

# *Navy Strategic Planning Guidance*

With Long Range  
Planning Objectives



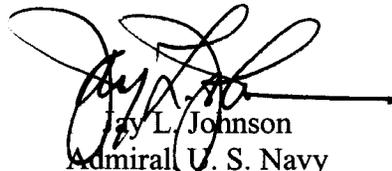
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## Preface

As we continue to build a Navy for the Information Age, it is imperative that we remain focused on both our enduring role of forward presence and our transformation to a network-centric and knowledge-superior force. Implementing a strategy-based approach to the planning, programming, and budgeting process will provide our nation a Naval Service that remains capable of assuring U.S. access abroad and influence ashore in the 21<sup>st</sup> Century. The maritime concept described in Section III is the first step in this process. It guides our transformation by describing the organizing principles, operational concepts, and priorities by which future naval forces will exploit new opportunities and capabilities to ensure our access forward. This second edition of *Navy Strategic Planning Guidance* provides a critical bridge from the ideas contained in our maritime concept to a set of prioritized strategic capabilities that are linked directly to operational concepts and serve as the foundation for the Integrated Warfare Architecture assessment process. The IWAR process then captures these prioritized capabilities in end-to-end analyses, providing programmatic recommendations in the form of the CNO's Program Assessment Memorandum, upon which resource sponsors base their programs.

In this planning cycle, we must all be cognizant of the upcoming Quadrennial Defense Review. Our ultimate objective will be to maintain and enhance our ability to project U.S. power and influence from the sea to directly and decisively impact events ashore during peacetime, crisis, and war. Forward presence and knowledge superiority are the two means upon which we will structure our Navy for the Information Age. Now and in the future, our command of the seas must be complemented by an improved speed of command via cyberspace in order to dictate the operational tempo across an expanded battlespace -- sea, air, land, space, and cyberspace. We must also outline in our planning process the new mission areas that will become an integral part of the Navy's operations early in the 21<sup>st</sup> Century. As we expand this mission envelope to include new capabilities such as Theater Missile Defense and Land Attack, we must also ensure that we have the capacity to perform them with power and responsiveness.

Throughout this planning process, we must also be mindful of our most valuable resource: the men and women of the U.S. Navy. They are the brightest and most highly motivated individuals that our nation has to offer, and keeping faith with them is our highest duty. We must take full advantage of emerging technologies and concepts in order to equip them with increasingly capable ships, aircraft, systems, and equipment as they stand ready to respond to our nation's call -- *anytime, anywhere*.



Jay L. Johnson  
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# TABLE OF CONTENTS

**PREFACE** ..... *i*

## **SECTION I: NAVY STRATEGIC PLANNING GUIDANCE**

INTRODUCTION ..... 1  
ABSTRACT ..... 1

## **SECTION II: THE STRATEGIC ENVIRONMENT**

THE STRATEGIC ENVIRONMENT AT THE TURN OF THE CENTURY ..... 3  
THE RISE OF REGIONAL ACTORS ..... 4  
GLOBALIZATION ..... 4  
THE NAVAL ENVIRONMENT ..... 5  
POTENTIAL ADVERSARY CAPABILITIES ..... 5  
PROBABLE OTHER AREAS OF CONCERN ..... 13

## **SECTION III: THE MARITIME CONCEPT**

BACKGROUND ..... 18  
THE STRATEGIC IMPERATIVE ..... 19  
MEANS ..... 20  
WAYS ..... 22  
ENDS ..... 24  
CONCLUSION ..... 28

## **SECTION IV: THE PROCESS**

INTRODUCTION ..... 29  
OPERATIONAL CONCEPTS ..... 30  
LONG RANGE PLANNING OBJECTIVES ..... 30  
INTEGRATED WARFARE ARCHITECTURE (IWARs) ..... 31  
QUADRENNIAL DEFENSE REVIEW (QDR) ..... 36

## **SECTION V: LONG RANGE PLANNING OBJECTIVES**

INTRODUCTION ..... 39  
MARITIME POWER PROJECTION ..... 42  
FORWARD PRESENCE ..... 46  
KNOWLEDGE SUPERIORITY ..... 50  
BATTLESPACE CONTROL ..... 59  
BATTLESPACE ATTACK ..... 68

BATTLESPACE SUSTAINMENT .....	73
OPERATIONAL CAPABILITIES PRIORITY.....	79
<b>SECTION VI: DIRECTED STUDIES.....</b>	<b>88</b>
<b>CONCLUSION.....</b>	<b>90</b>

# SECTION I: NAVY STRATEGIC PLANNING GUIDANCE

## INTRODUCTION

This second edition of *Navy Strategic Planning Guidance* (NSPG) provides a prioritized set of capabilities to the IWAR/OPNAV PPBS planning process with direct strategic linkage to a maritime concept (described in Section III) that builds upon *From the Sea* and *Forward... From the Sea* and provides the organizing principles by which naval forces will exploit new concepts and capabilities to assure U.S. access forward in order to continue to influence events directly and decisively ashore in the future. The NSPG expands on these principles and provides the conduit to translate the strategic guidance of the maritime concept into specific required operational capabilities that will build the foundation upon which the OPNAV planning process will be based.

After detailing the key capabilities of potential 21<sup>st</sup> Century adversaries, based on the Office of Naval Intelligence (ONI) assessment, the NSPG describes the maritime concept that provides the organizing principals and concepts developed in response to ONI's assessment. The NSPG then defines the strategy-based process that will be the foundation of the OPNAV planning process in the 21<sup>st</sup> Century. This section includes: (1) a discussion of the genesis of the Operational Concepts that are based on the maritime concept; (2) the requirement for a set of prioritized operational capabilities in the form of Long Range Planning Objectives; (3) a description of the end-to-end capability assessment process of the IWARs that will be used to guide the CNO's Program Assessment Memorandum (CPAM) development and, finally; (4) because of the unique implications of this upcoming planning process on the first Defense review of the 21<sup>st</sup> Century, an outline of the emerging themes and actions for the Quadrennial Defense Review (QDR) and the potential naval implications. The fifth section of the NSPG provides the critical link between these concepts and resources by providing a series of Long Range Planning Objectives in the form of prioritized, strategy-based capabilities. The last section of the document then presents a list of studies that the Navy needs to undertake in order to help sustain our strategy in the future.

This document establishes the bridge from strategy to capabilities within the IWAR assessment process. Accordingly, the IWAR assessment process will employ this guidance in their end-to-end analyses. The NSPG will be released on an annual basis in the March-April timeframe, and will provide IWAR teams an updated focus on capability priorities enhancing stability throughout a continuous planning process.

## ABSTRACT

The following is a brief synopsis of the remaining sections of the NSPG:

- Section II summarizes key 21<sup>st</sup> Century potential adversary capabilities. ONI capabilities-based assessments offer IWAR teams the in-depth critical information necessary for a rigorous analysis of potential adversary capabilities in the 21<sup>st</sup> Century. Leveraging these analyses will be fundamental to a successful IWAR planning effort, enabling IWAR Integrated Process Teams (IPTs) to clearly identify areas where risks can be taken and where

we need to hedge against an uncertain future.

- Section III contains a summary of the maritime concept that will guide the IWAR and CPAM efforts in terms of the relevancy and the prioritized capabilities outlined in Section V. In those instances where capabilities do not enhance the key tenets of this concept, those capabilities should be considered lower priority.
- Section IV details the OPNAV PPBS planning process. Contained in this section is an overview of the genesis for the operational concepts that are applied to each of the “means” and “ways” of the maritime concept, the Long Range Planning Objectives associated with them, the background of the IWAR process and an abstract of each IWAR domain, and finally, the issues/topics that will impact the Navy in the upcoming QDR.
- Section V details the NSPG Long-Range Planning Objectives. It provides the link between strategy and the assessment and programming process in the form of a series of prioritized, strategy-based capabilities that will guide the CPAM/POM development.
- Section VI provides a listing of topics for study and analysis to be completed within OPNAV, CNA, NWDC and the Fleet to better assess emerging concepts and capabilities for the Navy of the future.

**NSPG Development:** The NSPG will be released on an annual basis in the March-April timeframe to provide OPNAV planning forums an updated focus on capability priorities. This will maximize stability throughout the continuous planning process.

**Additional Planning Guidance Documents:** Related documents that will significantly impact the continuing development of the PR-03 IWAR roadmaps and CPAM issue development include the FY02-07 Defense Planning Guidance and the PR-03 SECNAV Planning Guidance.

## SECTION II: THE STRATEGIC ENVIRONMENT

*“The security environment in which we live is dynamic and uncertain, replete with a host of threats and challenges that have the potential to grow more deadly.”*  
*President Clinton, National Security Strategy, 1999*

### **The Strategic Environment at the Turn of the Century**

No one can predict with certainty the future security environment, but there are emerging trends that make it imperative for our Navy to focus on the littorals and the land beyond. The growing role of regional and non-state actors in international affairs and the increasing globalization of the world economic networks and systems portend a future security environment of greater complexity. These and other forces combine to lend uncertainty to the planning process.

To frame the planning guidance of Section V, the Navy assumes that no peer competitor on a global scale will arise prior to 2020. The United States and the Navy will remain engaged in areas of vital interest in the Middle East, Asia, Europe, and the Americas. Potential adversaries will obtain technologically advanced weapon systems and access to sensor systems to employ these weapons in an effort to thwart our efforts in geographically limited regions. We must continue to be prepared to fight and win at the high end of military conflict, while maintaining a clear focus on the day to day shaping responsibility through the forward presence and engagement activities that our forces conduct throughout the world.

In preparing for the high intensity end of conflict, the Navy must consider those countries, with the potential and desire to exercise regional hegemony which may be hostile to the U.S. or its presence. These countries will seek to exercise influence antithetical to U.S. interests in their corners of the world. The political influence of regional powers is derived from their economic and military power, and they may often employ military strategies aimed at raising the perceived cost of engagement to the United States. A probable course of action for many adversaries will be to challenge our access to their region of influence.

The Navy must maintain the capability to dominate the maritime environment to dissuade global naval ambitions by a future regional power, while also retaining the capacity to handle operations at the lower end of the spectrum of conflict and to perform our enduring role in strategic deterrence. By ensuring credible U.S. combat capability remains forward, the Navy assures U.S. influence is always present across the spectrum of operations, promoting U.S. and allied interests through day to day engagement. This engagement process also encompasses the spectrum of military operations other than war (MOOTW), which repeatedly employ naval forces in missions such as humanitarian disaster relief, non-combatant evacuation operations (NEO), peace support missions, enforcement of embargoes and no-fly zones, counter-proliferation measures, and rapid reaction to terrorism. Future forces also must be prepared to support law enforcement agencies to deal effectively with non-military challenges to our national security, such as illegal immigration, illegal drug trafficking, and other international criminal activity. These types of activities will not necessarily be inhibited or stopped through traditional military means; and, while these challenges pose less risk than war, they occur with much greater frequency.

## The Rise of Regional Actors

For the foreseeable future, regional and local actors will continue to pursue increased influence within their areas of interest. These actors include rogue states, states with aspirations of regional hegemony, and new non-state actors with a capability to influence events on a disproportionate scale. While none are projected to have the ability to challenge the United States on a global scale, the availability of weapons and technology on the global market permits potential adversaries the opportunity to challenge U.S. interests on a limited or regional scale.

Each of the world's countries has its own approach to its national defense, but none can match the United States' capability to project power and very few, if any, can confront the United States on equal terms, even close to their own territories. Some, however, can mount a defense designed to discourage the United States from initiating or, once initiated, from continuing operations against their forces and territory. Analysts in the United States have collectively termed these widely differing strategies as "area denial" strategies.

The objective of an area denial strategy is to form the impression that presence in, or entry into, the region would produce unacceptable losses, thereby limiting U.S. involvement and influence. An area denial strategy may employ naval mines, submarines, anti-ship cruise missiles, ballistic missiles or weapons of mass destruction in an attempt to prevent the movement of U.S. forces into or through an area. The objective is not necessarily to destroy U.S. forces but to inflict enough damage to make the political cost of involvement in a region unacceptably high. The increased globalization of the world marketplace puts sophisticated military technology in the hands of any nation or group with sufficient economic means. Ultimately, the success of any foreign area denial strategy relies on U.S. willingness and ability to remain forward to enable the successful transition to conflict and in order to fight and win any contingency.

## Globalization

The interconnection and interdependence of national economies, networks and systems present new challenges in the security environment. This globalization affects every day operations as well as future planning. The global economy permits the widespread proliferation of advanced weapons which has the potential to limit the traditional technological edge of U.S. weapons and sensors. We must also recognize that globalization and the power available from access to the new competitive domain of cyberspace provides a new international medium for non-state, as well as regional actors to advance their agendas by unconventional means.

*"As borders open and the flow of information, technology, money, trade and people across borders increases, the line between domestic and foreign policy continues to blur. We can only preserve our security and well-being at home by being actively involved in the world beyond our borders." National Security Strategy for a New Century*

From terrorism to the proliferation of weapons of mass destruction, potential adversaries will challenge us in innovative and insidious ways by using commerce, information and technology readily available on the global market. The Navy must use cyberspace to gain a

superior knowledge position if we are to act with timeliness and decisiveness despite an adversary's denial efforts. Knowledge superiority combined with forward presence will provide stability and further our national security objectives in an era of globalization.

## **The Naval Environment**

Foreign military forces will acquire more effective and sophisticated sensors, weapons and platforms over the coming two decades through indigenous and cooperative industrial development, technology transfer and outright arms purchases. The force that can best combine surveillance, strike, and support capabilities to secure control of the littoral battlespace and large ocean areas will prevail. Despite the advances in the military capabilities of foreign governments and non-state actors, it will be the intentions of these actors, which will determine whether or not they pose a threat to U.S. naval forces.

The spectrum of challenges to U.S. naval forces will be broad, ranging from information attack operations and pirates in small go-fast boats to fully modernized regional combat fleets of surface combatants, aircraft and submarines. Capabilities will vary from region to region and regime to regime and exist in virtually every theater from East Asia to Western Europe and across the entire spectrum of operations from peacetime presence to combat missions.

Additionally, the potential for U.S. forces to be involved as a third party in a conflict remains high, with several regions of the world where the United States retains vital national interests, such as the Middle East and Korea, being historic areas of unrest. Tensions exist in many other parts of the world on an international, national and sub-national level, and the potential failure of a state, for example, may require U.S. involvement in either support of a government or faction or in dealing with the humanitarian crises resulting from civil war. It is from a posture of forward presence that the Navy will respond to such crises.

In view of the above, there are two likely challenges for which our forces must be prepared: Potential Adversary Capabilities, and Probable Other Areas of Concern.

### **1. Potential Adversary Capabilities**

The Office of Naval Intelligence (ONI) assesses that our potential adversaries will continue to pursue area denial strategies over the next 15 to 20 years. These challenges will primarily be land-based and in the near-coastal regions. Some potential adversaries will expand their denial strategy to include space and cyberspace as well as adjacent sea and air space to provide a defense in depth.

Both the sophistication and the performance of weapons will increase substantially. Platform and weapons survivability will increase through multi-spectral signature control and

advanced countermeasure designs. Increasingly, these weapon systems and platforms will be supported by more sophisticated sensor systems. This requires sophisticated counter-targeting systems and doctrine to enable U.S. and allied forces to defeat such weapons. There will be significant threats to forward presence forces from defensive mine warfare; massed small boat attacks employing man-portable weapons; advanced air, surface and submarine launched cruise missiles; and potential for chemical/biological weaponry. Another area of concern is the availability of advanced air independent propulsion systems for submarines.

Ballistic missiles will remain the primary strike capability for many states. The range and accuracy of available systems are expected to increase due to the proliferation of technology and advances in miniaturization techniques, although the capability to target mobile naval forces will remain low. The greatest threat will be to allied state population centers and fixed infrastructures including both air and surface points of debarkation. Ballistic missiles increasingly will have the potential to carry chemical, biological, and nuclear warheads.

Most states attempting area denial face a number of challenges in effectively executing such a strategy. The most significant shortfalls are: (1) a lack of precision strike capability; (2) a lack of national or regional-level C4ISR capabilities; (3) a lack of credible area air defense systems; (4) limited quantities of modern military equipment; and (5) an inability to sustain most military operations. However, many of the technologies and systems required to overcome these shortfalls are readily available on the international open market. The operational proficiency of potential adversaries must be closely monitored to strategically anticipate risk.

The following areas are of specific interest and must be accounted for when conducting risk analysis. Each potential adversary capability is presented in the following format: Trends; Representative states pursuing; and U.S. Navy implications. Also listed is a forecast of future capabilities (including select friendly and neutral countries).

## **I. Theater Ballistic Missiles (TBM)**

### **A. Trends:**

The TBM threat continues to grow in complexity, and advances are to be expected in multiple warhead technology that will allow for tactical flexibility. This implies both multiple warheads on the same missile and different warhead types available for the same missile system.

- Accuracy will improve due to satellite navigation and/or terminal guidance capability. GPS will allow the user to quickly and accurately determine coordinate positions, thereby reducing targeting and set-up time.
- Warhead survivability will increase due to warhead cross section reduction, decoys and onboard jammers included with the ballistic missile package.

### **B. States Pursuing:**

Among the states pursuing advanced ballistic missile systems are Iran, Iraq, Libya, China, North Korea, Pakistan and India.

### **C. Navy Implications:**

Challenges to battlespace control will increase as TBM/WMD technologies improve and proliferate. While mobile naval forces will remain difficult to target, the greater accuracy of the systems will increase the risk in the future. The greater variety of warheads and the potential for decoys make the defense of allied territory more difficult. This will require a large number of interceptor missiles or improved intelligence to allow for acceptable  $P_k$  on threats. These issues point out the need for greater knowledge superiority in order to inhibit or impede an adversary's courses of action.

## **II. Submarines**

### **A. Trends:**

The challenge of detecting, tracking, and if necessary, destroying nuclear and conventional submarines will increase. The driving factors are improved quieting techniques, better submarine deployed sensors, improved torpedoes, and improved endurance for conventional submarines.

- Improved quieting techniques increase the stealth of submarines. Advances are occurring in pumpjet/propulsor technology, improved outer hull coatings, skewed propellers, and machinery sound isolation mounting.
- Flank and towed array sonars are available for export.
- Improvements noted in torpedo technology include improved counter-counter measures (CCM) that employ advanced logic, multiple influence fuses, and stealth designs; ultra high speed torpedoes on the export market; and advanced seekers capable of improved target discrimination in the littoral environment.
- The evolution and proliferation of air independent propulsion will greatly improve the endurance of conventional submarines. The use of fuel cell technology will allow submerged operation for up to thirty days with an acoustic signature comparable to current battery operations.

## **B. States Pursuing:**

Russia is one of the leaders in developing advanced submarine systems. The Russians use exports to fund future quieting research and development. They are continuing to develop ultra high-speed torpedoes. China and Iran employ advanced conventional submarines and will continue to improve their ability to employ these platforms.

## **C. Navy Implications:**

The reduction in detectability of future submarines and the increased export of the technology impose significant challenges for naval operations in and beyond the littorals. Advances in detection, prosecution and torpedo defenses are required.

### **III. Anti-Ship Cruise Missiles (ASCM)**

#### **A. Trends:**

ASCM design trends indicate a focus on defeating ship air defense systems.

- Expect significant increases in missile terminal velocity from predominantly subsonic speeds now through supersonic speeds in the next ten years to hypersonic by 2020.
- Designers are employing radar and IR signature reduction to reduce missile detectability.
- Complex terminal maneuvers and seekers are being designed to tax point defense systems with improved countermeasure discretion.
- Expect flight profiles to get lower in altitude, making detection and targeting much more difficult.

#### **B. States Pursuing:**

Several suppliers of advanced cruise missiles compete in the world market. Russia, China and North Korea are all suppliers. In addition, several Western states are deeply involved in advanced research and sales of cruise missiles. The missile market is global, and advanced missiles will be available to anyone with hard currency. Assume that many states will have a variety of launch platforms, including manned aircraft, ships, submarines and mobile land based launchers.

#### **C. Navy Implications:**

Naval forces will be exposed to increased missile capabilities over time. To operate effectively in the littorals, active and passive defense systems must be improved. Counter-targeting of launchers may provide the only high probability means of defeating the threat.

At a minimum, ships will require advanced sensors to detect more stealthy missiles, improved stealth characteristics to complicate enemy target selection, effective hardkill and softkill capability and the ability to sustain missile damage and continue to function.

## **IV. Mines**

### **A. Trends:**

Mine warfare continues to provide many potential adversaries a potent and relatively inexpensive tactic for area denial. Significant advances are projected in the following areas:

- Improved explosives and directional warheads to improve lethality.
- Increased stealth through use of advanced materials.
- More complex, multiple influence fusing technology to reduce susceptibility to current countermeasure techniques.
- Layered mine threats from the surf zone to deep water.
- An expansion of both overt and covert employment means.
- Mines designed to attack countermeasure platforms (e.g., helicopters).

### **B. States Pursuing:**

Russia, China and North Korea have extensive mine stockpiles and sophisticated mine tactics. Iran and Iraq have previously employed mine warfare in the Arabian Gulf. Due to the low technology required to employ even very advanced mines, non-state actors may easily use mines.

### **C. Navy Implications:**

Naval forces must be able to either breach or avoid mine fields to execute a littoral strategy. We must think in terms of "counter-mine" vice "mine countermeasures." This will require investment in intelligence and sensor capabilities. Adversary use of mines may lead to significant delays in the execution of U.S. and allied operational plans.

## **V. Surface to Air Missiles**

### **A. Trends:**

Advances in airframes, propulsion, guidance and warheads will increase the lethality of air defense systems both ashore and afloat.

- Improvements in airframes and propulsion will be required to meet the challenge of countering ballistic missiles. These improvements will be

equally effective against air breathing systems.

- Sensor and fusing improvements will improve missile performance against stealthy targets. These improvements will include multi-spectral guidance and search systems.
- These advances will also decrease the effectiveness of current countermeasure systems.

### **B. States Pursuing:**

Russia, China and Iran possess advanced weapons and are actively pursuing air defense technology. Advanced man-portable missiles are expected to proliferate widely.

### **C. Navy Implications:**

Counters to both manned and unmanned aircraft will improve. Battlespace attack with missiles will also be more difficult.

- Manned aircraft will be placed at greater risk due to sophisticated air defense systems.
- The importance of stealth will continue, but Electronic Warfare support will remain critical.

## **VI. Surface Ships**

### **A. Trends:**

Surface warship design trends depict a movement toward modular construction and signature reduction.

- Modular design allows for customer specific variation without significant added cost.
- All new surface combatants for sale on the world market incorporate signature reduction. Signature reductions include not just radar cross section reduction but multi-spectral low observability (IR, visual, magnetic and acoustic).
- Fire control systems are beginning to evolve from radar/electro-optical (EO) to combine radar/EO/IR and laser for AAW and ASUW.
- At the low technology end of the spectrum, the advances in man-portable weapons increase the lethality potential of small boat attacks.

### **B. States Pursuing:**

Major warship procurement is expensive. Russian production has decreased markedly over the past ten years. China is developing indigenous designs, and also is acquiring (at least) two Sovremenny-class destroyers from Russia. Iran has the potential for acquiring advanced Western built warships. Iran is the major small boat operator, but small boats are within the reach of all foreign countries. Advanced weapons may be backfitted into older platforms, but many existing ships are reaching the end of projected service lives.

### **C. Navy Implications:**

Advanced warships will require improved sensors for detection and targeting. While no global peer competitor is projected, the global arms market will make advanced designs available to many foreign actors. The increasing availability of technology will make the individual warship lethal within its weapons envelopes.

## **VII. Identifying Future Capabilities**

There are no states at present that can challenge the maritime capabilities of the United States nor do there appear to be any within the timeframe of this estimate. There is, however, a small number of states that have been hostile to the United States, its policies, and, frequently, its allies -- in some cases, for decades. There is no evidence or reason to believe that the most obvious examples, North Korea, and Iraq, will change their attitudes. Therefore, they will continue to be of significant interest with regard to future naval planning. Moreover, it is clear that other states could easily become hostile and threatening to the U.S. and its interests; Iran's "overnight switch" in 1979 from key U.S. ally to hostile revolutionary state is the most obvious example. Included below are states that are also pursuing area denial capabilities but are not currently in an adversarial relationship with the United States.

### **A. North Korea:**

North Korea is, and likely will remain, at the lower end of the technology scale. The country nonetheless maintains significant coastal defense and monitoring capabilities. Primary area denial tactics would rely on mine warfare and cruise missiles. The major shortcoming is the lack of advanced over-the-horizon sensors that limit defensive measures to visual range. The development of ballistic missile technology capable of attacking U.S. facilities and allies in the region utilizing a sizable chem-bio stockpile affords the North Koreans an avenue for attack. North Korea also has been the source of ballistic missiles and related technology for Iran, Iraq, and Pakistan.

## **B. Iran:**

By virtue of its size and geographic location, Iran will remain a significant player in the Persian Gulf region. Although recent political events in Iran hold the promise of improving relations between Iran and the U.S., no official Iranian "sea change" with respect to U.S. interests and presence in the Gulf region has been seen. Unless and until real movement towards better relations occurs, it is only prudent to continue to accept Iran's publicly stated positions and past actions representing Iran's policies and stance towards the United States. Since one of Iran's most important goals is the eventual elimination of the U.S. presence from what Iran considers its sphere of influence, there are bound to be periods of increased tension, especially with U.S. naval forces that are the centerpiece of U.S. presence in the Gulf. Iran employs a layered defense in support of a stated area denial strategy. The Iranians are actively seeking advanced aircraft, cruise missiles and mines. The continued modernization of their forces increases the risk to opponents. The mix of air, surface and subsurface platforms provides significant ability to control strategic choke points in the Persian Gulf. Iran will continue to improve its capabilities over the coming years. Its geography and natural resources afford it the ability to remain a significant player in the region. It is actively developing ballistic missiles and WMD that will give it an area denial capability and the ability to hold U.S. allies and its neighbors in the region at risk.

## **C. Iraq:**

Iraq suffers from continued isolation and international sanctions. This forces reliance on older systems. The elimination of the Iraqi Navy during the Gulf War limits the capacity for interdiction of naval forces. Iraq continues to attempt to improve its ability for asymmetric attacks, principally with ballistic missiles and WMD. Iraq retains significant conventional ground forces at the low end of the technology scale, and retains the ability to hold its neighbors at risk.

## **D. China:**

Heavy emphasis is being placed on modernizing both naval and air forces. China seeks to develop or purchase effective electronic countermeasures, low observable technologies, laser targeting, satellite navigation technology, improved space surveillance and tracking capability, anti-satellite weapons and advanced surface to air missile systems. Naval forces could expect limited coordinated joint air, surface and subsurface attacks. At present Chinese C4ISR systems are poor to good with limited range, but technology globalization offers the ready ability to improve in this area. Mine warfare offers China a means of area denial. In addition, China is trying to jump several generations ahead in technology by purchasing submarines, surface ships, and cruise missiles. It is actively seeking system improvements across the weapons spectrum, including the continued development of its ballistic missiles and their nuclear capability.

### **E. Russia:**

Russia continues to use arms and exports as a major source of hard currency. Military readiness and modernization has suffered greatly due to economic difficulties, but Russia retains strategic and tactical capabilities, including an extensive NBC arsenal. In terms of area denial capabilities, Russia maintains submarine, mine and cruise missile inventories. It is continuing to invest in research and development of sensors and weapons. This research is often funded by foreign military sales.

## **2. Probable Other Areas of Concern**

As previously noted, naval forces can expect to be involved in a multitude of missions at the lower end of the violence continuum. The Navy must retain the capability to act in support of maritime interdiction operations, humanitarian support, terrorist reaction, and peace-support missions. These missions are much more likely than regional -- or even local -- war and will require focused capabilities. Of emerging interest are non-lethal force capabilities.

Military objectives in these types of actions are often less clear than during war. The objective is often not the destruction of an enemy force, but humanitarian action. This requires tools to conduct relief operations and limited force demonstrations. Examples of such actions include hurricane relief operations in the Caribbean basin, maritime interception operations in support of United Nations sanctions, and peacekeeping operations in numerous hot spots throughout the world. These operations remain dependent on both forward presence and knowledge superiority. Naval forces on watch throughout the world are poised to take prompt action in support of unplanned situations.

Of particular note, many of these situations require immediate response with very limited planning. The ability to gather and disseminate information on a daily basis during peacetime provides a background to conduct contingency operations in a crisis. Short or no-notice tasking in response to either natural disasters or terrorist attack remains highly likely for forward-deployed naval forces. The response required ranges from providing basic life sustaining aid to precision military strikes.

At an increased level of violence, it is reasonable to assume that sustained low level tactical responses may be required to enforce U.S. policies. The continued pace of naval operations following the Gulf War stands as a case in point. There has been a repeated need to swing naval forces between theaters to support military action in order to contain a foreign actor with extra-territorial aspirations. The risk is not just war on a theater scale, but isolated situations of military violence. The requirement for knowledge superiority is just as great in these circumstances. Naval forces must remain capable of preempting hostile actions.

Significant proliferation of high technology weapons continues. The same weapons that threaten U.S. forces during major theater wars will threaten them during smaller scale contingencies. The technology proliferation factor must be considered in all military planning. The risks to U.S. forces posed by this trend will continue to grow as the technology improves and becomes more affordable and accessible through globalization.

Any of the technologies discussed in the threat section are available to any nations or groups with sufficient means to purchase them. Therefore, the most benign operations may imply significant military risk from either state-controlled formal military groups or other non-state actors with technologically advanced munitions. The capabilities and operational employment likely to be encountered include, but are not limited to:

- Massed small boat attacks, armed with a wide variety of man-portable weapons including RPG's, shoulder-launched missiles and automatic rifles
- Small-scale mining of strategic sea-lanes and straits
- Unalerted, single-salvo cruise missile attacks on naval and merchant shipping
- Short-range ballistic missile attacks upon civilian population centers or strategic military installations
- Terrorist actions against U.S. or allied installations and personnel

In view of the above, the following are presence missions in which our naval forces must be postured appropriately to handle both the high-end and the lower-level, yet still lethal, capabilities:

- Ready Duty Strike
- Noncombatant Evacuation Operations
- Maritime Interception Operations
- No-Fly Zone Enforcement
- Migrant Interdiction -- to include humanitarian operations, security operations and potential hostile force interdiction
- Strategic Sealift/Pre-positioned Force Escort
- Engagement/Exercise
- Area Defense
- C4ISR and IPB

Another emerging concern is asymmetric warfare -- attempts to circumvent or undermine U.S. strength while exploiting U.S. weaknesses using methods that differ significantly from the expected method of operations. Asymmetric approaches often employ innovative, nontraditional tactics, weapons, or technologies, and can be applied at all levels of warfare -- strategic,

operational, and tactical and across the spectrum of military operations. Asymmetric warfare may range from weapons of mass destruction use to guerrilla warfare, but it is almost always intended to be unanticipated or difficult to counter by the stronger opponent. It is clear that the imperative for future opponents to employ asymmetric counters against technologically superior U.S. armed forces is becoming greater. Furthermore, advances in technology and proliferation of certain means of warfare, such as information warfare, will generate new types and combinations of asymmetric threats to the United States.

Asymmetric warfare is not limited to nation-states; sub-national and transnational groups will also use asymmetric means as the only form of military action available to influence and attack the U.S. or any other nation. Opponents engaging in asymmetric warfare will probably not limit their attacks to our deployed and deploying forces. Asymmetric measures may be taken across the spectrum of military operations and in virtually all crisis and conflict scenarios in which U.S. naval forces could become involved. These measures may be taken to prevent or delay U.S. deployment into a region, limit U.S. ability to form an effective coalition and obtain and sustain basing support, and degrade U.S. military effectiveness -- especially limiting U.S. application of technology -- before and during combat. As a result, we must analyze the evidence of potential opponents' capabilities and intentions to direct asymmetric attacks at U.S. logistical and staging nodes, neighboring countries, actual and potential U.S. coalition partners, and the U.S. homeland, including our national infrastructure. The ultimate goals of such asymmetric warfare actions will be to raise the risks and costs of U.S. action such that an opponent would hope we would elect not to intervene militarily in a situation; or once intervention has begun, to compel disengagement because of unacceptable costs.

The spectrum of asymmetric options available to potential opponents is broad and will likely grow over the next two decades. Potential forms of asymmetric warfare that are the objects of ongoing, dedicated intelligence community (including ONI) analysis include: information operations, use of weapons of mass destruction (nuclear, chemical, and biological), use of unconventional forces and state-sponsored terrorism, environmental sabotage, denial and deception, guerrilla warfare tactics and prolonged insurgency, inflicting and accepting mass casualties, use of urban terrain, and mine warfare.

These military measures will often be combined with political actions to achieve desired results. Future opponents will probably select asymmetric measures based on available capability and means on hand, observation and analysis of our capabilities and vulnerabilities, cultural incongruities, and desired effects. Some countries may elect to obtain an asymmetrical capability by concentrating available resources on the development of specific technologies to counter U.S. advantages in weaponry, communications and intelligence. While no country is expected to have achieved the ability to counter the United States across the entire range of technological capabilities by 2015, "niche competitors" are likely.

In the context of future conflict environments, asymmetric warfare can be a means through which an opponent, by combining advanced technologies with unexpected, non-linear operational concepts can render our preferred strategy militarily or politically untenable. Given the present and growing reliance of U.S. forces on global distributed information networks, coupled with the increasing proliferation of information technologies, one prominent asymmetric threat against which the Navy must plan is Information Operations (IO).

IO refers to efforts to disrupt or manipulate the flow of information across distributed networks as well as efforts aimed at preventing an opponent from disrupting or manipulating one's own flow of information. These efforts aim to deny the commander the use of his information processing systems, to drive the adversary to use more exploitable media, or to shape the adversary's understanding of the battlefield. IO subsumes traditional counter-C2 warfare within a broader information campaign. IO tactics include:

- Trusted insiders who destroy the system from within
- Sabotaging equipment during the manufacture, transport, storage, repair, and installation of updates
- Network penetration and compromise
- Electronic and/or physical attack
- Denial of service attacks
- Denial/spoofing/jamming of sensors
- Manipulation of trusted information sources in order to condition/control the adversary's thinking

The ultimate goal of IO is information dominance, defined as a superior understanding of an adversary's strengths, weaknesses, intentions, and locations, while denying the adversary similar information on friendly assets. The side with information dominance is best able to enjoy battlespace dominance over his opponent. Effective IO is a powerful force multiplier. Perfectly effective IO may even enable the commander to usurp the opponent's understanding of battlefield reality.

An adversary may conduct IO either as an alternative to a costly conventional engagement with a superior U.S. force or as a complement to conventional operations. IO does not necessarily require high-technology or strictly military systems to disrupt or deny our information systems, corrupt key data, or alter our perceptions of a situation.

Increasingly, as the U.S. naval advantage turns on the superior information processing capability of U.S. forces, potential adversaries will develop the knowledge and the capabilities to attempt IO attacks against us. Virtually any state, group -- even friendly or neutral -- can use IO to attack other nations. Four countries -- Russia, China, India, and Cuba -- currently have an acknowledged IO policy and a rapidly developing IO capability. Rogue states, such as North

Korea, Iran, Iraq, Libya, and Syria have some IO capability and may covertly employ it at any time that suits their needs. Many other nations, including France, Japan, and Germany, are players in IO and are also potential proliferators of IO capabilities to other states.

Knowledge superiority and credible combat capability remain vital to the success of the Navy's forward presence mission due to the short notice responses and limited planning timelines demanded of our forces during the course of routine operations. The Navy must therefore be prepared to address the challenges from both the dangers presented by traditional military operations as well as from anti-access and asymmetric capabilities.

## SECTION III: THE MARITIME CONCEPT

For more than 200 years, the United States has depended on the Naval Service -- *the Navy and Marine Corps Team* -- to promote peace and stability and to defeat adversaries when necessary. The current *National Security Strategy* outlines a broad approach to enhance America's security, bolster prosperity, and promote democracy through active engagement abroad in partnership with allies and friends. The *National Military Strategy* supports these goals and describes the application of military power to help shape the international environment and respond to dangers, while preparing for an uncertain future. Naval forces are uniquely suited to support these strategies by remaining forward in peacetime, ready to provide timely initial crisis response, and, when called upon, to fight and win -- *anytime, anywhere*.

While the traditional objectives of the United States and its military remain largely unchanged, we are compelled to constantly reassess the methods by which they are achieved. The Navy-Marine Corps vision ...***From the Sea*** steered us from blue water into the littorals where most of the world's population resides and where most conflicts occur. The strategic concept ***Forward...From the Sea*** refined this course by articulating the naval contributions to national security made by expeditionary forces present forward and credibly shaped for combat during peacetime, crisis, and war.

The maritime concept presented here builds upon the landward focus of those documents and, more specifically, describes the organizing principles, operational concepts, and priorities by which future naval forces will exploit new opportunities and capabilities to assure U.S. access and influence forward in the Information Age, despite an adversary's efforts to preclude our presence. By maintaining a robust and scalable forward presence, and with superior knowledge of the battlespace, the Naval Service will continue to achieve its ultimate objective: projecting U.S. power and influence from the sea to directly and decisively influence events ashore throughout the spectrum of operations.

The vast majority of America's global trade will continue to move by sea, and freedom of the seas remains the enduring responsibility of the Naval Service. However, the ultimate objective of our nation's overall maritime strategy has always been to impact political, military, and economic interests ashore -- where U.S. interests predominantly lie. Until recently, the Naval Service could only pursue this strategy indirectly by first winning or denying command of the seas; naval forces were therefore only available to directly affect a land campaign on a sequential, or secondary, basis. But the Navy-Marine Corps contribution to national security has broadened since the end of the Cold War. Operations during the past decade -- from humanitarian and evacuation missions to contingency responses against both coastal and landlocked countries -- affirm that the Naval Service is steering the proper course by emphasizing the ability to influence, directly and decisively, events ashore...from the sea. We must also recognize that assuring naval access forward will remain a prerequisite for continuing this strategic heading landward in the future.

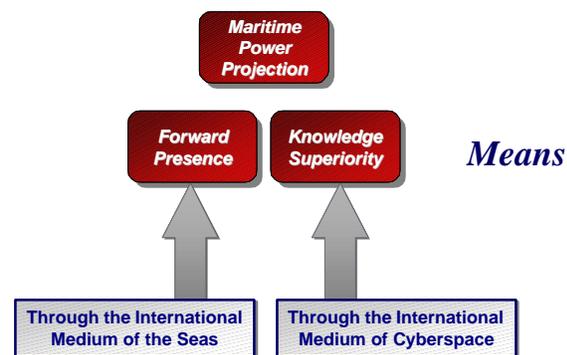
### The Strategic Imperative

No nation will match the United States globally in the foreseeable future, but some regional actors will seek to exercise influence that competes with U.S. interests in their respective corners of the world. Pursuing economic, political, and military policies designed to raise the cost of U.S. engagement, they will seek to diminish the stature and cohesion of regional partnerships with the United States. These regional actors will value their militaries to the extent that they are perceived to affect America's willingness or ability to remain engaged on behalf of friends and allies. Our unrivaled ability to dominate the world's oceans and operate in forward areas dissuades the global ambitions of regional powers, affording us the opportunity to focus upon defeating the conventional, asymmetric, and anti-access capabilities they are likely to field. By remaining forward, combat-credible naval expeditionary forces guarantee that the landward reach of U.S. influence is present to favorably shape the international environment. Through the international medium of the seas, forward naval forces -- ready to respond to any contingency -- promote regional stability, reassure allies, and check the competing influence of regional actors.

Freedom of the seas will always be a requirement for our maritime nation, but the information age has revealed a second international medium -- *cyberspace* -- equally critical to the global interchange. The globalization of markets, networks, and systems inextricably links U.S. economic and security interests.

This trend also accelerates the proliferation of information and technology, providing state and non-state actors both conventional and unconventional means to advance their agendas. The rapid exchange of information has, in fact, become so much a part of our day-to-day operations and so critical to our success that cyberspace must be viewed as a new element of the battlespace. We must, therefore, exploit our own access to

cyberspace to provide naval, joint, and combined forces a superior knowledge position relative to our opponents, from which to act with timeliness and decisiveness. Combat-credible forward presence through the seas and *knowledge superiority* via cyberspace will, together, provide the means for effective maritime power projection.



## Maritime Power Projection -- Shaping and Responding

Projecting U.S. power and influence from the sea is the heart of the Navy and Marine Corps' contribution to national security. The unrivaled strategic agility and operational flexibility of forward-deployed naval expeditionary forces provide the United States extraordinary reach and access overseas. Sea-based, self-contained, and self-sustaining naval forces are relatively unconstrained by regional infrastructure requirements and uniquely suited to exploit the access afforded by the seas to respond to the full spectrum of contingencies. Our inherent versatility allows us to seamlessly expand the size and capability of forces to match a broad range of missions and situations. At one end of the spectrum, naval forces are engaged daily around the globe to project U.S. influence and favorably shape the security environment. These same forces are available at a moment's notice for humanitarian assistance, disaster relief,

or crisis response. At the other end of the spectrum, on-station naval expeditionary forces can provide timely and powerful sea-based response through the full range of amphibious and precision strike operations. These forces also enable the unimpeded flow and sustainment of follow-on naval, joint, and combined forces in both small-scale contingencies and major theater war. Naval forces also provide the most cost-effective and survivable component of America's strategic nuclear deterrence triad. Ultimately, naval expeditionary forces, capable of direct and decisive influence through maritime power projection, are the nation's essential first responders and shape the early phases of hostilities to set the conditions for victory.

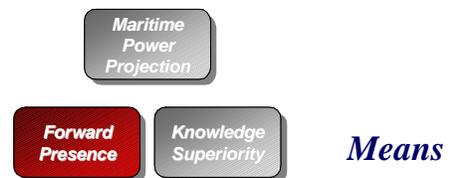
## Our Means

Together, the *means* of forward presence and knowledge superiority enable maritime power. Acting through the international media of the seas and cyberspace, naval forces assure access and project both power and influence in peacetime, crisis, and war.

## Forward Presence

*Forward Presence is being physically present with combat credible forces to Deter Aggression, Enhance Regional Stability, Protect and Promote U.S. interests, Improve Interoperability, and provide Timely Initial Crisis Response where our national interests dictate.*

The foundation of maritime power projection is our ability to go where America wants us to go. Naval expeditionary forces that are present forward -- where our economic, political, and military interests are most concentrated -- provide a security framework that helps to permit the other instruments of national power to build stability and favorably shape regions of interest. Our engagement with potential coalition naval, air, and ground forces enhances interoperability and helps to develop critical partnerships. In cooperation with these friends and allies, forward forces also discourage challenges to shared interests. The powerful presence of a Navy-Marine Corps team deters aggression on the part of would-be adversaries; and when deterrence fails, these on-scene forces provide both a unique understanding of an emerging crisis and the means for timely response. Should combat operations by joint and coalition forces be required to resolve conflict, the early, sustained response of naval expeditionary forces will have shaped the battlespace to the advantage of U.S. and allied forces.



Combat-credible forward presence is an enduring contribution of naval expeditionary forces. But structuring the Naval Service to continue this contribution in the future means exploiting new opportunities made possible by technology and addressing the anti-access

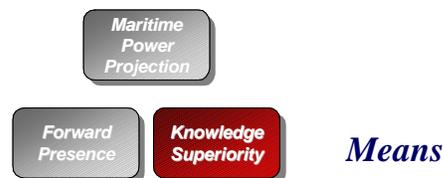
strategies and asymmetric approaches that adversaries may seek to counter U.S. access and influence. Sea control will remain the cardinal prerequisite that guarantees access forward for naval forces as well as for our sister Services that increasingly rely both on movement of assets by the sea and their pre-positioning on the sea. To ensure America's continued maritime dominance, the Navy and Marine Corps must remain forward in peacetime -- both overtly and covertly -- routinely collecting intelligence and gaining valuable knowledge of the operating areas where they will most likely be called to respond during crisis or conflict. Further, network-centric operations among these geographically dispersed, forward forces will serve as the "bridge" that transforms today's Naval Service into the knowledge-superior Naval Service of the future. A shared knowledge of the battlespace and the ability to synchronize our actions, along with new defensive capabilities, will allow naval forces to remain forward with assured access. Now and in the future, command of the seas must be complemented by an improved speed of command via cyberspace.

## Knowledge Superiority

*Knowledge Superiority is the ability to achieve a real-time, shared understanding of the battlespace at all levels through a network which provides the rapid accumulation of all information that is needed -- and the dissemination of that information to the commander as the knowledge needed -- to make a timely and informed decision inside any potential adversary's sensor and engagement timeline. In peacetime, this provides the assured knowledge to be an appropriate instrument for shaping events in the region. During a crisis, this knowledge superiority ensures a confident and timely response by in-theater forces.*

Knowledge superiority will allow us to know what is occurring and to act quickly; it is the second means that underpins the projection of maritime power. Through our access to cyberspace, naval forces will achieve an unprecedented awareness of the battlespace.

Information, however, will not improve understanding unless it provides commanders the real-time knowledge required to make timely and informed decisions. And improvements in networking and communications technology, matched by agile and adaptive organizations, will dramatically accelerate the operations of dispersed and maneuvering naval forces. Knowledge superiority will also provide us a better understanding of adversaries' decision-making and engagement timelines. Further, it will provide naval forces the speed of command to operate faster than those adversaries -- inside their decision timelines. Ultimately, networked operations will improve our operational tempo and provide the knowledge to maneuver or produce effects that "lock out" an opponent's intended actions and defeat his overall strategy. In short, combat credibility in the information age will depend as much on speed of command as on weapon or platform. No foe, present or future, will match our knowledge -- or our ability to apply it.



U.S. Armed Forces, as well as interagency and coalition partners, will benefit from a regional knowledge base that is built and enhanced by day-to-day naval presence, familiarity with forward operating environments, and foreign-area expertise. During peacetime, knowledge superiority will enable naval forces to act as effective instruments for shaping the international environment. During a crisis or conflict, it will mitigate “fog” and “friction” and permit a confident, timely response by in-theater forces. Further, interoperable communications networks will allow all elements of U.S. foreign policy to “plug-and-play” in this regional knowledge base upon their arrival in theater.

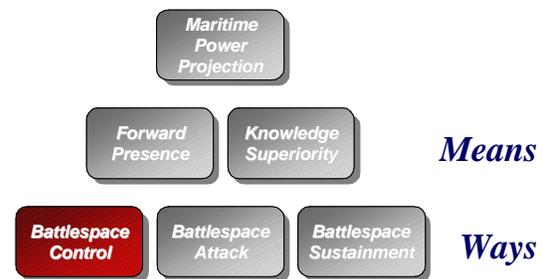
Just as forward presence has become a way of life for the Navy and Marine Corps, so too will knowledge superiority become a part of our naval character. The ability to master this new domain in warfare -- cyberspace -- must become a core competency across all warfare specialties. Forward presence and knowledge superiority are, in fact, like two sides of the same coin. By routinely operating forward, naval forces gain knowledge of the environment where they will be called to act during crisis or conflict. This superior knowledge and the resultant ability to operate inside an adversary’s decision and engagement timeline will then contribute, in large measure, to the ability of naval forces to remain forward. Ultimately, these two means will provide the Naval Service both the capability and capacity to assure U.S. access and to project power in the Information Age.

## Our Ways

The *ways* we use the *means* can be described through the three components of maritime combat power: battlespace control, battlespace attack, and battlespace sustainment. These components underwrite the conduct of naval expeditionary operations at sea, in the littorals, and beyond. The battlespace -- determined by our dispersed, networked forces and their organic and joint sensor and weapon reach -- is the only appropriate dimension in which to consider the boundaries of our operations. Naval expeditionary forces must be able to control, attack, and sustain seamlessly across all elements of the battlespace, transitioning smoothly from peacetime presence to crisis response or large-scale warfighting and forcible-entry operations as the situation warrants.

## Battlespace Control

Battlespace control encompasses the range of actions required to assure our access and shape the battlespace for naval, joint, and combined forces. Our enduring mission of sea control remains both a cardinal prerequisite for, and a unique naval contribution to, joint warfighting; it is essential to assuring the flow of follow-on forces into a theater. However, it is no longer sufficient to think only in terms of sea or area control. Future naval forces will be challenged by anti-access capabilities such as land-based cruise missiles, space-based satellite targeting, and information operations. Naval forces must therefore control the entire battlespace -- sea, air, land, space, and cyberspace -- in order to defend against, defeat, deny or negate these capabilities. Forward naval forces will also project defensive power over land to protect U.S. and allied forces and their homelands with sea-based theater air and missile defense. Long-range, responsive and accurate reconnaissance, surveillance and target acquisition; strike operations; and the range of actions required to protect our forces will enable simultaneous offensive operations. Battlespace control is therefore more than efforts to assure

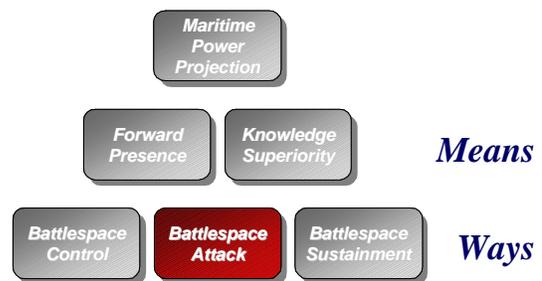


access in order to place follow-on forces and power ashore; it permits naval forces to simultaneously produce decisive effects -- both offensively and defensively.

Ultimately, countering an adversary's anti-access capabilities will have an overwhelming impact on his overall warfighting strategy because the heart of his investment -- these anti-access capabilities -- will have been defeated. In the final analysis, our battlespace control capabilities may foreclose the attractiveness of an adversary's investing in or employing anti-access capabilities as that adversary recognizes the ability of naval forces to credibly operate forward and project power despite his area-denial efforts. Together, command of the seas and speed of command will provide the freedom of action necessary to control the battlespace and assure access for the naval, joint, combined, and interagency team.

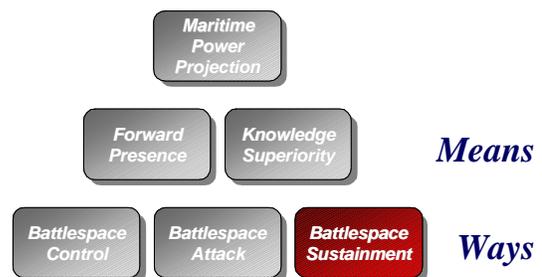
## Battlespace Attack

Concurrent with battlespace control, attack operations such as precision strike and ship-to-objective maneuver exploit the advantages of maneuver and firepower from the sea. The speed of employment afforded by networked forces forward is invaluable when speed of deployment from the United States -- and the loss of surprise -- is a disadvantage. But the unprecedented reach, volume, and precision of our weapons and sensors, along with the flexibility described in *Operational Maneuver from the Sea*, allow us to project power deep inland. Improving and connecting our sensor, information, and targeting systems -- including focusing on the real-time location of an adversary's mobile and time-critical targets -- will accelerate the operational tempo at which attacks can be delivered for decisive effects. The ability to apply these effects inside an adversary's decision timeline, with a knowledge and understanding of their impacts, permits effects-based planning to disrupt his operational design. Concurrent offensive and defensive operations -- attack and control -- will also enable joint and combined battlespace attack by making follow-on forces more immediately available for offensive operations as they enter a battlespace where naval forces have already asserted control. In the end, the battlespace attack capability afforded by forward presence and knowledge superiority will deter would-be aggressors in peacetime, and permit the decisive application of combat power in crisis or conflict.



## Battlespace Sustainment

Mobile, dispersed forces require an equally agile and tailored logistics system to support their dynamic operations. Logistics from the sea that are focused to arrive where and when needed, without a large footprint requiring significant protection, will support sustained maneuver in an expanded



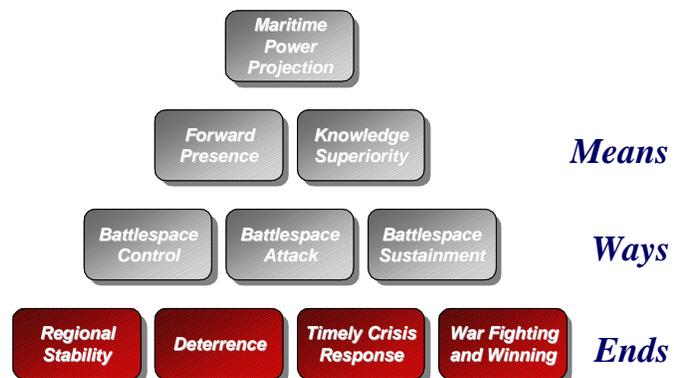
battlespace. Netted logistics that include pre-positioning, strategic sealift, and airlift are key to sustaining future joint and coalition forces. Moreover, maneuvering sea-based forces will permit commanders to conduct fully integrated joint command and control, surveillance, targeting, logistics and re-supply.

Configured to the mission, sea-based logistics and joint command and control will support maneuver forces across the battlespace -- from replenishing and refueling forces at sea to delivering tailored seaborne logistics that sustain operations on land. In the future, both conventional and asymmetric threats will require ground forces to become less dependent on vulnerable fixed bases or stockpiles ashore. Force sustainment through sea-based logistics will reduce the threat of an attack on key logistics nodes and the requirement for dedicated forces to protect shore-based logistics concentrations.

In the end, the joint team will depend upon the ability of forward naval forces to provide sustainment from the sea and protection of the entire logistics pipeline at sea for as long as U.S. interests require.

## Our Ends

The Navy and Marine Corps support America's security objectives by promoting regional stability, deterring aggression, providing timely crisis response, and defeating the enemy -- *anytime, anywhere*. In the future, regional disturbances will have a more immediate and disproportionate effect on the global community and U.S. national interests. Expeditionary naval forces, present forward with sustainable combat power, help shape the regional security environment. As sovereign and maneuverable bases, they can be uniquely positioned to project influence and reassure allies and friends.



The credible presence of both conventional and nuclear naval forces is an effective deterrent that convincingly demonstrates aggression will not succeed. Translating national strategic interests into military objectives and tasks allows us to effectively size and configure future forces with the correct capabilities and capacity for deterrence. As a result, defining the forces required forward to support regional security interests and deter a prospective opponent need not be guesswork.

Forces rotationally deployed and permanently stationed for peacetime presence are also the forces most likely to be called upon by theater and joint force commanders to respond rapidly during an emerging crisis. Naval expeditionary forces can provide a powerful and timely crisis response from forward positions, free of the political encumbrances that can limit the access of land-based forces.

The most important contribution of naval forces is their ability to prevent wars -- but like all elements of a military arsenal, they are built to fight and win them. The unique contribution of the Naval Service comes as enabling forces during the critical transition from crisis to conflict. Combat-credible naval expeditionary forces forward, configured to handle the spectrum of contingencies and prepared to operate jointly or with interagency and coalition partners, are key to this enabling role.

## **Operational Concepts**

Two complementary capstone operational concepts will chart our course to the future. *Naval Operations in the Information Age* outlines our transition from platform-centric to network-centric warfare and *Operational Maneuver from the Sea* underwrites the conduct of naval expeditionary operations in the littorals by combining the proven principles of maneuver warfare and maritime power projection. Together, *Naval Operations in the Information Age* and *Operational Maneuver from the Sea* capitalize on technology and improvements in mobility, weaponry, sustainment, and command and control, as well as doctrine and organization. These concepts will guide our efforts to dominate the entire battlespace across the full operational continuum and to seamlessly project power ashore to attain critical campaign objectives. Each is tailored to the unique challenges of naval expeditionary operations and consistent with the concepts outlined in *Joint Vision 2010*: Dominant Maneuver, Precision Engagement, Full-Dimensional Protection, and Focused Logistics.

## **Our Priorities -- Preparing Now**

The paramount objective of the Navy and Marine Corps will remain the projection of American power and influence -- *anytime, anywhere*. But taking the proper "lead angle" on the future requires balancing the Naval Service in terms of both capabilities and force levels. It also demands a steadfast commitment to innovation and experimentation. Our priorities for meeting the challenges and exploiting the opportunities of the information age are described below.

## **Keeping Faith with Our People**

People will always be our top priority. The recruiting, training, and retention of quality men and women is key to the Naval Service's continued success. The consistent lesson of naval operations is that their outcomes often hinge on the actions of even our most junior personnel. To prevail in the complex battlespace of the future, tomorrow's Sailors and Marines will require the training, experience, and strength of character to make sound and timely decisions. We must, therefore, ensure that our people are proficient in the use of increasingly sophisticated weapons, sensors, and information systems and have an understanding of the entire battlespace. Regional, joint, combined, and interagency experts must be cultivated. We must also harness the leadership ability and dedication to excellence resident in all our personnel and develop in each

Sailor and Marine a lifelong commitment to education and innovation. Our recruiting efforts must extend to all segments of the population to ensure that we represent the nation's rich diversity. Finally, we must act to improve the quality of life of the entire Navy-Marine Corps team -- Sailors, Marines, civilians, and their families.

## **Influence Ashore**

The unprecedented reach and accuracy of our sensors and weapons provide the Naval Service the ability to influence events far inland -- in both peace and war. In the future, that capability will be improved through the refinement of precision strike capabilities, naval fires, ship-to-objective maneuver, sustained land operations, operations other than war, and special operations. Enhancing our maritime prepositioning force; developing effective doctrine, organization, training, and equipment for military operations on urban terrain, counter-terrorism, and counter-proliferation operations; and building close working relationships with other governmental and non-governmental security actors are also priorities. Person-to-person interactions in vital areas of the world are equally important. And finally, our ability to enable the flow and sustainment of follow-on joint and combined forces will be strengthened.

## **Sensors and Networks**

Today's naval forces have impressive striking power, but it must be enhanced by improvements in information technology and agile, adaptive command organizations in order to operate within an adversary's sensor and engagement timeline. Network-centric operations will link shooters, sensors, and commanders and will permit effects-based planning in order to provide the knowledge required to attack rapidly an adversary's critical vulnerabilities, avoid strengths, and destroy centers of gravity. Sensors under the tactical control of commanders and networked systems for real-time shared awareness are priorities for improving our exploitation of cyberspace, synchronization, and overall combat-effectiveness.

## **Numbers Count**

The conspicuous forward presence of combat-credible naval forces is a visible and compelling deterrent, and a symbol of American power and influence. As we build the future force, we must remember that numbers for presence are not a lesser-included case of regional contingencies; sufficient platforms and personnel are required to maintain a presence wherever we require access and influence. Sufficient numbers of platforms permit naval forces to shape regions of U.S. interest and ensure they can be positioned for timely crisis response. Manpower levels are also critical and must support the demands of both routine deployments and contingency responses. Insufficient numbers entail strategic risk as well as excessive personnel and operational tempos. Clearly, numbers of platforms and naval forces matter.

## **Assured Access**

Sea control is a unique naval contribution to joint warfighting, and it is fundamental for projecting U.S. power and influence overseas. But the battlespace has expanded and now includes -- alongside the traditional dimensions of air, land, and sea -- space and cyberspace. In the future, naval forces will be challenged by anti-access strategies built upon varied asymmetric and conventional threats and weapons. In order to assure U.S. access forward, naval forces will be required to counter a host of threats: sea and land mines, cruise missiles, submarines, chemical and biological weapons, space-based sensors, and information warfare. Maintaining our ability to assure access and project power in light of these threats will be increasingly vital and remains one of our most important priorities.

## **Projecting Defense**

Naval forces must be capable of projecting both offensive and defensive power ashore to protect American forces, those of our allies, and their homelands. Control of the multi-dimensional battlespace will hinge on our ability to project a defensive umbrella landward. This umbrella will be built largely on our emerging air and missile defense capabilities. Projecting defense ashore will enable *Operational Maneuver from the Sea*, and it will be critical for setting the conditions necessary to protect the flow of follow-on forces into a theater. Moreover, this unique capability will make arriving joint and coalition forces more immediately available for offensive operations. Our priorities in this area include the development of capable sensors and networks and credible theater ballistic missile defense.

## **Sea-based Logistics**

Efficient sea-based command, control, and logistics will be crucial to naval and joint warfighting as well as the realization of emerging operational concepts. Robust Maritime Pre-positioning Forces and strategic lift capabilities will be key to the projection and sustainment of combat power. Advanced work practices, borrowed from the ongoing revolution in business affairs, will also improve the overall efficiency of sustainment operations and permit the development of near real-time, in-transit supply and underway replenishment tracking.

## **Force Protection**

Asymmetric and conventional threats will make protection of naval, joint, and combined forces increasingly challenging. Improving our ability to protect air and sea ports of debarkation, intermediate staging bases, strategic “hub” ports, other assets, and personnel throughout all dimensions of the battlespace is a high priority. Enhancing our capabilities to counter terrorism, to respond to chemical or biological attack and operate in a chemical or biological environment, and to treat and process mass casualties is essential. The extension of a missile defense umbrella, effective counter-mine capabilities, and the ability to locate and negate or destroy key enemy weapon systems are also fundamental to our efforts to achieve full-dimensional

protection.

## **Homeland Defense**

By remaining forward, naval forces are positioned to address threats as far from the United States as possible. However, some of the dangers that characterize the international security environment will undoubtedly reach America's shores. The precise nature of our involvement in homeland defense and coastal security is evolving, but we must be prepared to support civil authorities in the areas of civil disturbance, disaster relief, migrant and refugee control, counter-terrorism, and counter-drug operations if called to do so. Our role in consequence management, as exemplified by our Chemical/Biological Incident Response Force, will also likely expand.

## **Conclusion**

The Naval Service exists to project U.S. power and influence from the sea throughout the spectrum of operations in peacetime, crisis, and war. Forward presence and knowledge superiority are the *means* that will guarantee both the capability and the capacity of naval forces to influence, directly and decisively, events ashore. Concurrent battlespace control, attack, and sustainment are the *ways* we will assure the United States global access in the information age. Ultimately, the combat credibility of naval forces will guarantee the achievement of our *ends*: regional stability, deterrence, timely crisis response, and when called upon, warfighting and winning.

In almost every instance, future challenges to our national security will originate forward. Having achieved its naval prerequisite -- command of the seas -- the Naval Service is afforded an unprecedented opportunity to expand our contribution to national security by focusing landward. No matter where or when the challenge arises, naval expeditionary forces will be there, as they have always been, with credible combat power from the earliest stages of a crisis or conflict through the return to peace and stability. In short, an increasingly capable Navy and Marine Corps team will remain on station, protecting and promoting U.S. interests with forces for presence that are shaped for combat.

## SECTION IV: THE PROCESS

A primary objective of the planning process is to develop a thorough understanding of how naval forces contribute to the nation's joint force capabilities, and then to ensure this contribution is translated into operational capability requirements that guide programmatic decisions. The planning process has four essential phases that must be understood at all levels of the organization to achieve the above objective: (1) The development and continuous refinement of a strategic concept; (2) the operationalizing of the concept into warfighting concepts and capabilities; (3) the establishment of a set of prioritized strategic planning objectives that will achieve the operational concepts and capture the strategic direction of the organization; and, finally, (4) the assessment of those capability requirements translated into programmatic recommendations.

The maritime concept described in Section III establishes the organizing principles for new concepts and capabilities required for enhancing and transforming the Navy in the 21<sup>st</sup> Century. This concept also provides the strategic framework from which the OPNAV planning process evolves. The next step is to clearly define the overarching Operational Concepts that are derived directly from the maritime concept that will shape the employment of our forces. These concepts provide the structure to identify and prioritize a set of Long-Range Planning Objectives (LRPOs) that define specific capability requirements directly linked to the maritime concept. The LRPOs (contained in Section V) are structured under the "means" of Forward Presence and Knowledge Superiority, as well as the "ways" of Battlespace Control, Attack and Sustainment. The Integrated Warfare Architecture process captures these prioritized capabilities in end-to-end analyses and provides balanced programmatic recommendations in the CNO Program Analysis Memorandum (CPAM) allowing the resource sponsors to develop balanced programs that fully support the maritime concept. This strategy-based process forms the foundation of OPNAV PPBS planning for the 21st century.

The catalyst for the strategy-based process described above is the Navy Strategic Planning Guidance (NSPG). The NSPG provides the Fleet and OPNAV staff a vehicle that guides the planning phase. The NSPG is designed to impact strategic planning and assessments through the IWAR and QDR 2001 process. Structured under the "means" and "ways" of the maritime concept we have defined the Operational Concepts and prioritized specific long-range capability planning objectives. The combination of concepts and capabilities provide the initial focus for the IWAR "road maps." Additionally, this year we need to think about how the Navy can leverage the ongoing assessments of the IWARs to support the identified themes of the QDR. To provide a fuller understanding of the steps of the planning process, the following paragraphs identify the methodology behind the development of the Operational Concepts, the Long Range Planning Objectives associated with them, a description of the individual IWARs, and, finally; a look ahead at the QDR process identifying current and planned actions and issues that will best position the Navy for the QDR.

## **I. Operational Concepts**

If the United States is to remain the world's leading Naval power, it is imperative that we maintain our edge over our potential adversaries, now and in the future, through innovation and the application of emerging technologies and ideas. Over the past year, emerging concepts have been further developed by various naval organizations, including: in particular, the Concepts Branch and Maritime Battle Center of the Naval Warfare Development Center, the CNO's Strategic Studies Group, and professional naval writings. The methodology for refining current operational concepts and the development of future ones relies to a large extent on our ability to determine and understand the strategies being pursued by potential adversaries. The operational concepts presented (in section V) will build upon current operating modes and expand them into the 21<sup>st</sup> Century.

The maritime concept outlines how our Navy intends to operate in broad terms to meet the objectives of the National Security Strategy and the National Military Strategy. In order to best determine what capabilities our naval forces require to accomplish these strategies, specific operational concepts have been applied to each of the "means" and "ways" of the maritime concept. These operational concepts will, in effect, "operationalize the strategy" and are grounded in the real world application of naval assets to meet our mission. As such, the operational concepts described for the "means" of Forward Presence and Knowledge Superiority, and the "ways" of Battlespace Control, Attack, and Sustainment, are the warfighting links between strategy and resources. The Long Range Planning Objectives delineate those specific capabilities that will be needed to execute the concept of operations.

## **II. Long-Range Planning Objectives**

To ensure the Operational Concepts discussed above can be executed, specific capability requirements must be identified, developed and acquired. Additionally, because resources are not unlimited and a balance of capabilities is required to meet the objectives of the concepts, there must be some reference to priority among the capabilities. Section V presents the capabilities in terms of strategic risk and the requirement to directly support or enhance the core naval competencies.

The NSPG (specifically Section V) provides a set of prioritized operational capability requirements that can be directly linked to the maritime concept. It is these capability requirements that provide the IWAR end-to-end capability assessments a "road map" to focus their assessments. These capabilities when coupled with the operational concepts will provide a fleet that is trained, organized and equipped to support the Navy's role in the National Security and National Military Strategies

### III. Navy Integrated Warfare Architectures (IWAR) Assessment Process

Established in 1998, the IWAR provides the CNO an end-to-end, *capabilities*-based view of the Navy for the *near*, *mid* and *far* terms. It is not tied to any specific PPBS milestones, but is continuously refined to reflect a comprehensive and accurate representation of the Navy's present and projected capabilities. The primary focus is on warfighting *capabilities* as opposed to the traditional focus on platforms and systems. The Assessment Division (N81) leads a process organized into five Warfare and seven Support IWAR teams. The individual IWAR teams carefully *integrate* their analyses to ensure that all dependencies between Navy capabilities and programs are understood. In this sense, the IWAR teams are building an "architecture" that captures the complexity of, and relationships among, naval warfare and support capabilities, thereby providing the CNO a more accurate understanding of current and programmed capabilities and the capability impacts of programmatic and process changes and decisions.

Starting with the guidance on strategic goals and capabilities provided in the Long-Range Planning Objectives in the NSPG, the twelve IWAR teams (the "architects") first identify the operational tasks necessary to achieve the objectives. They then assess the capabilities necessary to carry out those tasks; the effectiveness and efficiency with which these capabilities are provided by current, funded, and projected programs and systems, balanced against the projected threat. The teams take care to ensure that their analyses of these capabilities include all the components necessary to field the capability -- support resources such as personnel, training, maintenance, and infrastructure as well as the system and equipment elements. Care is also taken to identify complementary or redundant capabilities. Each year, in the fall, each of the twelve IWAR teams report the results of that year's IWAR analyses to the CNO. This provides senior leadership with a basis for decision-making and the baseline necessary to judge proposed programmatic alternatives.

The programmatic element of the IWAR process is the CNO's Program Analysis Memorandum (CPAM) that, unlike the IWAR, is linked directly to the PPBS cycle. CPAM development initiates the programming phase of the annual PPBS cycle as IWAR teams examine the upcoming Navy program and assess the difference between desired capabilities, capabilities being provided by the current Program of Record, and available resources. Out of this examination come programmatic and process alternatives designed to balance capability risk and resource availability. The IWAR teams carefully analyze the cost, operational risk, and effectiveness (benefits) of each of the alternatives. These analyses and a set of recommendations form the CPAM. The CPAM is thus a decision tool for senior DoN leadership as well as the analytic foundation for the Navy's programming guidance (published by N80) for the next POM.

Although the CNO Staff is responsible for developing IWARs and the CPAM, active support and input from Fleets, Systems Commands, and Headquarters Marine Corps are critical to the effectiveness of the process.

## **Information Superiority and Sensors**

Information Superiority and Sensors (ISS) is concerned with those capabilities that enable commanders at all levels to control and shape the pace, phasing, and space of battle by rapidly integrating and synchronizing dispersed forces to apply appropriate effects at the right place and time. ISS includes:

- Access and assurance of radio-frequency spectrum
- Sensors and primary detection systems
- Local, operational, regional, and global area networks, communications, and information distribution services
- Command and control
- Intelligence, surveillance, and reconnaissance
- Meteorology and oceanography
- Navigation
- Information Operations

## **Sea Dominance**

Sea Dominance includes naval warfighting capabilities that help to establish and sustain superiority on and below the surface of the world's oceans. Sea Dominance includes the employment of naval mines in offensive and defensive operations and mine countermeasures, surface warfare superiority, and anti-submarine warfare superiority. These capabilities are essential to joint-force operations in both choke points and littoral regions worldwide.

Sea mining and offensive/defensive mine countermeasures include those capabilities used to employ mines against an adversary's forces or to neutralize an enemy's efforts to use mines against U.S. or allied forces. Surface warfare superiority involves those actions necessary to neutralize an adversary's efforts to utilize his surface combatants against friendly forces. Anti-submarine warfare superiority includes capabilities that neutralize or defeat an adversary's efforts to employ submarines against friendly forces. Acting either independently or as a joint force component, naval forces provide capabilities that are critical to ensuring freedom of maneuver and power projection from the sea.

## **Air Dominance**

Air Dominance includes those naval warfighting capabilities that establish and maintain overwhelming control of theater air space, in both open-ocean and littoral regions. By providing a protective umbrella above U.S. and friendly forces through Theater Missile Defense (TMD) and air superiority, Air Dominance is a key enabler of the Navy's role in power projection and is a core mission required for protection of naval, joint, and allied forces.

Theater Missile Defense, which includes both Cruise Missile Defense (CMD) and Theater Ballistic Missile Defense (TBMD), employs aircraft, air warfare-capable surface warships, and self-defense-capable surface units to defend against enemy cruise and ballistic missiles. Included

in Theater Missile Defense is the capability to engage enemy missiles through both hardkill and softkill measures, and to conduct attack operations against missile launch systems.

Air Superiority provides the capability to ensure full use of theater airspace by U.S. and allied forces through offensive and defensive operations. Offensive options involve attacking the enemy's warfighting capabilities with Offensive Counter-Air (OCA) operations that include attack operations, Suppression of Enemy Air Defenses (SEAD), Electronic Warfare (EW), and fighter escort and sweep. Defensive Counter-Air (DCA) operations focus on maintaining air superiority with the capability to detect, identify, intercept, and destroy enemy air forces with aircraft or air warfare-capable surface warships before they attack or penetrate the friendly air environment.

## **Power Projection**

Power Projection includes naval fires and amphibious warfare. When naval fires are required, the joint task force commander will have a variety of naval weapons to choose from including accurate stand-off munitions delivered from aircraft, gun-fired precision guided munitions, and sophisticated ballistic and cruise missiles launched from surface warships and submarines. The essence of this capability is aircraft carriers equipped with long range attack aircraft, surface warships and submarines capable of launching a variety of responsive, accurate long range missiles, and a robust naval surface fire support capability.

Amphibious warfare includes the ability to amass overwhelming naval, joint and allied military force and deliver it ashore to influence, deter, contain, or defeat an aggressor. Amphibious forces provide the joint task force commander with the ability to conduct military operations in an area of control extending from the open ocean, to the shore, and to those inland areas that can be attacked, supported, and defended directly from the sea.

Navy-Marine Corps expeditionary forces -- acting independently, jointly with the Army and Air Force, or combined with allied forces -- provide the backbone of America's ability to project credible and effective military power throughout the world, quickly and effectively.

## **Deterrence**

Deterrence connotes the ability to influence the decision-making and actions of a nation's or a group's leadership based on a perceived credible military capability. It is the use of a clear, convincing, and precisely tailored military capability to hold potential opponents' most-valued assets at risk so that they will assess the cost of aggression or escalation and conclude that their best option is to remain at, or return to, peace.

Conventional deterrence rests on credible capability and willingness to deny an aggressor his objectives or make him suffer unacceptable consequences for his actions.

The critical element of conventional deterrence is the full-spectrum, non-nuclear warfighting capability enhanced by the positional advantage of combat-credible, forward-deployed forces.

Deterrence focused on countering Weapons of Mass Destruction (WMD -- chemical, biological, nuclear/radiological devices) includes activities that ensure U.S. forces and interests are protected from WMD by countering their effective use. This can be accomplished by counter-force measures taken to destroy these weapons or their means of delivery before they can be launched, active defense measures taken to intercept these weapons after their launch but prior to their delivery, and passive defense measures. Nuclear deterrence involves maintaining a survivable, responsive, secure, and credible nuclear strike force, thereby creating a perception that the cost for the use of WMD against the United States or its allies would far exceed any gain.

Thus, deterrence is applied to the entire spectrum of aggression and is accomplished through Navy's ability to shape regional political-military environments, to respond to incidents and crises, and ultimately to the actual employment of U.S. conventional and nuclear weapons.

## **Sustainment**

Sustainment -- the specific naval surface and air logistics functions enabling the movement and support of U.S. combat forces and other friendly forces afloat and ashore -- remains an area of intense interest. During Operations Desert Shield and Desert Storm, for example, sealift transported some 95 percent of all supplies and equipment to and from the Arabian Gulf. This mission area also includes the Combat Logistics Force (CLF), hospital ships, the fleet hospital program, Maritime Prepositioning Force ships, Ready Reserve Force strategic sealift assets, and commercial lift assets.

Marine Corps Assault Echelon and Assault Follow-On Echelon operations are supported by prepositioned ships and surge sealift. Sealift also carries Navy sustainment supplies and ammunition from storage sites to forward logistics bases where CLF shuttle ships pick up and deliver this material to combatant forces at sea. Likewise, sealift is vital to Army and Air Force regional operations, as the nation's land-based Armed Services are almost totally dependent upon the "steel bridge" of sealift ships to deliver everything a modern fighting force requires to accomplish its missions.

Sealift and the protection of in-transit ships by naval expeditionary forces allow joint and allied forces to deploy and sustain operations, without the compelling requirement for shoreside infrastructure in forward areas. In the near future, sea-based logistics assets will increasingly support emerging concepts for operational maneuver and ship-to-objective maneuver.

## **Infrastructure**

This IWAR consists of the supporting infrastructure -- shore facilities and services -- necessary to support operational units. It includes the capability to provide waterfront and air operations; community support, including housing, medical, morale/welfare/recreation (MWR), and child care services; readiness support, including shipyards and Naval Aviation Depots (NADEPs); ranges; and shore force protection. As the Navy sails into the 21st century, our challenge will be to find ways to support our infrastructure using a smaller percentage of Navy

resources while maintaining acceptable quality of profession, quality of life, and operational standards.

## **Manpower and Personnel**

An essential part of the Navy's warfighting ability is our manpower and personnel capability -- active, reserve and civilian. Our capacity to provide sufficient operational forces, as well as shore support, to sustain a force structure that provides credible naval combat power is critical to meeting the missions of the Navy. It ensures critical naval capabilities to support national strategic requirements for sustained deployed presence, deterrence, prompt and assured crisis response, and warfighting. It also includes the capabilities provided by the personnel system for the acquisition, development, retention and management of the civilian and military workforce, including programs for recruiting, community management, and the distribution of personnel.

## **Readiness**

The Navy is changing the way it does business -- finding innovative and less costly methods while supporting the critical training, supply, and maintenance programs that are essential to readiness. This IWAR team evaluates these programs and reviews current indicators and trends to ensure that readiness is maintained. Included in the readiness area are Navy operating funds, force operations, flying hour/steaming day programs, all levels of maintenance, spares, and safety and survivability.

## **Training/Education**

Training and education capabilities are provided in four major functional categories: accessions, skills, professional development, and unit/force training. Programs include the staff, facilities, equipment, and services required to train. The objective of naval training and education programs is to deliver efficiently and effectively the appropriate level of quality training and education as part of a cost-effective process to provide a career-long continuum supporting Navy operational readiness and personal excellence.

## **Technology**

One of the foundations of U.S. military strategy is technological superiority over potential adversaries. For the Navy, maintaining this technological edge has become more challenging as the size of the fleet declines and high technology weapons become readily available to potential adversaries on the world market. Research, development, test and evaluation (RDT&E) funds must be spent as efficiently and effectively as possible. This IWAR analyzes and assesses Navy RDT&E funding and priorities to ensure that Navy technology investments meet current and emerging warfighting needs.

## Force Structure

Naval force capabilities are most visibly manifested in the number of ships, submarines, and aircraft in the Fleet. This IWAR is focused on assisting Navy leadership in best matching available resources with desired capabilities in the near, mid, and far terms. Evolving threats, desired capabilities, developing technologies, doctrinal and operational concepts, and fiscal realities all play a role in shaping resource-allocation decisions leading to the naval forces the United States actually deploys. The force structure IWAR team analyzes the resources required to recapitalize or modernize the force, develops alternative force structure paths and subsequent consequences of the trade-offs, and frames relevant issues via integrated decision timelines.

## IV. Quadrennial Defense Review (QDR)

The QDR is the latest in a series of comprehensive national security posture reviews that have taken place since the end of the Cold War. Most of those reviews were conducted on a biennial basis. The first QDR was mandated by the National Defense Authorization Act of 1996, which also indicated a need for recurring reviews every four years.

The outcome of the first QDR, completed in May 1997, has been widely judged as supportive of the naval contribution to national security. However, one of the most significant lessons learned from QDR 1997 is the need to make early preparations for participation in the next QDR process. This is especially important because, while the 1997 QDR's force of 305 ships -- if fully manned, properly trained, and adequately resourced -- is sufficient for today's requirements within acceptable levels of risk, there is mounting evidence that this naval force posture is not likely to be enough to meet the security challenges of the next century.

The next QDR is scheduled to begin in early 2001 and should be completed around September of that year. N3/N5 has been charged with directing the initial OPNAV preparations for QDR 2001. Such preparation includes, but is not limited to, the identification of key issues, the assignment of areas for study and analysis, development of models and other analytical tools, development of information and associated staff products, and recommendations on Navy positions on defense issues to the Chief of Naval Operations through the Vice Chief of Naval Operations.

The QDR Planning Group has developed three major themes for the Navy to guide it during and beyond QDR 2001:

- The Navy's enduring contribution is combat-credible forward presence, providing our Nation with the means for both continuous shaping and timely crisis response. The other Services are transforming to become expeditionary -- which we already are.
- The Navy's transformation is into a knowledge-superior force, enabling it to dictate the operational tempo across sea, air, land, space, and cyberspace -- an expanded battlespace.
- Technology is driving Navy into new mission areas -- such as theater ballistic missile defense and deep land attack -- and these, in turn, drive requirements for both new

capabilities and additional capacity.

Initially briefed to the CSPG in March 1999, N3/N5 has put into place a plan to identify and research potential issues for QDR 2001. To this extent, ten subgroups were established in the following areas: Overseas Presence; Asymmetric Warfare and Homeland Defense; Space; Force Structure; Strategy for Balance Among Readiness, Recapitalization and Transformation; 21<sup>st</sup> Century Defense Support/RBA; Transformation; Nuclear Deterrence and NMD; Total Force; and Modeling. These subgroups identified potential issues, determined what areas have been studied and what issues require further study to prepare the Navy for the next QDR.

Following six months of issue identification, QDR Phase II (Issue Development) commenced. Each of the ten subgroups was given a detailed Plan of Action and Milestones (POAM) to execute. The POAMs consisted of a series of issue papers, roundtable discussions and articles that synergistically work to develop, test and disseminate the Navy's national security contributions.

Intertwined with the POAM was the Engagement Plan for QDR 2001. This plan consisted of the following:

- Roundtables: to present the Navy rationale to the larger defense community on QDR related issues, and obtain an early look at criticism, opposing views, and an opportunity to engage non-DoD personnel.
- Strategic Concepts Wargame: to assess organizing principles of the Maritime Concept for assuring access in peacetime, crisis, and conflict despite an adversary's anti-access strategy.
- Forward Presence Workshops: a series of seven workshops, beginning in November 1999 with the goal of describing the relationship between regional strategic and diplomatic interests and the presence of combat-credible naval forces. Participation comes from a multitude of government agencies to include DoD, Departments of State and Commerce, regional CINCs, all Services, the Joint Staff as well as the Fleets, NWDC, ONI and representatives from the Center for Naval Analyses. The workshop process is based on a methodology that uses a strategy-to-task approach to describe the relationship between the strategic interests, military objectives that support those interests and the force and capabilities required in achieving those objectives. The workshop process will make a meaningful contribution to the discussion of how forward presence forces support regional stability, deter conflict, provide timely crisis response, and ultimately support the transition to war fighting and winning. An additional goal of the workshops is to articulate the linkage between strategic risk and the availability (or non-availability) of forces for forward presence.
- Knowledge Superiority Workshop: A workshop and roundtable were undertaken to discuss the concept of Knowledge Superiority and how the service will best pursue this concept as one of the "means" of the maritime concept. During the first six-day workshop seven goals under which objectives and strategies were produced were agreed

upon.

- Develop a process for the coherent development of the Knowledge Superiority capability.
- Develop a Navy “all hands” training and education continuum for core Knowledge Superiority competencies.
- Develop levels of Knowledge Superiority in the Navy.
- Develop the Information Operations protection capability of Knowledge Superiority to affect adversary information and information systems while protecting our own.
- Develop an architecture process which supports/enhances the full range of naval missions.
- Develop and resource an integrated, end-to-end investment strategy to ensure effective, efficient, interoperable naval Knowledge Superiority capability.
- Change the organizational structure and culture of the Navy to achieve Knowledge Superiority.

The Navy has created and implemented an aggressive plan to prepare the Service for QDR 2001. It will require the continued dedicated effort of all those involved to ensure that the naval contribution to our nation’s security is properly assessed during this major defense review.

## SECTION V: LONG RANGE PLANNING OBJECTIVES

### INTRODUCTION

This section contains Operational Concepts and the Long Range Planning Objectives based upon the maritime concept. It is intended to provide the link between strategy and resources by identifying a set of prioritized capabilities for incorporation into the IWAR analysis process to ensure that the Navy is properly trained, equipped and organized to execute the National Security Strategy and the National Military Strategy.

The FY02-07 Defense Planning Guidance (DPG) identifies the following as the overarching resource programming priorities:

- Readiness and sustainability
- Modernization
- Force structure
- Infrastructure

The Secretary of the Navy's Planning Guidance for POM-02 reiterates these concepts and stresses the need to improve our business practices by building upon the work of the Strategic Sourcing Committee. SECNAV direction is: maintain current operational readiness while sustaining our recapitalization program within fiscal guidance; invest to make the DoN a much better employer for our sailors, marines and civilians; end strength reductions should not be relied upon to produce savings; and, finally, over the long term aim for balanced and affordable sensors/C4/weapon/munitions/platform investments.

The Navy Strategic Planning Guidance ties strategy to capabilities. The "means" and "ways" of the maritime concept map directly to the capability assessments done by each of the IWAR teams as discussed in Section III. With our maritime concept and the defense guidance above as the foundation of the IWAR roadmaps, this section is intended to steer planning efforts for the near term (FYDP) and the mid-to-long term (2008-2025). The objective is not to provide specific programming guidance, but rather to provide strategic planning guidance, which identifies force attributes and capabilities required -- and the priorities among them -- to provide a fleet trained, organized and equipped in accordance with the concept. The goal, as stated in the maritime concept is to provide the Fleet with the capability and capacity to conduct concurrent battlespace control, battlespace attack and battlespace sustainment as the "ways" to achieve the ends of the concept through the two "means" of Forward Presence and Knowledge Superiority.

The maritime concept will support the objectives of the National Security Strategy and National Military Strategy by two "means": Forward Presence and Knowledge Superiority. These "means," therefore, comprise the highest naval strategic priorities. Naval capabilities that contribute to the "ways" in which we will achieve these "means" must be considered a higher priority than those that do not. IWAR efforts should refer to Forward Presence and Knowledge Superiority as the Navy's strategic landmarks.

Fiscal constraints dictate that we maintain a balance between costs and numbers. We therefore must establish concept-based priorities. We must look at every program, platform, organization, concept and technology to systematically judge whether it supports the maritime concept and provides positive progress along the path toward a Navy that is fully "knowledge-centric," present forward and combat-credible.

NSPG priorities therefore are linked to the "means," "ways" and "ends" of the maritime concept. They are built upon the historic and enduring role for the Navy in the service of our maritime nation -- forward naval presence; and we must ensure the correct capabilities to remain forward in the future in spite of challenges to do so. Demands imposed by those responsible for promoting U.S. foreign policy, along with the requirements from the combatant commanders responsible for ensuring military preparedness and the protection of U.S. and allied interests, require balancing the Navy in terms of both capabilities and force levels to meet these challenges in the future. To provide a framework for prioritization, the following criteria will be used:

**PRIORITY (I): Those capabilities that directly support or enhance the enduring core naval competencies without which severe strategic risk would be incurred.**

**PRIORITY (II): Those capabilities that directly support or enhance the enduring core naval competencies without which significant strategic risk would be incurred.**

**PRIORITY (III): Those capabilities that directly support or enhance the enduring core naval competencies without which moderate strategic risk would be incurred.**

**PRIORITY (IV): Those capabilities that directly support or enhance the enduring core naval competencies without which marginal strategic risk would be incurred.**

**PRIORITY (V): Those capabilities that directly support or enhance the enduring core naval competencies without which minimal strategic risk would be incurred.**

This priority scheme provides the framework of overarching capabilities necessary to achieve the maritime concept. The IWAR end-to-end capability assessment process reviews the current, mid, and far-term programs and assesses their ability to provide the capabilities necessary to achieve the Long-Range Planning Objectives in the NSPG. Guided by the IWARs, the CPAM then provides a prioritized, fiscally balanced set of programmatic recommendations upon which the resource sponsors base their POMs.

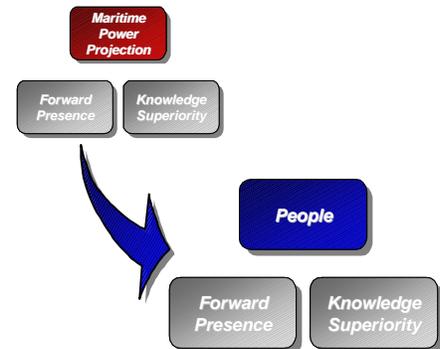
Numbers of assets for presence are no longer a lesser-included case of regional contingencies; there must be enough assets to maintain a forward presence where we want to have influence from the seas. Additionally, through the access of cyberspace we must have the assured capability to directly impact events ashore. Sensors under the tactical control of commanders and networked systems for real-time shared awareness are the priorities for exploiting this access. With sufficient platforms and netted sensors, maritime power will continue to ensure freedom of the seas in order to directly influence events beyond the seas.

Throughout Section V, *italicized text (blue font)* contains direct extracts from the maritime concept. The frequent references to this maritime concept document emphasize the

link between NSPG guidance and strategy, facilitating a clear decision path from strategy to IWAR in order to produce a strong strategic foundation for PPBS resource decisions.

## Maritime Power Projection

The maritime concept clearly articulates our overarching strategic imperative as Maritime Power Projection. The paramount objective of the Navy and Marine Corps will remain the global projection of American power and influence -- *anytime, anywhere*. But taking the proper 'lead angle' on the future demands a balancing of the Naval Service in terms of both capabilities and force levels. It also requires a steadfast commitment to innovation and experimentation. The cornerstone to achieve this goal is our most valued resource: People. As illustrated in the maritime concept discussion, people remain our number one priority. In warfighting terms, while forward presence remains the enduring role of the Navy, it is only by leveraging the brightest and most highly motivated individuals that our nation has to offer that we can accomplish our mission. To prepare the warfighter of the future will require taking full advantage of emerging technologies and new concepts so that we provide them the skills required to employ the highly capable ships, aircraft, weapons and equipment they will be operating. Additionally, we must also identify capabilities that improve the quality of life and quality of service of all our personnel, both military and civilian. These capabilities, when coupled with the unique opportunities of naval service, will provide the incentives required to retain our Sailors and Marines and attract the new generation of warfighters. Our priorities for meeting the challenges and exploiting the opportunities of the future are described below.



***“Keeping Faith with Our People.*** *People will always be our top priority. The recruiting, training, and retention of quality men and women is key to the Naval Service’s continued success. The consistent lesson of naval operations is that their outcomes often hinge on the actions of even our most junior personnel. To prevail in the complex battlespace of the future, tomorrow’s Sailors and Marines will require the training, experience, and strength of character to make sound and timely decisions. We must, therefore, ensure that our people are proficient in the use of increasingly sophisticated weapons, sensors, and information systems and have an understanding of the entire battlespace. Regional, joint, combined, and interagency experts must be cultivated. We must also harness the leadership ability and dedication to excellence resident in all our personnel and develop in each Sailor and Marine a lifelong commitment to education and innovation. Our recruiting efforts must extend to all segments of the population to ensure that we represent the nation’s rich diversity. Finally, we must act to improve the quality of life of the entire Navy-Marine Corps team -- Sailors, Marines, civilians, and their families.”*

The following readiness capabilities directly support the Long-Range Planning Objectives detailed in the capability-based sections:

## 1. MANPOWER AND PERSONNEL

*“...sufficient platforms and personnel are required to maintain a presence wherever we require access and influence...Manpower levels are also critical and must support the demands of both routine deployments and contingency responses.”*

To attain knowledge superiority in the battlespace of the future, we will need increasing numbers of officer and enlisted that are comfortable with the conduct of warfare in the new realms of space and cyberspace. To ensure correct future manpower requirements planning is achieved and changes to warfighting capability requirements are supported, Manpower and Personnel Capability requirements should be verified/checked against the requirements identified by the IWARS process. There will likely be a vast increase in the battlespace, the limits of which will be determined by the broad dispersion of highly mobile forward forces and the extended reach of their sensors and weapons. Within this battlespace forces will act continuously and seamlessly across sea, air, land, space, and cyberspace. Common shared awareness of the threat within this battlespace and the ability to control the timing of our actions will permit the best possible management of our assets. The following are the priorities for Manpower & Personnel system capabilities:

- **PRI (I) The capability to recruit the personnel that support the manning requirements of our current and future force.** To ensure our force is manned to the projected requirement levels, emphasis must be placed on providing the right quantity and quality of personnel that will be needed to operate the Navy of the future.
- **PRI (I) The capability to meet established retention goals for the correct manning structure to support the Navy’s mission.** Job satisfaction, career paths, and incentives should all be considered as tools for improving retention. Innovative leadership and management of enlisted and officers alike will be required to meet the retention challenges of the future.
- **PRI (II) The capability to synchronize Fleet Manpower and Personnel distribution with the Inter-Deployment Training Cycle.** Priority should be given to personnel transfers early in the IDTC in order to stabilize manning and maximize training evolutions prior to deployment.
- **PRI (II) The capability to provide our Sailors and Marines career patterns that provide stability and predictability and lead to increased job satisfaction.** This capability must include the ability for personnel to manage career milestones with some degree of predictability. The development of standardized career patterns across all ratings will provide an enhancement to the quality of life for our enlisted Sailors and Marines and will lead to increased retention.
- **PRI (IV) The capability to assess the impact of increasing joint staffing**

**requirements and emerging “specialist” requirements (e.g., FAO, IT, AP) on the ability to meet warfighter and staff needs.** Develop a capability for assessing future afloat and ashore requirements as related to officer and enlisted mix ratios and potential trends to increase officer specialty manning requirements. Assessment capability must include appropriate manning of URL/RL and Staff officers to meet both warfighter and staff needs, and should include required changes in career paths to employ and fully exploit information assets and networked systems. Associated cost analysis is an additional requirement of the assessment process capability (fiscal, manpower and opportunity).

- **PRI (V) The capability to assess the impact of changing demographics on our ability to acquire future officers and enlisted that have the ability to function in an environment that requires knowledge superiority.** Develop capability for assessing changing demographic effects on finding the right personnel to function in an “information smart” environment.
- **PRI (V) The capability to centralize responsibility and authority over all Manpower and Personnel areas.** A centralized M&P system will provide for common visions and goals across all warfare and support areas. The capability will maximize inter-system efficiencies by removing counter-productive practices and competition for resources.

## 2. TRAINING

*“To prevail in the complex battlespace of the future, tomorrow’s Sailors and Marines will require the training, experience, and strength of character to make sound and timely decisions. We must, therefore, ensure that our people are proficient in the use of increasingly sophisticated weapons, sensors, and information systems and have an understanding of the entire battlespace.”*

Readiness will remain the highest Navy programming priority for our Active and Reserve Component forces. We must be ready to effectively execute the full range of assigned peacetime and wartime missions upon arrival in theater -- for routine or contingency deployments. Force Protection must be an integral part of naval strategic planning efforts; however, future capabilities must balance the need for adequate defense with a risk analysis of current and potential threat so as to properly manage investment in this area. As we move toward a network centric Navy, information operations become an increasingly critical element to the successful execution of assigned missions. Therefore, policies, procedures and technology must be developed to protect and defend information and information systems. Naval strategic planning efforts must incorporate offensive and defensive information operation capabilities across Integrated Warfare Architectures. The following priorities apply to Readiness and Training capabilities:

- **PRI (II) Technology should be utilized, where appropriate, to support the most efficient training and education system possible.** The throughput of students should be maximized, and training pipeline delays and inefficiencies should be eliminated.

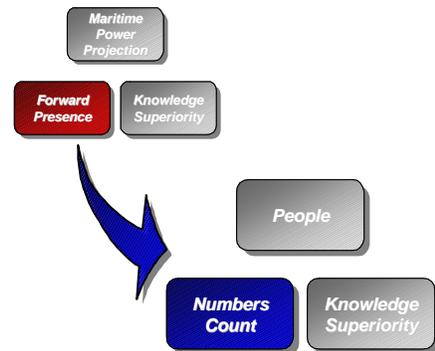
- **PRI (II) The capability to achieve the highest level of warfighting mission proficiency while sustaining a high level of non-deployed Quality of Life.** This will allow for a balanced fleet training program that sustains readiness at levels to support OPLAN and contingency requirements while simultaneously reducing IDTC workload and retaining the ability to incorporate new missions.
- **PRI (II) The capability to conduct realistic and stressful training at the unit, battle group and joint levels based on specific objectives correlated to joint mission and tasks.** The capability must reflect emerging threats and include both information saturation and total interruption of information flow.
- **PRI (III) The capability to use technology to move training to people.** Reduce in-class specialized skill training in favor of progressive individual training. For example, computer-based training (CBT), web-based training, and afloat degree programs (PACE).
- **PRI (III) The capability to provide officer corps with educational opportunities necessary to develop competence, leadership and character to succeed and employ technological advances.** Expanded educational opportunities are needed for our officer corps to ensure the Navy of the future is equipped with the best cadre of leaders possible. Technological advances and future concepts of operation demand that our officers continue to develop and learn and as an added benefit will lead to greater recruitment and retention.
- **PRI (III) The organic capability to provide interactive training, including the capability to incorporate direct “red team” interaction.** Realistic training requires distributed interactive tools. Appropriate Battle Group and JTF level simulation should also be provided. Training should be based on the common consistent tactical picture and provide for rapid scenario development for enroute training. It is important to reduce the number of observer/controller personnel involved in the training evolutions.

### 3. METRICS

- **PRI (I) The capability to provide improved metrics that will accurately measure key readiness factors.** The development and application of these metrics for the measurement of personnel, training, equipment and maintenance requirements (spares, flying hours, steaming days and depot maintenance) will provide an accurate prediction of readiness gains/losses during the programming and execution phase of the budget cycle.

## Forward Presence

The "means," "ways" and "ends" of our maritime concept for the next century are all built upon the historic role of the Navy in the service of our maritime nation, **forward naval presence**. This is the enduring role of the Navy in those areas of the world where our most vital interests are concentrated. In cooperation with our friends and allies, deployed forces deter the emergence of dangers to shared interests. In the most serious situations, when deterrence fails, combat-ready forward deployed forces will provide the "means" for timely initial crisis response. We must ensure that we develop the capabilities that permit us to remain forward in spite of challenges to do so.



*“Combat-credible forward presence is an enduring contribution of naval expeditionary forces. But structuring the Naval Service to continue this contribution in the future means exploiting new opportunities made possible by technology and addressing the anti-access strategies and asymmetric approaches that adversaries may seek to counter U.S. access and influence. Sea control will remain the cardinal prerequisite that guarantees access forward for naval forces as well as for our sister Services that increasingly rely both on movement of assets by the sea and their pre-positioning on the sea.”*

### I. Operational Concepts for Forward Presence:

Forward naval forces are the key to regional stability. They shape the peace by becoming a tangible part of the local security calculus that any would-be aggressor must take into consideration. Naval forces are the visible guarantee that the United States can and will react to provocation and will support its friends in time of need. The operational application of the forward positioning of naval assets and personnel to operating theaters around the world is based on the needs of the Unified CINCs as apportioned through the guidelines of the Global Naval Force Presence Policy (GNFPP).

The core of the forward-deployed surface naval force will be the **Carrier Battle Group (CVBG)**. The CVBG contains the combined deterrence capabilities of surface, subsurface and air power to present the most combat credible presence forward.

- The CVBG is composed of an aircraft carrier and its air wing, surface combatants, submarines, and combat logistics ships.
- The CVBG capabilities consist of theater ballistic missile defense (TBMD), air warfare, long-range strike, undersea warfare, surface warfare, naval surface fire support C4ISR and mine counter measures.
- The Carrier Battle Group normally operates as a contained, self-sustaining force, with

little dependence on shore based support able to maintain a stable base of operations for long periods of time in international waters and airspace, unfettered by sovereignty concerns.

- In certain circumstances, two or more CVBGs may join forces to operate as a Carrier Battle Force (CVBF).

The **Amphibious Ready Group (ARG)** is a naval force that is capable of providing forward presence and power projection. The ARG with its Marine Expeditionary Unit (MEU), Special Operations Capable (SOC) will be able to perform missions ranging from humanitarian assistance and disaster relief to crisis response and full-scale combat operations. By virtue of its forward-presence and self-contained capability, the ARG/MEU can be one of the initial forces to react to a crisis or potential area of concern.

- The ARG will normally be composed of a mix of amphibious/landing assault ships with Air Combat Element (ACE), amphibious transport (dock) ships, and associated landing craft.
- The ARG/MEU (SOC) will have the capability to conduct amphibious operations as well as a wide range of MOOTW actions such as non-combatant evacuation operations (NEO), security operations, and reinforcement operations. It will be capable of acting as an enabling force for follow-on forces.
- The ARG/MEU (SOC) may operate in concert with one or more CVBGs to operate as part of a Carrier Battle Force.
- Multiple/expanded ARGs can be created as necessary to accommodate larger Marine Air Ground Task Forces (MAGTF), including the Marine Expeditionary Brigade (MEB) and Marine Expeditionary Force (MEF). These larger expeditionary forces are more capable and adaptable than the ARG/MEU and are classified Amphibious Task Forces (ATF).

**Maritime Patrol and Reconnaissance (MPR)** forces are land based, forward deployed forces consisting of squadrons of variants of the P-3 Orion (VP/VQ). The MPR squadrons are a highly visible forward presence since their dependence on forward basing presents their operations over the land, in the littorals and far out to sea for host and neighboring nations to observe.

- MPR squadrons will be forward deployed to each fleet AOR on a continuous basis.
- Mission capabilities include undersea warfare, over the horizon targeting/surface warfare, ISR, C2, land attack, strike support (targeting, BDA) and mine warfare.

MPR forces are capable of operating independently or in conjunction with all naval forces in a supporting role and act as a force multiplier in all mission areas.

## II. LONG RANGE PLANNING OBJECTIVES FOR FORWARD PRESENCE:

*“Numbers Count. The conspicuous forward presence of combat-credible naval forces is a visible and compelling deterrent, and a symbol of American power and influence. As we build the future force, we must remember that numbers for presence are not a lesser-included case of regional contingencies; sufficient platforms and personnel are required to maintain a presence wherever we require access and influence. Sufficient numbers of platforms permit naval forces to shape regions of U.S. interest and ensure they can be positioned for timely crisis response. Manpower levels are also critical and must support the demands of both routine deployments and contingency responses.”*

### 1. FORCE POSTURE

*“Insufficient numbers entail strategic risk as well as excessive personnel and operational tempos. Clearly, numbers of platforms and naval forces matter.”*

Force posture changes, by definition, directly impact naval forward presence. Force posture alternatives must meet Unified CINC requirements as well as current Navy policies on OPTEMPO, PERSTEMPO, and maintenance training. IWAR roadmaps must utilize a methodology in the determination of overseas presence requirements. Forces for presence -- shaped for combat -- provide the framework of security without which the instruments of U.S. policy would be unable to be engaged to help favorably shape the regional environment for U.S. interests. Naval forces shape the peacetime strategic environment through their continued forward presence regardless of whether direct foreign interaction is involved. Therefore, a methodology to determine the specific requirements for naval forces to support strategic interests -- and the military objectives and tasks, which underpin those interests, must be used. Additionally, an assessment is needed of the manner in which naval forces for presence contribute to our military’s overall “shaping” effort. The methodology must translate regional strategic interests into military objectives and tasks, doing so with sufficient precision to enable the Navy to train, equip, and organize forces to accomplish those military objectives. The defining linkage between the regional interests and the forces required to perform those strategic interests in terms of military objectives, supporting tasks and capabilities then permits one to identify the resources needed to accomplish those interests and objectives. The analytical rigor in such a strategy-based approach must determine both the capability and force levels needed to accomplish those regional objectives and associated tasks. The methodology will, therefore, also provide a means to assess which regional strategic interests are at risk if the forces and capabilities required to support the identified military tasks and military objectives are not present in the region.

*“...A force of 305 ships -- fully manned, properly trained, and adequately resourced-- would be sufficient for today's requirements -- within acceptable levels of risk. But the mounting evidence leads me to believe that 305 ships is not likely to be enough in the Future”*

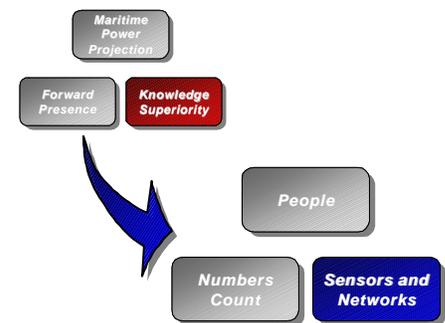
*-- CNO Quote before the SASC, Sept 99*

We must analyze our experience in the years since the last QDR; specifically, in terms of how the force has been and will be used, to arrive at a credible, confident and coherent plan to make sure we have the force sized and shaped correctly for the future. These then are the priorities for Force Posture capabilities:

- **PRI (I) The capability to deploy the CVBG and ARG fully combat ready as the core naval combat force package, directly augmented and supported by other maritime, air and logistics forces.** Force planning should account for other missions supported by dispersed combatant forces.
- **PRI (I) The capability for forward deployed forces to maintain survivability must be a design characteristic of all future platforms.** Survivability in the 21st century will integrate a combination of reduced detectability (consider stealth and signature reduction), improved defensive systems and sensors, and improved recoverability (damage control, CBR protection) that will allow platforms to fight while hurt or exposed to chemical or biological contamination.

## Knowledge Superiority

Just as we have historically capitalized on the freedom of the international seas, we must now exploit our access to cyberspace to leverage our ability to directly and decisively impact events ashore. U.S. combat credibility in this era of globalization will depend upon our ability to gather all the information that is needed, and then present the information to every operator who requires it. Access to data must ultimately result in real-time awareness of the battlespace by the commander so he has the knowledge to make timely and informed decisions inside the decision timeline of a potential adversary.



This acceleration of the decision-making process places us inside an adversary's sensor and engagement timeline where speed of command matters as much if not more than weapon or platform. Knowledge superiority places the strategic priority on sensor over weapon and network over platform. As a result, a regional adversary's anti-access strategy supported by superior weapons reach will not preclude our presence with a netted system that provides the knowledge to act within the adversary's engagement timeline. This improved battlespace awareness and ability to rapidly transfer information when and where needed also provides a decisive advantage to naval forces conducting operations other than war or peacetime engagement. The ability to apply timely and decisive effects at a critical point will prevent -- or pre-empt -- the adversary's use of weapons and systems, thereby "locking out" his options. Because of the assured knowledge provided by networked operations, less effort is required for unit self-protection; consequently, the focus on applying our offensive and defensive power ashore can be orders of magnitude greater than before. Whether responding to a crisis or conducting presence operations in support of CINC objectives, forward naval forces will enhance the fidelity of the knowledge network by using their mobility and forward positions to leverage their information advantage and further increase the options for achieving military objectives. The control of the adversary's timeline by the subsequent increase in speed of command is how knowledge superiority will ensure operational primacy. We must keep in mind however, that the analyses of potential measures of effectiveness remain challenging and require continued study.

*"Through our access to cyberspace, naval forces will achieve an unprecedented awareness of the battlespace. Information, however, will not improve understanding unless it provides commanders the real-time knowledge required to make timely and informed decisions. And improvements in networking and communications technology, matched by agile and adaptive organizations, will dramatically accelerate the operations of dispersed and maneuvering naval forces."*

## I. Operational Concepts for Knowledge Superiority:

The Navy of the future will conduct all operations based on the concept of **Network Centric Operations (NCO)**. NCO derives its power from the robust, rapid networking of well-informed, geographically dispersed warfighters to create a precise, agile style of maneuver warfare and overpowering tempo. It focuses on operational and tactical warfare, but impacts all levels of military activity from tactical to strategic operations. A multi-sensor information grid will provide all commanders access to essential data, sensors, command and control systems, and weapons. The concept pairs networking and information technology with effects-based operations.

- NCO will include implementation of Information Technology for the 21<sup>st</sup> Century (IT-21), improved and integrated data links, combined with an all-weather, dense, and tiered sensor grid.
- Reachback to ashore expertise and information will be provided via Teleport connectivity with the Navy/Marine Corps Intranet.
- Knowledge Superiority gained through Network Centric Operations will facilitate the penetration, disruption, denial and deception of the adversary's information processes, while providing friendly forces a superior understanding of complex operations.
- IT-21 will provide wide-band information exchange; ensure voice, video, data, and imagery availability to shipboard Local Area Networks (LANs); enable ship-shore tactical data exchange; and enhance Over-the Horizon (OTH) and line-of-sight (LOS) capabilities. It will also provide Low Probability of Intercept/Low Probability of Detection (LPI/LPD) low/medium/high data rate satellite communications, satellite broadcast services, video and telephonic satellite transmission, and nearly jam-proof communication and connectivity.

Sophisticated land attack operations will require a shift to an intelligence cycle that enables on-line, on-demand digital targeting. The goal will be total integration of information at all command levels to produce a single, **merged operations and intelligence picture** of the battlespace that is tailored by the commander for his warfighting needs.

- The new approach to intelligence will have four building blocks: understanding the enemy better; organizing to counter key adversary capabilities; targeting smarter, and building a precision targeting system.

A **tiered system of sensors** will be used to provide continuous surveillance to detect and track all-important activities and objects over the entire battlefield. It will incorporate satellites, manned and unmanned aircraft, ground-based sensors, and troops.

- The fusion of sensors and intelligence data received near real-time will be distributed throughout the NCO network to allow commanders to gain the needed knowledge superiority to launch attacks against multiple targets simultaneously and accurately.

**Information Operations (IO)** are those actions we will take to affect adversary information and information systems while defending our own information and information systems.

- Defensive IO includes Information Assurance (IA), Physical Security, Operations Security, Counter-Deception, Counter-psychological Operations, Counterintelligence, Electronic Warfare, and Special Information Operations.

Information Assurance will use Firewalls, Intrusion Detection Systems, Qualified Systems Administrators, Multilevel System Security, and Encryption to protect and defend our information systems.

## **II. LONG RANGE PLANNING OBJECTIVES FOR KNOWLEDGE SUPERIORITY:**

*“Sensors and Networks. Today’s naval forces have impressive striking power, but it must be enhanced by improvements in information technology and agile, adaptive command organizations in order to operate within an adversary’s sensor and engagement timeline. Network-centric operations will link shooters, sensors, and commanders and will permit effects-based planning in order to provide the knowledge required to attack rapidly an adversary’s critical vulnerabilities, avoid strengths, and destroy centers of gravity. Sensors under the tactical control of commanders and networked systems for real-time shared awareness are priorities for improving our exploitation of cyberspace, synchronization, and overall combat-effectiveness.”*

Establishing capability priorities within the domain of Knowledge Superiority is challenging due to the difficulty of quantifying risk and the lack of established metrics to analyze warfighting return on Information Superiority and Sensor investment. That notwithstanding, sensors, information transfer/management systems and advanced data display remain the key enablers for a transition to network-centric, knowledge-based operations. Operational maneuver, precision effects and speed of command rely upon exploiting the U.S. C4ISR and data network capabilities. Navy investments must be synchronized with emerging technological developments and the implementation of the new operational concepts identified in the maritime concept. Therefore, the following are the priorities for Knowledge Superiority capabilities:

### **1. COMMAND AND CONTROL**

*“Network-centric operations will link shooters, sensors, and commanders and will permit effects-based planning in order to provide the knowledge required to attack rapidly an adversary’s critical vulnerabilities, avoid strengths, and destroy centers of gravity.”*

- **PRI (I) The capability to direct Naval, Joint and Combined Task Force operations afloat.** Leverage collaborative planning systems and improved C4I capabilities to better support the command and control of distributed naval, joint, and combined task force operations from sea-based platforms. Emerging C2 concepts, procedures and technology should be assessed using advanced C2 wargames, the Fleet Battle Experiment and the Joint Experimentation processes.
- **PRI (I) The capability to link shooters, sensors and command nodes with an open-architecture integrated information grid that leverages Commercial Off-the Shelf (COTS) technology wherever possible.** A grid of interoperable Data Links, Combat Systems and networks is required to support joint and combined operations. These systems must be compatible with the communications and computing backplane provided by IT-21 and the Navy/Marine Corps Intranet, which provide the critical path to connectivity across the force, both afloat and ashore.
- **PRI (II) The capability to dynamically manage information to produce maximum awareness of the battlespace for the maximum number of decision-makers.** Embedded equipment, software applications dedicated personnel and new procedures are required to manage the increasing information flow to achieve best actionable knowledge at all levels and nodes.
- **PRI (II) The capability to effectively detect and report chemical and biological warfare agent detections via networks.** This capability is needed to ensure that chemical and biological warfare agents are detected quickly, but more importantly, rapidly and efficiently reported to the force. Through the early countering of these agents their effects will be minimized, thereby assuring our forces will be able to continue to fight and win.

## **2. COMMON OPERATIONAL/TACTICAL PICTURE**

*“Knowledge superiority will allow us to know what is occurring and to act quickly; it is the second means that underpins the projection of maritime power. Through our access to cyberspace, naval forces will achieve an unprecedented awareness of the battlespace.”*

- **PRI (II) The capability to fuse and display sensor data into an integrated, near real-time common operational picture.** The distributed operations, speed of command and decentralized command structures dictated by the maritime concept demand a common operational picture (COP) focused on the operational theater which is timely, accurate and interoperable with joint and combined forces.
- **PRI (II) The capability to rapidly process data into useful knowledge by user-friendly displays and decision aids.** In addition to rapid access to raw sensor, intelligence and logistics data, advanced information systems must automate processing and include evaluation aids for decision-makers and supporting commanders, providing translation of raw data into adaptive information and knowledge. These systems must

employ push-pull architectures, with data transfer priorities determined by operational commanders.

- **PRI (II) The capability to fuse and display weapons-quality sensor data into a real-time, common/coherent tactical picture.** System architectures and tactical procedures must support a common/coherent tactical picture (CTP) focused on the battlespace. It must also support inter-agency and combined force operations.

### 3. COMMUNICATIONS/DATA LINK

*“And improvements in networking and communications technology, matched by agile and adaptive organizations, will dramatically accelerate the operations of dispersed and maneuvering naval forces...it will provide naval forces the speed of command to operate faster than those adversaries -- inside their decision timelines. Ultimately, networked operations will improve our operational tempo and provide the knowledge to maneuver or produce effects that “lock out” an opponent’s intended actions and defeat his overall strategy.”*

- **PRI (I) The capability for all combatants and tactical aviation platforms to operate a common tactical data link system.** This will provide the capability to achieve responsive, accurate fires and effective battlespace control. Priority should be placed on joint integration and achieving a common baseline across the force. Satellite connectivity is required to integrate distributed naval forces and land-based forces.
- **PRI (I) The capability to produce and sustain a Single Integrated Air Picture (SIAP), where all assets share one near real-time joint/fused picture, identifying friendly, adversary and neutral air contacts.** This capability is necessary to reduce fratricide, and increase the confidence of units’ ability to engage designated hostile targets.
- **PRI (II) The capability to positively identify enemy, friendly and neutral ships, aircraft and ground forces at extended ranges in all weather conditions.** This will allow battlefield commanders to manage and control the entire battlespace, and to minimize fratricide.
- **PRI (II) The capability to receive, translate, and forward multiple data links (TADIL-A, TADIL-B, TADIL-J, PADL, ATDL, etc.) to Joint and Coalition forces over-the-horizon.** Near real-time data fusion is needed to correlate tracks in overlapping sensor coverage areas, particularly air tracks reported on different links. Reliable combat identification sharing among Joint and Coalition tactical forces is also required. Data link capability must provide the picture to Joint forces in a tactically useful time period (example: the air picture must be updated every few seconds), and visualization tools in tactical displays which ensure that on-scene commanders can quickly grasp mission-critical information. All elements (primary collection, fusion and dissemination architecture, deconfliction, classification, broadcast, and display technologies) are critical.

#### 4. SURVEILLANCE/RECONNAISSANCE

*“To ensure America’s continued maritime dominance, the Navy and Marine Corps must remain forward in peacetime -- both overtly and covertly -- routinely collecting intelligence and gaining valuable knowledge of the operating areas where they will most likely be called to respond during crisis or conflict.”*

- **PRI (I) The capability to conduct covert surveillance in the littoral battlespace.** Real-time awareness of the battlespace is required to support an accurate common tactical picture. The relatively long dwell time capabilities resident in manned and unmanned aerial and sub-surface naval vehicles provide a means to surveil surface/shore targets of interest and detect the presence of mines in shallow or congested littoral waters with minimal risk to naval forces.
- **PRI (I) The capability to conduct armed maritime and littoral ISR.** Operation in the littoral environment requires an armed maritime and littoral ISR capability for U.S. Naval forces in traditional, joint and combined roles to counter changing and emerging threats. Improve capabilities for armed surveillance and reconnaissance in maritime and littoral areas; collection, processing and dissemination of environmental data and acoustic, signals, imagery, communications, and electronic intelligence; and evolution into a network-centric warfare environment.
- **PRI (I) The capability to identify and provide near real-time targeting data to shooters against mobile and re-locatable targets ashore.** The potential adversaries we face in the future will have a growing number of mobile re-locatable threats such as TELs that can be broken down and moved in a matter of minutes after use. It is essential to be able to neutralize these threats to be able to dominate the littoral battlespace and protect our forces at sea and ashore.
- **PRI (III) The capability to operate organic remote sensors (e.g., Vertical Take Off and Landing UAV) from all air-capable platforms.** Distributed operations in the littoral place a premium on organic, tactical sensors, which extend the horizons of our ships and allow us to search/surveil a greater volume of the battlespace. An organic unmanned tactical aerial reconnaissance capability is needed. This asset must: be organic to naval forces afloat and ashore; be deployable from all aviation-capable ships and from shore; be survivable in multiple threat environments; provide the range, speed, and endurance to support tactical missions; have accuracy capable of supporting precision guided munitions; quickly and accurately acquire, recognize, and designate targets (all weather, night and day); be integrated with attack/re-attack planning aids; and perform BDA, with real-time data communications for battle management.
- **PRI (II) The capability for stand-off detection of chemical and biological warfare agents.** Networked chemical and biological sensors will improve the common tactical picture and when combined with stand-off agent detection capability, improve operational response.

## 5. SENSORS

*“Network-centric operations will link shooters, sensors, and commanders and will permit effects-based planning in order to provide the knowledge required to attack rapidly an adversary’s critical vulnerabilities, avoid strengths, and destroy centers of gravity. Sensors under the tactical control of commanders and networked systems for real-time shared awareness are priorities for improving our exploitation of cyberspace, synchronization, and overall combat effectiveness.”*

- **PRI (I) The capability to operate in an environment in which the Global Positioning System (GPS) is jammed or degraded.** To achieve the rapid, precise effects integral to our concept, we must ensure GPS does not become a single point failure in future warfighting capability. We must therefore reduce the risk of current mission-critical reliance upon GPS navigation data across the spectrum of operations and platforms. Total reliance places network-centric operations at risk. Near-term analysis is required to assess aggregate GPS vulnerability across warfare areas, prioritize mission-critical systems, assess the costs of technology options to improve current systems (such as jam-resistant antennas, high gain receivers and INS/GPS coupled navigation) and assess risks of not providing back-up for mission critical systems.
- **PRI (II) The capability to generate and disseminate precise time and time-interval signals to appropriate nodes on the network.** These signals are critical to the calibration and operation of space-based systems for fleet precise geolocation, and navigation systems as well as for targeting, BDA, and communications.
- **PRI (III) The capability to organically measure and evaluate atmospheric, oceanic, and terrestrial environmental characteristics in real-time.** Real-time characterization of the battlespace environment is essential for the operational decision-making and is a required input for sensor/weapons systems performance prediction and optimization as part of the common operational picture.
- **PRI (IV) The capability of deployed radars and sensor systems to evolve rapidly with simple component replacement.** Capabilities not available when the system is originally deployed should be easily added as emerging technologies mature. Jamming improvements must be designed for deployment as rapidly and easily as the upgrades to the threat systems they are designed to counter. A method to anticipate, produce, and field “just in time” counter tactics and system upgrades is required.

## 6. SATELLITES

*“Naval forces must therefore control the entire battlespace -- sea, air, land, space, and cyberspace -- in order to defend against, defeat, deny or negate (an adversary’s) capabilities.”*

- **PRI (I) The capability to dynamically manage and assign bandwidth for maximum efficiency.** As inherently mobile subscribers, Navy platforms are and will continue to be bandwidth limited relative to the other Services. The Navy should maintain a leading role in satellite communication support to the mobile user. Bandwidth usage needs to be made more efficient and effective. The combined bandwidth requirements of the transmission of national imagery, tactical imagery, common/consistent tactical picture, tactical data networks, command voice networks, video, etc., need to be addressed. The IT-21/Navy-wide intranet core capability should be developed to efficiently accommodate the full spectrum of requirements.
- **PRI (IV) The capability to deny our adversaries accurate positioning, navigation and timing signals from space-based systems.** Allowing adversaries access to precise position and time information will allow them to target and re-target U.S./allied forces faster and with greater accuracy.

## 7. INFORMATION OPERATIONS

*“No foe, present or future, will match our knowledge -- or our ability to apply it.”*

- **PRI (II) The capability to conduct offensive and defensive information operations across the spectrum of warfare.** Information operations, particularly computer networks at sea and ashore, will become increasingly important as the Navy moves toward network-centric operations. Specific priorities include: Naval Security Group activities, Operational Security (OPSEC), Operational Deception (OPDEC), Psychological Operations (PSYOPS), Physical Destruction, Civil Affairs (CA) and Electronic Warfare (EW) to include denial of adversary C4ISR systems, as well as denial/exploitation of adversary access to friendly information and networks (CNA/CND).
- **PRI (II) The capability to develop sufficient numbers of linguists fluent in specific languages to use for information operations and intelligence gathering.** Accurate and timely information from foreign sources can only be assured if we have a sufficient group of linguists available for rapid translation. These linguists must be fluent in their particular language specialty, and available to be dispersed throughout the fleet and positioned forward as well as at the central analysis nodes for optimum effectiveness. A worldwide language capability should be pursued to ensure that all contingencies can be covered.

## 8. INTEROPERABILITY

*“...interoperable communications networks will allow all elements of U.S. foreign policy to "plug-and-play" in this regional knowledge base upon their arrival in theater.”*

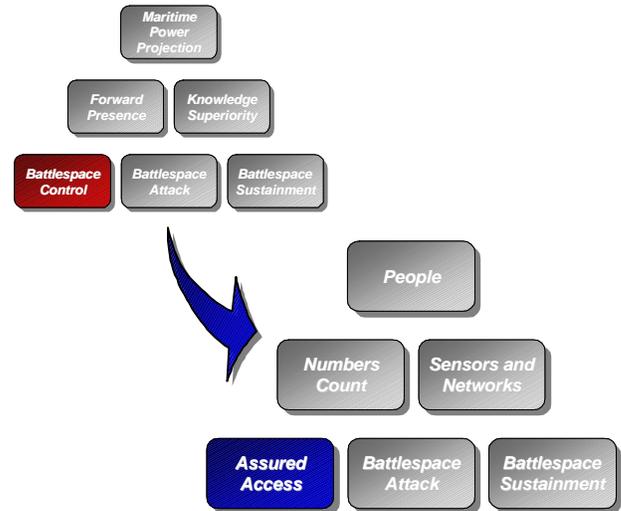
- **PRI (III) The capability to provide automated, timely access and exchange of**

**national source data to tactical forces (Joint and Coalition).** Automated exchange protocols should be developed to allow timely sharing of information between all Joint and Coalition forces. It is only through the judicious sharing of this information that true Knowledge Superiority and dominance of the battlespace can be achieved by Joint and Coalition forces.

- **PRI (III) The capability to share with allies the full range of digital communications that is releasable.** In order to be truly interoperable with allies, the maximum use of shared digital communications must be a priority. Current and future systems should be upgraded to allow appropriate communications flow with allies.

## Battlespace Control

Forward naval forces will project defensive as well as offensive power over land in order to shape the future battlespace. Theater missile defense, cruise missile defense, air defense for the protection of U.S. and allied forces, and their homelands, will be possible. Battlespace control is more than efforts to ensure naval survivability in order to subsequently place power ashore; our access through forward presence and knowledge superiority will now permit the cumulative effects of our protections, fires and maneuvers to simultaneously impact events offensively on land. Naval forces must remain capable of operating regardless of a future adversary's area denial strategy. This may mean overcoming varying levels of space-based, non-acoustic and acoustic sensors, layered defenses of undersea platforms and cruise missiles, information warfare, intelligent mines or weapons of mass destruction.



*“Battlespace control encompasses the range of actions required to assure our access and shape the battlespace for naval, joint, and combined forces. Sea control remains both a cardinal prerequisite for, and a unique naval contribution to, joint warfighting; it is essential to assuring the flow of follow-on forces into a theater.”*

### I. Operational Concepts for Battlespace Control:

Battlespace control for forward forces will require a combination of **strategic, surface, subsurface and air** superiority.

- Ballistic missile submarines (SSBNs) provide the Navy's contribution to nuclear deterrence at the strategic level. Continuously forward deployed to classified locations, the SSBNs represent a secure and reliable counter to any potential adversary's attempt to obtain a nuclear advantage over the United States.
- Although the mission requires stealth and invisibility on station, the knowledge that a certain portion of our ballistic missiles are always at sea in safe locations and able to launch against any adversary with a very short lead time will continue to be a credible deterrent.

The primary force enabler for air superiority is the **carrier air wing**. The air wing will be capable of projecting air power over the littoral and far inland, attacking enemy aircraft, and suppressing or destroying enemy land-based surface to air and surface to surface threats.

- The carrier airwing will consist of strike/fighter, early warning, and CSAR/SUW aircraft. The airwing assets will contain all required capabilities to gain and maintain air superiority.
- These aircraft will be able to accomplish all the required missions including fighter, attack, aerial refueling, C2, ISR, CAS and SEAD.
- MPR and HSL aircraft will act as force multipliers and provide mid to long range attack, C2, ISR, ASUW and USW.
- Submarines can approach the littoral covertly and provide a defensible asset that can launch special operations forces and stand off land attack munitions.
- Aegis cruisers and destroyers use precision stand off land attack munitions to prepare the battlespace. Cruise missiles attack enemy command and control, and communications nodes. Missile attacks will also be aimed at the anti-aircraft installations/TELS to soften up enemy defenses. Marine Corps assets ashore will be supported with Naval Surface Fire.

**Force Protection** consists of a layered defense concept of shipboard, aircraft and submarine systems. Central to ship defense is the ability to defend against surface and sub-surface, theater ballistic, and anti-ship cruise missile attack.

- The Theater Ballistic Missile Defense (TBMD) system fielded on Aegis capable platforms will be the Navy's primary theater defense asset to counter the ballistic missile threat. Multiple TBMD ships will combine forces to provide a defense in depth against long/short range theater ballistic missiles.
- All platforms will use a system of integrated self-defense capabilities including advanced radars for detecting threats and directing fires, anti-ship cruise missile defenses, decoys, and close-in weapons systems.
- An example of Network Centric Operations applied to force protection is encapsulated in the Navy's revolutionary "Ring of Fire" concept for naval fire support. Aircraft, surface ships, and submarines are linked into a single battle group LAN. The Ring of Fire automatically matches requests for fire with available assets, saving both manpower and time, while ensuring the correct ordnance is on target when and where needed.
- Surface combatants, submarines, MPR aircraft, helicopters and IUSS assets combine forces to counter the undersea warfare threat.

- Protection against mines will be accomplished through the use of organic and dedicated mine countermeasures to include detection, avoidance, marking and neutralization.

## II. LONG RANGE PLANNING OBJECTIVES FOR BATTLESPACE CONTROL:

*“Battlespace control encompasses the range of actions required to assure our access and shape the battlespace for naval, joint, and combined forces. Our enduring mission of sea control remains both a cardinal prerequisite for, and a unique naval contribution to, joint warfighting; it is essential to assuring the flow of follow-on forces into a theater.”*

### 1. STRATEGIC DETERRENCE

*“Naval forces also provide the most cost-effective and survivable component of America's strategic nuclear deterrence triad.”*

- **PRI (I) The capability to maintain current sea-based strategic nuclear deterrence.** The SSBN force will be sized as directed by Defense Planning Guidance and constrained by treaty limitations.

### 2. ANTI-SHIP CRUISE MISSILE DEFENSE

*“In order to assure U.S. access forward, naval forces will be required to counter ...cruise missiles.”*

The ONI capabilities based assessments indicate significant advances in cruise missile technology and its widespread proliferation. Missile speed and ability to discriminate countermeasures are projected to increase. At the same time, missile detectability will likely decrease due to the spread of stealth technologies. In view of this increased threat, the following capabilities are required with respect to Theater Air and Missile Defense with a near-term priority placed on the deployment of improved close-in and point defense systems.

- **PRI (I) The Fleet-wide, point defense capability to achieve high-probability hardkill against sub-and super-sonic cruise missiles.** Future dispersed operations as envisioned in the maritime concept, and a robust multi-axis threat as projected by ONI require improved self-defense capabilities for all combatants against advanced ASCMs.
- **PRI (I) The capability to develop and deploy advanced active countermeasure systems and expendable decoys to facilitate deception operations and self-defense against ASCMs.** Ships must have the capability to defeat advanced weapons with multi-spectral seekers.
- **PRI (I) The capability to integrate self-defense stand-alone sensors and hard/soft-kill systems.** Engagement timelines imposed by advanced adversary capabilities and the compressed littoral battlespace dictate further automation of detection and decision-making processes to maximize system and operator responsiveness against low

observable sea-skimming threats.

### 3. AREA AIR DEFENSE

*“Forward naval forces will also project defensive power over land to protect U.S. and allied forces and their homelands with sea-based theater air and missile defense... Battlespace control is therefore more than efforts to assure access in order to place follow-on forces and power ashore; it permits naval forces to simultaneously produce decisive effects -- both offensively and defensively.”*

Priorities for area air defense (AAD) are as follows:

- **PRI (I) The capability for naval air forces to maintain air superiority over potential adversaries with technologically advanced and tactically superior aircraft possessing enhanced lethality and survivability, and capable of seamless interoperability.** This requires modernization of current aircraft as well as development and procurement of follow-on aircraft capable of air dominance over potential adversaries.
- **PRI (I) The capability to provide area air and missile defense against emerging threats, including advanced cruise missiles.** Development of a multi-sensor capability to complement radar systems should be considered. Improve capabilities to plan and execute joint air defense operations afloat. Modernization efforts must focus on collaborative planning systems, middleware for systems integration and supporting C4I/bandwidth to facilitate afloat planning and real-time battle management/operational decision making.
- **PRI (II) The capability to project the maritime air and missile defense umbrella inland over critical port facilities, ground forces and allied/coalition infrastructure.** Overland air and missile defense should leverage off improvement of current shipboard and carrier air wing sensor and weapons system capabilities.

### 4. UNDERSEA WARFARE

*“In the future, naval forces will be challenged by anti-access strategies built upon varied asymmetric and conventional threats and weapons. In order to assure U.S. access forward, naval forces will be required to counter a host of threats...”*

The following are the priorities for USW capabilities:

- **PRI (I) The capability to conduct undersea surveillance in littoral waters.** This capability will support sustained littoral campaigns against coordinated submarine and mine strategies in coastal waters and geographic choke points. Emphasis must be placed on improvement of sensors and processors required for ASW and MIW. Non-acoustic technologies should be given emphasis given the environmental conditions in most littoral waters.

- **PRI (II) The capability to simultaneously detect targets, process, fuse and display near real-time multi-sensor data for USW tactical decision making.** Defense against the undersea threat will require the combined efforts of numerous platforms and sensors operating simultaneously in different locations in the battlespace. Fusion of the information from these sensors will enable the battle force to be able to apply the appropriate neutralization techniques in a timely manner.

## 5. ANTI-SUBMARINE WARFARE

*“In order to assure U.S. access forward, naval forces will be required to counter...submarines.”*

The complexity of the littoral battlespace requires that undersea warfare adopt an integrated approach utilizing a variety of sensors including non-acoustic, multi-static active and passive technologies. These capabilities will support sustained littoral campaigns against coordinated submarine and mine strategies in coastal waters and geographic choke points. The following are the priorities for anti-submarine warfare:

- **PRI (I) The capability to deploy undersea sensor networks that can detect nuclear and conventional submarines in a littoral environment.** Processed data must be capable of integration into the common operational picture.
- **PRI (II) The capability to ensure adequate inventories of expendable USW sensors are available to achieve combat readiness prior to forward deployment and able to sustain combat/contingency operations in 2 MTW.** The inventory of active and passive expendable sensors must be maintained at a level that will support the requirement to sustain combat in a 2 MTW scenario. Additionally, training and readiness events must be accounted for to ensure that combat-ready forces are always deployed.
- **PRI (II) The capability to engage low doppler, near bottom threat submarines operating in shallow, high ambient noise water.** Anti-submarine warfare in the littoral involves some of the most difficult acoustic environments in the oceans. In order to ensure a capability against slow, quiet submarines in this environment, improved acoustic and non-acoustic sensors must be developed.
- **PRI (II) The capability to conduct extended range passive acoustic target classification, and threat weapon alertment.** The latest generation submarine weapon threats require early alertment in order to achieve survivability. High speed, multi-mode torpedoes and missiles are a growing threat to the battle force.
- **PRI (III) The capability to exploit non-acoustic submarine signatures such as periscope/mast exposure and wake phenomena.** Submarine quieting technology has proliferated worldwide in recent years, making the detection and tracking of submarines through passive acoustics alone very difficult. All detection methods must be exploited

to ensure a probability of success in ASW.

- **PRI (III) The capability to operate active, multi-static acoustic systems with improved performance and reduced false alarm rates.** Multi-static acoustic systems will provide the ability to track quiet, elusive submarines, particularly diesels in the littorals. Continue improvement of current capabilities including reducing false alarm rates.
- **PRI (IV) The capability to conduct enhanced ASW modeling and simulation.** New generation submarines have presented a challenge to ASW forces. Training must be realistic and include accurate threat modeling and simulations in all environments that will be encountered.

## 6. MINE WARFARE

*“...effective counter-mine capabilities, and the ability to locate and negate or destroy key enemy weapon systems are also fundamental to our efforts to achieve full-dimensional protection.”*

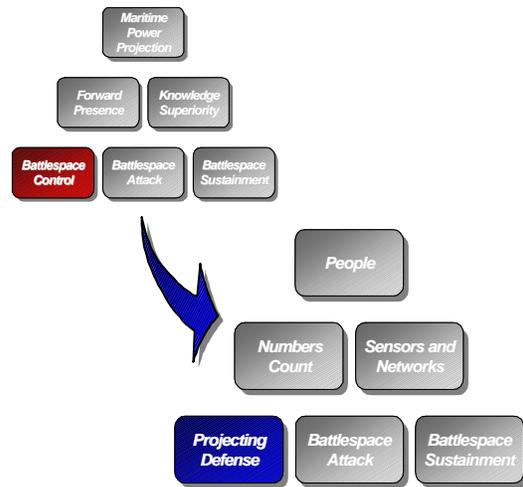
While it is preferable to avoid mined areas (using our knowledge superiority), military objectives may require operations in close proximity to mined waters. The Navy will continue to aggressively research and prepare mine countermeasure systems to ensure effective operational capability in littoral waters in support of land campaigns. Countermeasure technology must keep pace with the increased sophistication in mine fusing and stealth technology. The following are therefore the priorities for mine warfare:

- **PRI (I) The organic capability of surface forces to detect, avoid and/or neutralize mines within operationally acceptable timelines and with acceptable levels of operational risk.** Navy capabilities must include airborne, shipboard and submarine-based sensors and vehicles, using acoustic and non-acoustic sensors (e.g. sonar, electro-optics, and lasers). As organic capabilities are brought on-line, stand-alone Mine Counter Measures (MCM) will be balanced with organic systems to meet warfighting requirements.
- **PRI (II) The capability to transit mined areas in very shallow water and surf zones in order to land troops and supplies ashore in support of combat operations and/or operations other than war.** The threat assessment of potential adversaries indicates mined landing zones will be a probable obstacle to amphibious forces. In order to project our power ashore through ground forces, while protecting those forces and transport craft, this threat must be neutralized.

## 7. THEATER MISSILE DEFENSE (TMD)

*“Control of the multi-dimensional battlespace will hinge on our ability to project a defensive umbrella landward. This umbrella will be built largely on our emerging air and missile defense capabilities. Projecting defense ashore will enable Operational Maneuver from the Sea, and it will be critical for setting the conditions necessary to protect the flow of follow-on forces into a theater.”*

To achieve useful Theater Missile Defense capability, naval forces require the ability to detect and plan destruction of threat missiles prior to launch; detect, track, identify and kill all in-flight threats; conduct reactive in-flight planning for strike/counter-strike assets; conduct cooperative engagement operations; distribute threat missile tracks, situational awareness and warning information to concerned areas, personnel and facilities; and launch prompt counter-strikes against missile launch and infrastructure sites. The following are priorities for TMD capabilities:



- **PRI (I) The capability for command and control in a theater ballistic missile environment.** Continue development and implementation of a Joint Composite Tracking Network (JCTN) and Joint Data Network (JDN) to achieve a multi-node integrated ship and aircraft sensor data for real-time fire control quality composite track picture.
- **PRI (II) The capability to integrate Navy (Aegis) and USMC/Army (Avenger/Patriot) air defense systems to provide direct support to USMC/USA ground elements.** Communications are currently the limiting factor.
- **PRI (III) The capability to rapidly coordinate remote infrared detection with tactical radar, and a theater-wide communications link to enable early destruction of threat missiles.** Fusion of remote sensors, radars and command and control nodes will enable early detection and destruction of missiles.
- **PRI (III) The capability for Aegis ships to quickly shift between tactical and Theater Ballistic Missile mode.** The utility of naval ships is in their multi-function/multi-mission capabilities. The numerous tactical capabilities of the Aegis ships must be made quickly available to the battle group when needed, yet be responsive to area defense in the Theater Ballistic Missile mode.

- **PRI (IV) The capability to positively identify targets detected by national sensors, with an overall reduction in false alarm rate and a reduced need for operator intervention.** Owing to the short travel times for missile threats, the latency of launch point and impact point predictions must be reduced, tactical information must be rapidly passed theater-wide, and cooperative engagement initiatives must be extended to all potential fixed and mobile defense assets. Improvements are also required to defend against an attack by multiple simultaneous lower tier weapons.
- **PRI (V) The capability to access and to exploit foreign sensors, links, and networks in order to determine best own-force asset deployment.** Theater missile defense will require fusion of an all-source sensor network including organic, national, and Allied/Coalition assets.

## 8. CHEM-BIO

*“Enhancing our capabilities to counter terrorism, to respond to chemical or biological attack and operate in a chemical or biological environment, and to treat and process mass casualties is essential.”*

To enable naval forces to operate effectively in a chemical/biological threat environment, the following capabilities and associated priorities are required:

- **PRI (III) The capability for small units and individual warfighters to sense low, sub-lethal concentrations of chemical/biological agents.** Capabilities include sensors/notification architecture, vulnerability assessment, planning TDA’s, and tactically responsive modeling and simulation.
- **PRI (III) The capability to continue full tactical operations while wearing protective gear.** Capabilities include operations in extreme climates including rapidly donned, lightweight and long duration individual protection as well as rapidly established and highly sustainable collective protection.
- **PRI (III) The capability to conduct a large-scale decontamination including the use of a waterless chemical decontamination process.** Capabilities also include faster, more effective, and less toxic means for decontaminating individual personnel, small units, large surfaces, aircraft and other vehicles, and electronic equipment.
- **PRI (III) The capability to administer chemical and/or biological weapon antidotes that are effective against new threats.** Protection of our forces requires defense against all chem/bio threats including any new developments. They must be made widely and readily available to all forces, with priority for those forward deployed.

## 9. SURFACE WARFARE

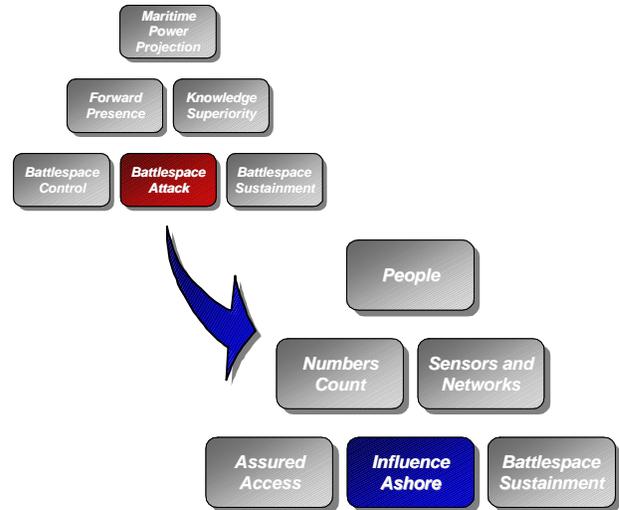
*“The vast majority of America's global trade will continue to move by sea, and freedom of the seas remains the enduring responsibility of the Naval Service.”*

Surface warfare (SUW) remains a core naval mission. In order to meet the advances in surface combatant technology and to provide flexibility to deal with current and projected contingency operations in support of interagency tasking, the following sea control capabilities are needed:

- **PRI (I) The capability to detect, identify, track and destroy high numbers of small craft in the littorals.** A combination of airborne and surface weapons systems is required to achieve adequate standoff ranges and provide force defense in depth against small boat raids.
- **PRI (II) The capability to conduct long-range, high-endurance maritime and electronic surveillance.** Improvements to current systems should focus on enhancing C4I and integrating sensors to facilitate the detection of reduced signature surface and subsurface targets.
- **PRI (III) The capability to intercept small boats in support of maritime interdiction, counter narcotics and migrant interdiction operations.** High speed, maneuverable aircraft and ships will be needed to be able to intercept go-fast boats used in smuggling operations.

## Battlespace Attack

Battlespace attack will disrupt an adversary's decision making process by an early exploitation of the access provided by both forward presence and preemptive knowledge superiority. The speed of employment and tactical surprise afforded by forward naval forces permit achieving battlespace control through simultaneous battlespace attack. Whether conducting long range strike or naval fires for dominant effect, inserting Marine Corps or Special Operations Forces, or conducting a non-combatant evacuation, the capability to apply a precise effect on target when needed is paramount to control of the situation. Therefore, the impact of events on land by battlespace attack concurrently results in battlespace control. The result is that sequential operations for both on-scene and follow-on, CONUS-based forces can be conducted as required. These joint, follow-on forces can, to a larger degree, then join the ongoing battlespace attack posture and be immediately available for offensive operations.



*“The ability to apply these effects inside an adversary's decision timeline, with a knowledge and understanding of their impacts, permits effects-based planning to disrupt his operational design.”*

### I. Operational Concepts for Battlespace Attack:

Battlespace attack will rely on the massed firepower of the carrier battle group, its air wing, associated amphibious landing forces, and MPR, all using precision aiming and network centric operations. **Power Projection** will be the overarching operational concept for battlespace attack, providing massed effects across the littoral and far inland. The Navy's forward presence and assured access means that naval forces will usually be the first ones on scene and available to confront a developing crisis.

- Ships, submarines and aircraft will achieve strategic effect and shape the battlespace with massed, precision guided munitions launched from numerous platforms aimed at the enemy's centers of gravity and critical nodes.
- Carrier air wings are launched to provide tactical air power, achieve air dominance and strike at critical targets while providing support to ground forces ashore.
- Submarines provide covert intelligence, surveillance, and indications and warning in addition to landing and recovering special operations forces.

- Marine Expeditionary Forces project power ashore, enabling follow-on entry of heavy land-based air and ground forces. The operational concept for amphibious operations is defined as the uninterrupted movement of forces from ships located in the littorals as well as from platforms located over the horizon, rapidly and directly to decisive objectives. OMFTS is the capstone concept for the 21<sup>st</sup> Century and is applicable across a range of military operations from small-scale contingencies to major theater war.
- MPR aircraft augment the air wing from forward bases by bringing the capability to conduct C2, ISR, SUW, USW, and land attack missions to the operation.
- Unmanned Aerial Vehicles will be launched and recovered from ships to gain critical ISR and provide additional SEAD capability for force protection.

Future battlespace attack concepts will build on the concept of land attack and expand its capabilities further to achieve direct and decisive impact ashore. The theme selected by the CNO for the focus of the Strategic Studies Group XVIII was “Sea Strike...Attacking Land Targets From the Sea Base.”

- **Sea Strike** is a future capability of forward deployed naval forces firing thousands of munitions per hour, with extended range, using fully integrated and simultaneous fires from distributed netted forces, with precision targeting.
- This type of attack would produce overwhelming physical destruction and psychological shock to enemy forces.
- This capability could be used as a substantial conventional deterrent thereby contributing to the shaping of a region.
- Network Centric Operations with a vastly improved ISR sensor network will provide the ability for precision effects-based targeting required for Sea Strike to be successfully conducted.

**Information Operations (IO)** will be conducted against an adversary to affect his information systems while defending our own systems.

- IO operations will include attacks on adversary computer networks and operations security, military deception, psychological operations, electronic warfare, and special information operations.

Naval forces will be able to perform all the necessary **Command and Control** functions to execute their operations, and at the same time be prepared to assume the responsibility for those same functions in conjunction with joint forces.

- As soon as the battle force is joined by other U.S. military, coalition, or civilian forces, the Naval Commander will be designated the Joint Force Commander (JFC) and naval forces will exercise command and control for the Joint Task Force (JTF).
- Network Centric Operations will enable naval forces to execute the roles of Joint Force Maritime Component Commander (JFMCC), Joint Force Air Component Commander (JFACC), Area Air Defense Commander (AADC), and Airspace Control Authority (ACA).

## II. LONG RANGE PLANNING OBJECTIVES FOR BATTLESPACE ATTACK:

*“Concurrent with battlespace control, attack operations such as precision strike and ship-to-objective maneuver exploit the advantages of maneuver and firepower from the sea. The speed of employment afforded by networked forces forward is invaluable when speed of deployment from the United States -- and the loss of surprise -- is a disadvantage.”*

### 1. LONG RANGE STRIKE AND INTERDICTION

*“...the unprecedented reach, volume, and precision of our weapons and sensors...allow us to project power deep inland. Improving and connecting our sensor, information, and targeting systems -- including focusing on the real-time location of an adversary’s mobile and time-critical targets -- will accelerate the operational tempo at which attacks can be delivered for decisive effects.”*

Naval forces must be able to project power far inland to effectively shape the battlespace and achieve the desired strategic effect. Navy surface combatants, aircraft, and submarines will use long range strike and interdiction to hold an adversary’s critical nodes at risk from the littoral to deep inland. These capabilities will improve the Navy’s ability to apply long range strike and interdiction to achieve the desired result. The following priorities apply to long range strike and interdiction. These capabilities will hold an adversary’s critical nodes at risk throughout the battlespace from the littoral to deep inland:

- **PRI (I) The capability for aircraft carriers to conduct all-weather precision strike operations.** Advanced strike fighter programs should focus on survivability, detectability, and full integration of the next generation of joint precision guided munitions to include all-weather precision strike munitions.
- **PRI (I) The capability to direct responsive, precision lethal naval fire against a wide range of tactical and strategic targets from surface combatants and submarines.** Investigate in-flight re-targeting and organic BDA options to improve Tomahawk Land Attack Missile (TLAM) responsiveness and operational flexibility. Due to recent combat expenditures, TLAM programs must remain on course to restore inventory stability and avoid a gap in attack capabilities. Increase the capability of surface combatants to provide high volumes of precision fires capable of interdicting enemy ground maneuver forces, and relocatable targets such as TBM systems.

- **PRI (I) The capability to provide sea-based Suppression of Enemy Air Defenses (SEAD).** SEAD capabilities must keep pace with the proliferation of mobile, advanced, and integrated air defense systems (IADS) in support of joint operations and retain the ability to affect adversary EW and communication systems.
- **PRI (I) The capability to conduct non-cooperative target identification equally well in the active or passive mode.** Identification needs include air, ground, surface, and subsurface assets. Additionally, improved identification friend or foe (IFF) capabilities are required. This should include the ability to discriminate between friends, foes, and neutrals.
- **PRI (II) The capability to conduct flexible, rapid mission planning for use of precision guided munitions.** TLAM mission planning time must be significantly reduced, to allow re-targeting minutes prior to launch and/or while airborne. The strike planning process must be compressed by applying technology to conduct battle damage assessment more rapidly, to update target databases and target lists, and to communicate strike plans. Planning systems must also support re-targeting after strike packages are airborne, by rapidly de-conflicting an evolving tactical scene and communicating new targeting data to the aircraft. New strike planning capabilities must be capable of managing more targets with the same number of strike platforms. Revolutionary battle damage assessment and target identification tools, including new sensors and unmanned platforms, are desired to optimize strike planning and updating as operations unfold. The capability to use high-speed communications networks and protocols to pass weapon assignments and time-critical targeting information in both text and graphical formats is desired.
- **PRI (II) The capability for naval guns to provide sustained volumes of long-range, precise effects fire to support operations from the sea and ashore.** The ability to project power ashore will depend on an integration of sea-based air power, amphibious landing forces and naval fire support. This naval fire must be long range and accurate to be able to extend our influence deep into the littorals and provide decisive effects.
- **PRI (III) The capability to perform BDA with rapid response time and video/data communications.** BDA plays an essential role in knowledge of the battlespace and is only effective if obtained rapidly and accurately. The need for follow-on attacks with costly precision munitions must be determined quickly to ensure that weapons are not wasted to ensure their availability to be placed when and where needed. An unmanned capability is desired.
- **PRI (IV) The capability to attack Hard, Deeply Buried Targets (HDBT).** Navy capability to hold HDBTs at risk is extremely limited. To provide an effective deterrent against and flexible response to projected adversary area denial strategies, forward deployed naval forces require the ability to neutralize selected HDBTs (such as leadership/C2 centers and weapons of mass destruction facilities).

- **PRI (IV) The capability to employ scalable munitions with selectable yield** (for both minimizing collateral damage or for increasing suppressive power).

## 2. AMPHIBIOUS OPERATIONS AND CLOSE AIR SUPPORT

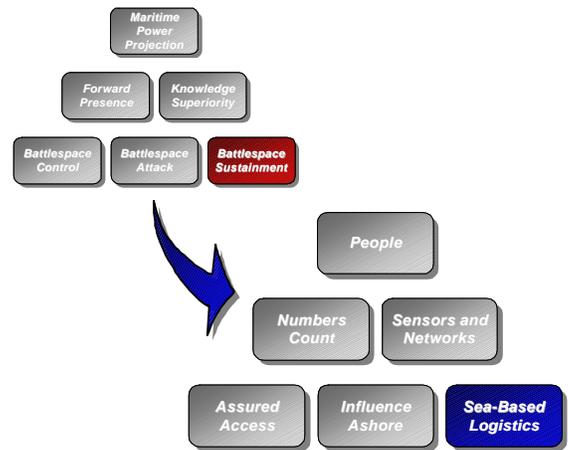
*“Operational Maneuver from the Sea underwrites the conduct of naval expeditionary operations in the littorals by combining the proven principles of maneuver warfare and maritime power projection...capitalizing on technology and improvements in mobility, weaponry, sustainment, and command and control, as well as doctrine and organization... to seamlessly project power ashore to attain critical campaign objectives.”*

We must continue to evolve the capability to conduct sea-based, expeditionary operations across the spectrum of conflict from peacetime engagement to major theater war. The following are the priorities for Battlespace Attack amphibious operations capabilities and Close Air Support (CAS):

- **PRI (I) The capability for improved day, night and all-weather close air support for amphibious operations ashore.** Ensure the mix and balance of Navy targeting sensors and munitions to support the capability to conduct day, night and all-weather close air support missions.
- **PRI (II) The capability to provide sufficient lift to support and sustain naval expeditionary maneuver operations from the sea.** Prepositioned assets, maritime sealift and combat logistic forces must be able to support the full range of amphibious operations. Forces must be capable of sustaining this support for extended periods of forward deployment.
- **PRI (III) The capability for upgraded C4I on amphibious ships.** Sufficient C4I is required on all amphibious ships to support the baseline demands of decentralized, network-centric naval and joint operations.
- **PRI (IV) The capability to employ expanded munitions, to include non-lethal weapons that minimize collateral damage in a densely populated environment.** Urban warfare, anti-terrorist actions and certain special operations require the capability to neutralize a threat with precision while minimizing damage to the surrounding area and populace.
- **PRI (V) The capability to detect human-portable munitions.** Security operations require the ability to detect hidden human-portable munitions to minimize the risk to US forces.
- **PRI (V) The capability for enhanced personal communication systems that allow hands-free voice communications with unit commanders.** Examine the possibility for future forces to be able to be connected through personal communications units that allow hands-free contact at all times.

## Battlespace Sustainment

Our mobile, dispersed forces will require an equally agile and tailored logistics system for support within their dynamic tempo of operations. Configured to the mission, ship-based logistics and joint command and control ships will provide the required support to sustain operations and maneuver across the extended battlespace. Maneuvering sea-based forces permit commanders to conduct fully integrated joint command and control, surveillance, targeting, logistics and re-supply. This sea-based sustainment of military forces also enhances other operational concepts such as *Operational Maneuver from the Sea* and *Ship to Objective Maneuver*.



*“Configured to the mission, sea-based logistics and joint command and control will support maneuver forces across the battlespace -- from replenishing and refueling forces at sea to delivering tailored seaborne logistics that sustain operations on land. In the future, both conventional and asymmetric threats will require ground forces to become less dependent on vulnerable fixed bases or stockpiles ashore. Force sustainment through sea-based logistics will reduce the threat of an attack on key logistics nodes and the requirement for dedicated forces to protect shore-based logistics concentrations.”*

### I. Operational Concepts for Battlespace Sustainment:

Battlespace sustainment depends upon the delivery of tailored and focused support and logistics from the sea across the spectrum of peacetime presence, crisis response and conflict. Force sustainment encompasses the comprehensive and responsive logistic support system that includes air and sealift, replenishment ships, mobile repair facilities, and advanced logistics support hubs. Battlespace sustainment is the backbone of any operation and is critical to its success. This capability underpins the Navy’s future ability to operate worldwide.

**Combat Logistics Forces (CLF)** are integral to the operation of forward positioned and rapidly deployable forces surged from out of theater. The ability to replenish forces underway and to respond rapidly to changing operational requirements is essential to the effective employment of these forces.

- Ships of the CLF provide the organic support that will allow U.S. naval forces to maintain a forward presence in any location worldwide with little or no dependence on shore based facilities. These ships will incorporate anti-terrorism/force protection capabilities during operations in areas where there is a threat of terrorist or pirate activities.

- Improvements in warfighting ability will require a commensurate revolution in the way CLF ships are operated, maintained and protected. In order to be successful in the future, Network Centric Operations must be applied to all units in the battle force including the CLF ships.
- Protected, hardened communications and command and control will be used to distribute necessary supplies. At-sea replenishment of weapons will be accomplished quickly and safely with increasingly sophisticated, systems. Rapid turn-around times will enable the speed of command necessary for such advanced concepts as Sea Strike and Ring of Fire.

The **Maritime Prepositioning Squadron (MPS)** is the key element of the Marine Corps expeditionary sustainment capability. It permits the rapid deployment of expeditionary forces anywhere in the world through the linkup of personnel from the operating forces with prepositioned, sea-based equipment and supplies.

- When the MPS and its combat forces are joined it becomes a Maritime Prepositioning Force (MPF). This operation will be protected from asymmetric threats.
- The equipment, supplies, facilities, and security afforded by an MPS provide a unique capability in response to a wide variety of operations from natural disasters, peace operations, and humanitarian missions to the full range of warfare.

Ships of the **Military Sealift Command (MSC)** provide the Navy with the capability to move and sustain U.S. forces overseas by strategic sealift. Equipment, ordnance, and supplies needed to conduct any sizable projection of joint military power must move by sea. Future conflicts will depend on the MSC and commercial assets to sustain forward forces for any period of time.

- MSC ships will incorporate anti-terrorism/force protection capabilities during operations in areas where there is a threat of terrorist or pirate activities.

## II. LONG RANGE PLANNING OBJECTIVES FOR BATTLESPACE SUSTAINMENT:

*“Sea-based Logistics. Efficient sea-based command, control, and logistics will be crucial to naval and joint warfighting as well as the realization of emerging operational concepts. Robust Maritime Prepositioning Forces and strategic lift capabilities will be key to the projection and sustainment of combat power. Advanced work practices, borrowed from the ongoing revolution in business affairs, will also improve the overall efficiency of sustainment operations and permit the development of near-real-time, in-transit supply and underway replenishment tracking.”*

The development of efficient sea-based command, control, and logistics will be crucial to

naval and joint warfighting as well as the realization of emerging operational concepts and capabilities. It is imperative that the Navy balance the size and cost of its infrastructure relative to its operating forces. The vision for Infrastructure is that it is the foundation of the Navy/Marine Corps fighting enterprise bringing together the right mix of people, knowledge, technology, structure and culture to provide effective and focused support to the warfighter. Infrastructure as defined by the RBA chartered Strategic Infrastructure Plan working group encompasses the people, processes, and properties that support Navy and Marine Corps forces and includes:

- Installations
- Logistics (Ordnance, Supply, Maintenance and Mobilization)
- Military and Civilian Personnel Management
- Recruiting/Retention
- Individual Training/Development
- Medical and Dental
- Communications and Information Technology (data/voice/video)
- Management Headquarters
- Quality of Service (live, work, learn and play)
- Acquisition – including RDT&E

Battlespace sustainment prioritization is difficult due to the corporate decision to historically mortgage recapitalization to fund readiness and modernization. It is imperative that we develop innovative investment strategies that will ensure naval forces are properly sustained to fight and win in the 21<sup>st</sup> Century. The following are priorities for battlespace sustainment:

## 1. **REPLENISHMENT**

*“Configured to the mission, sea-based logistics and joint command and control will support maneuver forces across the battlespace -- from replenishing and refueling forces at sea to delivering tailored seaborne logistics that sustain operations on land.”*

- **PRI (I) The capability for day and night connected and vertical replenishment and transfer of personnel and cargo at sea.** The Navy must retain an afloat, organic capability for tactical logistics and combat support missions (i.e., SAR, MEDEVAC).
- **PRI (III) The capability to conduct ship-to-shore resupply in sea states up to 3.** The ability to provide logistics and re-supply for naval forces ashore is presently limited to sea state 1 or 2.

## 2. OPERATIONAL LOGISTICS

*“Mobile, dispersed forces require an equally agile and tailored logistics system to support their dynamic operations. Logistics from the sea that are focused to arrive where and when needed, without a large footprint requiring significant protection, will support sustained maneuver in an expanded battlespace.”*

- **PRI (III) The capability to provide in-transit tracking of logistics spares.** Integrate Focused Logistics and Total Asset Visibility concepts throughout shore and afloat logistics infrastructure to reduce redundancy in shipboard logistics loadouts and improve efficiency and responsiveness of re-supply.
- **PRI (IV) The capability to fully integrate logistics information into the Common Tactical Picture.** Naval force commanders lack a means of obtaining, displaying, and analyzing the status of equipment and resources necessary for operational/tactical planning. Current logistics reporting systems are not focused on providing information to the warfighter, but to logisticians. Logistics information should be part of the Common Operational Picture.

## 3. WEAPONS HANDLING AND LOADING

*“...maneuvering sea-based forces will permit commanders to conduct fully integrated joint command and control, surveillance, targeting, logistics and re-supply.”*

- **PRI (I) The capability to sustain forward deployed precision guided munitions levels in support of rotational deployment requirements, contingency operations, and DPG directed two MTW requirement.** While cross-decking may be necessary to provide desired levels of certain special purpose ordnance, we should not be dependent upon this process for fundamental combat capabilities -- we must deploy combat-ready.
- **PRI (II) The capability to conduct underway reload and cross-deck of land attack munitions.** Retain the capability for theater reload of Tomahawk and follow-on land attack missiles. This capability should be met through an optimum mix of organic naval forces, host nation and contractor support.
- **PRI (II) The capability to provide required support equipment, training shapes, and mission essential tactical equipment to all deploying and follow-on forces.** The requirement to maintain combat readiness while deployed necessitates access to appropriate below the line support equipment.

#### 4. FORCES SUPPORT

*“Netted logistics that include pre-positioning, strategic sealift, and airlift are key to sustaining future joint and coalition forces...Force sustainment through sea-based logistics will reduce the threat of an attack on key logistics nodes and the requirement for dedicated forces to protect shore-based logistics concentrations.”*

- **PRI (I) The capability to support MAGTF contingency deployments from maritime preposition force assets.** The maritime pre-positioning force must support Marine Corps expeditionary operations at Defense Planning Guidance (DPG) directed levels of readiness.
- **PRI (III) The capability to conduct expeditionary naval construction support, naval expeditionary operations, Marine Corps operations ashore, humanitarian assistance/disaster relief operations, and naval construction/installation support.** In addition to contingency employment, construction capabilities provide unique opportunities for engagement with Allies and emerging partners when the employment or exercise of combat forces may be inappropriate or ineffective due to political sensitivities or significant differences in military capabilities/security interests.

#### 5. MAINTENANCE

*“Advanced work practices, borrowed from the ongoing revolution in business affairs, will also improve the overall efficiency of sustainment operations.”*

Corrosion/deterioration reduction and control and condition-based maintenance are needed to ensure that our equipment is maintained to our best ability. More austere budgets have dictated reduced acquisition of new equipment -- it is therefore imperative that our extant equipment be maintained efficiently and properly. The following priorities apply to Infrastructure Maintenance capabilities:

- **PRI (I) The capability to determine the physical condition of ship, amphibious vehicle, ground vehicle and aircraft systems (especially electro-mechanical systems) that signal when maintenance is required.** Sensors, neural networks, vibration monitors, analyzers and fluid quality test equipment or monitors are examples of technologies that may be applied. The goal is to increase asset availability and to reduce total ownership costs.
- **PRI (IV) The capability to incorporate new or alternate materials that are more resistant to corrosion and fouling into new and replacement systems and platforms.** New, faster and less expensive stripping and surface preparation techniques for large and irregular surfaces are required. New coating materials must be long lasting, weather and damage resistant, anti-fouling, environmentally safe, and applied using equipment and techniques that are not hazardous to personnel or to the environment. Better and longer-lasting deck coverings (interior and exterior) are required. In each instance (coatings,

surface preparations, and deck coverings), affordability and easy application and use by operational personnel is essential. New technologies for anti-corrosion and corrosion control for USMC vehicles and systems are needed.

- **PRI (V) The capability to use composite material repair equipment and tools, techniques and environmentally safe materials to allow quick and affordable repair at lower and intermediate maintenance levels.** These new capabilities are required to repair the composite to original specifications with simple equipment, and be safe for the user and the environment.

## 6. INFRASTRUCTURE

*“Finally, we must act to improve the quality of life of the entire Navy-Marine Corps team – Sailors, Marines, civilians, and their families.”*

- **PRI (I) The capability to provide base, port, airstation, and installation infrastructure that supports the current and planned Navy force structure.** The Navy must maintain and operate shore installations in the most efficient, effective manner to provide operational support to the warfighter.

## Operational Capabilities Priority

- **Priority (I): Those capabilities that directly support or enhance the enduring core naval competencies without which SEVERE strategic risk would be incurred.**
- The capability to recruit the personnel that support the manning requirements of our current and future force.
- The capability to meet established retention goals for the correct manning structure to support the Navy's mission.
- The capability to provide improved metrics that will accurately measure key readiness factors.
- The capability to deploy the CVBG and ARG fully combat ready as the core naval combat force package, directly augmented and supported by other maritime, air and logistics forces.
- The capability for forward deployed forces to maintain survivability must be a design characteristic of all future platforms.
- The capability to direct naval, Joint and Combined Task Force operations afloat.
- The capability to link shooters, sensors and command nodes with an open-architecture integrated information grid that leverages Commercial Off-the Shelf (COTS) technology wherever possible.
- The capability for all combatants and tactical aviation platforms to operate a common data link system.
- The capability to produce and sustain a Single Integrated Air Picture (SIAP), where all assets share one near real-time joint/fused picture, identifying friendly, adversary and neutral air contacts.
- The capability to conduct covert surveillance in the littoral battlespace.
- The capability to conduct armed maritime and littoral ISR.
- The capability to identify and provide near-real time targeting data to shooters against mobile and re-locatable targets ashore.
- The capability to operate in an environment in which the Global Positioning System (GPS) is jammed or degraded.

<ul style="list-style-type: none"> <li>• The capability to dynamically manage and assign bandwidth for maximum efficiency.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to maintain current sea-based strategic nuclear deterrence.</li> </ul>
<ul style="list-style-type: none"> <li>• The Fleet-wide, point defense capability to achieve high-probability hardkill against sub- and super-sonic cruise missiles.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to develop and deploy advanced active countermeasure systems and expendable decoys to facilitate deception operations and self-defense against ASCMs.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to integrate self-defense stand-alone sensors and hard/soft-kill systems.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability for naval air forces to maintain air superiority over potential adversaries with technologically advanced and tactically superior aircraft possessing enhanced lethality and survivability, and capable of seamless interoperability.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to provide area air and missile defense against emerging threats, including advanced cruise missiles.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to conduct undersea surveillance in littoral waters.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to deploy undersea networks that can detect nuclear and conventional submarines in a littoral environment.</li> </ul>
<ul style="list-style-type: none"> <li>• The organic capability of surface combatants to detect, avoid and/or neutralize mines within operationally acceptable timelines and with acceptable levels of operational risk.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability for command and control in a theater ballistic missile environment.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to detect, identify, track and destroy high numbers of small craft in the littorals.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability for aircraft carriers to conduct all-weather precision strike operations.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to direct responsive, precision lethal naval fire against a wide range of tactical and strategic targets from surface combatants and submarines.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to provide sea-based Suppression of Enemy Air Defenses (SEAD).</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to conduct non-cooperative target identification equally well in the active or passive mode.</li> </ul>

<ul style="list-style-type: none"> <li>• The capability for improved day, night and all-weather close air support for amphibious operations ashore.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability for day and night connected and vertical replenishment and transfer of personnel and cargo at sea.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to sustain forward deployed precision guided munitions levels in support of rotational deployment requirements, contingency operations, and DPG directed two MTW requirement.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to support MAGTF contingency deployments from maritime preposition force assets.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to determine the physical condition of ship, amphibious vehicle, ground vehicle and aircraft systems (especially electro-mechanical systems) that signal when maintenance is required.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to provide base, port, airstation, and installation infrastructure that supports the current and planned Navy force structure.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Priority (II): Those capabilities that directly support or enhance the enduring core naval competencies without which <u>SIGNIFICANT</u> strategic risk would be incurred.</b></li> </ul>
<ul style="list-style-type: none"> <li>• The capability to synchronize Fleet Manpower and Personnel distribution with the Inter-Deployment Training Cycle.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to provide our Sailors and Marines career patterns that provide stability and predictability and lead to increased job satisfaction.</li> </ul>
<ul style="list-style-type: none"> <li>• Technology should be utilized, where appropriate, to support the most efficient training and education system possible.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to achieve the highest level of warfighting mission proficiency while sustaining a high level of non-deployed Quality of Life.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to conduct realistic and stressful training at the unit, battle group and joint levels based on specific objectives correlated to joint mission and tasks.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to dynamically manage information to produce maximum awareness of the battlespace for the maximum number of decision-makers.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to effectively detect and report chemical and biological warfare agent detections via networks.</li> </ul>

<ul style="list-style-type: none"> <li>• The capability to fuse and display sensor data into an integrated, near real-time common operational picture.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to rapidly process data into useful knowledge by user-friendly displays and decision aids.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to fuse and display weapons-quality sensor data into a real-time, common/coherent tactical picture.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to positively identify enemy, friendly and neutral ships, aircraft and ground forces at extended ranges in all weather conditions.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to receive, translate, and forward multiple data links (TADIL-A, TADIL-B, TADIL-J, PADL, ATDL, etc.) to Joint and Coalition forces over-the-horizon.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability for stand-off detection of chemical and biological warfare agents.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to generate and disseminate precise time and time-interval signals to appropriate nodes on the network.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to conduct offensive and defensive information operations across the spectrum of warfare.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to develop sufficient numbers of linguists fluent in specific languages to use for information operations and intelligence gathering.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to project the maritime air and missile defense umbrella inland over critical port facilities, ground forces and allied/coalition infrastructure.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to simultaneously detect targets, process, fuse and display near real-time multi-sensor data for USW tactical decision making.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to ensure adequate inventories of expendable USW sensors are available to achieve combat readiness prior to forward deployment and able to sustain combat/contingency operations in 2 MTW.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to engage low doppler, near bottom threat submarines operating in shallow, high ambient noise water.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to conduct extended range passive acoustic target classification, and threat weapon alertment.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to transit mined areas in very shallow water and surf zones in order to land troops and supplies ashore in support of combat operations and/or operations other than war.</li> </ul>

<ul style="list-style-type: none"> <li>• The capability to integrate Navy (Aegis) and USMC/Army (Avenger/Patriot) air defense systems to provide direct support to USMC/USA ground elements.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to conduct long-range, high endurance maritime and electronic surveillance.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to conduct flexible, rapid mission planning for use of precision guided munitions.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability for naval guns to provide sustained volumes of long-range, precise effects fire to support operations from the sea and ashore.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to provide sufficient lift to support and sustain naval expeditionary maneuver operations from the sea.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to conduct underway reload and cross-deck of land attack munitions.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to provide required support equipment, training shapes, and mission essential tactical equipment to all deploying and follow-on forces.</li> </ul>

<ul style="list-style-type: none"> <li>• <b>Priority (III): Those capabilities that directly support or enhance the enduring core naval competencies without which <u>MODERATE</u> strategic risk would be incurred.</b></li> </ul>
<ul style="list-style-type: none"> <li>• The capability to use technology to move training to people.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to provide officer corps with educational opportunities necessary to develop competence, leadership and character to succeed and employ technological advances.</li> </ul>
<ul style="list-style-type: none"> <li>• The organic capability to provide interactive training, including the capability to incorporate direct “red team” interaction.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to operate organic remote sensors (e.g., Vertical Take Off and Landing UAV) from all air-capable platforms.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to organically measure and evaluate atmospheric, oceanic, and terrestrial environmental characteristics in real-time.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to provide automated, timely access and exchange of national source data to tactical forces (Joint and Coalition).</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to share with allies the full range of digital communications that is releasable.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to minimize the effectiveness of enemy targeting efforts against maritime forces.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to exploit non-acoustic submarine signatures such as periscope/mast exposure and wake phenomena.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to operate active, multi-static acoustic systems with improved performance and reduced false alarm rates.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to rapidly coordinate remote infrared detection with tactical radar, and a theater-wide communications link to enable early destruction of threat missiles.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability for Aegis ships to quickly shift between tactical and Theater Ballistic Missile mode.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability for small units and individual warfighters to sense low, sub-lethal concentrations of chemical/biological agents.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to continue full tactical operations while wearing protective gear.</li> </ul>

<ul style="list-style-type: none"> <li>• The capability to conduct a large-scale decontamination including the use of a waterless chemical decontamination process.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to administer chemical and/or biological weapon antidotes that are effective against new threats.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to intercept small boats in support of maritime interdiction, counter narcotics and migrant interdiction operations.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to perform BDA with rapid response time and video/data communications.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability for upgraded C4I on amphibious ships.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to conduct ship-to-shore resupply in sea states up to 3.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to provide in-transit tracking of logistics spares.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to conduct expeditionary naval construction support, naval expeditionary operations, Marine Corps operations ashore, humanitarian assistance/disaster relief operations, and naval construction/installation support.</li> </ul>

<ul style="list-style-type: none"> <li>• <b>Priority (IV): Those capabilities that directly support or enhance the enduring core naval competencies without which <u>MARGINAL</u> strategic risk would be incurred.</b></li> </ul>
<ul style="list-style-type: none"> <li>• The capability to assess the impact of increasing joint staffing requirements and emerging “specialist” requirements (e.g., FAO, IT, AP) on the ability to meet warfighter and staff needs.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability of deployed radars and sensor systems to evolve rapidly with simple component replacement.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to deny our adversaries accurate positioning, navigation and timing signals from space-based systems.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to conduct enhanced ASW modeling and simulation.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to positively identify targets detected by national sensors, with an overall reduction in false alarm rate and a reduced need for operator intervention.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to attack Hard, Deeply Buried Targets (HDBT).</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to employ expanded munitions, to include non-lethal weapons that minimize collateral damage in a densely populated environment.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to fully integrate logistics information into the Common Tactical Picture.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to incorporate new or alternate materials that are more resistant to corrosion and fouling into new and replacement systems and platforms.</li> </ul>

<ul style="list-style-type: none"> <li>• <b>Priority (V): Those capabilities that directly support or enhance the enduring core naval competencies without which <u>MINIMAL</u> strategic risk would be incurred.</b></li> </ul>
<ul style="list-style-type: none"> <li>• The capability to assess the impact of changing demographics on our ability to acquire future officers and enlisted that have the ability to function in an environment that requires knowledge superiority.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to centralize responsibility and authority over all Manpower and Personnel areas.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to access and to exploit foreign sensors, links, and networks in order to determine best own-force asset deployment.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to employ scalable munitions with selectable yield.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to detect human-portable munitions.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability for enhanced personal communication systems that allow hands-free voice communications with unit commanders.</li> </ul>
<ul style="list-style-type: none"> <li>• The capability to use composite material repair equipment and tools, techniques and environmentally safe materials to allow quick and affordable repair at lower and intermediate maintenance levels.</li> </ul>

## SECTION VI: DIRECTED STUDIES

To support forward presence in the next century, the Navy must investigate and study the capabilities and programs that will allow us to retain our uncontested access to the high seas. N81 and N51 will jointly identify lead responsibilities and supporting roles within the framework of the current IWARs and QDR processes to accomplish the following studies during FY01. Lead organizations will be selected from OPNAV, Fleets, NWDC, and SYSCOMs in addition to the ongoing efforts of N81 IWAR teams and N51 QDR teams. Directed studies should be integrated with already approved studies where practical, and the results of these studies should be available to support QDR 2001 analyses.

- Develop an assessment tool in order to identify the level of forward presence required -- in terms of both numbers and capability -- to support our national interest. Forward Presence Workshops provide a means to determine the specific requirements for naval forces to support strategic interests -- and the military objectives and tasks which underpin those interests -- but an assessment is needed of the manner in which naval forces contribute to our military's overall "shaping" effort. (N51)
- Examine the long-term impact of a strategy to procure greater numbers of mission-focused ships (with robust survivability features and point defense systems) to allow for increased forward presence/numbers of operational nodes. (N86/NAVSEA)
- Develop Naval doctrine for the counter-proliferation of weapons of mass destruction. This doctrine will be used as a foundation for a Navy/Marine Corps Counter Proliferation Master Plan designed to enhance our ability to participate in a wide spectrum of counter proliferation operations. (NWDC)
- Examine the implications of Navy force structure requirements and the associated programmatic impact of resourcing emerging Marine Corps *Operational Maneuver from the Sea* and *Ship-to-Objective Maneuver* concepts. (N81)
- Assess the Navy implications of supporting Military Operations in Urban Terrain (MOUT). (N85)
- Analyze the impact of emerging mission areas and system capabilities on VLS weapons loadouts and rotational inventory requirements for current and planned missile systems. Examine alternatives for nominal loadouts as well as tailored loadouts for land attack, TMD, and TBMD missions. (N41)
- Balance the affordability of hard kill systems versus significantly improved countermeasures (e.g. missile countermeasures, anti-torpedo systems, and countermine system development) for surface and subsurface platforms. (N86/N87)
- Due to the increasing importance of unmanned sensors and platforms to network-centric forces, examine future roles and missions for tactical and combat UAVs, including

intelligence surveillance and reconnaissance, interdiction, SEAD/JSEAD, airborne early warning, and CBR detection. (N85/N88)

- Examine the need for a Navy contingency plan in case space assets (eg. GPS) are denied. (N6)
- Conduct a study on naval access for presence, crisis response and warfighting requirements in accordance with the access issues identified in Strategic Concepts Wargame X. (CNA)

In addition to capability assessments, current programs require supporting Concepts of Operation (CONOPS). NWDC in conjunction with the OPNAV, SYSCOM and Fleet staffs should examine the following issues:

- Assess the Navy role in OCMD. Include in the study proposed CONOPs and Operational Architectures development. (NWDC)
- Assess Blue in support of Green requirements in the development of CONOPs and supporting Operational Architectures for OMFTS. Include the examination of MCM, COP/CTP, naval fires requirements (range, volume, C2 and precision targeting) and Tactical IW in support of OMFTS and JV2010. (NWDC)
- Re-examine Chem-Bio TTP for integration of carrier air wings and embarked Marines in CBW, CB recon and decon of landing craft, aircraft, UAVs. (NWDC)

The following studies from the 1999 NSPG Directed Studies section have been undertaken by various organizations and their progress will be monitored until conclusion pending potential incorporation of the results into future Navy planning documents:

- Assess the impact on current and planned personnel recruitment, training and utilization in light of potential manpower requirements for information operations, jointness, pipeline training, and staff positions. (CINCPACFLT)
- Assess the Navy's contribution to Ballistic Missile Defense and the role TBMD contributes to Joint warfighting. Include in the study proposed CONOPs and Operational Architectures development. (N865)
- Examine and assess the envisioned CONOPs and Operational Architectures being developed for organic MCM. (N85/CNA)
- Examine the scope of OTH-T/SUW engagement CONOPs and the impact of platform multi-tasking, potential time delay in positioning firing units and magazine limitations. (CNA)
- Examine and assess the CONOPs and Operational Architecture for SEAD/JSEAD. (CNA)

## CONCLUSION

POM-02 marked a significant opportunity to establish a program that will field naval forces capable of operating in challenging new 21st Century realms. The IWAR/CPAM process provides a mechanism that promises to capture the end-to-end capabilities required for meaningful transformation. The success of capturing this integrated process of strategic force planning will depend upon a firm organizational commitment throughout POM-02 IWAR and CPAM production efforts. The capabilities outlined herein provide the strategic foundation to guide the PR-03 planning and subsequent programming process. As we commence these critical efforts, it is imperative that we continue to build upon the unmatched capabilities of U.S. naval forces -- trimmed for peace, rigged for war -- into the next century.



