Anti-Submarine Warfare

Concept of Operations for the 21st Century

BACKGROUND

As we sail deeper into the 21st century, Anti-Submarine Warfare (ASW) will remain a core mission area for the United States Navy. Execution of that vital mission will be critical to protecting the strategic speed and operational agility of joint and coalition forces across the largest maneuver space in the world – the sea. The ASW capabilities we possess today when confronting potential enemies are based largely on skills developed during the Cold War. To sustain our operational advantage, we must develop additional skills, implement them in an innovative manner, and rapidly leverage advanced technologies to swiftly defeat enemies wherever they may be found.

This 21st Century ASW Concept of Operations (CONOPs) is intended to guide the development of a comprehensive ASW Master Plan that will be forthcoming shortly. It details operational principles and force attributes that we seek to develop in the years ahead. Our goal in the near term is to maximize our undersea advantage anywhere in the world by leveraging advances in acoustic processing, data collection and sharing, communications, collaborative real-time planning, reachback support, rapid maneuver, and precision engagement. These tactical advantages will allow friendly forces to take the fight to the enemy. In the far-term, we will build on these advances to fully leverage an integrated network of sensors coupled to stand-off weapons, thereby maximizing our advantages in persistence, speed, and precision as the conceptual framework for our future.

21st CENTURY OPERATING ENVIRONMENT

The 21st century environment is one of increasing challenges, due to the littoral environment in which we operate and advanced technologies that are proliferating around the world. Operations in the future will be centered on dominating near-land combat, rapidly achieving area control despite difficult sound propagation profiles and dense surface traffic. The operating environment will be cluttered and chaotic, and defeating stealthy enemies will be an exceptional challenge.

Operating Environment
- High traffic density
- Poor sound propagation
- High technology enemies
- Asymmetric challenges

The spread of new technologies will dramatically affect operational planning and execution by both friends and adversaries. Future enemies will pose asymmetric threats by employing mines, missiles, and submarines that benefit from technological advances in enhanced propulsion, quieting techniques, and weapons technologies. Adversary capabilities may also include Weapons of Mass Destruction, which will threaten friendly nations, fixed military bases, and land-based forces. When facing such enemies, our advantage lies in Sea Basing that employs Sea Shield and Sea Strike capabilities to ensure sea supremacy by US and allied forces.

ASW & SEA POWER 21: Near-term and Far-term

To achieve victory in this environment and against such adversaries, we are pursuing a wide range of initiatives in the areas of doctrine, organization, training, materiel, logistics, personnel, and facilities development. To accelerate near-term successes, we have created the Fleet Anti-Submarine Warfare Command. It will expand the efforts of TASK FORCE ASW, aimed at delivering enhanced ASW proficiency and capability to the fleet. These efforts are focused on compressing the detect-to-engage sequence by employing networked data, collaborative planning, and rapid engagement to quickly destroy enemy forces.

NEAR-TERM ASW Transformation

- **Enhanced Signal Processing**
- **Bistatic Towed Arrays**
- **Low Frequency Arrays**
- **Advanced Deployable Systems**
- **Advanced Sonobuoys**
- **Periscope Detection Systems**
- **Common Maritime Picture**
- **Open Architecture Torpedoes**
- **Torpedo Countermeasures**

Our long-term transformation strategy will exploit these tactical advances to achieve two key operational level objectives:

- **Hold Enemy Forces at Risk:** We will deny enemy submarines an offensive capability by maintaining the ability to destroy them, if and when required, at a time and place of our choosing.

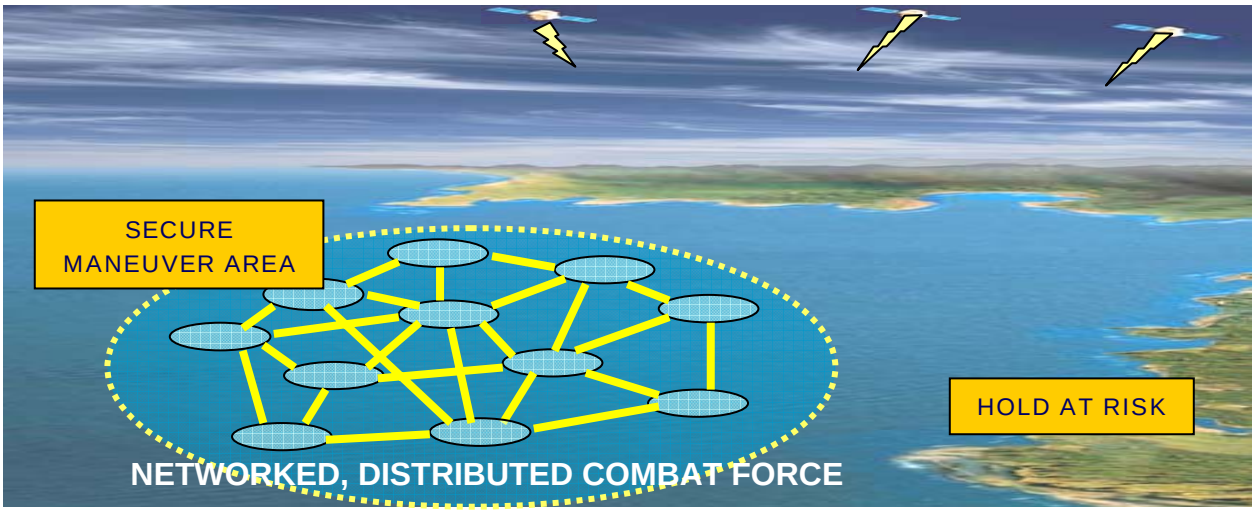
- **Secure Friendly Maneuver Area:** We will drive away or destroy enemy submarines, thereby protecting maritime operating areas. We will protect US and coalition naval combatants, support ships, and merchant shipping from undersea attack within and enroute to vital operating areas.

Fundamental to holding enemy forces at risk will be the dynamic application of Sea Strike and Sea Shield capabilities for persistent intelligence, surveillance and reconnaissance; time-sensitive strike; information operations; and covert strike. Simultaneously, battlespace superiority will be created as linked sensors, platforms, and kill vehicles consolidate area control, allowing joint forces to “climb into the ring” and stay there. Sea Basing will host ASW forces, protecting

LONG-TERM ASW Transformation

- **Distributed Netted Sensors**
- **Rapid Attack Weapons**
- **Advanced Data Relays**
- **Integrated Weapons Systems**

allied assets while minimizing land-based support requirements. All of these efforts will be coordinated by FORCEnet, which integrates warriors, sensors, platforms and weapons into a networked, distributed combat force applicable across all levels of ASW.



Advanced technologies employed in support of friendly forces will include exploiting the rapidly increasing computing power of sensors and networks. When coupled to the operational **persistence** afforded by Sea Basing, such systems will provide **pervasive awareness** by way of hundreds, even thousands, of small sensing and computing devices that permeate the operating environment, yielding unprecedented situational awareness and highly detailed pictures of the battlespace. This tremendous fidelity will enable enhanced precision and timeliness in weapons delivery that will translate into increased tactical **speed and operational agility** as principal characteristics of our CONOPS.

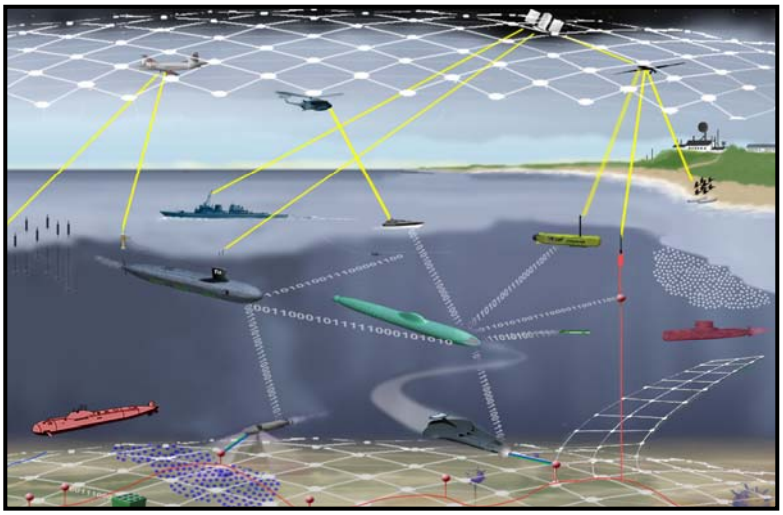
FORCE ATTRIBUTES

- **PERSISTENCE**
- **PERVASIVE AWARENESS**
- **SPEED & OPERATIONAL AGILITY**
- **TECHNOLOGICAL AGILITY**

To succeed in this complex operating environment, we will also continuously improve the manner in which we field new capabilities for our force. Agility must extend beyond the battlespace, all the way back to the systems commands and industry, which will continuously implement effective and rapid technology insertion processes. This **technological agility** will bring steady improvements to programs by way of open architecture enhancements, advanced processing and computing, human systems integration, and rapid technology insertion.

FORGING THE REVOLUTION: ASW IN THE 21ST CENTURY

Pervasive awareness of the battlespace will lie at the heart of 21st century ASW effectiveness, allowing us to apply rapid maneuver and precise firepower. Limitations in current weapons reach and sensor integration drives many of today's ASW operations toward "force on force" engagements that place our forces at risk. Such engagements have proven effective in the past, but as we look to the future our intent is to apply network centric warfare to dominate the environment by using unmanned vehicles, common operating pictures, and standoff precision weapons. The future will leverage our asymmetric advantages of advanced technology and highly skilled professional Sailors.



As we develop these capabilities, the networking of self-aware, autonomous sensor fields coupled with manned and unmanned kill vehicles will shift ASW from "platform-intensive" to "sensor-rich" operations. Sensors and networks will enable effective employment of weapons and platforms to a greater degree than ever before. In many cases, the sensors, command & control (C^2) devices, and weapons that provide pervasive awareness and precise firepower will not exist in the same platform. For example, attack submarines that now host sensors and weapons in a single platform will, in the future, also serve as C^2 and logistical support bases for off-ship sensors and kill vehicles.

DEVELOPMENT PRIORITIES

Sensor over weapon,

Network over platform

Technological dispersal will be mirrored in decentralized C^2 structures that allow rapid, decisive operations. Naval forces are well prepared for such operations because decentralized execution is at the heart of our culture and leadership. This tradition of independent action will allow us to seize and exploit fleeting opportunities, thereby compressing the "kill chain" of locating, identifying, tracking, and engaging targets. In this manner, we will greatly increase the rate at which enemy submarines are destroyed.

THE WAY AHEAD

To bring 21st century ASW to fruition, we will focus on developing the following **operational principles** and **associated capabilities:**

- **Battlespace Preparation & Monitoring.** Pervasive awareness of the undersea environment begins with comprehensive operational and technical intelligence to include understanding enemy doctrine, tactics, capabilities, and vulnerabilities. This awareness is amplified by studying the operating environment, to include historical conditions, predicted dynamics, and the in-situ characteristics.

- **Persistent Detection & Cueing.** The networking of rapidly deployable and fixed surveillance systems will maximize enemy detections, tracking, and engagement opportunities.

- **Combined Arms Prosecution.** Tracking and engagement of enemy submarines will be executed through coordinated and integrated Joint Force ASW operations, enhanced by common operational and tactical pictures that permit precise targeting and weapons employment.

- **High Volume Search & Kill Rates.** Agile technology development will maximize search and kill rates, resulting in greater numbers of enemy submarines destroyed per unit of time. These advancements will be achieved by the combined employment of large area search systems, highly accurate localization techniques, and standoff, precise attack systems.

- **Non-Traditional Methods.** New technologies will yield enhanced operational agility by employing miniaturized sensors, weapons, and command and control systems, as well as reconfigurable manned and unmanned vehicles. Such non-traditional methods will be employed from pre to post-hostility operations, generating effects that range from influencing threat behavior to destroying enemy forces.

- **Defense-in-Depth.** Integrated self-defense capabilities enabled by networked sensors, weapons, and platforms will greatly improve force countermeasures, providing unprecedented levels of force protection.

The objective of 21st century ASW operations is clear: to secure the battlespace from undersea threats by swiftly destroying enemy submarines. To achieve that end, we will maximize our strengths and exploit the vulnerabilities of our enemy. We will build upon the foundation of our past and move toward a future where we achieve information superiority and effects-based capabilities that decisively alter the deterrence and warfighting calculus in favor of the United States, our allies, and coalition partners.