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NAVAL THEATER AIR & MISSILE DEFENSE CONCEPT



Naval Doctrine Command

*Theater Air & Missile Defense
Concept Development Team*

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Executive Summary

Overview

The strategic pause accompanying the end of the Cold War creates a window of opportunity in which to apply emerging technology, advance new warfighting capabilities, and test new doctrinal concepts without placing US combat forces and interests at risk. Weapons systems and enabling technologies are proliferating among our known and potential enemies, increasing the danger to US forces and interests from hostile theater air and missile systems. This Naval Theater Air & Missile Defense (TAMD) Concept describes the naval contributions to the joint TAMD system and its operations circa 2010. Although the focus is on "naval" operations and capabilities for dynamic defense in depth, the concept is joint. Navy and Marine capabilities and operations are joint, by design and necessity, whether they serve as the foundation for a developing joint force, reinforce an established joint force, or are the only forces in an operation.

Mission

Theater air and missile defense is the prioritized protection of critical assets, friendly forces, and US interests from air and missile attack. Taking a systems analysis perspective, TAMD plans integrate joint air and missile defense operations against piloted and uninhabited aircraft, theater missiles, and their infrastructure for logistics, command, and control. TAMD operations support the main effort of the joint force, preventing enemy air and missile forces from interfering with operations by US forces. Forces and operations for TAMD are organized around the joint task force operations area and its associated areas of interest (AOI).

Threat

The historical theater air threat to US forces and interests was massed attacks by piloted aircraft. Despite the end of the Cold War, this threat remains widespread due to the continuing export of advanced combat aircraft, and now is complicated by the rising threat from theater missiles. "Theater missiles" include cruise missiles and theater ballistic missiles (TBM). Each presents very difficult technical and tactical problems to US forces. Televised coverage of Iraqi SCUDs exploding in Israel and Saudi Arabia focused US attention on the TBM threat and emphasized its proliferation. The overall TBM threat is predicted to increase in quantity, range, and lethality in the next decade. Cruise missiles share some of the characteristics of aircraft but display

others that are unique. A significant cruise missile threat is emerging from the export of current weapons, the proliferation of indigenous production capabilities, and the likelihood that large inventories of antiship cruise missiles will be converted to land-attack cruise missiles using commercially available technology. All three of these threat systems (piloted aircraft, TBMs, and cruise missiles) can be used to deliver weapons of mass destruction (WMD).

The Naval TAD Concept

Joint, integrated TAMM operations are one element of US network-based warfighting capabilities. Cohesive, force-wide leverage of network-based knowledge and understanding supports dynamic defense in depth against air and missile attack. TAMM forces neutralize or destroy the threat before launch where possible, engage and defeat attacks which are launched, and minimize the effectiveness of attacks which can't be prevented or stopped en route. Dynamic defense in depth integrates mutually supportive, network-based operations to prevent hostile air and missile forces from interfering with US operations. Network-based forces wage dynamic defense in depth across time and distance, engaging enemy forces in every phase of their operations and throughout the battlespace. Joint forces integrate their actions against enemy aircraft, theater missiles, and the logistics, command, and control infrastructure, engaging it as an operational system. Planning is centralized, enabling operational commanders to synchronize decisive, high-tempo tactical operations, issuing broad guidance and clear requirements to tactical commanders and their units for decentralized execution. Tactical commanders integrate combat actions and adapt decisions to exploit the changing situation, reporting their status and the progress of the battle to the network.

Engage the Threat as a System

- **Disrupt, degrade or deny critical processes in enemy system**
- **Engage critical vulnerabilities offering best leverage to JTF**

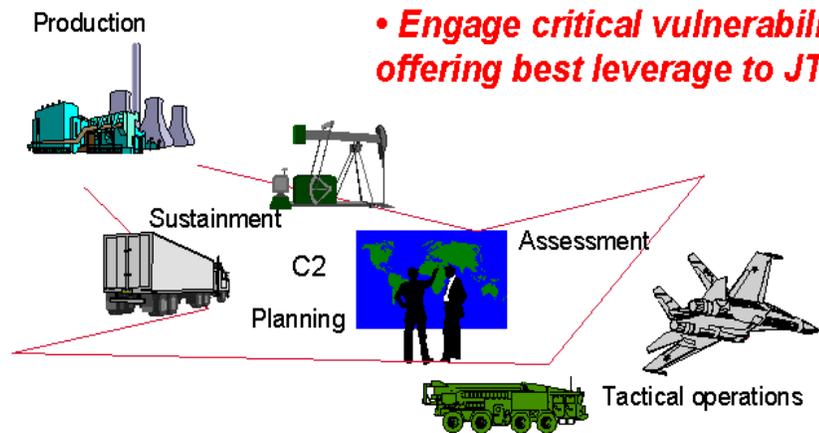


Figure EX-1. Network-based Forces Engage the Enemy System

Network-Based Theater Air and Missile Defense

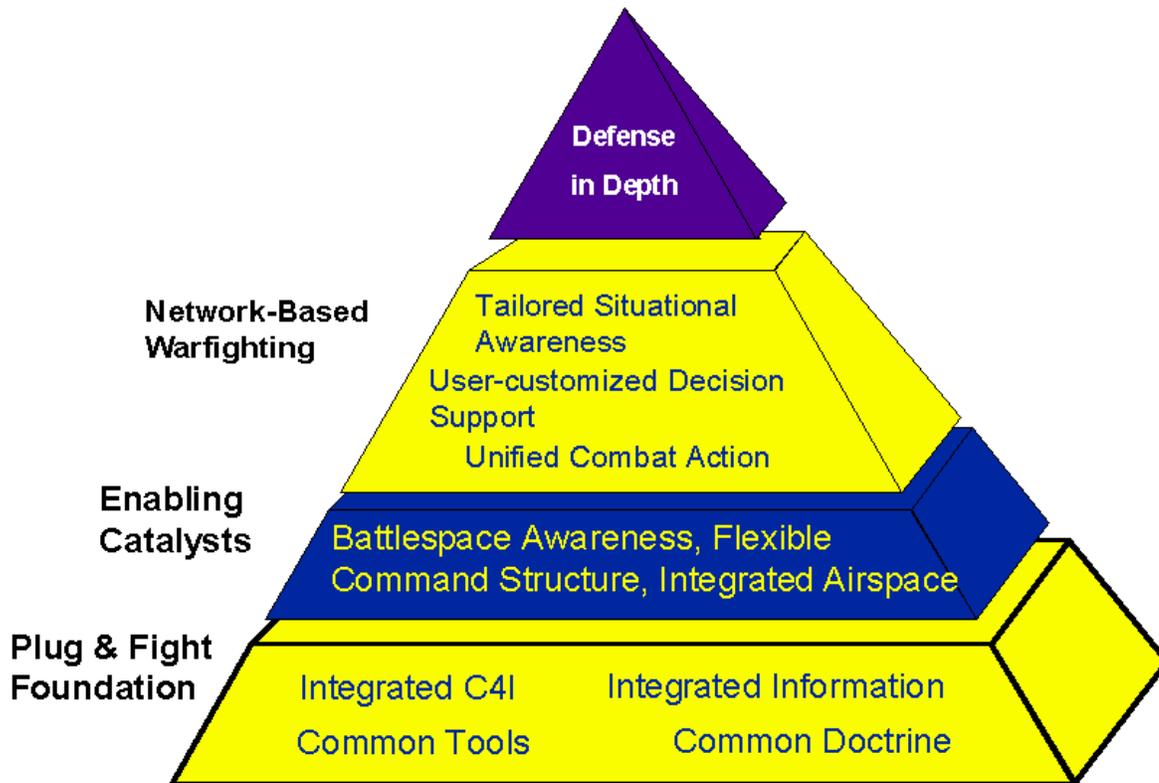


Figure EX-2. Network-Based Warfighting Underpins Dynamic Defense in Depth

Network-based capabilities for TAMD enable tailored situational awareness, user-customized decision support, and unified combat action. Network-based warfighting springs from a flexible command structure, battlespace awareness, and integrated use of airspace. In turn, these three enablers depend upon the "plug and fight" foundation to create network-based capabilities. The foundation combines integrated C4I, integrated information resources, common doctrine, and common tools for decision support. Air defense plans combine TAMD actions into four operational elements: attack operations, active defense, passive defense, and supporting C4I. These "operational elements" are conceptual and planning constructs, not to be confused with functional or tactical organizations of forces.

Conduct of Naval TAMD Operations

The Joint Force Commander normally delegates operational command of TAMD to an Area Air Defense Commander (AADC). Network-based capabilities enable on-scene location of the AADC, using collaborative planning systems to draw and organize support from geographically dispersed resources into a "virtual staff." The AADC is responsible for TAMD operations, developing the Air Defense Plan (ADP) in coordination with other joint force operational commanders, particularly the Joint Force Air Component Commander (JFACC).

The AADC exercises command through Service tactical commanders and control centers, such as the Navy's Air Warfare Commander and the Marine's Air Combat Element commander. The AADC prioritizes forces and assets for protection in the ADP, assigning responsibility for each to specified tactical commanders, making best use of Service expertise and capabilities. Tactical commanders execute these assignments with their Service air defense organizations, plus any additional assets assigned by the ADP.

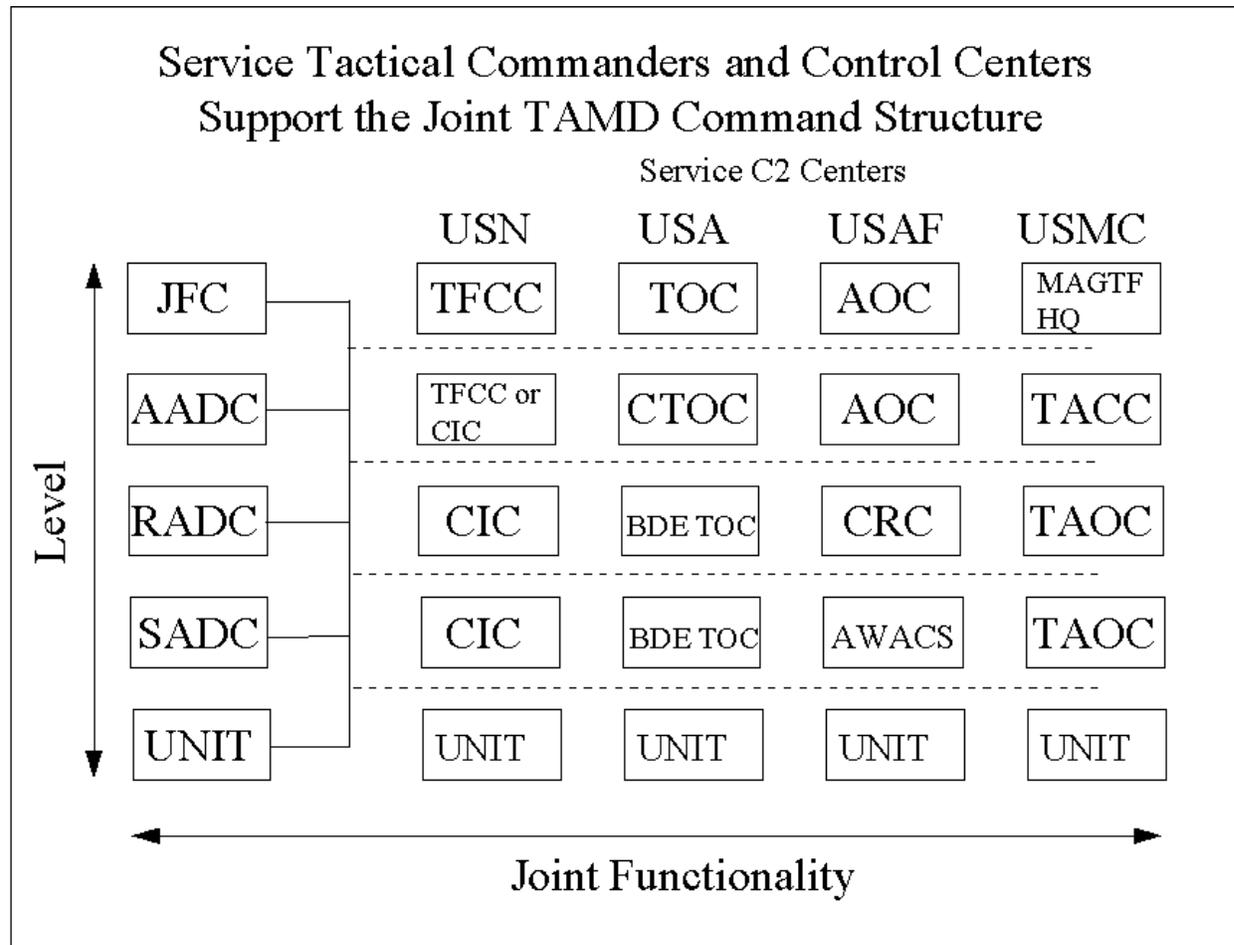


Figure EX-3. The TAMD Command Structure

The Air Defense Plan (ADP) integrates the four operational elements as mutually supportive parts of dynamic defense in depth. The leading element of dynamic defense in depth is the attack operations which destroy or neutralize enemy forces before missiles and aircraft become airborne, and the passive defense measures which deny effective targeting information and minimize the number of attractive targets for the enemy. Once hostile raids are airborne, layered active defenses engage them from their points of origin all the way to their targets, providing 360 degree coverage for defended assets. The C4I system ensures timely detection, warning, classification, and identification. The goalkeeper of dynamic defense in depth is the passive defense measures for protection from weapon effects, reconstitution of forces, and recovery. The C4I system links and supports the other three operational elements, underpinning their coordination with other force operations. Integrated C4I distributes the integrated information resources available to the force, directly enabling intelligence preparation of the battlespace (IPB), battlespace awareness, and battle management.

Conclusion

Concepts exploit the promise of emerging capabilities. This concept shows the power of network-based capabilities to enhance human understanding, decision, and action. Network-based TAMD contributes to full-dimensional protection and battlespace dominance, combining the four operational elements of TAMD to defeat the theater air and missile threat and prevent enemy interference with U.S. operations.

INTRODUCTION

Purpose and Intended Audience

Naval Concepts are tools for thinking through problems, complementing efforts in war gaming, modeling, and simulation. They bridge the gap between the CNO's strategic vision, Forward From the Sea, and the immediate demands of the budget cycle and current warfighting doctrine. Sponsored by the Naval Doctrine Command, a Concept Development Team (CDT) will identify an issue, frame the problem, analyze and synthesize the elements of the problem, evaluate the results, and produce a "naval concept" - a proposed solution to the opportunity or challenge. A CDT integrates and unifies the expertise of representatives from operational commands and supporting activities. By synthesizing their concurrent efforts it guides ongoing research and development, thereby setting an authoritative framework for future equipment, capabilities, and doctrine.

This concept paper examines future employment of naval forces in the conduct of theater air and missile defense (TAMD) circa 2010-2020 AD. It examines the doctrinal challenges inherent in future operational requirements, scientific advances, and technological changes. The paper concentrates on the larger themes and issues involved in integrating naval forces into combined and joint operations. This naval concept is the product of collaboration between the Naval Doctrine Command, the Marine Corps Combat Development Command, operational Navy and Marine commands, the R&D community, acquisition commands, and resource sponsors working together on the CDT. The document serves the following purposes, and should accommodate a broad audience:

- Serve as an overarching reference for the development of doctrine, and follow-on tactics, techniques, and procedures;
- Provide guidelines for use of naval forces in TAMD operations by naval and joint commanders;
- Support decision makers during resource allocation and acquisition decisions;
- Foster discussion and exploration of new capabilities and tools developed by the scientific and technical community;
- Highlight areas for further study by academic institutions, and by scientific and engineering organizations; and,
- Highlight challenges and opportunities for management of training and manpower programs.

Scope and Organization

This paper examines how naval forces contribute to TAMD across a range of situations and in a variety of conditions. The context always is joint, but the subject is naval forces - the elements of the Navy and the Marine Corps. The Concept begins with today's technology, doctrine, and operations, and blends them with emerging and potential developments through the next two decades. The Concept addresses ideas without using

a deadline or timetable. The paper defines the nominal mission and the threat to U.S. interests and forces, describes naval forces and capabilities contributing to TAMD, discusses the principles, functions, and the role of the TAMD chain of command, and discusses general principles for TAMD planning. The conclusion captures the common threads, key capabilities, and key issues for TAMD as it develops through 2010 and beyond. Appendix A uses three scenarios to illustrate the Naval TAMD Concept, demonstrating the influence of different military and geographic circumstances on naval capabilities. Appendix B lists some of the significant technologies and representative programs which shaped the Naval TAMD Concept, while Appendix C is a partial bibliography for the concept project. Appendix D is a List of Acronyms.

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