sound tactics and doctrine, training and exercises develop skills and instincts required for combat. However, examination of the tactics, doctrine, and training which pertain to Littoral Warfare indicate that they are clearly lagging within the U.S. Navy Surface Fleet.

In order to train and gain proficiency in operations to control littoral areas and support land operations from the sea, the Navy must develop the tactics first. With broad acceptance, the tactics can be recorded and promulgated in written tactical doctrine which will ultimately produce unified effort among naval surface forces. The tactics may then be evaluated, refined, and practiced until they are second nature.

The recommendations of Chapter VI indicate the kind of fundamental tactical core that should serve as the basis for specific signals, formations, firing plans, Electronic Warfare procedures and other guidance that might form an inshore annex to ATP-1. It is hoped that the recommendations will initiate a tactical debate to better prepare naval forces for operations near land. These recommendations are:

- Ensure there is a shared belief throughout the Navy that future conflict will take place under the constraints of the littoral environment.

- The belief that blue water proficiency can be carried unmodified into littoral regions is uninformed and baseless.

- Within the littoral environment, it would be best for the U.S. Navy to revert to the tactics of World War II in which forces operate in close mutual defensive support while at the same time maintain the capability to deliver precision offensive firepower.

- Surface formations must be tightened.

- Establish free-fire zones and procedures.

- Establish defensive support tactics for warships engaged in operations in support of activities on land.

- Maintain minimum formation speed of at least 10 knots.

- Adapt Electronic Warfare procedures for inshore operations.

- Surface screening forces must perform tasks in an ambiguous tactical environment under risky conditions.

- Shallow water ASW proficiency will be essential. Active acoustic search will be necessary and requires quite different tactics, formations, and means of prosecuting contacts. Airborne assets are preferred over seaborne assets, but require unaccustomed patience and use of non-acoustic means for detection.

- Command structure and Rules of Engagement for operations within the littoral environment require review.

- Responses to the threat of weapons of mass destruction must be formulated.

- Tactical coordination is required to clear minefields covered by enemy fire.

- To effectively operate in the littoral, the U.S. Navy must conduct its training in it. Exercises must be conducted in the most congested environment possible.

I. INTRODUCTION

A. PURPOSE OF THESIS

This thesis serves to illustrate the kind of fundamental tactical core needed as the basis for naval operations in a littoral environment. It is hoped that it will initiate a tactical debate to better prepare naval forces for operations near land.

B. SOURCE OF INTEREST IN TOPIC

In 1992, the author had the unique opportunity to spend two days at sea aboard one of several Bahraini Coastal Patrol Craft during training exercises with the U.S. Navy. He was intrigued by their efficient coordination, high speed maneuvers, knowledge of the surrounding waters and environment, and the quality of their weapons and sensors. During daylight hours they anchored, camouflaged themselves among rocks, and waited till sunset to begin their maneuvers. Under the cover of darkness, they began their search for the U.S. warship. Keenly aware of the shipping lanes and fish havens, they cleverly blended in with merchant shipping and fishing boats. They communicated with flashing light and designated only one patrol craft to illuminate his surface-search radar randomly for seconds at a time. It was not difficult to locate the U.S. warship with passive Electronic Support Measures (ESM). The U.S. warship was radiating her air-search radar to track and control her scouting helicopter for safety of flight, and continuously operated her surface-search radar for navigational purposes and to avoid shipping. Once detected, the Bahrainis easily executed a simulated attack. The U.S. warship was unaware of their presence until it was too late.

Additionally, in 1994, the author participated in coastal warfare exercises with the Israeli and Tunisian Navies. The patrol craft of these navies operated with proficiency and could not be located nor identified in the congested waters off the coast as well. Once again, several successful simulated engagements were conducted against the U.S. warship.

The efficiency displayed by the patrol craft of three foreign navies and the poor performance of the author's warship was alarming and raised serious concerns regarding the U.S. Navy's ability to effectively conduct littoral operations in support of "...From the Sea" and "Forward...From the Sea. "

C. BACKGROUND

The fall of the Soviet Union has fundamentally altered the international security environment. As a result, the world is more complex and uncertain with many and varied emerging threats. The White Papers "...From the Sea" and "Forward...From the Sea" provide the vision and strategy the U.S. Navy will carry into the 21st Century to meet these threats. They specify the continuance of several naval roles and missions, such as maritime supremacy, but also call for readiness to conduct naval operations in littoral regions all around the world.

Maritime supremacy - the ability to maintain control of the high seas for military and economic purposes - is where U.S. naval strength lies. No other nation, at least in the foreseeable future, can deny its ability to transport troops, equipment, and goods by sea. However, the littoral environment and the potential enemy which may be encountered there impose new demands on U.S. naval forces.

It is possible to influence events in these regions by projecting power over littoral waters with the use of carrier based aircraft and land attack cruise missiles, thus avoiding the need to operate in them. However, if logistic support from the sea is required to sustain a land campaign, or if amphibious forces are required to conduct a landing, naval forces must transit and operate within the littoral.

Naval operations near land are best described as warfare in confined waters. Coastal waters are not only where the enemy will contest our control, but where he has advantages of congestion and limited battlespace [Ref. 1]. Warships which operate in this complex environment will see that their warning and reaction time have been reduced significantly, their ability to maneuver has become extremely difficult by virtue of the shallow water and the always present mine threat, and lastly, classification and deconfliction are crucial given the abundance of aircraft and shipping. This is an environment the U.S. Navy is not yet prepared to overcome.

D. SCOPE OF THESIS

The author has attempted to isolate the case of the surface ship in the littoral arena. The author acknowledges that by doing so, there is an apparent risk of oversimplifying the difficulties which aircraft and submarines face in their attempts to control the littoral area and support land operations from the sea. Nonetheless, the argument for the development and implementation of sound tactical, doctrinal, and training development to meet the challenges imposed by the littoral environment can and should be extended to warfare communities other than the Surface Warfare Community.

E. ASSUMPTIONS

It is recognized that many research and development programs are underway to enhance the capabilities of future naval forces for littoral warfare. These programs could be years away from fruition. The recommendations of this thesis are based on the premise that the U.S. Navy must be able to fight and win with forces at its disposal in a battle of the near future.

A distinction must be made with regard to coastal states. Some may be poor, badly governed, and ill-equipped for naval operations while others are quite capable. In the Middle East and Eastern Asia - regions which are vital to U.S. national interests and possess the potential for future conflicts - several coastal states are capable of conducting highly professional naval operations. For the purposes of this thesis, coastal states with competent coastal navies are assumed.

F. OUTLINE OF CHAPTERS

1. Chapter II. Shift in U.S. Maritime Strategy

This chapter will promote a shared understanding throughout the Surface Navy of how and why the vision and strategy set forth in the White Papers "...From the Sea" and "Forward...From the Sea" shifted the focus of U.S. Maritime Strategy from open-ocean (blue-water) operations to near land (littoral) operations.

2. Chapter III. The Littoral Environment and the Enemy

This chapter will convey the message that it is imprudent to assume U.S. naval forces can transfer their open-ocean proficiency into the littoral arena unmodified. This will be accomplished by describing in detail the difficulties of operating in this

environment and by illustrating the competence of potential enemy coastal navies throughout the world.

3. Chapter IV. The Importance of Tactics, Doctrine, and Training for Command and Control

This chapter will lay the foundation from which the remainder of the thesis is based - that sound and effective tactics, doctrine, and training combine to prepare forces which are capable of conducting nearly automatic, harmonious, and coordinated action under the constant pressure and stress of hostilities. Hence, the evaluation of tactics, doctrine, and training will reveal whether or not a force is prepared for battle.

4. Chapter V. Evaluation of U.S. Navy Tactics, Doctrine, and Training for Littoral Warfare

This chapter will evaluate how well the U.S. Surface Navy is prepared to conduct littoral operations by reviewing its tactics, doctrine and training.

5. Chapter VI. Building Effective Littoral Warfare Tactics, Doctrine, and Training

This chapter will serve two purposes: the first, to provide a framework or paradigm of how the U.S. Navy might go about developing the tactics, doctrine and training required to support the maritime strategy expressed in "...From the Sea"; and second, to recommend actions for implementing such development.

II. SHIFT IN U.S. MARITIME STRATEGY

A. INTRODUCTION

The White Papers "...From the Sea" and "Forward...From the Sea" shifted the focus of U.S. Maritime Strategy from open-ocean (blue-water) operations to emphasize near land (littoral) operations. Both documents outline clearly the vision and strategy that the U.S. Navy will carry into the 21st Century. How and why the vision evolved will be discussed in order to promote a shared understanding among those who will support and implement this strategy.

B. BACKGROUND

U.S. Maritime Strategy is derived from objectives and guidance established in U.S. National Security Strategy and U.S. National Military Strategy. Its aim is to provide a framework from which planning and decisions regarding naval roles, missions and force structures are formulated. [Ref. 2]

Maritime Strategy during the Cold War, and for that matter National Security and Military Strategy, dealt primarily with the Soviet threat. The objective of this strategy was to prevent the Soviet Union from gaining dominance over Europe and Asia. Despite the Cold War tensions between the United States and the Soviet Union, the security environment during this era was generally stable and predictable. In other words, the bipolar superpower competition somewhat paradoxically helped to maintain the status quo and balance of power in other regions throughout the world. [Ref. 3]

Events to the end of 1991 fundamentally altered the international security environment. The Soviet Union collapsed. The Cold War, which so dominated world

politics for almost a half century, was over. So too, however, was the stability it provided [Ref. 3]. The world now faces a period where the only certainty is uncertainty and change [Ref. 4].

The international security environment is complex, ambiguous, and turbulent. Complicating the issue is the reemergence of several "roots of conflict" such as intra-nationalism - among ethnic, religious, and social groups inside states - demographic or population expansion, and resource competition, which have led to instability and regional disputes previously held in check by Communism and the Cold War competition alluded to above [Ref. 5]. Dr. Edward L. Warner III, Assistant Secretary of Defense for Strategy and Requirements, notes that the danger posed by the Soviet Union during the last half century presented policy makers with focus and direction for their strategy to confront this threat. The fall of the Soviet Union, however, has changed things and thus forced the United States to rethink its policies [Ref. 6].

In *The Prince* Machiavelli wrote that, "there is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things..." [Ref. 7] Four centuries later, this statement couldn't be more true. In light of these changes to the international security environment new questions arose regarding U.S. priorities and strategy. In particular the question: "What are America's national interests and how might they be threatened?" took center stage. What emerged was a focus primarily centered on regional challenges, opportunities, and instability, where change is widespread and unpredictable [Ref. 8].

After the National Security Strategy was refocused, the National Military Strategy followed suit. It soon became quite clear that this shift in policy would have profound

implications for the Navy and Marine Corps. Direction and coherent strategy for the future were thus required for the development of policy and programs pertaining to doctrine, training and education, force structure, acquisition, and the allocation of resources. Thus the impetus for the new Maritime Strategy.

In late 1991, then Secretary of the Navy H.L. Garrett III realized that the dynamic and uncertain security environment required naval forces which were flexible to meet the many and varied emerging threats. This, however, presented somewhat of a catch-22, because planning for uncertainty requires flexibility, which is invariably costly, despite a shrinking military budget and force structure. Therefore, a prudent and sound direction for the Navy was required to meet the needs of the future within the constraints imposed by cuts in defense spending. [Ref. 9]

A directive aimed at creating such direction was issued by the Secretary of the Navy to the Chief of Naval Operations and the Commandant of the Marine Corps on 20 November 1991. It ordered the development of a new strategic concept to assess U.S. naval requirements for the next century. The Secretary's instructions further emphasized that efforts were to go beyond the short term ramifications of the then-impending Soviet collapse. A long view, fifteen to twenty years forward, was required. [Ref. 10]

C. DEVELOPMENT OF A NEW STRATEGIC CONCEPT

1. Naval Forces Capabilities Planning Effort

In response to Secretary Garrett's directive, a forum called the "Naval Forces Capabilities Planning Effort" (NFCPE) was established to develop the strategic concept. The working group began with two fundamental assumptions: first, naval forces, owing

to their inherent ability to respond swiftly with credible power to crises throughout the world, would continue to implement national policy when required; and second, the United States, clearly superior to other power centers throughout the world, would continue to maintain a leadership role in the world. These assumptions established the need for naval forces with the ability to sustain long-term operations in far off locations. [Ref. 11]

Next the group set out to identify, from the many and varied changes in the international security environment, which changes would have the most pronounced impact on future naval requirements. In other words, why would U.S. naval forces be called into action and how would they conduct operations differently in the future? Their findings are central to this thesis.

a. Trends That Point to Regional Instability

(1) Weapons Proliferation. Despite the collapse of the Soviet Union, its nuclear stockpile still existed in the hands of Russia and other successor states. It was estimated that by the end of the century, perhaps up to a dozen Third World nations could actually possess or have the knowledge to develop weapons of mass destruction - nuclear, biological, and chemical. Additionally, the prospect that these nations might use these types of weapons seemed more likely after Desert Storm where the might of U.S. conventional power was displayed. The presumed stability of "mutual assured destruction" during the Cold War, by which thousands of U.S. and USSR warheads were tightly controlled with little likelihood of their use, could not be guaranteed. This therefore implied a broadened scope of deterrence - from an emphasis

on deterring global thermonuclear war to a more complex objective of also deterring regional crises and conflicts. [Ref. 11]

(2) Global Economic Interdependence. The world had witnessed dramatic changes which led to significant effects upon world economies. Deregulation of domestic financial markets, international trade agreements, trans-national business enterprises, and expanded capital flows, coupled with the emergence of powerful computers, networks, and telecommunications, created an interdependent world economy [Ref. 12]. The working group focused on the role naval forces would play in protecting U.S. economic interests into the 21st Century.

It was widely believed within the group that a stable global environment ensured peaceful economic growth - which would be essential to the long-term welfare of the United States. Conversely, it was understood that crisis and instability throughout the world could make the U.S. economy vulnerable. Therefore, "the linkage between economic interests and a stabilizing security strategy indicated that the traditional missions of crisis deterrence and response would take on a new economic significance..." [Ref. 11] In a nutshell, U.S. access to foreign resources and markets was to be ensured, not only in times of war, but in times of peace.

Attempts by the working group to identify and list critical economic interests for contingency planning were unsuccessful. Economic interdependence implied complexity. It was not possible to predict where or for what economic interests the U.S. would be compelled to use military force, nor could it be determined at what level that force might have to be used. Given its inability to forecast such crises, the group concluded that the naval service had to be able to deal with a broad

scale of conflicts throughout the world rather than prepare for contingencies in specific locations, and that the naval services would continue emphasis on overseas presence to foster political and economic stability.

(3) Accelerating Pace of Technological Change. The NFCPE believed strongly that planning for future naval capabilities had to address the accelerating rate of global technological change. It was impossible to predict exactly how these changes would alter the nature of warfare. However, it was noted that there were three areas of technological progress which created such potential: the advancement of information systems which enhance the ability to gather, process, and disseminate information about the enemy; dramatic improvements in the range, accuracy, and lethality of conventional weapons; and, the development of advanced computer simulation techniques used to train forces and aid in new operational concepts [Ref. 13].

Advancements in these areas were observed in both the military and civilian sectors, as opposed to the Cold War Era, when these sectors were largely separate. This, the group believed, would lead to dramatic consequences: first, the lengthy and ponderous acquisition process of the military sector would not be expeditious enough to exploit the technical advances; and second, the acquisition of "off-the-shelf" civilian technology could allow other nations to obtain military capabilities without the expense of costly research and development.

b. Maritime Issues

Up to this point the group had identified the changes which had occurred to the international security environment following the collapse of the Soviet Union. In

order to fully develop the new strategic concept, the group next focused on maritime issues. The following were noted.

(1) Roots of Conflict in Coastal Areas. "Roots of conflict," such as intra-nationalism, demographic expansion, and resource competition, were concentrated in regions near coastal areas and chokepoints throughout the world. It was observed that: 70 percent of the world's population lives within two hundred miles of the sea; 80 percent of the world's capitals lie within three hundred miles of the sea; and 99 percent (by weight) of U.S. exports travel on the seas, with many of the important chokepoints controlled by states in crisis. [Ref. 14]

(2) 1982 U.N. Convention on the Law of the Sea. Throughout the twentieth century, the value of ocean resources have increased as they have become more scarce. This fact, coupled with technological advances, has prompted coastal nations to lay claim to resources beyond their lawful jurisdiction. As a result, the world community has tried to establish rules to govern ocean uses. The 1982 U.N. Convention on the Law of the Sea was convened to seek a legal framework for governing the uses of the seas, the rights and obligations of states, and the extent of jurisdiction that states may exercise offshore. [Ref. 15]

The Convention of the Law of the Sea significantly increased the importance of nations situated along coastal regions throughout the world. Each gained increased authority in its territorial seas (out to 12 nautical miles) and jurisdiction in its exclusive economic zones (out to 200 miles) and continental shelf [Ref. 15]. These states determined the allowable catch of resources in their economic zones and were granted exclusive rights for exploring for and exploiting natural resources on their own

continental shelf. In the eyes of the NFCPE, coastal regions were important in strategic economic and political terms [Ref. 11].

c. Naval Forces Influence Events On Land

The regional instability and the maritime issues suggested that naval forces would increasingly be tasked to respond to crises throughout the world in close proximity to land. The NFCPE requested that the Center for Naval Analyses (CNA) conduct a study of U.S. naval involvement in crises following World War II to gauge past performance against possible future requirements. The analysis found that there were 325 instances where U.S. military forces responded to crises. Among them, 83 percent included naval forces, and about half the responses were entirely naval in composition. The NFCPE thus came to an extremely important determination: first, naval forces will certainly be called upon to counter various threats, and secondly, they can and will influence events not only at sea, but also, on land. [Ref. 11]

d. Potential Areas Where Conflict May Occur

The next logical step was projecting where and against whom the potential for future conflict might occur. Although it was impossible to accurately forecast where future crises would occur, it was feasible to identify nations which would have the potential to pose a threat to the United States in various regions throughout the world. This was accomplished by analyzing demographic and economic trends, educational infrastructures, and the technological and industrial bases of all nations. From this evaluation, the group was able to appraise the strengths and weaknesses of these nations as well as discern what their military potential might be, should a crisis arise. These

nations were then grouped by geographical regions throughout the world to support judgments about the potential for volatility in the future security environment.

The working group concluded that two regions, the Middle East and Eastern Asia, possessed the greatest potential for future conflict. This was based on the number of nations within each regions which had the potential to equip and maintain large-scale forces with modern technologically advanced weapons. Additionally, these regions were most likely to be affected by the aforementioned trends which may lead to regional insecurity - access to weapons of mass destruction through proliferation, increased economic significance (mainly because of oil in the Middle East and opportunities which exist due to the emerging markets in Eastern Asia) and technical advancements through proliferation. [Ref. 11]

e. Coalition Building

The NFCPE believed that alliances last as long as the threat existed which led to their creation. The fall of the Soviet Union prompted the question - what was to become of the alliances created to match the Soviet threat, particularly the North Atlantic Treaty Organization (NATO)?

The Gulf War was fought by a coalition of forces temporarily aligned to meet a single transitory threat. NATO members involved in the coalition were able to work together effectively based on the interoperability developed during the Cold War. However, what if the United States required a coalition of forces focused outside NATO's interests? What would the United States do if NATO disbanded? Without an historical alliance relationship, including over forty years of experience and efforts to improve interoperability, how could future coalitions be formed to operate successfully?

The working group concluded that the essential elements of cooperation and interoperability - mainly gained through exercises - must be in place before a coalition became necessary. Long term interaction with potential partners would therefore be necessary. However, with decreasing budgets and a decline in overseas bases, the long term preparatory presence and interaction would have to fall increasingly in the hands of naval forces deployed to areas of strategic importance.

f. Conclusions of the NFCPE

The NFCPE concluded that the collapse of the Soviet Union and the resulting changes in the international security environment would lead to two significant consequences for naval forces as they prepared to enter the 21st Century:

- Naval forces would not only need to maintain operational proficiency for sea control and maritime supremacy, but also require capabilities to effectively conduct operations in a littoral environment.

- A renewed emphasis on overseas presence within littoral regions would be required, due not only to decreasing budgets and a decline in overseas bases but also, due to the necessity to ensure access to foreign resources and markets in an interdependent global economy.

In essence, the group concluded that operations in the littoral entail the ability to enter and dominate the waters and airspace of another nation [Ref. 16]. With an emphasis on joint operations and capabilities following the 1986 Goldwater-Nichols Act, this also translated into providing support for operations ashore either logistically or with power projection [Ref. 17].

2. "...From the Sea" and "Forward...From the Sea"

The end product of the Naval Forces Capabilities Planning Effort was the White Paper titled, "...From the Sea." It provided a simple, direct, and concise vision which

articulated the scope and capability of the naval services as they prepared to enter the 21st Century. This vision was subsequently updated and expanded in "Forward...From the Sea" in October 1994. The strategic concept in these two documents provide for the development of policy and programs pertaining to doctrine, training and education, force structure, acquisition, and the allocation of resources. Although the concept specified the continuance of several naval roles and missions, it also called for naval operations to concentrate on the potential for future conflicts in littoral regions around the world.

D. EVIDENCE WHICH SUPPORTS THE FINDINGS IN "...FROM THE SEA"

Recent developments within littoral regions throughout the world and studies of actual naval force employment and missions suggest that the findings and recommendations in "..From the Sea" were accurate.

1. Potential For Conflict Exists in Littoral Regions

The oceans throughout the world, particularly near-shore areas, have been used more intensively with the growth of the world population and advances in technology. Problems of overuse and unsustainable exploitation have become more common and are a source for potential future conflict. So too are the activities which threaten the maintenance of order at sea.

a. Fishing Rights

Expanding populations have grown more dependent on fish. In 30 years, from 1970 to 1990, the total world catch rose nearly 50 percent to 100 million metric tons [Ref. 18]. Failure to manage this resource has led to depletions of these catches. Coastal nations are ever more conscious of foreign nations who fish in their territorial waters.

This has led to several international disputes, the most recent being between Canada and Spain.

b. Energy Exploitation and Territorial Expansion

Exploitation of offshore oil and gas from the continental margin (that part of the continent that extends underwater to the deep seabed) has progressed with the help of advancements in technology. As much as 30 percent of the worlds energy resources come from offshore areas and this figure will most probably increase as the demand for energy continues to rise throughout the world [Ref. 18]. However, so to will the potential for conflict, as coastal nations claim rights over the same offshore deposits.

Heated disputes over the Spratly Islands in the South China Sea among China, Taiwan, Vietnam, Philippines, Malaysia, and Brunei provide just one example of this phenomenon. These seemingly insignificant islands consist of several islets, not more than 90 acres in area, and about 50 coral reefs and sea mounts. However, their waters may be rich in oil, gas, and other sea-based minerals, which are obviously important resources to sustain economic growth. Conflict over control of these islands has occurred in the early 1970s and most recently in early 1995. [Ref. 19]

c. Waste Disposal

Of the world's 5.6 billion inhabitants, 3.5 billion live in coastal regions [Ref. 18]. Disposal of garbage and sewage into the oceans from these coastal regions has led to increased levels of pollution. Friction is possible when nations, which depend on the ocean, find their ocean resources contaminated by the waste of other nations.

d. Maritime Disorder

The act of piracy, particularly in the Malacca and Singapore Straits and the East China Sea, has increased as the economies in the Western Pacific have grown in size and importance. According to the International Maritime Bureau, there were 103 such incidents of piracy in 1993 alone [Ref. 19]. The scale and economic consequence of numbers such as this is minimal, considering the overall amount of trade through these areas. Nonetheless, piracy still threatens the free and unimpeded navigation of shipping, which is vital to U.S. economic security.

Other near-land issues that threaten the maintenance of order at sea and subsequently U.S. national and political security are illegal arms running and forced migrations - resulting from regional conflicts, civil wars, and poor economic conditions - as well as drug smuggling. Along with the U.S. Coast Guard, the U.S. Navy has had to confront these issues most recently in the Adriatic and Caribbean Seas.

2. Actual Employment of Naval Forces Has Historically Taken Place Near-land

Frank Uhlig, former editor of the Naval War College Review, conducted an exhaustive study of the actual employment of naval forces in his recent book, *How Navies Fight: The U.S. Navy and Its Allies*. Through extensive historical analysis, he concluded that the most common employment of these forces was the support of operations ashore, the landing of forces, and the protection of shipping at sea. His findings most clearly substantiate the conclusions of the NFCPE. [Ref. 20]

E. CONCLUSION

How and why the U.S. Navy shifted its maritime strategy must be understood in order to promote a shared understanding among those who will support and implement this strategy. Critical thinking among the NFCPE was required to assess the threats of the future security environment in order to extrapolate requirements for naval capabilities. "...From the Sea" implies that naval forces should expect conflict within littoral regions and must be capable of operating with proficiency in them. Recent trends and findings support this judgment. However, conditions near-land are substantially different from those encountered in the open-ocean. Therefore, this thesis will now set out to define the littoral and describe the difficulties of conducting operations in this type of environment.

III. THE LITTORAL ENVIRONMENT AND THE ENEMY

A. LITTORAL ENVIRONMENT

1. Definition

Naval Doctrine Publication I, "Naval Warfare," defines "littoral" as "those regions relating to or existing on a shore or coastal region, within direct control of and vulnerable to the power of Naval expeditionary forces." [Ref. 21] The U.S. Navy further describes Littoral Warfare as "...the ability to mass overwhelming joint and allied force and deliver it ashore to influence, deter, contain and overcome the enemy." [Ref. 22]

Although it is possible to influence events on land by projecting power over littoral waters and thus avoid the need to operate in them, eventually logistic support from the sea will be required to sustain land forces and if required, amphibious forces must transit through them to conduct a landing. Even in operations with limited objectives or operations other than war, such as low intensity conflicts, Noncombatant Evacuation Operations (NEO), peacekeeping, and showing the flag operations, the naval role is to exert influence near land with a constant and visible presence. At some point, naval forces must operate within the littoral.

2. Difficulties of Conducting Operations

To operate effectively in the littoral, naval forces must be able to handle the inherent difficulties of this environment. Captain Wayne P. Hughes, USN (Retired), author of *Fleet Tactics*, has characterized warfare in the littoral as "...warfare in confined and congested waters. In this arena, the enemy will not only contest our control, but will

also use to his advantage the limited battlespace and congestion found in this environment." [Ref. 1]

a. Geographical Constraints

Compared to the vastness of open ocean operations, the littoral areas are confined by geographical constraints which significantly reduce the size of the battlespace and increase the vulnerability of units operating within them. The very nature of the waters in this type of environment - often narrow, shallow, and bound by the shoreline creates unique challenges which lead to interesting insights.

CDR John Stavridis, USN, former commanding officer of USS Barry (DDG 52), recently noted in a forum on naval tactics for small wars that, operations in the littoral significantly reduce a ship's ability to maneuver - an extremely uncomfortable operating environment for a Commanding Officer. By his account, CDR Stavridis and the Barry participated in operations within the last two years in Haiti, the Adriatic and the Arabian Gulf. The ship routinely operated in waters as shallow as 50 feet with a navigational draft of 36 feet. The risk of grounding was therefore a serious concern. Highly competent and vigilant watch teams, both on the bridge and CIC, were necessitated at all times, which was a significant energy drain upon personnel. [Ref. 23]

b. Increased Threats and Reduced Reaction Time

In addition to the considerably reduced maneuverability and constant threat of grounding, units operating close to shore are within the surveillance and weapons envelope of the enemy. The modern coastal defense system, comprised of radar, electric support measures, coastal artillery, anti-surface missiles, high speed patrol craft, land-based aircraft, mines, and in some cases submarines, poses a continuous and

immediate threat. The enemy has the ability to initiate strikes at any time with little or no warning, a circumstance which poses extremely difficult problems for units operating within this type of environment. By far the most numerous and varied threat to naval warships in the littoral environment is the anti-surface missile.

As discussed previously, the proliferation of missile technology to coastal nations has enabled them to carry advanced missiles. Missiles can be launched from land, small fast patrol craft, submarines, and aircraft. The characteristics of most of these missiles include: high speeds; deceptive terminal maneuvers to penetrate hard-kill defenses; and, a variety of guidance systems to defeat soft-kill defenses. Warships operating within the confines of the littoral environment are faced with reduced reaction time to respond to missile threats, and the threat sectors from which the missiles can be launched are often large and ambiguous.

CDR Stavridis notes that the game of racquetball is a representative paradigm of operations within the littoral environment. In the game, the ball moves with blinding speed and careens off the sidewalls in many directions, forcing the opponent to make quick decisions and leaving little time to react [Ref. 23]. The lethality of the threat, the short distances, and the wide area from which enemy weapons along the coast can be launched, force platforms to detect the threat and conduct defensive measures within seconds.

c. Sensor Degradation and Uncertainty

Detection and rapid engagement of suspected threats, however, are by no means easy tasks. First, sensors and guidance systems are affected by heavy land clutter which results in severely degraded detection and tracking capabilities. Often false targets

are created and, even worse, actual targets are masked [Ref. 24]. Secondly, and perhaps more importantly, the intrinsic density, clutter, and congestion within the littoral environment - tankers, freighters, fishing boats, and aircraft - result in uncertainties in identification and deconfliction. Time is therefore required to develop an accurate tactical picture before one can engage the enemy or the incoming threat. Unfortunately, as previously mentioned, time is a scarce commodity when it comes to self-defense in this arena.

Rear Admiral Yedidia Ya'ari, Israeli Navy, among other things, discusses an anti-surface missile scenario in his essay, "The Littoral Arena: A Word of Caution." The scenario serves well to put in perspective the time constraints and ambiguities of a surface missile attack in coastal waters. He uses the Russian SS-N-22, a Mach 2-plus sea-skimmer missile, against a surface target 15 miles offshore. It is assumed that the ship is constantly tracked by coastal radar, and that, therefore, the ship is unaware of when it has been targeted. The missile is launched and will impact the ship within 40 seconds. In order to react effectively, the ship "... must be ready not only to detect it [the missile] the instant it is launched but to have every countermeasure operating within the *first thirty seconds*. Setting aside the first five or ten seconds for resolving ambiguity in identification, the reaction time is reduced to some twenty seconds." [Ref. 25]

d. Rigid Rules of Engagement

Rules of Engagement (ROE) thus tend to dominate the minds of the Commanding Officer and Tactical Action Officers because of the need to respond quickly to threats. Incidents involving the USS STARK and the USS VINCENNES tend to confuse the issue, however. Failure to resolve uncertainty and a hesitation to react on the

part of a ship may lead to a missile hit. On the other hand, quick and rapid reaction to what appears to be a threat may lead to undesirable consequences. In order to avoid such incidents and possibly limit the escalation of conflicts, there has been an increased emphasis on restrictive control over Commanding Officers with regard to ROE. Often, the Commanding Officer is given rigid constraints on how and when to use weapons, which serves to seriously limit the ability of the ship to defend itself until it may be ultimately too late. [Ref. 24]

e. Human Factors and Equipment Concerns

Another challenge in conducting operations in the littoral concerns human factors. People play a crucial role in operating the systems required to counter the inherent threat. It is by no means realistic to assume that shipboard personnel can continuously perform at a state of alertness for extended periods of time, especially with the knowledge that a mistake or malfunction of equipment could well result in the disablement or loss of the platform. Additionally, it is not possible to take down systems to conduct preventive maintenance on vital equipment, because this could degrade weapon and sensor performance. Obviously, the stress on shipboard personnel and the eventual degradation of equipment make naval forces more vulnerable to attacks in the long run.

B. THE ENEMY

1. Definition

In his essay, "The Seapower of the Coastal State," Jacob Borrensen defines a coastal state as a state which is located along the sea, but without the ability to establish

sea control outside its local waters. This state can, however, control its local waters quite effectively. [Ref. 26]

2. Assumption

A distinction must be made with regards to coastal states. Some may be poor, badly governed, and ill-equipped for naval operations while others are quite capable. In the Middle East and Eastern Asia - regions which are vital to U.S. national interests and possess the potential for future conflicts - several coastal states are capable of conducting highly professional naval operations. For the purposes of this paper, coastal states with competent coastal navies are our subject.

3. Characteristics

Some general characteristics are shared by most such navies. First, coastal navies are prepared and trained exclusively for operations within the littoral environment. They understand and are fully acquainted with the geography and conditions of their local waters, which serve well to offer cover and protection to their forces. Second, since these coastal navies intend to operate in and control these waters, their weapon and sensor systems are optimized to operate without degradation in a near-land environment. Third, the ships and patrol craft of a coastal navy are relatively small and expendable. The proliferation of advanced missile technology allows the concentration of significant amounts of firepower on small platforms. These ships are designed for local operations and not long-distance operations. Lastly, these navies optimize their doctrine, tactics and coordination to gain comparative advantages over forces not acquainted with these waters or the surrounding environment. This is particularly true when the coastal state can pick the time and place for engagement.

4. Coastal Navy Roles and Missions

The primary functions of the navies of these coastal states can be broken down into three elements: protection against the illegal exploitation of natural resources within exclusive economic zones; the exercise of sovereignty and control over territorial waters; and, deterrence against invasion from the sea. [Ref. 26]

In order to support these functions, the coastal state will most likely utilize a balanced approach with regard to its naval forces. Based upon this concept, a mixture of elements of the coastal defense system - surface, subsurface, air and mine threats - is used to provide both a synchronized defense and a formidable offensive capability.

Synchronized defense is the ability to operate fast patrol boats and submarines within weapons range of each other, as well as inside the range of coastal artillery, land-based anti-ship missiles, mines, and attack aircraft. This complex operating environment forces the opponent to operate in one of two ways. One option is to perform all tasks simultaneously - ASUW, AAW, ASW, mine-clearance, etc. The other is to employ enough platforms that he can lose some and still fulfill all mission requirements one at a time. [Ref. 26]

Most states realize, however, that in an open conflict or all-out war against a strong opponent with the will to carry on, they can not guarantee victory. They perhaps could win some battles and cause damage to the opposing force, but they would not be able to sustain themselves in the long run. Coastal states will therefore most likely conduct operations which aim to "... bleed the enemy's military and political resources, until he comes to the conclusion that the price of continuing the war exceeds any gain he

might hope to reap from it." [Ref. 26] In other words it might be in the coastal state's interests to prolong the conflict to mount political pressure against such a conflict on the enemy's home front.

C. CONCLUSION

The littoral environment and the potential enemy which may be encountered in these surroundings pose new challenges for U.S. naval forces. Geographical constraints, limited battlespace, reduced reaction time to incoming threats, the lethality of enemy weapons, ambiguous threat bearings, clutter, congestion, uncertainty, restrictive ROEs, unrealistic and unattainable states of readiness, and the eventual degradation of weapon and sensor performance equate to increased vulnerabilities for naval forces which operate within littoral areas.

The potential enemy of the future - the coastal state - will be proficient at operations in his coastal waters. His training, weapons, sensors, tactics, and doctrine will be optimized to gain comparative advantages over opposing naval forces, especially when they can dictate when and where battles will take place. U.S. naval forces which are not prepared, trained, or organized for operations against an enemy of this stature in his home waters will suffer punishment.

IV. THE IMPORTANCE OF TACTICS, DOCTRINE, AND TRAINING FOR COMMAND AND CONTROL

A. INTRODUCTION

The objective of this chapter is to relate the importance of tactics, doctrine, and training for command and control. Additionally, the nature of their relationship will be discussed to show how these factors actually create the potential to achieve prompt and harmonious action among forces in battle. The purpose of which is to lay the framework from which U.S. tactical and doctrinal development as well as training requirements for naval operations in littoral waters will be evaluated.

B. COMMAND AND CONTROL

Joint Publication 1-02, the Department of Defense Dictionary of Military and Associated Terms, defines command and control as,

> The exercise of authority and direction by a properly designated commander over assigned forces in the accomplishment of the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures which are employed by a commander in planning, directing, coordinating and controlling forces and operations in the accomplishment of the mission. [Ref. 27]

Given the definitions length and complexity, command and control is somewhat difficult to comprehend and subject to varied interpretations. The Command and Control Research Program of the National Defense University, an active program which directs research on emerging national issues in command and control, breaks down the definition in its publication, *Command and Control: The Literature and Commentaries*. The

purpose of which is to provide a better understanding of the breadth and scope of the subject.

1. Command and Control as a Function, Process, and System

According to the research program, command and control is thought of as a function, a process, and a supporting system. The function refers to the exercise of authority and direction of a commander over assigned forces, the process includes the planning, directing, coordinating, and controlling of forces and operations, and the system includes the personnel, equipment, communications, facilities, and procedures employed by a commander. [Ref. 28]

Suffice it to say the function, process, and system which constitute command and control provide the foundation upon which naval operations are planned and executed. This can best be explained and depicted through the use of a command and control cycle paradigm devised by Dr. J.S. Lawson and Professor Paul Moose of the United States Naval Postgraduate School.

2. Lawson-Moose Command and Control Cycle

The Lawson-Moose Command and Control Cycle is a system which senses the environment containing both the enemy and friendly forces, processes the observed information, and compares the information with an established desired state. The commander then decides, based upon his examination of the situation, what actions to take to ultimately attain the desired objective.

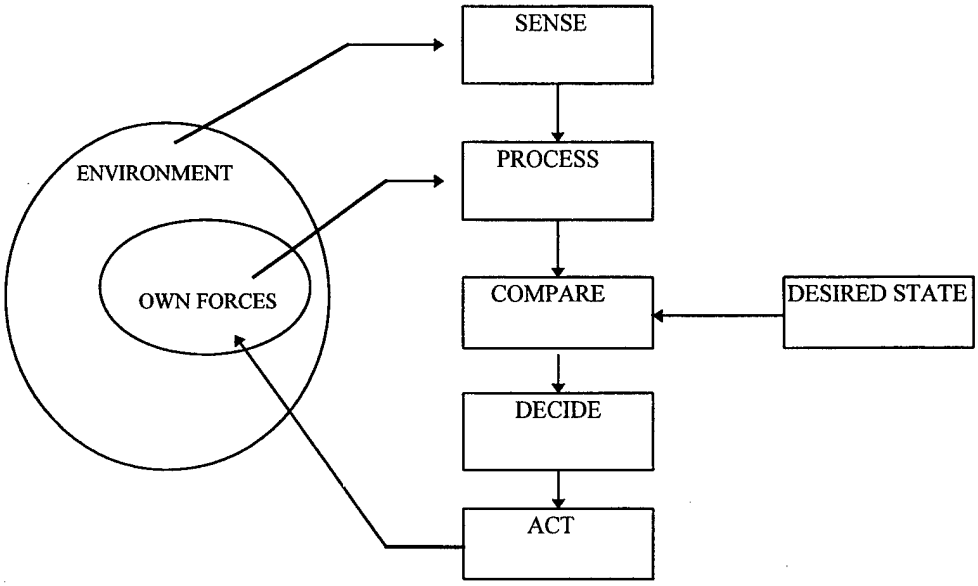

Figure 1. Lawson Command and Control Cycle [From Ref. 29]

As an abstraction, the Lawson-Moose Command and Control Cycle serves well to show how command and control - the function, process, and system - enables a commander to make decisions and exercise authority over subordinate commanders in accomplishing assigned military objectives.

3. Effect of Technological Improvements in Command and Control Support Systems

Today, an era where improved communication and information system technologies have greatly enhanced the ability to rapidly process and distribute information, forces have the ability to seize opportunities and meet objectives across a wide range of military operations. Unfortunately, however, many associate command and control with technological improvements in these support systems rather than

recognizing that they are created to help fulfill the function of command and the planning, directing, coordinating, and controlling of forces and operations.

As an example, a recent command and control internet newsgroup forum, established by the students of the Command and Control Curriculum at the United States Naval Postgraduate School, was initiated to uncover and discuss current command and control issues. Almost all of the discussions revolve around command and control support system issues such as system architectures, network configuration and management tools, transmission media types, and bandwidth limitations. Granted, nothing diminishes the importance of these areas in providing continuous near real time information in support of military operations. However, these support systems constitute only part of the established command and control definition.

4. Building Effective Command and Control Through Tactics, Doctrine and Training

Naval Doctrine Publication 6, "Naval Command and Control" (NDP 6), describes the importance of rapid and aggressive high-tempo naval operations selected to deliver decisive blows against an enemy. Rapid tempo of operations is generated through effective command and control. Effective command and control is achieved not only through the use of support systems, which provide an accurate view of the battlespace to senior and subordinate commanders alike, but perhaps more importantly through a shared vision among all commanders of the desired state and the purpose for attaining it and the tactics and doctrine that will be used. These factors enable the friendly force Command and Control Cycle to operate faster than that of the enemy, which ultimately results in

rapid and overwhelming attacks against a force that is unable to react effectively. [Ref. 27]

NDP 6 refers to the shared vision among senior and subordinate commanders as "unity of effort." Thomas P. Coakley, author of *Command and Control for War and Peace*, states that well formulated tactics, commonly understood doctrine, and effective training ideally unites the minds of commanders up and down the chain of command and instills teamwork and trust among the men and women of the force [Ref. 30].

a. Inter-Relationship Among Tactics, Doctrine, and Training

Tactics are the methods by which forces are employed. In other words they are the action and coordination among ships, aircraft, submarines, and land forces in battle. Tactics are dictated by the mission at hand, the capabilities, strengths, and weaknesses of both the enemy and friendly forces, the environment, weather, and time available. They are developed through skills and knowledge acquired through realistic and extensive training.

Training is the primary means for improving a force's readiness to fight. It serves two purposes: first, training serves to build proficiency and confidence among naval forces in preparation for battle; and secondly, training exercises provide the means to execute plans, tactics, and doctrines so that they may either be validated, refined, or negated.

Doctrine consists of fundamental principles by which naval forces guide their actions. Doctrine is intended to be a general guide to the application of what is mutually accepted or believed to be true. It is essentially derived through the tactical and

training process at each echelon of command from policy and strategy to individual unit techniques and procedures.

Tactics, doctrine, and training are inter-related, meaning, their development and implementation are highly dependent upon each other. Taken together, they improve the effectiveness of forces in combat by enabling timely and united action among forces in battle.

b. Historical Perspective

Perhaps the best example of this relationship is found with Admiral Horatio Nelson of the Royal Navy. Nelson firmly believed that no plan could survive engagement with the enemy nor could he directly control his forces amongst the chaos of battle. As such, he was of the opinion that the way to achieve victory was through the direct indoctrination of his subordinates.

Indoctrination was conducted through extensive training where tactics were learned and rehearsed. Over time, the tactics which were developed and mastered were imbued in the minds of his subordinates as doctrine. In battle, Nelson gave little to no direction and allowed his subordinates to conduct themselves with almost absolute initiative. Nelson did so with the belief that they were of the same spirit and mind as himself [Ref. 27]. In a sense, Nelson knew what the subordinates were going to do and the subordinates knew what Nelson wanted to achieve. This resulted in cohesion, reliability, mutual understanding, support, and ultimately victory.

In retrospect, the Battle of the Nile did not go as planned. However, as Captain Wayne Hughes so eloquently states, "... in a deeper sense it (the battle) is the

epitome of a sound plan executed flawlessly in spirit." [Ref. 29] This could not have been accomplished without sound tactics, doctrine, and training.

President Theodore Roosevelt, himself a former Assistant Secretary of the Navy, understood the importance of an established foundation in naval tactical and doctrinal thought in times of peace. He attributed success in future naval warfare not only in this foundation, but also in sound and efficient training. In his eyes, training served to reinforce tactics and doctrine as well as prepare naval forces to fight effectively in battle. Although spoken nearly a century ago, his words are still to this day relevant:

> It cannot be too often repeated that in modern war, and especially in modern naval war, the chief factor in achieving triumph is what has been done in the way of thorough preparation and training before the beginning of war. [Ref. 21]

The function of command and the planning, directing, coordinating, and controlling of forces and operations - often ignored aspects of command and control - are thus enabled through tactics, doctrine, and training.

C. CONCLUSION

In essence, tactics and doctrine are key, and often overlooked, elements of command and control. They promote a "shared knowledge" among those throughout the force. This shared knowledge is further enhanced by training where experience is gained through exercises designed to develop skills and instincts required of forces in combat. Tactics, doctrine, and training ultimately serve to enhance cohesion, mutual understanding, and support, thereby creating the potential to achieve prompt and harmonious action among forces in battle - the ultimate objective of command and

control. On the day of battle, a naval force will fight as well or as poorly as they are prepared and trained.

V. EVALUATION OF U.S. NAVY LITTORAL WARFARE TACTICS, DOCTRINE, AND TRAINING

A. INTRODUCTION

The U.S. Navy is without question the strongest in the world. No other nation, at least in the foreseeable future, can challenge its ability to maintain sea control or threaten its maritime superiority. However, as the Navy shifts its strategy to include the additional requirement to control the littoral arena and support land operations from the sea, it must be cognizant of the fact that their warships, aircraft, and submarines are designed and its people are trained for operations on the high seas rather than operations near land.

The primary threats to the force within the littoral region, as in the open ocean, are missiles and torpedoes. What changes in the littorals is the fact that the battlefield is no longer open ocean, where survival depends on adequate warning, time for maneuver, depth of fire, and the absence of neutral aircraft and shipping. The inshore battlefield is a complex environment where warning and reaction time are reduced, maneuver is complicated by shallow water and the always present mine threat, and classification and deconfliction are dominant issues amidst abundant aircraft and shipping. Given the intricacies of the littoral environment, it would be imprudent to suppose that these seagoing forces can turn their open ocean proficiency to advantage in this setting. This chapter attempts to evaluate how well the United States is prepared to conduct such operations by reviewing its tactics, doctrine and training requirements.

B. TACTICS

As stated in Chapter IV, tactics are the methods by which forces are employed in battle. In order to evaluate how well the U.S. Navy is prepared tactically to conduct littoral operations, the following areas will be assessed: people, technology, tactical dissemination, and current tactics.

1. People

There is a perception throughout much of the Navy and the American public that extensive damage and losses to U.S. naval forces are not possible, nor are they tolerable. There is no basis for this. In fact, history shows that warfare within the constraints of the littoral arena is fast, furious, and deadly. Conflicts such as the 1971 Indo-Pakistan War, the 1973 Arab-Israeli War, the 1980-1987 Iran-Iraq War, and the Falklands War of 1982, suggest otherwise. Shipboard personnel would be forced to continuously perform at a state of high alertness for extended periods of time and would have to expect hits during combat operations to control this environment. As a result, the morale, physical and mental conditioning, and endurance of the men and women - perhaps some of the most crucial elements of battle - would undoubtedly decline over time and be severely tested once damage and losses were sustained.

A decline or collapse of these elements does not guarantee defeat. The British were successful in their efforts to gain control of the Falkland Islands despite incurring heavy damage and losses. In the memoirs of Admiral Sandy Woodward, the Falklands Battle Group Commander, he describes in detail the extreme difficulties of leading his people through the calamity of war and how they narrowly escaped defeat against the

Argentineans [Ref. 31]. Damage or losses to U.S. naval forces may not result in defeat, but will certainly adversely affect the overall effectiveness of the force and perhaps negatively sway public opinion.

2. Technology

In *Fleet Tactics*, Captain Hughes stresses the fact that effective tactical development adapts to technology. He warns that all too often the American Navy aims to solve its tactical deficiencies with technological improvements. This is not to say that they are neither important, nor required for the Navy to advance capably into the future. On the contrary, he points out technological improvements will correct operational deficiencies, but they take time for development and implementation. It is vital to remember that there is a need to be prepared to fight with what you have today, not tomorrow. Captain Hughes states, "(t)he tactician stays ready by knowing his weapon systems." [Ref. 29] Knowledge of current platforms is equally important. A look at these reveals some interesting insights.

a. Weapons and Sensors

Current naval sensors and guidance systems are optimized for operations in the open ocean. Land and the otherwise cluttered environment of the littoral were not considered in the development of most of these sensors. Therefore, their use in this environment severely degrades their performance. As an example, during Desert Storm Aegis cruisers were saturated with a super-abundance of tracks caused by the extreme sensitivity of their SPY-1B radars to land, frequent sandstorms, and chaff expended by coalition air forces at the slightest hint of enemy air activity [Ref. 22]. Additionally, missile systems which utilize active homing, such as the Harpoon missile, are not as

effective in the littoral environment. Their seeker search window is large enough to pick up land when searching for targets close to shore. The missile will most likely head for the land and miss its intended target or will home on innocent vessels, oil rigs etc.

b. Platforms

The Department of the Navy reported, in their summary report of the lessons learned of the Falklands War, that modern warships can be defended against modern weapons as long as they have defense in depth and are able to sustain hits, absorb damage, and keep fighting [Ref. 32]. The confined and collapsed battlespace of the littoral region eliminates the ability to establish such a defense in depth. Damage sustained by American units, such as the USS Stark and USS Samuel B. Roberts, demonstrate the inability of 4000 ton warships to absorb damage and continue to fight. If confirmation of ship vulnerability is needed, study of the Falklands War provides several examples where hits incurred by warships either sank or placed them out of action.

If damage is to be expected in future conflicts, the costs of current surface platforms should also be contemplated. Consider the costs imposed against U.S. warships that were damaged in recent conflicts at the hand of relatively cheap weapons:

- Exocet hit against USS Stark.: $42 million damage.
- Mine damage to USS Samuel B. Roberts: $96 million damage.
- Mine damage to USS Tripoli: $4 million damage.
- Mine damage to USS Princeton: $17 million damage. [Ref. 33]

Newly commissioned Ticonderoga class cruisers and Arleigh Burke destroyers amount to roughly $1 billion each. A loss of one would be significant, not only in terms of dollars, but especially in lost firepower potential. Hits taken in the littoral environment will be costly.

3. Tactical Dissemination

Naval tactics are documented in Naval Warfare Publications (NWPs) and Fleet Marine Publications (FMPs). Together they consist of over 800 volumes - not an easy task for one to read, teach, or study. They still are mostly directed to meet the Soviet naval threat! When specific new threats are encountered or new weapon systems are developed, the Surface Warfare Engineering Development Group issues new tactics to the fleet through Tactical Memorandums (Tacmemos). Tacmemos must then be maintained for an average of three years before they are incorporated into a NWP. The result is that Tacmemos (though tentative) are studied while NWPs (though authoritative) are not. It would be an interesting - if colossal - task to determine which NWP tactics are known and practiced in training.

In light of the innumerable changes to the international security environment and subsequent enemy order of battle in recent years, even Tacmemos have not been an efficient means of distributing tactical modifications to the fleet. The warfare publications are antiquated and in serious need of revision. To overcome the voluminous burden and outdated information within these warfare publications, the Navy has moved to long, detailed Operational Tasking Orders (Optasks) that include their own tactics. [Ref. 34]

World Wide Optasks, organized by warfare area and maintained by Fleet Commanders, provide a standardized means by which to distribute tactics. A Battle Group Commander then distributes an Optask Supplement for each respective warfare area to modify or add measures driven to meet specific threats based upon current threat and area assessments in a particular region. This process is the only means to ensure that the tactics remain current and geographically specific.

Captain Neil Byrne, Commanding Officer of the Pacific Tactical Training Group, wholeheartedly states that written tactics must not only be current, but also "...clear, concise, and memorable." [Ref. 34] Unfortunately, current tactics do not meet these criteria. Specifically, Optasks have not alleviated the onus of dealing with an over-abundance of information. For example, the World Wide Optask for Anti-Surface Warfare is thirty pages in length. The Optask Supplement for Anti-Surface Warfare for a recent deployable battle group consisted of twenty-five pages. Although far less extensive than the Naval Warfare Publications, fifty-five pages for only one of many warfare areas is not satisfactory. Thus, Optasks even fail to achieve what they purport to achieve - pragmatic doctrine for forces in battle.

4. Current Tactics

The U.S. Navy professes the capability to conduct operations to control the littoral area and to support operations on land, yet tactics for such operations are clearly lagging. An event during Desert Storm illustrates: On 25 February 1991, two Iraqi Silkworm missiles were launched from land positions and directed toward the USS Missouri which was conducting naval gunfire support 18 miles off the Kuwaiti coast. Of the two missiles, one misfired and the other was destroyed by the HMS Gloucester. The

confrontation was the first and only surface-to-air engagement by a cruise missile. Although no damage resulted to friendly units, examination reveals that the Missouri and her escorts were in disarray and probably would not have prevented two hits had the anti-ship cruise missiles been reliable and well aimed. The Gloucester and other escorts were to seaward of the Missouri; they were nearly dead in the water which precluded them from turning and unmasking their batteries or reducing their cross section relative to the incoming threat, and they interfered with each other when they accelerated to do so; they were confined to a channel cleared by minesweepers which was so narrow that it curtailed their maneuvers; and, chaff and other decoys were expended is such large quantities that their supply would have quickly been drained if there were more attacks. Tactics for such operations were non-existent, and remain so to this day. [Ref. 35]

C. TACTICAL DOCTRINE

The goal of tactical doctrine or fighting instructions is to improve the effectiveness of forces by prescribing a framework for prompt and unified action in battle. Given the complexities, limited battlespace, and reduced reaction time within the littoral environment, harmonious and coordinated effort under the constant pressure and stress of hostilities must be nearly automatic and is impossible without sound doctrine, which anticipates the tactical situation that may develop.

Within the U.S. Navy system, doctrine is different at each echelon of command - the policy/strategy level, campaign level, fleet level, and individual unit level. Policy/strategy doctrine unifies beliefs and thought among all the forces. This is a NCA/JCS function. The White Paper "...From the Sea" is an example of this type of

doctrine. Campaign level doctrine transforms strategic thought into activity to support theater objectives such as the rapid movement of forces and their sustainment to provide crisis response when required. This is a CINC function. Fleet level doctrine guides action among units within a battle group. It is much like a football playbook, with formations, search plans and distributions of fire which are implemented to transform combat potential into combat power. Lastly, individual unit level doctrine consists of single unit techniques and procedures which are aimed to foster automatic and instantaneous action, such as defeating an incoming missile. [Ref. 35]

1. Campaign and Policy/Strategy Doctrine

Doctrine at the campaign and policy/strategy levels is geared predominately to ensure unity of belief among those within the force. Doctrine at both these levels is well established. The U.S. Navy translated the current National Security Strategy and National Military Strategy into a well formulated policy/strategy doctrine through the White Papers, "...From the Sea" and "Forward...From the Sea." These documents have provided the impetus for further doctrinal development at lower echelons, and instituted a framework from which to base the Navy's future force structure, acquisition programs, and allocation of resources.

2. Individual Unit and Fleet Doctrine

LCDR Dudley W. Knox, a proponent for sound doctrine within the Navy at the beginning of this century, stressed the importance of individual unit and fleet level doctrine in a 1915 *Proceedings* article. He stated that doctrine at these levels were "(g)overning ideas to which every situation may be referred and from which there may be derived a sound course of action." [Ref. 36] Littoral Warfare doctrine at the individual

unit and fleet levels, where it is needed most, is non-existent within the U.S. Surface Navy.

Doctrine is a compilation of tactics. Without the tactics for fighting near land, there is no doctrine. ATP-1, the governing document for formations, search plans, and other evolutions since the 1950s, is outdated and obsolete to support littoral operations. Formations and signals are not prescribed to: provide guidance when mines and minesweepers are present; protect a main body or high value unit and offer mutual support; incorporate tactical command and control procedures for the earliest possible warning and fastest possible response to enemy missile attacks; and, give speed and courses to steer relative to threat axes so that weapons and sensors are optimized to detect and destroy incoming threats. The Silkworm missile attack addressed in the previous section also illustrates that there was no doctrine to provide the tactical commander with guidance to unite action among his forces.

3. Naval Doctrine Command

The Navy established the Naval Doctrine Command in March 1993 primarily to translate the vision and strategy established in "...From the Sea" and "Forward...From the Sea" into lower echelon doctrinal reality. Additionally, they espouse the integration of naval doctrine into the naval training and education system. The Command initially began with development of Naval Doctrine Publications which have served well to enhance beliefs throughout the Navy at the campaign level. At present, the Doctrine Command has not undertaken the arduous task of developing fleet and individual unit level doctrine to support Littoral Warfare.

D. TRAINING

Once again, training is the primary means for improving a force's readiness to fight. Training ensures that deploying forces are balanced, sustainable, flexible, and, responsive to requirements established by higher authority. Training for deployment begins with individual ships and squadrons where each gains unit qualifications and proficiency in basic mission areas. Force training then culminates with a joint fleet exercise in which deploying Task Force units demonstrate their readiness to perform required missions. In order to evaluate how well the U.S. Navy is trained to conduct operations in a littoral environment, individual unit and fleet training will be appraised.

1. Individual Unit Training

Training for individual units is classified as Basic Phase Training. It is conducted in stages, ashore and at sea, and is designed to work progressively toward the achievement of full combat readiness. The Atlantic/Pacific Surface Force Training Manual has established a standardized Tactical Training Strategy designed to achieve maximum combat readiness and interoperability between the Atlantic and Pacific Fleets. The strategy provides a sound foundation in areas such as engineering, damage control, medical, seamanship, navigation, and administration. However, an examination of the combat systems training strategy indicates that most combat training is still oriented towards the open ocean "Soviet" threat. Training exercises are geared to gain efficiency in target acquisition, designation, and weapons firing, scouting, maneuvering, and command and control procedures based on sea room, early warning, and defense in depth. With few exceptions, this training at sea generally consists of exercises in operating areas

far from land where conditions are very much less stressful than in the littoral itself. As a result, ships are not adept in operating within the confines of the littoral in conditions that are fast, confusing, and extremely stressful.

2. Fleet Training

Fleet Training is conducted through what is classified as Intermediate and Advanced Training Phases. The overall objective of these phases is for units to participate cooperatively with each other in coordinated underway battle group operations, and to complete necessary inport and underway training evolutions, inspections, and equipment calibrations not completed during Basic Phase Training.

In recent years Second and Third Fleets - responsible for implementing fleet training in the Atlantic and Pacific Oceans respectively - have recognized the importance for battle groups to be flexible forces that not only can operate in the open ocean, during day and night, in all weather conditions, but in shallow and narrow waters as well. Within the littoral environment, their emphasis has been placed on conducting power projection, anti-air, anti-submarine, anti-surface, and electronic warfare operations. The Intermediate and Advanced Training Phases culminate with two fleet level exercises - COMPTUEX and FLEETEX - which are conducted at sea just prior to actual deployment. Up until a year ago, the two fleet exercises were the first opportunity for units attached to a particular battle group to operate together as a team. The squadron realignment and reorganization effort of 1995 was established so that squadrons would train and operate with each other throughout the training cycle and deploy together. This effort serves well to enhance the mutual understanding and cohesion among the units of the battle group.

Despite the recent increased emphasis on preparing units to conduct operations in a littoral environment and the efforts to produce harmonious and coordinated actions among the units of each respective battle group, fleet training falls far short of preparing units for actual hostilities. Almost all of the training evolutions and exercises are conducted well out to sea in operating areas with little air and sea traffic. Land areas, choke points, and navigational hazards are simulated on charts and JOTS terminals, and synthetic tracks are incorporated into the link. As a result, watchteams and equipment operators are not subject to the rigors, stress, or difficulties inherent to the clutter of the littoral environment to: detect and identify enemy sub-surface, surface, and air contacts among the congestion of background shipping and the complications induced by land; operate in waters that are mined or provide mutual support for mine countermeasure units engaged in minesweeping operations; determine hostile intent or hostile action in accordance with ROE; and defend against missile and torpedo attacks with limited battlespace and reduced reaction time.

In discussions with senior officers with regard to the obvious lack of training for littoral operations, the author found that all agreed. The U.S. Navy is well trained to conduct open ocean missions - strategic deterrence, sea control, maritime supremacy, and strategic sealift. Although the U.S. Navy in recent years has placed a greater emphasis on training for littoral operations, its individual unit training requirements are still tailored towards blue water operations and its fleet training is less than ideal in preparing forces with the quick-response tactics for the confusing, fast, deadly, and extremely stressful conditions found near land. Officers queried shared the belief that the U.S. Navy is most operationally proficient in the open ocean and, therefore, will be able to adopt this

proficiency to the littoral environment. Given the complexities of coastal waters, this is an imprudent assumption.

E. CONCLUSION

Professing the capability to operate with proficiency in the littoral environment without having the tactics, doctrine, or proper training to do so may lead to undesirable consequences for the Navy.

Using an analogy, it would be ludicrous to assume that the Notre Dame football team could defeat Navy if they were not prepared both physically and mentally for the game and had no play book. Notre Dame, the most dominant of the two teams in terms of size, strength, and speed, winners of several national championships, a team built upon the foundations of tradition and prestige, would lose their game to Navy for the first time since the early 1960s.

As he proceeded south to the Falkland Islands, Admiral Woodward wrote in his diary, "(w)hat is it today that I will wish tomorrow I had done yesterday?" [Ref. 31] Rather than waiting for tomorrow, today is the time for the Navy to develop the tactics for operations near land. They must be evaluated, refined, practiced and learned through effective training. In time, mutual acceptance of these procedures will formulate itself into lower echelon doctrine which will ultimately produce unified effort among naval forces to effectively conduct operations within the littoral environment.

VI. BUILDING EFFECTIVE LITTORAL TACTICS, DOCTRINE, AND TRAINING

A. PART I

1. Introduction

Having suggested the need for the U.S. Navy to develop and implement tactics, doctrines, and effective training programs to gain proficiency in operations to control littoral areas and support land operations from the sea, the question arises, how does this process begin? This chapter attempts to answer the question.

The chapter is dividend into two parts. Part one is a case study of the Israeli Navy. It serves to provide a framework or paradigm of how the United States Navy might go about developing and implementing the tactics, doctrine and training to support the maritime strategy expressed in "... From the Sea" and "Forward...From the Sea." Part two is the author's attempt to initiate the impetus for tactical, doctrinal, and training development for operations within the littoral environment.

2. Historical Perspective

The Israeli Navy provides a superb example of the development and implementation of tactics, doctrine and training aimed to counter the threats which it confronted in Eastern Mediterranean littoral waters before the Yom Kippur War of 1973. It would be difficult to fully understand the significance of the development of the Israeli naval concept without first looking back at the creation of the Israeli Navy and other regional naval development following World War II.

The first naval vessel of the Israeli Navy was an ice breaker built in 1927 for the U.S. Coast Guard. She was bought in 1947, named the "Jewish State," and did service as

an immigrant ship which transported Jewish émigrés to the future state of Israel. Renamed the INS Eilat, she was outfitted with a cannon and had a maximum speed of only seven knots. She took part in a successful naval engagement off the coast of Tel Aviv in the War of Independence in 1948.

In the early to mid 1950s the Soviet Union developed a missile boat concept which envisioned offensive, defensive, and special operations attacks with numerous patrol craft within 20 to 30 miles of the shore [Ref. 37]. In the late 1950s, they had produced Komar and Osa fast patrol boats armed with the Styx missiles (25-30mi range).

The Soviet Union began delivering these fast patrol craft along with the Styx missile to the Egyptian Navy in the early 1960s. By 1966, the Egyptians were equipped with both the Komar (75 tons) and Osa (200 tons) class patrol craft. The Israelis understood that they were facing a complete and drastic change in the balance of naval power within the region. Their fleet, by then consisting mostly of ex-British World War II vintage Z class destroyers, were no match in warfare against faster patrol craft equipped with accurate long-range surface-to-surface missiles.

The need for a more modern and capable naval force posed a formidable challenge to the Israeli Navy. They understood that their naval force, inferior to that of the Egyptians and possibly Syria as well, required immediate force and equipment changes. Equally important, they realized that such an undertaking would require revision of concepts of operations, doctrines, tactics, and training.

By early 1967, the Israelis had implemented an intermediate fix. First, they developed the Gabriel surface-to-surface missile (12mi range) and installed it on their Z class destroyers. Meanwhile, they were at the end of the design phase and early into the

production phase of a new 250-ton fast patrol craft. These Saar boats were to be equipped with the Gabriel missile in addition to 40 and 76 mm guns. Still inferior in ASCM range to the Egyptians, the Israelis were nonetheless engaged in well advanced thought of how to employ these new craft even before they were delivered. [Ref. 38]

In October of 1967, the Israelis suffered the first anti-ship missile attack in history, launched by the Egyptians off Port Said. The now-aged destroyer Eilat was hit by three Styx missiles fired from an Osa patrol craft resulting in the death of 47 and 91 wounded. The ship was surprised and had no means to defeat the missiles nor engage the Egyptian patrol craft [Ref. 39]. This event stressed the urgency and need for a new operational concept.

3. Israeli Operational Missile Boat Concept

The Israeli operational concept was primarily based upon a technological limitation - the Gabriel missile was out-ranged ten to fifteen miles by the Styx missile. In other words, an Israeli patrol craft would have to approach the enemy more than ten miles inside Styx missile range before they could fire missiles. The Israeli Navy knew they could not depend on aircraft for either reconnaissance or attack. With this in mind, the concept called for fighting at night, and full use of surprise generated by early detection and identification in order to saturate the enemy with sheer numbers of patrol craft and missiles.

A substantial scouting force would proceed ahead of the main body about half the distance of the effective range of the Gabriel missile for detection and identification of the enemy. Once detected, the enemy would be closed at high speed by the main forces and attacked when within the firing range of their missiles. During this phase, the patrol

craft would have to evade, out-maneuver, or destroy Styx missiles if encountered. Lastly, the patrol craft were to continue to close the enemy, firing their Gabriel missiles and finally destroying the enemy with guns. Obviously the most difficult aspect of this concept was closing while inside the enemy's weapons range. Therefore, the development and implementation of procedures to avoid or destroy enemy missiles became paramount. [Ref. 38]

Scouting procedures, EMCON conditions, electronic warfare, hardkill and softkill anti-missile procedures, coordinated anti-ship missile attacks, as well as gunnery procedures, were developed and extensively tested both at sea and inport with the use of state-of-the-art tactical trainers in Haifa. The tests served as a mechanism for identifying weaknesses and shortfalls in their tactics, which were then evaluated, refined, adopted, and mastered. The exercises served to build proficiency and confidence in their ability to fight as a team. The entire naval force developed a common bond and mutual understanding of their procedures and how they were to be executed. Eventually this bond and mutual understanding coalesced into a simple, clear and powerful doctrine which each and every member of the naval force - from the most junior sailor to the highest ranking officer - could relate to, understand, and execute in battle.

Israeli missile boats operated under the following three-stage doctrine:

Stage 1: Detect and identify the enemy as early as possible.

Stage 2: Close range and attack when at own effective missile firing range. During the execution of this second stage, out-maneuver and avoid being hit by enemy missiles when encountered.

Stage 3: Within own effective range, continue to close range, while firing own missiles. Use guns to finally destroy the enemy.
[Ref. 38]

The Israeli missile boat tactical development and doctrine has been described not only to show its clarity and simplicity, but also for its potency in meaning. Captain Byrne would admire the fact that the doctrine is clear, concise, and memorable. Captain Hughes would commend the Israelis for a tactical doctrine that, " ...allow(s) for subtle and complex considerations, for variations, and for both error and initiative at the moment of execution." [Ref. 29]

4. Israeli Naval Engagements of the Yom Kippur War

The measure of how well the aforementioned tactics, doctrine, and training prepared the Israeli Navy was in the crucible of naval combat in the Yom Kippur War. The battle of Latakia will be discussed because it was the first battle in which the Israeli concepts were put to the test, the first missile boat on missile boat engagement in history, and for the most part, is indicative of the remaining battles of the conflict.

The Battle of Latakia took place in coastal waters off the coast of Syria on October 6, 1973. The Israelis were actively patrolling the area with five Saar class fast patrol craft.

Stage 1: The Israeli vessels were detected approximately 30 miles off shore by two Syrian picket ships, a torpedo boat and minesweeper, who alerted three Syrian missile boats to the east and close inshore. The Israelis engaged and sunk both pickets - the torpedo boat by 40mm gunfire and the minesweeper with three Gabriel missile hits. The Israelis then detected the Syrians to the east at 25 miles.

Stage 2: The Israelis turned and closed the Syrians. Shortly thereafter, at 22 miles, the three Syrians launched a total of eight Styx missiles - all they carried - at the closing Israeli force. The Israelis deceived all missiles by softkill anti-missile measures and continued to close. The Israelis engaged the three Syrian patrol craft with their Gabriel missiles at 12 miles. One Komar and one Osa were sunk and a second Komar was hit and ran aground.

Stage 3: The grounded Komar was then closed and destroyed by 40mm gunfire. In summary, eleven Gabriel missiles were launched with six hitting. Eight longer range Styx missiles were launched first by the Syrians with no hits.

This battle serves as a potent illustration of how interrelated tactics, doctrine, and effective training can effectively prepare a force for battle. It also shows how the anti-ship cruise missile advantage of the Syrians lulled them into carelessness, and the absence of well thought out combat doctrine. Ultimately, the Israeli Navy's desire to achieve surprise, generated by early detection and identification, and plan to saturate the enemy with sheer numbers of patrol craft and missiles was transformed from a concept into success, even though the details of the plan had to be adopted to the circumstances of the engagement.

5. Summary

The Israeli example is an oversimplification of the many issues which the U.S. Surface Navy now faces. However, it shows the payoff of sound tactics, doctrine and training. We need to develop and implement these measures to gain proficiency in operations to control littoral areas and support land operations from the sea.

B. PART II

1. Introduction

The following recommendations are provided to better prepare U.S. naval forces for operations within littoral regions throughout the world. They provide a basis for fighting near land. The framework stresses simplicity, because otherwise the complex and dynamic nature of battle within the confines of the littoral will overwhelm the tactical commander and his forces. It is recognized that research and development programs are already underway in some of these areas to enhance the capabilities of naval forces for future littoral warfare, but these programs could take years before they transition from concept to reality. The following recommendations are based on the premise that the U.S. Navy must be able to win with forces at its disposal in a battle of the near future.

The recommendations are the personal views of the author and are not to be taken as proven for combat within the littoral environment. Rather, it is hoped that these words will initiate thought and sound tactical debate throughout the fleet so that a concerted effort can be launched to develop the tactics, doctrines and training requirements to better prepare naval forces for operations near land.

2. Recommendations Aimed to Initiate Sound Tactical Development

- **Ensure there is a shared belief throughout the Navy that future conflict will take place under the constraints of the littoral environment.**

The paradigm shift from open ocean operations to operations near land, which we now see in the U.S. Navy, is not an anomaly. The study of maritime history reveals that

the most common employment of navies has been the support of operations ashore, the landing of forces, and the protection of shipping at sea [Ref. 20].

In fact, a review of the period of confrontation with the Soviet Union, roughly 1950-1990, shows that there is a dichotomy between U.S. Navy strategy and actual force employment. Maritime strategy during this time frame was developed to gain sea control, support a major war in Europe, and attack the Soviet homeland directly - blue water missions. However, the actual employment of American naval forces was conducted near land in many and varied circumstances throughout the world. Air strikes in North Vietnam, cruise missile strikes against Iraq, naval gunfire support in Lebanon, amphibious landings in Korea, blockade operations against Cuba, and maritime interdiction operations in the Adriatic are just a few examples of such operations [Ref. 29].

Additionally, since the fall of the Soviet Union, regions near coastal areas and chokepoints of national and economic interest throughout the world have witnessed dramatic increases in nationalism, demographic expansion, and resource competition. Potential for conflict within these areas is extremely high.

- **The belief that blue water proficiency can be carried unmodified into littoral regions is uninformed and baseless.**

Warfare within the confines of the littoral is sharply different from warfare on the open-ocean. Despite this fact, there is a belief throughout the U.S. Navy that the blue water tactical proficiency can be transferred into the littoral. This is an uninformed attitude considering that the weapons, sensors, platforms, and personnel of the Navy -

optimized and trained for warfare in the open-ocean - are not well suited for such operations.

Exercises at sea should be conducted in the worst congested environment possible so that ships get a sense of the traffic density and associated IFF problems encountered in such an environment. Furthermore, simulations and tactical team trainers should add these conditions into their scenarios.

- **Within the littoral environment, it would be best for the U.S. Navy to revert to the tactics of World War II in which forces operate in close mutual defensive support while at the same time maintain the capability to deliver precision offensive firepower.**

The tactical aim of naval forces in battle is to attack effectively first. This is created through superior scouting and command and control procedures. Although the warships of the U.S. Surface Fleet have great offensive firepower, they may not always have the ability to attack effectively first against the enemy within the littoral environment. This is because their scouting ability and command and control efforts are diminished by the speed at which events transpire and the confusion created by land clutter and the over-abundance of shipping and air traffic. As a result, an ambiguous and unclear tactical picture is produced inhibiting our ability to detect, track, and target the enemy and thus forestall enemy first attack. While U.S. warships are in the process of working through the ambiguous and unclear tactical picture, they will be subject to attacks by small combatants and aircraft familiar with the constraints of their home field. The aim of an inferior enemy will be to use stealth and surprise to impose disproportionate losses on us.

In World War II, the U.S. Navy concentrated forces for the purposes of defense with fighter aircraft and the massed fire of their anti-aircraft guns. By the end of the war, their defense was so formidable that the Japanese resorted to suicidal missions - Kamikaze attacks - to penetrate their defense. After World War II, this tactic was soon replaced by dispersed formations designed to conceal warships amidst the vastness of the oceans and commercial shipping in the face of nuclear weapons at sea. In the 1980s the threat of nuclear weapons at sea was largely replaced by missiles with conventional warheads. By then tactics had been modified with the development of surface-to-air missiles and modern jet fighters equipped with air-to-air missiles. Over the years this fleet defense evolved into a layered "defense in depth" to counter air, surface, and sub-surface launched anti-ship cruise missiles. These blue-water tactics still exist today, but they depend on battlespace: conditions of adequate warning and reaction time; conditions we have demonstrated are lacking within the littoral environment. Therefore, given the conditions of the littoral environment and the unstable tactical situations U.S. warships face with the inability to attack effectively first and the susceptibility of taking hits, it would be prudent for the Navy to avoid ever exposing single warships to attack. We should operate with small numbers of strong, mutually supporting formations that accept the constraints of the environment and be prepared to prioritize missions and tasking until the enemy forces are crushed.

- **Surface formations must be tightened.**

Massing for the defense will require formations to collapse, perhaps to ranges governed by the maximum range of a warship's point defense weapons. Point defense weapons must be free to fire without concern for hitting the other ships of the formation.

- **Establish free-fire zones and procedures.**

Free-fire zones should be established in order to alleviate the need for deconfliction with friendly air and surface units, to prevent fratricide, and reduce the danger of surprise attack. The ability to quickly alter these free-fire zones by simple tactical signal, depending on a particular threat, should be made easy to do, well rehearsed, and conducted swiftly and efficiently. Free-fire zones won't eliminate the ambiguities created by neutral aircraft or shipping, but the absence of U.S. forces in these zones would make deconfliction easier and reduce fratricide.

- **Establish defensive support tactics for warships engaged in operations in support of activities on land.**

Procedures should be formulated so that a warship is provided with substantial defensive support - a consort "riding shotgun" - while engaged in operations to support activities on land such as Naval Gunfire Support or Tomahawk strikes. Relieving the ship of most of its defensive constraints will allow the ship to concentrate on effective offensive support. Tested and ready tactics to screen and defend logistic support ships and amphibious forces should also be easily signaled and thoroughly practiced. Movement in restricted waters and operations within easy enemy reach from below, on, or above the sea imposes the constant burden of readiness. An intense armed

reconnaissance effort to uncover and sweep away "hot spots" should be seen as the antecedent of inshore operations.

- **Maintain minimum formation speed of at least 10 knots.**

A minimum warship speed of at least 10 knots should be maintained at all times of danger, giving the ability to turn fast, unmask batteries, and reduce cross section relative to an incoming threat. Ships should never be confined to operate within the constraints of a box merely for easy identification. What we know about a patrol station the enemy will soon come to know. Ships on fixed station become easy prey for enemy submarines, fast patrol craft, land based missiles, and aircraft.

- **Adapt Electronic Warfare procedures for inshore operations.**

A major consequence of a strong defense is that we must radiate radar in active search, and so the enemy will certainly be aware of the formation's presence and location. Therefore, Electronic Warfare tactics should be developed to detect, track, and target the enemy with aggressive radiation. [Ref. 29]

The use of softkill measures - chaff, decoys, etc. - to defeat incoming missiles is effective in combat [Ref. 39]. However, an over-enthusiastic response with these measures can do more harm than good. Excessive dumping of chaff within a tight formation will most likely lead to radar interference among the warships of the formation. Chaff clouds might get between an incoming missile and a radar guided weapon that it is attempting to engage. Interactions such as these will make weapon and sensor performance uncertain. Lastly, the use of chaff may seduce missiles from one target to another. The sinking of the SS Atlantic Conveyor in the Falklands War provides such an

example. Two air launched Exocet missiles were fired at HMS Ambuscade who was screening the British Fleet. She detected the incoming missiles and launched chaff to decoy the missiles. The chaff was successful in seducing the missiles away, but once through the chaff cloud the missiles acquired the converted VTOL/helicopter carrier SS Atlantic Conveyor. Both missiles locked on and hit. Twelve sailors were killed and the ship sank six days later [Ref. 39]. Electronic Warfare tactics to avoid these interactions must be developed and trained for. Procedures to optimize the use of softkill measures in mutual defense will be a challenge to develop [Ref. 24].

- **Surface screening forces must perform tasks in an ambiguous tactical environment under risky conditions.**

The speed at which events transpire, the clutter created by land on radar, and the density of shipping and air traffic within the littoral environment make it difficult for warships to develop clear tactical pictures and unambiguous situational assessments. Plain and simple, the first warships entering littoral waters must deal with the congestion and confusion because there is no escaping it!

To alleviate some of the confusion, not only should a greater emphasis be placed on scouting - the process where information about the enemy's position, movements, vulnerabilities, strengths and intentions are gathered and disseminated among the force - but also, tactics to confuse and deceive the enemy should be sought to make his tactical picture equally confusing if not worse.

Aircraft and UAVs are the most capable assets to conduct the mission of scouting. However, surface ships must be prepared to do so effectively as well. Failure to identify

contacts will require visual identification before attack is authorized. Therefore, visual recognition techniques should be developed for aircraft crews and bridge watch teams. Surface ships require nighttime visual capability. Remote optical sensors that provide this capability are available through commercial-off-the-shelf technologies. On a priority basis, these sensors should be purchased and placed high on the mast of surface ships to enable sighting at the longest ranges possible.

- **Shallow water ASW proficiency will be essential. Active acoustic search will be necessary and requires quite different tactics, formations, and means of prosecuting contacts. Airborne assets are preferred over seaborne assets, but require unaccustomed patience and use of non-acoustic means for detection.**

Submarine detection and prosecution in shallow and relatively noisy water against mostly diesel-electric submarines is extremely difficult. ASW weapons and sensors currently found in today's warships - developed for open-ocean operations against nuclear-powered submarines - are not very effective in the littoral environment. These conclusions were known as far back as 1983 upon examination of the Falklands War, yet the U.S. Navy has not developed new tactical doctrine for the circumstance. The Third World submarine menace has not been quantitatively great, but new acquisitions and developments will soon stress U.S. littoral ASW capabilities, both surface and airborne.

After performance measurements of ASW sensors and weapons in shallow waters have been taken, then new tactical procedures to operate in the littoral environment must be formulated and practiced. Until new means are developed, surface ship active sonar tactics of the 1960s should be relearned. More importantly, efforts must be developed to employ ASW fixed wing aircraft and helicopters to detect, locate, and destroy enemy submarines remote from surface platforms using tactics of patience and tenacity.

Submarine detection by surface ships in an escort role will continue to be important, but the enemy will gain first detection, and prosecution with surface ships will be hazardous. Rather, the aim should be to give surface ships new and more effective torpedo evasion techniques. Chokepoint ASW operations and tactics with or without passive towed array sonars and specialized sonobouy patterns should be mastered.

- **Command structure and Rules of Engagement for operations within the littoral environment require review.**

The U.S. Navy has an established command structure for open-ocean operations with its Composite Warfare Commander Doctrine. The command structure for operations within the littoral environment may require revision due to the condensed battlespace. Operational and tactical control issues need to be addressed specifically for units engaged in operations in support of the land battle.

Rules of Engagement (ROE) used for operations in the littoral are extensive. They should be reviewed for adequacy and risks against a skillful attacker. ROEs must be responsive to the compressed nature of these regions which necessitate quick and decisive response to many and varied threats. At the edge of war, operating under ROEs seems fraught with difficulty and hazard.

- **Responses to the threat of weapons of mass destruction must be formulated.**

By the end of the century, perhaps up to a dozen coastal nations could actually possess or have the capability to develop weapons of mass destruction - nuclear, biological, and chemical. Procedures for continued operations in case they are used are

sketchy at best. Tactics should be formulated with initial emphasis on seaborne defense of ports, terminals, and beachheads.

- **Tactical coordination is required to clear minefields covered by enemy fire.**

The presence of mines poses serious hazards to seaborne forces and amphibious landing forces because they channelize movement of ships and reduce their speed below the desired 10 knot minimum. Yet minefields must not intimidate naval forces nor hamper their efforts to gain control of the littoral arena and access to ports and beachheads. Mines will often be encountered where mine countermeasure forces are subject to attack. Procedures to clear mines while neutralizing enemy attacks on our entire formation do not exist.

Eliminating mines requires a concerted effort among mine sweeping and clearing ships, helicopters, and special operations forces. It must be assumed that the littoral waters in need of mine clearing operations will often be contested by an opposing force because it is a time of great vulnerability. Procedures are required for surface ships to cover the mine sweeping forces while they are engaged in clearing operations. Likewise, procedures are required for mine sweeping forces to clear channels wide enough so that the maneuvers of the escorting ships are not curtailed in such a way that the protector becomes the victim.

3. Transformation From Concept Into Reality

a. Tactics

Assuming that the recommendations will initiate intensive thought and energetic development throughout the fleet, the next logical step is to transform the ideas

into tactical reality. Tactical development will be accomplished through exercises under conditions as nearly as possible like those encountered in the littoral environment. Efforts to work up tactics in conditions other than those encountered within this environment - such as out to sea and clear of shipping lanes, commercial air routes, and land - will be futile. Only under cluttered and stressful conditions can the newly conceived procedures be extensively tested, reviewed, built upon, and modified. Realistic exercises will stimulate competition and new ideas from the bottom up. Furthermore, means to quickly formulate, record, and disseminate lessons learned should be embraced. With motivation and interest in a better system, tactics will develop of themselves; they will quickly grow viable and strong.

b. Tactical Doctrine

The tactics which evolve and become believed next need to be written so that a commander can control or indoctrinate his forces before action takes place - much like Admiral Nelson. Tactical doctrine, as it is called, should not be written in secret manuals or in voluminous detail, but in a clear, concise, and simple fashion so that it can easily be distributed, understood and updated if need be. An inshore annex to ATP I, specifically for use within littoral regions, should be contrived to incorporate the policies and procedures as soon as they have matured. The ATP I inshore annex would provide tactical guidance upon which surface forces could take action such as stationing speeds, formation compositions, search plans, distributions of fire, and the like that can be quickly signaled or taken without signal, for prompt and unified action. [Ref. 40]

Given the complexities, limited battlespace, and reduced reaction time within the littoral environment, harmonious and coordinated effort under the constant

pressure and stress of hostilities must be nearly automatic. In the heat of battle, this is an impossibility without a comprehensive and practiced plan of action which establishes unity amidst chaos. Tactical doctrine provides such guidance.

c. Training

Sound tactical doctrine becomes the basis for training and the measurement of the achievement of training standards. Training based on these standards will be the primary means for improving a force's readiness to fight. Whereas tactics and doctrine establish the potential for victory, the skills, experience, and knowledge gained through training and education translate this potential into reality. [Ref. 29]

Training within the school command structure, individual unit training, and fleet training for littoral warfare ought to be more standardized than it now is. The objective is to ensure that all personnel, the most junior to most senior, are imbued with knowledge of and faith in the new tactical doctrine. To effectively operate in the littoral, the U.S. Navy must conduct its training within it. This probably requires an expansion of training operations overseas in combined operations with friendly navies who are more experienced than we with littoral operations. Imagine the difficulties - even the feasibility - of exercising warships in Chesapeake Bay or Long Island Sound. Surface forces must learn through first hand experience the difficulties of operating in such an environment in order that they gain the know-how and confidence required to fight and win.

4. Conclusion

The recommendations suggested are the author's attempt to provide the impetus for tactical, doctrinal and training development for littoral warfare. They are not proven.

However, they are submitted with the understanding that well formulated tactics, commonly understood tactical doctrine, and effective training for littoral operations will ideally unite the minds of those throughout the surface fleet. As shown through the Israeli example in Part I of this chapter, their combination will create a synergistic effect which will ultimately prepare forces for battle in the littoral arena.

VII. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

The White Papers "...From the Sea" and "Forward...From the Sea" outline clearly the vision and strategy the U.S. Navy will carry into the 21st Century. They specify the continuance of several naval roles and missions such as sea control and maritime supremacy, but also call for readiness to conduct naval operations in littoral regions all around the world.

The littoral environment and the potential enemy which may be encountered therein impose new demands on U.S. naval forces. Geographical constraints, limited battlespace, reduced reaction time to incoming threats, the lethality of enemy weapons, ambiguous threat bearings, clutter, congestion, uncertainty, restrictive ROEs, unrealistic and unattainable states of readiness, and the eventual degradation of weapon and sensor performance equate to increased vulnerabilities for naval forces which operate within these areas.

The U.S. Navy is without question the strongest in the world. No other nation, at least in the foreseeable future, can challenge its ability to maintain sea control or threaten its maritime superiority. However, given the intricacies of the littoral environment and the fact that its warships, aircraft, submarines, and personnel are designed and trained for operations on the high seas, it would be an imprudent supposition to assume that these seagoing forces can turn their open ocean proficiency to advantage in this setting.

Research and development programs are underway to enhance the capabilities of future naval forces for littoral warfare. These programs could be years away from

fruition. Should the Navy be called upon to enter battle close to shore in the near future, it must be able to fight with what we have now. The Navy will fight as well or as poorly as we are prepared, and that is highly dependent on current tactics, doctrine, and training.

Tactics and doctrine serve to enhance cohesion, mutual understanding, and support, thereby creating the potential to achieve prompt and harmonious action among forces in battle. Given the complexities, limited battlespace, and reduced reaction time within the littoral environment, having the right tactics is extremely important. With sound tactics and doctrine, training and exercises develop skills and instincts required for combat. However, examination of the tactics, doctrine, and training which pertain to Littoral Warfare indicate that they are clearly lagging within the U.S. Navy Surface Fleet.

In order to train and gain proficiency in operations to control littoral areas and support land operations from the sea, the Navy must develop the tactics first. With broad acceptance, the tactics can be recorded and promulgated in written tactical doctrine which will ultimately produce unified effort among naval surface forces. The tactics may then be evaluated, refined, and practiced until they are second nature.

B. RECOMMENDATIONS

The following recommendations are the personal view of the author and are not to be taken as the proven method by which proficiency and synergy of forces is to be obtained within the littoral environment. Rather, the recommendations serve to illustrate the kind of fundamental tactical core needed as the basis for specific signals, formations, firing plans, Electronic Warfare procedures and other guidance that might form an

inshore annex to ATP-1. It is hoped that they will initiate a tactical debate to better prepare naval forces for operations near land.

- Ensure there is a shared belief throughout the Navy that future conflict will take place under the constraints of the littoral environment.
- The belief that blue water proficiency can be carried unmodified into littoral regions is uninformed and baseless.
- Within the littoral environment, it would be best for the U.S. Navy to revert to the tactics of World War II in which forces operate in close mutual defensive support while at the same time maintain the capability to deliver precision offensive firepower.
- Surface formations must be tightened.
- Establish free-fire zones and procedures.
- Establish defensive support tactics for warships engaged in operations in support of activities on land.
- Maintain minimum formation speed of at least 10 knots.
- Adapt Electronic Warfare procedures for inshore operations.
- Surface screening forces must perform tasks in an ambiguous tactical environment under risky conditions.
- Shallow water ASW proficiency will be essential. Active acoustic search will be necessary and requires quite different tactics, formations, and means of prosecuting contacts. Airborne assets are preferred over seaborne assets, but require unaccustomed patience and use of non-acoustic means for detection.
- Command structure and Rules of Engagement for operations within the littoral environment require review.
- Responses to the threat of weapons of mass destruction must be formulated.
- Tactical coordination is required to clear minefields covered by enemy fire.
- To effectively operate in the littoral, the U.S. Navy must conduct its training in it. Exercises must be conducted in the most congested environment possible.

The author suggests that leadership for this tactical development process rests upon the Commanders of Second and Third Fleet in close coordination with the Atlantic and Pacific Tactical Training Groups and the Naval Doctrine Command. Inshore tactical doctrine should be sponsored and overseen by the Naval Doctrine Command. And lastly, responsibility for standardized training based upon tactical doctrine for littoral operations rests with the Chief of Naval Education and Training and fleet schools, with advice and close coordination with Second and Third Fleets, the Atlantic and Pacific Tactical Training Groups, and the Naval Doctrine Command.

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