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2007 PROGRAM GUIDE TO THE U.S. NAVY



SEA POWER FOR A **NEW ERA**





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SEA POWER FOR A NEW ERA

Even as fresh copies of this year's *Sea Power for a New Era* roll off the printer, the Navy it describes will change. By the time you sit down to read it, we will have learned new lessons on the battlefield, discovered new ways to attack an old shipboard problem, or simply made a new friend and partner somewhere in the world. We will have matured.

Things are changing fast. The Israeli-Lebanon conflict last summer came without a hint of warning and lasted little more than a month. North Korea went from a nation who threatened nuclear testing to one which actually conducted nuclear testing in nearly the blink of an eye. And terrorists in Iraq can design new improvised explosive devices on the backs of napkins over a cup of coffee.

This pace of change—the speed of war—dictates, perhaps more than anything else, the security environment in which we operate. But staying ahead of change is difficult, always has been. As Yogi Berra once quipped, “It’s tough to make predictions, especially about the future.”

Our people understand this unpredictability and are responding in superb fashion. More than 60,000 are deployed as I write this, some 13,000 of them on the ground in combat and combat support roles throughout the Central Command Area of Responsibility. They are taking on new and not-so-new missions all over the world, from providing security at detention facilities to riverine patrol to conventional presence and deterrence operations. Supported at home by extraordinary families, our Sailors and Navy civilians are stepping up as never before to their responsibilities as warfighters and ambassadors.

They know how challenging the times really are. They know that while we continue to fight the war on terror, we must also contend with traditional threats from regional powers who possess robust conventional and, in some cases, nuclear capabilities.

The freedom to conduct naval operations in support of joint, allied and coalition operations—assuring access and projecting persistent combat power—must be preserved through enduring, warfighting competencies. We are and will remain a warfighting, seagoing service and a vital element of our nation’s “Strategic Reserve.”

As the President made clear in his *National Security Strategy*: “There was a time when two oceans seemed to provide protection from problems in other lands, leaving America to lead by example alone. That time has long passed. America cannot know peace, security and prosperity by retreating from the world. America must lead by deed as well as by example.

That is where this guide, *Sea Power for a New Era*, comes in. By carefully explaining the platforms, systems and technology we possess, as well as the organizational constructs we apply for joint and combined operations, this guide forms a blueprint of sorts for pacing change and leading by example.

Yogi Berra was right. We cannot predict the future. But we can and we must be ready for it. Turn the page. Read and share this guide. Use it to better understand your Navy and help us all prepare for an uncertain future.



M. G. Mullen
Admiral, U.S. Navy

Mike Mullen

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CHAPTER 1

DEFENDING FREEDOM IN AN UNSTABLE WORLD

SEA POWER FOR A NEW ERA

Ours is a demanding era. Our Navy operates in a security environment defined by the unrelenting pace of change. The setting is dynamic and unpredictable. Our challenges range from natural disasters to terrorism; from proliferation of Weapons of Mass Destruction (WMD) to fluctuating oil prices; from the potential spread of endemic diseases to the inexorable spread of radical ideologies. The world has shrunk and even the disenfranchised can now be globally connected. As a result, our enemies can “reach out” and directly influence events worldwide.



We are engaged in a long war against violent extremists, insurgents, pirates, criminals, and other nefarious characters seeking to fracture the peace and destabilize legitimate governments. Threats to U.S. interests, citizens, and friends are complex and unpredictable. They include a thorny mix of potential peer competitors, state sponsors of terrorism and failing states that undermine regional stability. The enemies of freedom operate asymmetrically across national boundaries, often in collusion with state sponsors, targeting their strengths against what they perceive as our weaknesses. Unhindered and unconstrained by moral conscience or social norms, our enemies resort to wreaking physical, economic, and psychological havoc as they pursue their radical ideologies or attempt to bolster their oppressive regimes. The threat is asymmetrical, so the counter to the threat must capture our own asymmetric advantages. Tempo, flexibility and adaptability will enable us to counteract these threats, and do so before our adversaries can execute their plans.

Defeating the enemies of global freedom and security will require the judicious application of the diplomatic, informational, military and economic elements of our national power. The Navy, of course, is a key strategic element of national power. Our strategic objectives are to:

- Secure the United States from direct attack by actively interdicting and defeating, preferably overseas, those who would threaten us, especially those who would do so by catastrophic means.
- Secure strategic access and retain global freedom of action by ensuring key regions, lines of communication and the global commons (international waters, airspace, space, and cyberspace) remain accessible to all.
- Strengthen existing and emerging alliances and partnerships to expand and enhance global maritime security efforts and counter security threats spanning national boundaries and jurisdictions.
- Establish favorable security conditions by countering aggression or coercion targeted at our partners or interests.

Specifically, the U.S. Navy will operate alongside other U.S. and coalition forces as well as Non-Government Organizations and other U.S. Federal and International agencies to enhance U.S., regional, and worldwide Maritime Security by:

- Preserving freedom of the seas.
- Facilitating and defending peaceful commerce.
- Safeguarding the movement of desirable goods and people across our maritime borders, while screening out dangerous people and material.

Defending our freedom is our most fundamental objective. The Navy must execute its roles, missions, and tasks with a sustained sense of urgency. In this dynamic security environment, we must continue to answer our Nation's call with the right combat capability—speed, agility, persistence, and dominance—at the right cost.

We are a fighting, seagoing service. We will defend Americans at home and abroad by ensuring combat forces are ready and available to meet any contingency; from humanitarian assistance and disaster relief to major combat operations. Our readiness will promote peace and security, preserve the freedom of the seas, deter aggression, and win wars. We will keep global sea and air lanes open and free for the peaceful, productive movement of international commerce. At the International Sea Power Symposium in September 2005, the Chiefs of 49 navies discussed a new vision of sea power in the 21st Century. Their vision of sea power portends a future of international partnerships for maritime security and awareness comprised of vessels and capabilities from partner nations around the world—nations with a shared stake in in-





ternational commerce, security and freedom of the seas. We will continue to forge enduring national and international naval relationships by strengthening current partnerships and by steadily deepening cooperation with and among the maritime forces of emerging partner nations.

Our mandate is to effectively allocate resources to provide Combatant Commanders with the most effective naval force. We continue to utilize best-business practices and discipline in our allocation of manpower and financial resources. Through the use of relevant metrics, we have succeeded in more effectively employing the fiscally constrained force structure, capabilities, and readiness of our operating forces. Initiated as the *Sea Enterprise* “pillar” of the *Sea Power 21* construct, our efforts included the establishment of executive Navy business courses for our senior leaders, increased focus on command accountability for efficient use of resources in mission execution, and the institution of an enterprise framework that has evolved into our Enterprises:

- Air
- Surface Warfare
- Undersea
- Expeditionary Combat
- Netwar/FORCENet

THE OPERATING ENVIRONMENT AND EMERGING STRATEGIC MISSIONS

Failing states and the under-governed areas of the world are breeding grounds for disconnectedness, disfranchisement, and the global threat to peace and stability. Current examples include the Afghanistan-Iranian Border, the Iraq-Syria border, Chad, the Gulf of Guinea, the Horn of Africa, and portions of Southeast Asia and South America. The radical ideologies born in these areas defy the rule of law and spread like a virus through cyberspace and the maritime commons. U.S. Naval Forces are uniquely suited to operating in and around these regions. During the past quarter century, our naval capabilities have been employed in over 76 operations ranging from humanitarian assistance and disaster relief to non-combatant evacuations to full combat operations. All but four of these events took place within the above mentioned areas. This arc of instability is largely littoral and, therefore, subject to naval power and influence.

The maritime domain covers over two-thirds of the earth’s surface. More than 90 percent of the world’s trade travels by water largely via a network of 30 major ports. More than 75 percent of the world’s population and nearly 80 percent of capital cities are located within the littorals. The world’s waterways serve as a con-



duit for commerce, but can also serve the darker purposes of our adversaries. It is up to us and our maritime partners to ensure these waterways are a barrier to and not an instrument of the enemies of freedom.

These adversaries will likely employ a variety of means against us. Among them, terrorism, weapons of mass destruction, major combat operations, and information operations impose the greatest concern. Decentralized, self-reliant, innovative, and networked groups employ terrorism to threaten U.S. interests at home and abroad. The continued proliferation of nuclear weapons and other WMD increases the likelihood of extremist groups obtaining and using catastrophic capabilities.

As previously discussed we committed our Sailors and Marines to a wide variety of missions beyond the scope of traditional combat operations. This trend is expected to increase in the years ahead. The 2006 Quadrennial Defense Review. In the QDR force planning construct, the Secretary of Defense outlined four strategic objective areas, including: homeland defense; war on terror/irregular warfare; conventional campaigns; and global, transnational, and regional deterrence. Embedded within these strategic mission areas are requirements for continuous regional shaping operations. These mission sets are no longer lesser subsets of major combat operations and their proper balance may change depending on the geopolitical climate.

THE NAVAL CHALLENGE

U.S. Naval Forces have historically focused on forward presence, crisis response, deterrence, sea control, and power projection. These missions remain the cornerstone of our future force capability. However, the post 9/11 security environment increased emphasis on the non-traditional missions, civil-military operations, counterinsurgency, counter proliferation, counterterrorism, maritime security operations (including drug interdiction), information operations, air and ballistic missile defense, and security cooperation with an expanding set of partners.

The Navy and Marine Corps' challenge is to remain capable of executing traditional naval missions while simultaneously enhancing our ability to conduct non-traditional missions in order to ensure naval power and influence can be applied at and from the sea, across the littorals, and ashore.

SEAPOWER 21

Sea Power 21 remains the vision and the framework for the 21st Century Navy. Sea power, in the 21st Century, demands much more than simply putting ordnance on target. It demands the abil-





ity to aggregate and disaggregate forces quickly; it demands highly sophisticated networks, connectivity and stealth; it demands joint, allied and coalition interoperability; and it demands we build a fleet for the future.

Innovative concepts and technologies will integrate sea, land, air, space, and cyberspace to a greater extent than ever before. In this unified battlespace, the sea will provide a vast maneuver area from which to project direct and decisive power around the globe.

Future sea-based operations will use revolutionary information superiority and dispersed, networked force capabilities to deliver unprecedented offensive power, defensive assurance, and operational independence to Joint Forces Commanders.

The capability pillars of *Sea Power 21*—Sea Strike, Sea Shield, and Sea Basing, integrated by FORCENet—continue to serve as the foundation for the continued transformation of our Navy. Sea Strike enables projection of offensive power from the sea. It employs networked sensors, combat systems, and warriors to amplify the offensive impact of sea-based forces. Sea Shield is global defensive assurance produced by extended homeland defense, sustained access to littorals, and the projection of defensive power deep overland. Sea Base enhances operational independence and support for the joint forces provided by networked, mobile, and secure sovereign platforms operating in the maritime domain. FORCENet will tie all three pillars together empowering their integration and enabling their capabilities. It is the operational construct and architectural framework integrating naval warriors, sensors, combat direction systems, networks, command and control elements, platforms, and weapons into all levels of conflict.

To build these pillars, we have enabled Sea Enterprise, Sea Trial, and Sea Warrior. Sea Enterprise improves the processes by which we acquire and maintain our fleet through our industrial base. Designed to improve organizational alignment, refine requirements, and reinvest savings to buy platforms and systems, it will transform our Navy and deliver increased combat capability. Sea Trial actively tests new technologies, force mixes, platforms, and operational concepts. This initiative streamlines and formalizes the transition of promising capabilities from concept through implementation in the Fleet. Sea Warrior will deliver a more responsive manpower and personnel system to our Sailors. It will ensure our service is manned with the right people, with the right skills, for the right jobs and available at the right time to achieve mission success.

Sea Power 21 enables the force our nation needs by sustaining our current readiness. The concept within *Sea Power 21* ensuring our forces are ready to surge on demand is The Fleet Response Plan.

THE FLEET RESPONSE PLAN

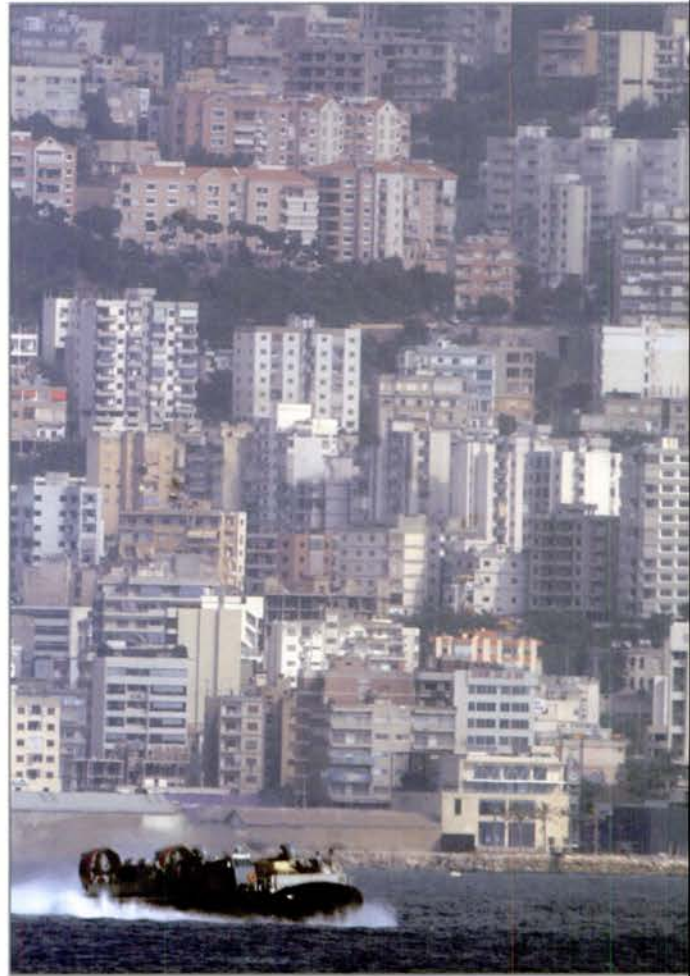
The Fleet Response Plan (FRP), by maintaining the Navy at a high degree of readiness, maximizes the Navy's ability to respond to emergent crises. It is a deliberate process to ensure continuous availability of trained, ready Navy forces capable of short notice surge response forward. FRP provides the capability to deploy carrier strike groups (CSGs), with additional CSGs available within 90 days. FRP is currently structured to provide six ready carriers in less than 30 days with an additional surge in 90 days. This construct is referred to as "6+1". This level of readiness will continue through FY 2008. FRP does not reduce training requirements, operational capabilities or amount of maintenance. Should indications and warning warrant otherwise, Navy can accelerate training and maintenance or otherwise modify schedules to meet emergent Combatant Commander requirements. The FRP concept was validated by the response to the Hurricane Katrina disaster. Twenty-three ships were immediately deployed for relief efforts off the coast of Louisiana.

FRP enables the Navy to enhance its ability to aggregate and disaggregate the force as required by the Combatant Commanders. The ability to surge dramatically shortens response times to any contingency and enables the United States to increase the global presence of its military force as required to support emergent requirements in the Global War on Terrorism or other events like the tsunami of 2005. This supports the nation's requirement for a scalable, immediate, and credible response to any contingency.

By streamlining our maintenance practices, transforming inter-deployment training, and adapting our approach to pre-deployment logistics, manning, and equipment maintenance, we have enabled the FRP and are prepared to deliver decisive, persistent, and credible combat power on demand.

In parallel with this strategy, the Navy Reserve Force is embarked on a fully integrated, active-reserve transformation to a more flexible and integrated unit structure. A vital element of this transformation is focused on providing a rapid surge capability of skilled aviators who have trained with active-duty units. These reserve aviators will reinforce the active units and rapidly boost their capability to generate combat sorties.

The enhanced and expanded readiness availability delivered by the FRP provides the President with unprecedented responsiveness and a ready force anytime, anywhere. Instead of the traditional and predictable, "lock-step," six-month Global Force Management deployments, the new Flexible Deployment Concept allows units to attain and maintain high readiness levels and embark on deployments of variable duration in support of specific national tasking. This includes Homeland Security and Defense, multi-national exercises, security cooperation events, deterrent operations,





and the prosecution of the Global War on Terrorism—often as part of multi-Carrier Strike Group Expeditionary Strike Forces (ESFs). These deployments provide persistent presence and can also occur in less predictable patterns, thereby offering potential adversaries less time to plan against our changing operational timelines. The sustained readiness created via the FRP will enable the Flexible Deployment Concept.

Flexible Deployment Concept implementation will occur under the emerging Joint Presence Policy. The Navy's implementation of these new presence requirements will be carefully monitored to ensure schedules, Operational Tempo (OPTEMPO), and Personnel Tempo (PERSTEMPO) standards are adhered to, thereby minimizing uncertainties for our Sailors or allies.

Further expanding the scope of the FRP, the Navy is moving forward with plans to bolster its land-based operations. In response to the growing need for a culturally aware Expeditionary Security Force, skilled in advanced-level Visit Boarding Search and Seizure, force protection, civil affairs and foreign languages, we commissioned the Navy Expeditionary Combat Command to help meet some of the asymmetric challenges of the 21st Century. The Navy has also re-introduced a riverine force to close gaps in very shallow-water littoral areas, ensuring access to the world's international waterways.

THE GLOBAL MARITIME PARTNERSHIP

The Global Maritime Partnership or the “1,000-Ship Navy” is not a thousand gray hulls flying the American flag, but rather a voluntary global maritime network tying together the collective capabilities of free nations to establish and maintain a dramatically increased level of international security in the maritime domain. It is a “fleet-in-being” comprising all freedom-loving nations, standing watch over the seas, aiding each other. Our vision is to extend the peace through an interconnected community of maritime nations working together. The time has come for the Navy to look at Sea Power as a team effort working in a concert with the Coast Guard as well as international maritime partners as a force to save lives, ensure stability, wage peace, and restore hope—a force for good.

BUILDING A 313-SHIP FLEET

To prevail in the maritime domain, we must build the right force. Our force structure determines what capabilities, weapons systems, and platforms the Navy will use to deliver global reach and persistent presence as part of the Joint Force. In February 2006, after a comprehensive ship requirements review aimed at clearly defining the Navy force structure objective for FY 2020 we unveiled a new 30-year shipbuilding plan providing a fleet of approximately 313 ships. The study compared the multi-mission and single-mission ships and their roles and functions in the context of the Joint Force. The mix of ships we arrived at includes the right balance of ship types to ensure expected missions are met but not over-

matched. The 313-ship fleet will be a fully combat force ready to answer our nation's call.

While the quality of our people remains both our priority and a source of justifiable pride, we must provide our Sailors with the best available technology and empower them to make independent, informed, and effective decisions. To support the Navy of the future, we must possess today the discipline and the vision to allocate resources for the Fleet of 2025 even as we preserve the readiness of the Fleet of 2007.

Recapitalization and modernization of our Navy involve an appreciation of future warfighting needs and a willingness to address those needs, both of which are evident in ship and aircraft designs being pursued and developed today for the Navy of the future.

Recapitalization and modernization also involve commitment to fiscal and design efficiency to streamline and improve business practices, allowing us to both afford the future Navy and maintain our current readiness.

LONG-RANGE SHIPBUILDING PLAN

Shipbuilding is a national security issue. The Navy's 30-year shipbuilding plan will ensure we are building the Fleet of tomorrow today. The plan lays the groundwork for acquiring future ships such as the next-generation aircraft carrier (CVN 21), the advanced-capability guided missile cruiser CG(X), the DDG 1000 multi-mission destroyer, the LHA 6 class modified-design amphibious assault ship, the *Virginia* (SSN 774) nuclear-powered attack submarine, the recently launched Littoral Combat Ship (LCS), and the future Maritime Pre-Positioning Force [MPF(F)]. Working closely with our partners in industry we will continue to control costs through best business practices. We remain committed to maintaining a stable shipbuilding plan and to making the plan affordable so we can acquire the fleet of the future while funding the modernization and maintenance of our current ships.

Tomorrow's ships will be faster, more agile and flexible, and more capable than ever before. They are designed to combat tomorrow's threats and provide future Navy leaders with platforms capable of performing the full range of expected future missions. No single ship class will meet the multiple challenges facing the Navy. For example, we need a "family" of surface warfare ships—DDG 1000, CG(X), the mission-tailored LCS, and a modernized existing Aegis Fleet. Beyond Aegis surface ships our fleet modernization plan includes the converted Trident guided-missile/Special Operations submarines (SSGN), a key component of the Sea Strike and Sea Basing capability for *Sea Power 21* and a premier example of leveraging existing assets in support of transformational requirements.

The Navy's 30-year shipbuilding plan will ensure we are able to sustain a major combat operations force capable of meeting the unconventional and asymmetric threats looming in the future.





ASHORE VISION

In addition to our ships and airplanes, our shore infrastructure is a critical element of projecting Sea Power in the 21st Century. This infrastructure includes bases, piers and support facilities, training ranges, schoolhouses, hospitals, and housing. We cannot lose sight of the tail as we concentrate on the tooth. Supporting a “Surge Navy” demands we create a “Surge Infrastructure,” one leveraging advanced technology, sound investment and intelligent sustainment for the Fleet, Sailors, and their families. The Navy’s Ashore Vision (NAV) 2030 is the Navy’s roadmap to transforming the Navy shore infrastructure over the next 25 years. Through the Navy Enterprise Framework, we are taking a hard look at maximizing dollars for readiness and future capabilities while seeking efficiencies and cost savings in our shore infrastructure. Within that context, however, the congressionally mandated Base Realignment and Closure (BRAC) process continues.

The Navy must size and locate its shore infrastructure to ensure it has the **RIGHT BASES**, in the **RIGHT PLACES**, with the **RIGHT CAPABILITIES**, at the **RIGHT COST**. Our bases must be sized, typed, and located to meet the wide range of operational requirements we expect to fulfill. Ashore facility investments and costs must make optimum use of Fleet, Navy, Department of Defense, and other resources. To consolidate support delivery, reduce duplication, and improve operational efficiency while enhancing combat effectiveness, we will make every effort to capitalize on joint-basing opportunities with our sister services.

RIGHT BASES: Installations, institutions, functional support facilities, and services must be available to enable commanders to most effectively and efficiently train, man, and equip operational units.

RIGHT PLACES: Installations and support functions must be relationally and geographically aligned with Fleet operations to enable surge, sustainment, and reconstitution.

RIGHT CAPABILITIES: Cost-effective functional support must actively serve dynamic readiness requirements and sustain quality of life.

RIGHT COST: Resource allocation must be driven by valid output requirements and return on our investments. Core facilities and services must be sustained.

Beyond their operational functions, our shore facilities are home to many of our Navy families. Future planning must also take into consideration family readiness and our Sailors when they are home. Bases will continue to operate in partnership with the surrounding community.

Quality base appearance sends a strong message to our Sailors and the American public. Quality of Service makes our Sailors proud of where they live and work. Quality of Service is a readiness imperative.

AVIATION ROADMAP

The Naval Aviation Enterprise (NAE) will continue to lead its people and judiciously manage its resources, providing the presence and the unequivocal striking power our nation demands. The NAE enables achievement of a more effective and efficient warfighting force. Its process improvement and productivity initiatives exist to improve current readiness, secure the future of Naval Aviation, and transform the way we fight, at sea and ashore. Aviation programs of record provide a broad and balanced arsenal of next generation capabilities aligned with our Navy Strategic Plan and 30-year shipbuilding plan.

Naval aircraft programs are the best in the world and they are operated and maintained by the smartest, most industrious, and dedicated people anywhere. We continue to develop new technologies while managing our costs—striking the delicate balance between today's readiness and tomorrow's capability requirements in the joint environment.

Naval Aviation leaders are committed to ensuring our warriors are equipped with the most combat-capable, fixed and rotary-winged, and tilt-rotor aircraft to fight the Global War on Terrorism and meet other emerging threats. In that regard, we are implementing a strategy called NAVAIR AIRSpeed. This strategy addresses the cost of operating and maintaining current aircraft as well as how to enhance productivity to ensure the Navy can afford the aircraft of the future. The dynamics of future network-centric operations will define the operational requirements of intelligence, surveillance and reconnaissance (ISR) data and expand Naval Aviations role. ISR capabilities will be significantly increased by the next generation of multi-mission maritime aircraft (MMA) as well as naval unmanned aerial vehicles (UAVs) with mission-reconfigurable advanced sensors.

Naval Aviation's *Strategy for Our People* considers the entire enterprise—workforce, military, civilian, and contractor support—to develop the optimal mix of skills at the right cost and ensure success across the full spectrum of naval operations.

In short, the Naval Aviation Enterprise is a warfighting partnership led by the Commander Naval Air Forces (CNAF), and forged with aviation stakeholders to drive readiness by optimizing processes and existing resources, and by managing costs.

DEVELOPING 21ST CENTURY LEADERS

Our success in defense of our nation boils down to our success in developing 21st Century Leaders. Perhaps no where else in our Navy is the pace of change more profoundly felt than in our Manpower, Personnel and Training Enterprise. It is here where the dynamics of globalization, cultural diversity, advancing technologies, generational differences, changes in the labor market, and declining numbers of hard science degrees among America's youth





combine to make recruiting and retention more challenging than ever. The men and women of the Navy—active, reserve and civilian—are the lifeblood and the heart of the Service. They are ambassadors, educators, health care providers, mentors, and friends to a diverse cross-section of the global community. They must be ready to deal with future challenges ranging from failing states and ungoverned territories to technologically advanced near-peer competitors. We must recruit today the young men and women who will be leading the Navy tomorrow. We will empower them by transforming the manpower, personnel, training, and education organization into one that better competes for their talent and creates the conditions in which they can achieve their full potential. Our Sailors are called to interact with and understand foreign cultures. Our plan will equip them to meet these challenges, to excel as professionals, and to develop as individuals.

We have a strong commitment to execute *Sea Warrior*, ensuring our training, education and career-management systems effectively provide for the growth and development of our people and enhance their contribution to our joint warfighting ability. If this is accomplished, we will attract and retain Sailors who compete to serve and strive to stay.

STRATEGY FOR OUR PEOPLE

The Navy's *Strategy for our People* will provide guidance to assess, train, distribute, and develop our manpower to meet the warfighting requirements of the Navy. At the same time, it will improve the work-life balance and quality of service so our Sailors and civilians will enjoy meaningful job content, recognize the importance of their contributions, and have expanded opportunity for realizing their full professional and personal potential.

The Navy's *Strategy for our People* provides overarching guidance for achieving a capabilities-based and competency-focused total-workforce in synch with joint and Navy mission requirements. Through our commitment to our people we have realized the best manpower and personnel readiness in our history. Capitalizing on those successes, we will produce a more flexible and operationally capable Navy with a workforce that is shaped to meet emerging needs and requirements directly linked to force structure and combat capability while supporting current and Joint warfighting requirement.

We will actively promote increased diversity at every level. Work will be distributed effectively among active, reserve, civilian, and contractor personnel; capitalizing on the strengths of our differences to ensure mission accomplishment.

Our goal is an affordable, experienced, better-educated, continually-ready force—active, reserve, and civilian—devoted to mission accomplishment, with more influence on assignment choices, more career opportunities and a healthier work-life balance. Indeed, the Navy will be recognized as the “employer of choice,” pro-

viding excellent quality of life and of service, all the while remaining selective about who is recruited, promoted, and retained.

SEA WARRIOR

Sea Warrior comprises the Navy's training, education and career management systems enabling growth and development of our people and, in return, enhancing their contributions to our Joint warfighting ability.

The primary Sea Warrior-Sailor interface is Navy Knowledge Online (NKO), an outstanding and evolving web-based resource available today. It will eventually encompass the full development of the Five Vector Model (5VM), and the Job Advertising and Selection Service (JASS) Career Management System (JCMS). Sea Warrior puts the right tools at our Sailor's fingertips to make the right career development choices.

The 5VM is the primary tool of a new Revolution in Training, bringing the Navy closer to its goal of pushing career ownership down to individual Sailors. 5VM provides the tools and resources to ensure a Sailor's career success. The JASS/JCMS is coupled to the 5VM. This program enables Sailors to view available Navy opportunities and apply for career-enhancing jobs. The first increment of Sea Warrior, Spiral 1, is Interactive Detailing. This system gives Sailors greater insight and engagement when identifying and applying for Navy positions of interest to them.

To enable Sea Warrior, the Navy is integrating Manpower, Personnel, Training, and Education (MPT&E) into a single enterprise. This will create a single, integrated business process to deliver optimally-trained and motivated Sailors to the Fleet. This aligned and centrally-managed and resourced organization will realize efficiencies, improve capabilities, and increase agility in personnel management, training, and distribution. Sea Warrior will enable the Navy to create an agile, market-like approach to career management, where Sailors "compete" in a dynamic marketplace, providing the right Sailor, at the right place, with the right skills. The goal is to create a Navy in which our people are optimally assessed, trained, and assigned so they can fully contribute to mission accomplishment.

DIVERSITY

The changing demographics of the American population demand the Navy to take proactive steps to ensure it has access to the full range of the nation's talent. Navy leaders are committed to improving the diversity of the service, especially in leadership and technical positions. Leveraging the strength of the nation's diversity creates an environment of excellence and continuous improvement, in which artificial barriers to achievement are removed and the contributions of all participants are valued.





Our initial goal is to improve the representation of both minorities and women in areas where there are currently shortfalls. We need to drive opportunities for women by improving female enlisted recruitment, development, promotion, and retention in technical skill sets and competencies. Overall, we must increase minority presence in our officer corps.

Although initial efforts are focused on the shortfalls previously described, overall Navy diversity principles are truly an effort to create and maintain an environment where we attract and retain the best talent the nation produces. Because of generational, demographic, and other external factors affecting us in the future, we must succeed in creating the kind of Navy environment in which every Sailor and civilian can contribute their skills to increasing mission readiness, are encouraged to lead, and feel empowered to reach their personal and professional potential. Diversity is about *all* Navy personnel, and it is not about head count—it is about having maximum access to and retaining the talent, skills, and quality to meet our future missions.

Even though we have made much progress in improving diversity, we must continually improve and always strive to be better. Our enlisted force is much more diverse than America in general, and is becoming more educated and technical. Although our officer corps is on par with college graduate diversity levels in the United States, we must still make progress at the senior levels of the military and civilian corps. The Diversity Directorate under the Chief of Naval Personnel is charged with helping to create an environment where promotion, assignment, mentoring, development, and retention maximize career opportunities for each and every Sailor and civilian serving the Navy. All personnel are charged with leading, treating others with dignity and respect, and to mentor those that follow. This will not occur overnight, but we will remain steadfast in our efforts until we succeed.

ACHIEVING THE MISSION...A CLEAR VISION OF PEACE AND CONFIDENCE

The Navy has an unmatched history of success. While we take great pride in our history, we must also learn from it. As Winston Churchill understood, “The further backward you look the further forward you can see.” Readiness is high. Maintenance is being performed faster and more efficiently. Recruiting and retention remain strong. Our people are motivated, well-trained, and battle-tested. In addition to the critical strategic reserve forces we provide the country, there are some 4,000 U.S. Sailors on the ground in Kuwait, Afghanistan, and Iraq, and many thousands more are on board ships at sea: 24/7/365! As we move into the future, our mission is clear. We organize, train, maintain, and equip combat-ready naval forces capable of answering our Nation’s call. We will deter hostility by would-be aggressors. We continue to preserve freedom of the seas and promote peace and security. We will not fail.



However, we cannot meet the challenge of this new era simply by sustaining today's readiness and requirements. Our adversaries will not rest; our friends and allies cannot wait. We must build a force that can apply Sea Power in the 21st Century. We must continue to transform, recapitalize, and modernize our Navy.

We will adapt to the challenging world around us by leading change, pacing the speed of change, and by embracing the innovations and improvements needed to guarantee our future success. It is impossible to foresee or fully comprehend all the challenges that lay ahead, but by building a balanced, resilient, and adaptable, force with the depth of capabilities required to meet the demands of a multi-mission, multi-task environment, we can mitigate against uncertainty.

This 2007 edition of the Navy's annual program guide, *Sea Power for a New Era* provides comprehensive information on how the Navy is making the transformation from vision to strategy and policy to global operations. It is ultimately a guide to meeting the challenge... shaping the future... and achieving a clear vision for peace.



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CHAPTER 2

BRIDGING VISION AND PROGRAM DECISIONS

SEA POWER FOR A NEW ERA

S*ea Power 21* began the process of translating theory into practice for a wide range of advanced and innovative naval concepts, technologies, systems, and platforms, which will ultimately increase the effectiveness of the joint force. We are moving forward with the fundamental concepts of Sea Enterprise, Sea Strike, Sea Shield, and Sea Basing to produce and deliver the most effective warfighting force to combatant commanders and to transform the way we fight.



To do so requires us to constantly review and when necessary update our strategic priorities. In 2006, we defined our priorities as:

- *Sustain Combat Readiness with the right combat capabilities—access, speed, agility, adaptability, persistence, awareness and lethality—at the right cost.*
- *Build a Fleet for the Future balanced, rotational, forward-deployed and surge capable of the proper size and mix of capabilities to empower our enduring and emerging partners, deter our adversaries and defeat our enemies.*
- *Develop 21st Century Leaders through a transformed manpower, personnel, training and education organization that better competes for the talent our country produces and creates the conditions in which the full potential of every man and woman serving our Navy can be achieved.*

We have made good progress in all three priorities. In 2006, the Navy met our Combatant Commanders' demands for well-trained and equipped forces and contributed to combat operations, international disaster-relief operations, exercises, humanitarian missions, and homeland-defense initiatives. To ensure we are getting the most readiness and capability for the nation's tax payers, we established the Navy Enterprise Framework.

As described in Chapter 1, we prepared a new 30-year shipbuilding plan that will provide a balanced fleet of approximately 313 ships by 2020. The Navy Strategic Plan (NSP) further aligns budgetary decisions with future operations and risk assessments, while the Resources and Requirements Review Board continues to help us curb cost and requirement growth.

The merger of Navy's Manpower, Personnel, Training, and Education in 2006 yielded more efficient and effective workforce management structure assuring the fleet remains fully manned at sea.

Our progress has led us to review and update our priorities for this year to include:

READINESS: Strengthen continuous readiness to ensure combat ready, surge-capable forces are available to meet any contingency. Natural disasters abroad and hurricanes here at home taught us valuable lessons. We must extend the Fleet Response Plan (FRP) philosophy of "continuous readiness" to our shore commands, our people, and our families. We will execute the Navy's new employability/deployability policy to balance properly the time at-sea with time at-home tempo.

FORCE STRUCTURE: Fund and build a balanced, effective fleet to guarantee the long-term strength and viability of U.S. naval air and sea power. We must continue to curb costs and requirements as we build to the 313-ship fleet, complete a long-range aviation procurement plan, and strengthen our

strategic partnership with industry.

WARFIGHTING: *Improve core warfighting competencies to defend the homeland and win the nation's wars as part of the Joint Force. We must strengthen our ability to conduct the enduring missions this nation expects of its Navy. We will improve our performance in surface warfare, submarine and mine warfare, air warfare, strike warfare, and ballistic missile defense, as well as other traditional maritime supremacy mission areas. Preeminence at sea still matters.*

PEOPLE: *Shape the Navy's workforce to develop 21st-Century leaders with the skills required to meet the demands of modern military operations. We must deliver the Strategy for our People, further streamline the Individual Augmentee process and execute the Diversity CONOPs.*

PARTNERSHIPS: *Advance the Global Maritime Partnership Initiative (i.e., the "1,000-Ship Navy") to promote stability, prevent conflict and enhance maritime security. We must look for more and better opportunities to work collaboratively with federal, international, and non-governmental agencies.*

The CNO's annual Guidance and these priorities provide the links between vision and strategy in a broad sense, and more specifically between the Independent Capability Analysis and Assessment (ICAA) and the CNO's Investment Strategy Options (ISO). Associated with this is the Naval Capabilities Development Process (NCDP), which places decisions within a capability-focused context.

To address our emerging naval operating concepts and the technologies, systems, and future platforms that will be used in the broader range of roles, missions, and tasks, we rely on the work of Navy Warfare Development Command (NWDC). NWDC reports to the Commander, United States Fleet Forces Command, in Norfolk, Virginia. In addition, the Navy's Fleet Battle Experiments (FBEs), which began in 1997, have proven to be excellent vehicles for innovation and change, and will continue to be a vital element in our Sea Trial initiatives, as articulated in *Sea Power 21*.

NAVY PROGRAM ASSESSMENT AND PLANNING

Navy program assessment and planning documents and processes are developed in conjunction with the Defense Secretary's Defense Planning Guidance and, internal to the Department of the Navy, with the Secretary of the Navy's annual "Planning Guidance." Such top-level guidance focuses on required capabilities instead of specific threat assessments. It uses a capabilities-based planning process to ensure readiness, operational availability, and warfighting requirements are satisfied as efficiently and effectively as possible to meet persistent and emerging strategic challenges. These challenges include:



Fleet Battle Experiments

The Navy's FBEs examine innovative warfighting concepts and emerging technologies and systems. They are true operational experiments in which failure is an option; there is important value in learning concepts that do not work. The service has conducted 11 FBEs through 2005.

Fleet Battle Experiment Alpha (FBE-A), conducted March 1997, used a special, sea-based Marine Air-Ground Task Force (MAGTF) that employed advanced technology and conducted dispersed operations on a distributed, non-contiguous battlefield.

Fleet Battle Experiment Bravo (FBE-B), conducted September 1997, focused on the joint fires coordination process known as "Ring of Fire" and the Joint Task Force targeting process for Global Positioning System(GPS)-guided munitions, including a supporting command-and-control (C2) architecture known as "Silent Fury."

Fleet Battle Experiment Charlie (FBE-C) conducted April and May 1998, during the USS Dwight D. Eisenhower (CVN 69) CVBG Joint Task Force Exercise, and addressed the Area Air Defense Commander and "Ring of Fire" concepts, in addition to the development of a Single Integrated Air Picture and air-missile engagements across a large area of operations.

Fleet Battle Experiment Delta (FBE-D), conducted October and November 1998 in conjunction with Foal Eagle '98, an annual exercise sponsored by Combined Forces Command Korea, focused on four warfighting priorities: joint counter fire, joint counter special operations, joint theater and air missile defense, and amphibious operations.

- **Traditional threats**
- **Irregular threats**
- **Disruptive threats**
- **Catastrophic threats**

To facilitate the capabilities-based planning process, the Deputy Chief of Naval Operations (DCNO) for Information, Plans, and Strategy (N3/N5) works with the Marine Corps to develop a prioritized list of warfighting capabilities based on the *Sea Power 21* construct and the 2006 Naval Operational Capabilities publication. This list of coordinated warfighting capabilities translates the four Naval Capability Pillars (NCPs) of *Sea Power 21* (Sea Strike, Sea Shield, Sea Basing, and FORCENet) into more detailed Mission Capability Packages (MCPs). The MCPs are further refined into listings of specific enabling capabilities developed collaboratively by the Navy and Marine Corps.

A panel of flag and general officers, representing the various mission and warfare areas, subjectively evaluates the list of capabilities. This panel, chosen for recent operational experience, employs an iterative process comparing capabilities and determining their order of priority based on expected future mission requirements. The result is a list of prioritized capabilities tied directly to the NCPs and providing the Naval Capabilities Development Process (NCDP) with more input for determining the types and numbers of platforms entered into the program. This input complements the adequacy assessments that are conducted as part of the NCDP by the Director, Integrated Warfare Division.

PLANNING AND PROGRAMMING

Innovation and transformation have characterized the Navy's program-planning process throughout the service's history, but neither received the level of emphasis they have during the past five years. Through Management Initiative Decision (MID) 913, the Navy modified the Department of Defense (DoD) Planning, Programming, and Budgeting System (PPBS). This revised process, known as the Planning, Programming, Budgeting, and Execution (PPBE) process, improves the overall effectiveness of the program-planning process. The PPBE process directly links strategy to programmatic decisions through a single organization responsible for analysis of warfare capabilities, while also adding additional emphasis to program execution. The Navy's Prioritized *Sea Power 21* Warfighting Capabilities List provides a framework to establish the capability roadmaps developed by the NCDP. This new planning process ensures program synchronization, balance, and integration across all naval warfare areas and within fiscal constraints. The result of this process is the Navy's input to the Defense Department's Program Objective Memorandum (POM) and, ultimately, the President's Budget submission to Congress.

INDEPENDENT CAPABILITY ANALYSIS AND ASSESSMENT (ICAA)

A primary objective of the planning process is to develop a thorough understanding of how naval forces contribute to the nation's joint warfighting capabilities. In 1992, *...From the Sea* outlined four key operational capabilities—command, control, and surveillance; battle space dominance; power projection; and force sustainment—required to execute operations in littorals. Today, the Navy's strategic planning guidance focuses on the overarching capability architectures enabling the projection of offensive and defensive naval power: Sea Strike, Sea Shield, and Sea Basing. These capability pillars are linked together by a seamless FORCENet and carried out by carrier strike groups, expeditionary strike groups, expeditionary strike forces, and other naval forces under the Fleet Response Plan (FRP). Within this conceptual architecture, the DCNO for Warfare Requirements, Resources, and Assessments program planning process relies on broad-based analyses capturing the complexity of naval warfare requirements, while balancing them within available resources.

Starting with the capability objectives, current and future technologies, systems, and platforms are assessed against their desired effectiveness in the joint-service environment, a process that addresses the balance and warfighting capability of the planned force structure and support areas. The analysis and review of the "health" of the individual warfare and warfare support capabilities is an ongoing, iterative process that is linked to the development of the Navy POM and Program Reviews (PRs).

WARFARE CAPABILITY ANALYSIS

The number of ships, submarines, and aircraft is the most visible manifestation of the Navy's operational capabilities. The ICAA assists Navy leaders in matching available resources with desired capabilities in the near, mid, and far terms. In addition to the numbers and types of ships, submarines, surface and amphibious warships, mine countermeasures (MCM) vessels, aircraft, and special-purpose platforms, the ICAA considers force posture, life-cycle support, presence, and engagement requirements of the regional combatant commanders. Evolving threats, desired capabilities, developing technologies, doctrinal and operational concepts, and fiscal realities all play roles in shaping resource-allocation decisions leading to deployed naval forces. Force structure analysis examines the resources required to recapitalize and/or modernize the force, develop alternative force structure paths and subsequent consequences of the tradeoffs, and frame relevant issues via integrated decision timelines.

Fleet Battle Experiments

Fleet Battle Experiment Echo (FBE-E), conducted March 1999, employed both real and simulated forces—and future concepts for command, coordination, communications, fires, and sensors—to address innovative operational concepts for defeating asymmetric threats, precision engagement, network-centric submarine warfare, information superiority, and casualty management.

Fleet Battle Experiment Foxtrot (FBE-F), a joint and combined exercise in the Arabian Gulf conducted November and December 1999, examined the concept of assured joint maritime access in protecting air and sea lines of communication.

Fleet Battle Experiment Golf (FBE-G), conducted April 2000, assessed emerging technologies in a network-centric, joint and combined forces environment to support theater ballistic missile defense and time-critical targeting in the Mediterranean theater.

Fleet Battle Experiment Hotel (FBE-H), conducted August and September 2000, focused on the application of network-centric operations in gaining and sustaining access in support of follow-on joint operations.

Fleet Battle Experiments

Fleet Battle Experiment India (FBE-I), conducted in the San Diego operational area June 2002, had the principal goal of operationalizing net-centric warfare. FBE-I tested a netted C4ISR architecture that provided participating joint forces with wide-area connectivity, enhanced bandwidth, and "reach-back" for enhanced situational awareness and decision-making.

Fleet Battle Experiment Juliet (FBE-J), conducted July and August 2002, developed and refined command and control processes for future joint maritime forces. This included defining in detail the functions and planning process for the Joint Forces Maritime Component Commander, improving ship-based command and control, and enhancing the integration of networks and databases serving forward sea-based forces, as well as those in the rear.

Fleet Battle Experiment Kilo (FBE-K), a joint warfighting exercise including both live field forces and computer simulation, was conducted April and May 2003 in various locations around the United States and the 7th Fleet Pacific area of operations. The experiment, conducted concurrently with Exercise Tandem Thrust 2003, developed and refined processes supporting joint command and control from the sea, which will be used in future operations. There were a total of 11 transformational initiatives within FBE-K, all designed to combine experimental tactics, techniques, and procedures (TTP) with new technologies or existing technologies used innovatively.

Our capabilities-based approach selects and prioritizes the proper capabilities to ensure strategic objectives are satisfied in diverse future crises and conflicts while simultaneously focusing on meeting current requirements. Driven by warfighting needs, which include assuring our allies while dissuading and deterring our enemies, these capabilities must also support Joint Force Commanders and be compatible with allied and coalition forces. The capabilities must be fiscally affordable and provide a continuum of crisis-response options and combat capabilities to support naval and regional combatant commanders and fulfill national commitments. The force planning approach articulated in the National Defense Strategy will guide decisions on the overall shape, size, and global posture of U.S. military forces. In short, the Navy will organize, train, maintain, and equip combat-ready naval forces capable of:

- **Winning the global war on terror and any other armed conflict**
- **Deterring aggression by would-be adversaries**
- **Preserving Freedom of the Seas**
- **Promoting Peace and Security**

SEA STRIKE

The Sea Strike ICAA includes naval fires, strategic deterrence, and amphibious warfare (the latter more appropriately characterized as Expeditionary Maneuver Warfare). When naval fires are required, the Joint Task Force Commander has a variety of naval weapons to choose from, including accurate standoff munitions delivered from aircraft, gun-fired precision-guided munitions, and sophisticated cruise missiles launched from surface warships and submarines. The essence of this capability is aircraft carriers, long-range attack aircraft, surface warships, and submarines capable of launching a variety of responsive, accurate, long-range precision weapons and providing robust Naval Fire Support (NFS).

Additionally, *Ohio*-class ballistic missile submarines (SSBNs) provide the nation with the most survivable leg of the nuclear deterrence triad, thereby making it a key element of the Navy's overall Sea Strike capability.

Expeditionary Maneuver Warfare includes the ability to mass overwhelming naval, joint, and allied military power, and deliver it ashore to influence, deter, contain, or defeat an aggressor. Naval expeditionary 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 littorals, and to accessible inland areas that can be attacked, supported, and defended directly from the sea. It is important to note that "littoral" operations are not exclusively "brown water" or "riverine." Today, littoral operations can commence hundreds of miles from an adversary's coast, as was clear in Operations Enduring Freedom and

Iraqi Freedom. Navy and Marine Corps expeditionary forces—acting independently, jointly with the Army, Air Force, and Coast Guard, or combined with allied forces—provide the backbone of America’s ability to quickly and effectively project credible military power throughout the world.

SEA SHIELD

The Sea Shield ICAA focuses on naval warfighting capabilities required to project defensive power at and from the sea. It assesses and analyzes emerging technologies designed to extend naval defensive firepower far beyond strike groups to dominate the sea and littoral battle space, project defense deep overland against cruise and ballistic missile threats, and provide the United States with a sea-based theater and strategic defense capability. Sea Shield integrates the alignment of the Joint Full-Dimensional Protection and Strategic Deterrence Joint Warfare Capability Assessments with the Sea Shield capabilities inherent in *Sea Power 21*. In addition, Sea Shield enables the extension of homeland security to the fullest extent possible by including: intelligence, surveillance, and reconnaissance (ISR) assets; surface ships, maritime patrol aircraft, guided missile submarines (SSGNs), attack submarines (SSNs) and ballistic missile submarines; and a mix of manned and unmanned systems operating below, on, and above the sea’s surface.

Persistent supremacy at sea and in the littorals continues to be at the heart of the U.S. National Military Strategy. Naval forces will assure access for the joint force through surface warfare (SUW) and anti-submarine warfare (ASW) superiority, air supremacy, and mine countermeasures and the employment of naval mines in offensive and defensive operations (MIW). Next-generation naval mines, or Mobile Autonomous Undersea Weapons (MAUWs), linked to distributed and dispersed undersea FORCENet sensors, could provide critical defense of the Sea Base in conjunction with more traditional offensive and defensive tactical mining concepts of barrier and area-denial operations.

Anti-submarine warfare superiority includes capabilities to neutralize or defeat an adversary’s use of submarines, thereby assuring access, permitting the use of the sea as a maneuver space, and allowing sea-based operations. Offensive and defensive sea mining and MCMs 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 actions necessary to neutralize an adversary’s efforts to employ surface warships against friendly forces. Air superiority provides naval forces the capability to assure access to theater airspace by U.S. and coalition forces. 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. Acting either indepen-

Fleet Experimentation: Sea Trial

With the advent of Sea Trial in 2003, the Fleet assumed responsibility for leading the Navy’s efforts to identify new concepts and technologies that could be transitioned rapidly into new warfighting capabilities. Through a rigorous process of experimentation, analysis, and assessment, Sea Trial has begun to deliver quantifiable enhancements in all four *Sea Power 21* pillars.

SSGN CONOPS experimentation (Silent Hammer October 2004). The focus of this experiment was to explore the SSGN’s ability to command, control, and support a variety of forces and operations. The experiment highlighted the utility of embarked Command-and-Control (C2) in a small or covert platform. While the results were derived from experimentation with the SSGN, they would be equally germane to the Littoral Combat Ship or Joint High-Speed Vessel. A number of promising technologies were recommended for accelerated acquisition.

Trident Warrior series (initiated in 2004). This series of annual events is focused on providing an increase in near-term FORCENet capability to the Fleet, and looks at a number of possible technology solutions within a wide array of focus areas. Each of the experiments to date has produced recommendations to accelerate the acquisition of, or the development of, a number of systems. They have also labeled as promising some immature technologies that require further experimentation.

Fleet Experimentation: Sea Trial

Biometrics Experimentation (September 2004 - June 2005). The goal of these efforts was to test the concept of identifying potential terrorists during maritime vessel boarding operations by gathering biometric identification data and subsequently relaying that information to government agencies with access to intelligence and criminal databases. Experiment initiatives focused on the speed and modalities of information exchange, the associated communications architecture, the requisite inter-agency coordination, and equipment reliability. A suitable communication architecture was identified, the interagency cooperation proved effective, and the data flow was adequate once wireless capability was incorporated in later events. As a result of these efforts, this capability is being acquired and incorporated into the Fleet.



dently or as a joint force component, naval forces provide capabilities that are critical to ensuring freedom of maneuver and power projection from the sea.

SEA BASING

The Sea Basing ICAA focuses on sealift, airlift, the Combat Logistics Force (CLF), transportation, and ordnance inventory. It includes the capability to move items both intra-theater and inter-theater. It also includes the overall health of the Navy ordnance inventory against combat, theater and homeland security, and training requirements.

The specific naval surface and air logistics functions enabling the movement, maneuver and support of U.S. combat forces and other friendly forces afloat and ashore remain areas of intense interest and are keys to attaining successful seabasing capabilities. In combat operations in the Arabian Gulf—from Desert Shield/Desert Storm in 1990 to Operation Iraqi Freedom in 2003 and continuing—sealift transported 95 percent of all supplies and equipment to and from the areas of operations. In 2001-2002 we achieved and sustained access during Operation Enduring Freedom in landlocked Afghanistan from naval forces and assets at sea. The Navy's strategic sealift fleet includes prepositioned, surge, and other support ships. Prepositioned ships include the Maritime Prepositioning Force (supporting the Marine Corps), Combat Prepositioning Force (supporting the Army), and Logistics Prepositioning Ships (supporting the Navy, Air Force, and Defense Logistics Agency). The surge fleet consists of Fast Sealift Ships (FSS), Large Medium-Speed Roll-On Roll-Off (LMSR) ships, and ships of the Maritime Administration's Ready Reserve Force (RRF). Other assets include hospital ships and aviation maintenance ships as well as commercial sealift assets if contracted to support specific mission requirements.

Prepositioned ships and surge sealift vessels directly support Marine Corps Assault Echelon and Assault Follow-On Echelon operations, as well as Naval Construction Battalion (Seabee) Force units. Sealift also carries Navy sustainment supplies and ammunition from storage sites to forward logistics bases, where the Navy's 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 forces allow joint and allied forces to deploy and sustain operations, without dependence upon shore-side infrastructure in forward areas. In the near future, sea-based assets will increasingly support emerging concepts for operational maneuver and ship-to objective maneuver—the essence of Expeditionary Maneuver Warfare—and provide a full-spectrum of logistics, command and control, com-

munications, and offensive and defensive fires for Joint Force Commanders while reducing the footprint ashore.

FORCENET

The FORCENet ICAA team assesses capabilities underpinning network-centric warfare, including communications and data networks; the common operational and tactical picture; and ISR concepts, systems, and programs. Many of these are key milestones on the Navy's transformational roadmap. FORCENet capabilities are the key to the execution of effects-based operations, enabling the commander to achieve "Full Spectrum Dominance" over the enemy, exploit his weaknesses, and counter his strengths during rapid, decisive operations.

SEA ENTERPRISE

The Sea Enterprise initiative is the resource enabler for *Sea Power 21*. It provides a vehicle for harvesting resources for recapitalization. We are changing the way the Navy does business by finding innovative and less costly methods, while supporting the critical training, supply, and maintenance programs that are essential to readiness. By taking prudent risks and attacking costs, we will fund essential requirements and optimize the operational impact of today's Navy, while creating a future force that can rapidly field new technology and surge ahead to meet all new challenges.

Sea Enterprise includes the establishment of executive and Navy corporate business courses for our senior leaders, increased focus on command accountability for efficient as well as effective mission accomplishment, and the beginnings of an Enterprise framework centered around our primary warfare communities (Air, Surface, Undersea, Netwar/FORCENet, and Expeditionary Combat).

WARFARE SUPPORT ANALYSIS

INFRASTRUCTURE

Ashore infrastructure includes land, buildings, structures, and utilities within ports and air stations, as well as repair and maintenance centers, communication sites, storage facilities, laboratories, piers, ordnance magazines, hospital and medical centers, training areas, and community support centers. This infrastructure is found at homeports as well as at overseas locations. While "infrastructure" seldom receives high visibility, the Navy's installations, are essential for naval force readiness at home and abroad. Although it is not essential for the Navy to have access to overseas facilities to carry out its worldwide missions, having facilities at key forward locations provides logistics support with rapid response capability for any threat and contingency. Unlike other services, the Navy has the ability to carry its immediate logistics

Fleet Experimentation: Sea Trial

Joint Force Maritime Component

Commander (JFMCC)/Distributed Staff Experimentation (MARCOLE Series 2005). The series of experiments focused on the organization, processes, and technologies required to support a Joint Force Maritime Component Commander staff in a variety of operating environments and C4ISR architectures. MARCOLE #1 focused on the processes and utilized existing and near-term collaborative information tools. It identified limitations of current processes and tools, highlighted required revisions to the current draft TACMEMO, and spelled out items to be investigated in future experiments. MARCOLE #2 added the challenge of operating in a coalition environment, with C2F acting as a Combined Force Maritime Component Commander (CFMCC). MARCOLE #2 leveraged the staff's growing familiarity with the prescribed tools to concentrate more on C2 processes. MARCOLE #3 was a discovery event conducted in conjunction with Trident Warrior 2005, and focused on developing and refining staff standard operating procedures (SOPs) for the fires and targeting team within the Future Operations Cell. Applicable portions of the SOPs developed in MARCOLE #3 will be tested during JEFX-06.

Theater ASW Wargame (Thundering Dolphin 5 May 2005). The purpose of the wargame was to examine the Theater ASW Commander Concept of Operations (CONOPS) in a taxing operational scenario. As a result of this wargame, the Fleet captured salient lessons that drove corresponding changes to affected operational plans.

Fleet Experimentation: Sea Trial

Distributed Mobile ASW Sensors (DMAS) experimentation (DMAS LOE July 2005). This experiment, built upon earlier initiatives, tested the concept of using low-cost, remote, mobile, autonomous sensors capable of collaborative actions to detect and track diesel-electric submarines. The experiment used unmanned surface vehicles equipped with sonobuoys, remotely controlled from a helicopter. Analysis revealed the concept to be promising, and follow-on experimentation will be conducted after required system modifications are completed.

Tactical Unmanned Aerial Vehicle (UAV) experimentation (Scan Eagle deployment with Expeditionary Strike Group (ESG) One, 2005-2006). ESG-1 is using the Scan Eagle tactical UAV in an operational environment. Upon ESG-1's return from deployment, the Sea Trial Executive Steering Group will assess the utility of a small, tactical UAV in an array of operational scenarios.

Maritime Dynamic Targeting/Digital Time Sensitive Targeting experimentation. This series of wargames, simulation exercises, and exercise spirals are planned to culminate in JEFX-06 in April 2006. This series will examine both the JFMCC staff's reaction to pop-up and time critical targets, as well as the flow of targeting information from sensor to decision maker to trigger-puller.

sustainment capabilities to forward operating areas. Beyond the first 30 days of conflict, however, advanced logistics bases provide fuel, ammunition, and maintenance for sustained presence and high-tempo operations.

The Navy has a significant investment in installations—more than \$110 billion in facilities replacement value in early 2007. During the downsizing through the 1990s, this inventory was not adjusted in similar proportion to the Navy's operating forces. Consequently, current facility sustainment and recapitalization rates are insufficient to maintain existing infrastructure, much of which is inappropriate for 21st-Century needs. Aging infrastructure greater than 50 years of age, numerous historical buildings maintained for heritage-preservation purposes, and the increase of new mission support infrastructure home and overseas without top-line relief exacerbate this problem. The Navy is working to shift its focus ashore from the current situation to reshaping regional footprints and advanced logistics bases to ensure the right capability is in the right place at the right price to support future naval operations.

Critical to sustaining readiness is our ability to train as we fight, through continued access to ranges and operational exercise areas (OPAREAS). Our military training ranges are highly valued national assets that enable our forces to train in a controlled, realistic, and safe environment. However, our ranges and OPAREAS are increasingly surrounded and encroached by urban development and subject to increasing environmental challenges impacting the Navy's ability to execute realistic training. We are therefore implementing a fully integrated, systematic strategy for our training ranges and exercise areas, balancing the dual goals of national security and environmental stewardship.

Key to this training range containment effort is the Navy's commitment to the Tactical Training Theater Assessment Planning (TAP) initiative supported by the "At-Sea Policy" and the Navy doctrine publication "Environmental Protection" (NWP 4-11). Implemented in FY 2004, the TAP initiative is providing a sound environmental range investment strategy for sustainable ranges/OPAREAS. This overarching sustainability program will seize the environmental high ground, ensuring effective stewardship of the Navy's ranges/OPAREAS and allowing our forces to conduct environmentally responsible realistic training. Accordingly, the Navy will continue to serve as a good steward of the environment while preserving the flexibility to train and exercise ashore and at sea.

Infrastructure also includes shore capabilities necessary to support operational units, such as waterfront and air operations facilities, ranges, shore force protection, community support, including housing, medical, child-care, and Morale, Welfare and Recreation (MWR) services, and readiness support, including shipyards and Naval Air Depots (NADEPs). Our challenge is to find ways to support an infrastructure using a smaller percentage of Navy resources, while maintaining acceptable Quality of Service for our Sailors and their families, and force-wide readiness. The 2005

round of Base-Realignment and Closure (BRAC) identified excess and over-age infrastructure for disposal as one means of enhancing operational readiness and Quality of Service for our Sailors and families.

The Navy's logistics transformation vision is captured in our High-Yield Logistics Transformation strategy. This strategy seeks responsive, timely, and high-quality support to forward-stationed forces throughout the world, while reducing the Navy's total ownership costs. The focus areas of this strategy are: optimization through best-value acquisitions; customer support and communication; process innovation; and, workforce productivity. The strategy has three overall objectives:

- **To ensure extraordinary support to the warfighter**
- **To strategically source infrastructure, maintenance, and service functions, as well as our supply inventory, to maximize operational effectiveness and reduce business inefficiency**
- **To optimize resource effectiveness and reduce redundancy within our remaining infrastructure.**

MANPOWER AND PERSONNEL

The Navy's Active, Reserve, and civilian members are the most essential element of our warfighting capability. Our capacity to provide sufficient operational forces and shore support to sustain a credible and responsive naval force structure is indispensable to meeting the missions of the Navy. Among other things, we must address critical naval capabilities to support national strategic requirements for homeland security and defense, persistent presence in forward areas, deterrence, prompt and assured crisis response, and warfighting. The personnel system must provide for the acquisition, development, retention, and management of a diverse civilian and military workforce, including programs for recruiting, quality of life, community management, and distribution of personnel.

Finally, we must take human factors into account in the design, engineering, integration, and operation of our weapon systems and platforms. This focus on human-factors engineering and human-systems integration has implications for recruiting, training, compensation, detailing, and development of our Sailors' careers. The fundamental principle that will continue to shape our approach is "Mission First... Sailors Always." Moreover, our *Sea Power 21* vision demands a highly educated, experienced, and flexible force capable of using our technical advantage to successfully defeat our enemies. The critical bridge to the future is the Sea Warrior initiative, which seeks to maximize workforce potential through transformed manpower processes. Sea Warrior reinforces the Navy's commitment to the growth and development of its most valuable resource—people—and ensures mission success by delivering the right Sailors, at the right time, and to the right places.





READINESS

The 21st Century's strategic environment requires that we increase the operational availability of our forces. We have to get to the fight faster to seize and retain the initiative. Every facet of the fleet will be organized around a "surge" operational concept, including our training, maintenance, and logistics processes. We are adapting our warfare doctrine, supporting procedures, training, and schedules to take best advantage of the FRP and other emerging constructs. Included in the readiness area are Navy operating funds, force operations, flying hour/steaming day programs, all levels of maintenance, spares, ordnance and fuel, and safety and survivability.

TRAINING AND 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 for training. The objectives of naval training and education programs are to deliver high-quality training and education efficiently and effectively and to provide a career-long continuum supporting Navy operational readiness and personal excellence.

NAVAL CAPABILITIES DEVELOPMENT PROCESS

The DCNO for Warfighting and Resource Requirements (N8) is the executive agent and lead for implementing the Naval Capability Development Process (NCDP). Through the NCDP, the Navy has sharpened its focus on capability-driven warfighting requirements to enhance the ability to communicate a long-term warfighting vision shaping the capabilities needed from research and development, procurement, force structure, and modernization to counter threats and achieve mission success. The NCDP addresses requirements both within and beyond the current Future Years Defense Plan (FYDP) programming horizon. The process looks to establish an affordable long-range Integrated Capability Plan (ICP) and a Warfighting Sponsor's Program Proposal (SPP) that will meet the operational needs of the fleet and regional combatant commanders. Our goal is to develop integrated, executable, and realistic sponsors' resource allocation proposals that deliver the greatest degree of balanced warfighting capability within available resources. If resources are insufficient to deliver warfighting wholeness, the process will quantify the remaining risk and determine the unfunded priorities to mitigate it.

To support the NCDP process, the Navy established Warfare Sponsors within OPNAV who are responsible for developing Joint Capability Area requirements within the four naval capability pillars—Sea Strike, Sea Shield, Sea Basing, and FORCENet—that cross and link platform-specific communities (e. g., Naval Avia-

tion, Surface Warfare, Submarine Warfare, and Mine Warfare) and coordinate these with resource sponsors, fleet commanders, and the acquisition community. Each of the naval capability pillars is supported by multiple Joint Capability Areas (JCAs). These JCAs serve as the primary mechanism to identify the current baselines of capabilities and to forecast capability evolution. In doing so, the JCAs contribute to comprehensive planning and programming for integrated systems capabilities identified in Navy and joint-service strategies. Critical issues to be addressed include redundancy among systems, joint interdependencies, interoperability, cost and performance, and program schedule.

NAVY PROGRAM IMPLEMENTATION

Even as the Navy continues its transformation to the capabilities and forces needed for the future, we must balance the costs of modernization and recapitalization for future readiness with the compelling need to maintain current readiness for emergent missions and tasks. This requires balancing recapitalization and modernization of aircraft, ships, submarines, and infrastructure with funding for today's operating forces, while providing a high Sailor-centric Quality of Service for our entire Navy family.

Based on previous experience, we know we must put in place the resources to attract, train, and retain the people we need for the future. In that context, we must also ensure our highly skilled and dedicated Sailors have the necessary tools for the complex and demanding jobs we expect them to perform. By finding and keeping talents reflecting the diversity of our Sailors, investing in their education, and providing a satisfying work-life balance, we are committed to attracting and retaining Sailors that compete to serve and strive to stay.

Balancing priorities and the requisite resource allocation decisions comprise the key portion of the Navy's PPBE process. The result is a program allocating resources to meet the Navy's highest priorities at some level of risk, funding critical needs at the expense of lower-priority programs. These difficult decisions are based on intensive analysis, informed reviews, and critical projections shaped by the reality of constrained resources.

QUALITY OF SERVICE

Quality of Service is a balanced combination of Quality of Life and Quality of Work. Ensuring a high Quality of Service for our Sailors, families, and civilian workforce is an essential element of the Navy's ability to attract and retain the best and brightest people, and is a top priority in carrying out our roles, missions, and tasks. We are fostering innovation and support technologies to enable our people to do their jobs more efficiently and effectively. The Navy's Strategy for Our People will address the Quality of Service for all of our people.





QUALITY OF LIFE

Quality of Life programs are a vital part of Quality of Service and are essential to our overall readiness and retention. Our wide variety of programs include those dealing with compensation, safety and health, medical care, military accommodations both shore- and sea-based, recreation, and Personnel Tempo (PERSTEMPO) limits. They also encompass legal, chaplain, community, and family services offering our Navy families deployment support, employment assistance, and, through programs like COMPASS, assist spouses in adjusting to the complexity and challenge of Navy life. Our Quality of Life programs are rooted in the awareness that although we recruit Sailors, we retain families.

QUALITY OF WORK

Our Sailors have chosen a lifestyle of service to their country. Recognizing this, we know we must offer them an excellent Quality of Work standard, the professional and personal tools to succeed, sufficient supplies, modern facilities, and a physical working environment that is not only important to our mission, but is also competitive with those offered by careers in private industry. Their work must be centered on enhancing mission effectiveness and honing their professional skills. A meaningful and satisfying Quality of Work standard is critical if we are to attract, develop, and retain a talented cadre of professionals. Our efforts this year will focus on development of the Strategy for Our People. This strategy includes the pursuit of new technologies and competitive personnel policies to streamline combat and non-combat personnel positions. We will also focus on improving the integration of active and Reserve missions, and reducing our total manpower structure. We will enhance our diversity and change policies and structures inhibiting the growth and development of our people. Our Strategy for Our People will ensure that we deliver the right skills at the right time and at the right place.

Quality of Life and Quality of Work are indispensable elements of the Navy's ability to attract and retain the talented people we need. Both our current and future force readiness depends on them. Job satisfaction, ongoing professional growth, high-quality training and education, personal recognition, and confidence in our promises are all integral to the Quality of Service we offer our people. Our Sailors must be secure in knowing that the tasks they take on will make a difference and is worth the personal sacrifices they and their families make in service to their nation.

FORCE READINESS

In the sensor-rich net-centric construct of 21st-Century operations, the numbers of platforms are no longer the only meaningful measure of combat capability. The capabilities posture of the fleet is what is most important. Indeed, our Navy can deliver significantly more combat power more quickly and accurately today

than we could 20 years ago when we had more ships and more people.

The current low rate of ship construction will constrain the future size of the fleet. Therefore, we must invest in the right capabilities for the ships we are procuring, and we must properly posture our forces to provide the speed and agility for seizing and sustaining the advantage in any fight. The application of transformational technologies, coupled with new manning and innovative distance-support concepts will enable us to attain the desired future combat capability with a force posture of approximately 313 ships. In today's and tomorrow's rapidly changing global environment, predictability is a liability. The Navy is introducing greater flexibility into its deployment patterns and formations. Variations on the traditional six-month deployments of Navy ships will decrease force predictability. These variations are being facilitated by use of longer-term deployments with crew rotations and forward home-porting of additional ships, as well as the FRP.

Nevertheless, our carrier strike groups, expeditionary strike groups, and surface action groups must be properly trained and equipped whenever they deploy. Even when combat or other contingencies do not occur, shortages can greatly compound the work required of our Sailors. Older equipment kept operating beyond intended service life and shortages force the "cross decking" of equipment, spares, supplies, and ordnance—and sometimes people, as well.

The ultimate requirement for Navy shipbuilding will be shaped by emerging technologies, forward Basing, and innovative manning concepts such as Sea Swap. For the first time in decades, we are building entirely new types of ships, with modular and open-architecture systems that will provide unprecedented flexibility and adaptability to fight in diverse environments against a variety of possible enemies. It also allows us to dramatically expand their growth potential with less technical and fiscal risk.

The FRP was created to field a more agile and responsive force structure to provide combat power to respond to combatant commanders' demands. Because FRP is executable with an 11-aircraft carrier force, we have decided to decommission the aging USS *John F. Kennedy* (CVN-67), which joined the fleet in 1968. With 11 carriers, the Navy can employ vital resources at top readiness priorities, without sacrificing fundamental capabilities.

We are also growing critically short of certain "low-density/high demand" (LD/HD) aircraft, particularly the EA-6B Prowler electronic-warfare (EW) aircraft. The demands of the "Long War" articulated in the 2006 Quadrennial Defense Review drive the need for effective electronic warfare and suppression of enemy air defenses. The retirement the Air Force EF-111A Raven EW aircraft and assignment all DoD radar-jamming missions to the Prowler underscore its significance in joint warfare.





The Long-Range Shipbuilding Plan outlines an attack submarine force-level of 48 attack submarines, including the *Virginia*-class nuclear fast attack submarines, USS *Hawaii* (SSN 776) and *Texas* (SSN 775) new to the Fleet in 2006. We commissioned the first *Virginia* (SSN 774)-class submarine in 2004 as a replacement for the *Los Angeles* (SSN 688)-class submarine. The *Virginia* class incorporates new capabilities, including unmanned vehicles, the ability to support special operations forces, and specialized mine-avoidance systems. The Navy is also focused on guided-missile submarine conversion program, with the first SSGN becoming operational in 2007. Our SSGN capability provides covert strike platforms capable of carrying 154 Tomahawk missiles and the capacity/capability to support special operations forces for an extended period—enabling clandestine “SpecWar” force insertion and retrieval. These ships also operate a variety of unmanned vehicles to enhance the joint force commander’s knowledge of the battle space. The large internal capacity of these submarines will enable us to leverage future payloads and sensors for years to come.

The Navy’s future surface warships are being designed and engineered from their keels up to operate as critical elements of a forward-stationed, distributed, networked, joint force. We have decided upon three entirely new ship classes: the tailored-mission Freedom-class Littoral Combat Ships (LCS), designed as “sea frames” (analogous to “air frames”) with mission modules for MCM, SUW, and ASW missions, initially; the DDG 1000 *Zumwalt*-class advanced, multi-mission guided missile and strike destroyer, to reach the operating forces in 2011; and the CG(X) theater air and ballistic missile defense cruiser, scheduled for fleet introduction later in the next decade.



To help meet near- and mid-term needs, the Navy is upgrading the in-service Aegis cruisers and destroyers with selected leading-edge technologies, some of which are being developed during the LCS, DDG 1000, and CG(X) design and production processes. This will ensure that this vital core of the multi-mission fleet will maintain operational effectiveness throughout their lifetimes and until the DDG 1000 and CG(X) programs come to fruition. The USS *Curtis Wilbur* (DDG 54), with an upgraded Aegis system, assumed a Long-Range Surveillance and Track role in late 2004 as part of the nation’s ballistic missile defense system. Through 2006, 12 other DDG 51s have received this upgrade, two of which have both a Long-Range Surveillance and Tracking and a Short-Range Ballistic Missile Defense Engagement Capability.

The Navy’s remaining *Oliver Hazard Perry* (FFG 7)-class frigates are being modernized. Hull, mechanical, and electrical (HM&E) systems are being enhanced, and a limited combat-systems upgrade will improve their survivability in the littoral environment until the new-design warships join the fleet. Because of their high operational costs and limited room for combat system growth or modernization, the Navy has decommissioned all *Spruance* (DD 963)-class destroyers.

We will continue to focus on the transformation of our amphibious warfare fleet of large-deck/aviation-capable amphibious assault ships, dock landing ships, and landing platform dock ships to a force that can affordably meet future needs. Critical elements of our plan include the continued acquisition of *San Antonio* (LPD 17) class amphibious platform docks, the design, engineering, and acquisition of the next-generation amphibious assault ship (LHA R); and, modernization of in-service ships.

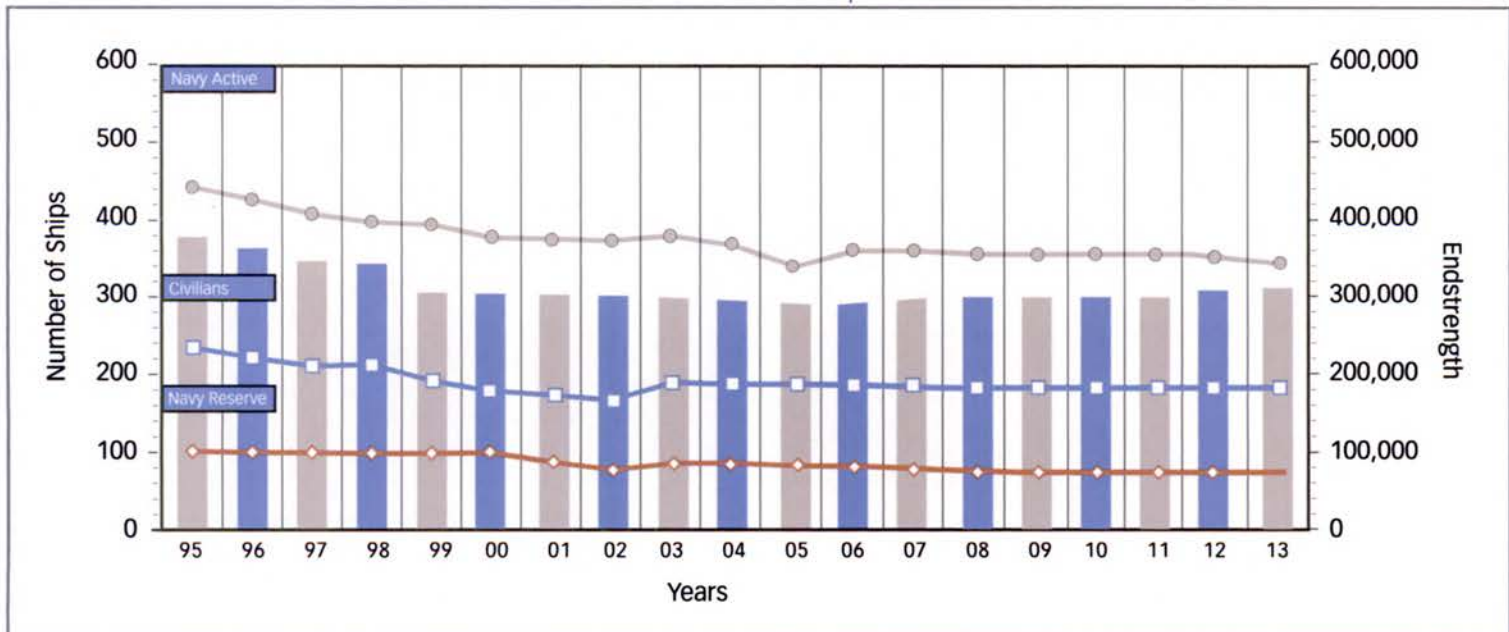
The requirement for our amphibious warfare forces includes the capability to support a single 2.0 Marine Expeditionary Brigade (MEB) forcible entry operation. This 2.0 MEB equivalent is the troops, aircraft, vehicles, equipment and cargo of a Marine Expeditionary Force (MEF), which is the primary Marine Air-Ground Task Force (MAGTF) element organized to fight and win in conflicts ranging from small contingencies to regional war.

Our Combat Logistics Force has been well represented in Operations Enduring Freedom and Iraqi Freedom, and has provided outstanding service to the ships in the Mediterranean, Arabian Gulf, and Red Sea. To increase the peacetime availability of these ships, the last of the four Navy-manned Supply (AOE 6) fast combat support ships have been transitioned to the Military Sealift Command. The *Lewis and Clark* (T-AKE) stores/ammunition ship program is on track for replacing the aging T-AFS and T-AE store ships, with the lead ship delivered in June 2006.

Mission accomplishment is our top priority; therefore, our focus on readiness must not waver. The FRP will support national security needs with persistent naval capabilities that are both rotational and surge capable. The FRP accelerates the Navy's advantage in responding whenever and wherever the Commander in Chief needs our naval forces, and harnesses the Navy's enhanced speed and agility to ensure we can respond to a crisis with overpowering force.



Figure 1: U.S. Navy Force Structure and Endstrength



CURRENT READINESS

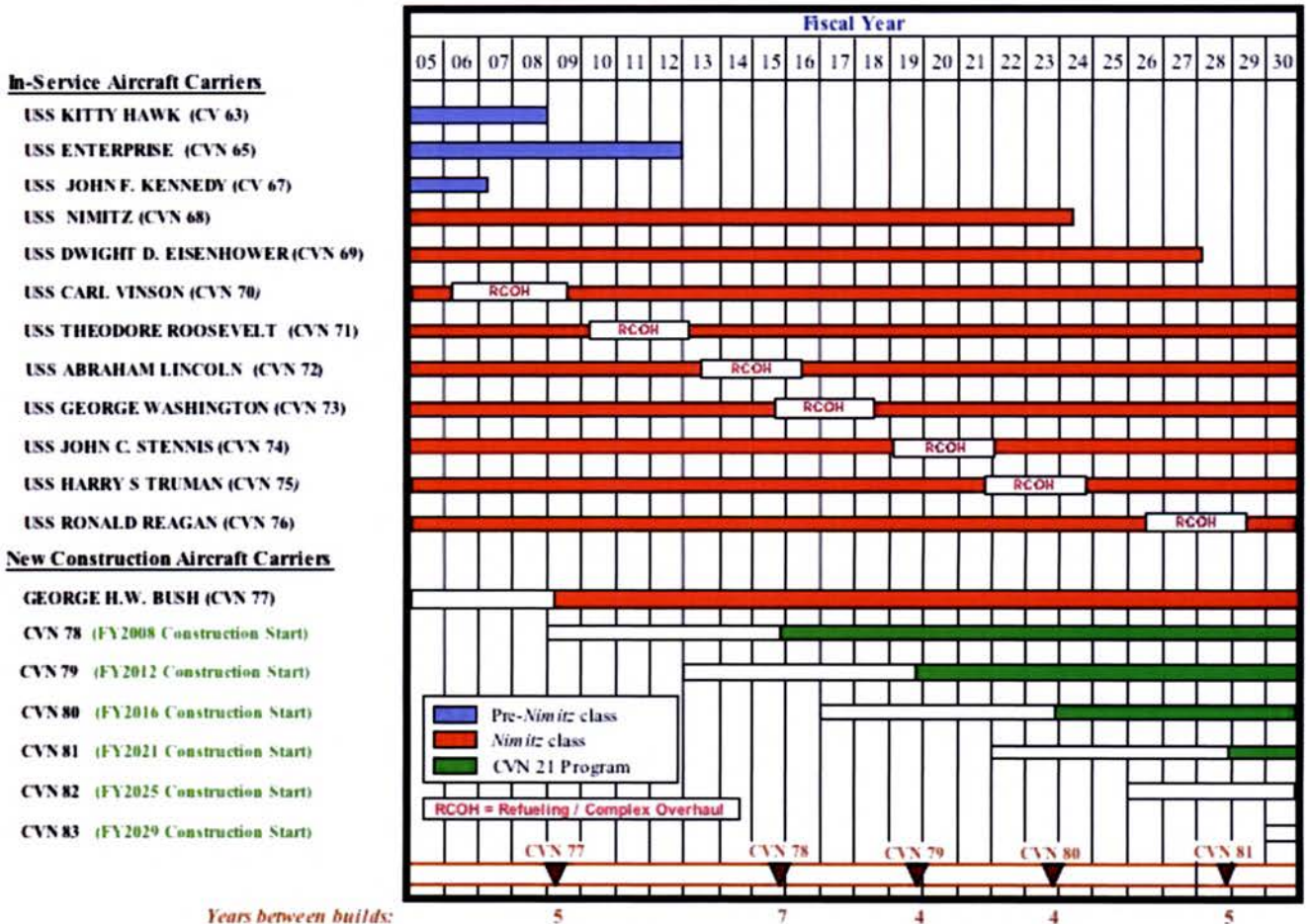
On average, one-third of America's fleet is deployed every day, and we are focused on ensuring that deployed readiness remains high. We have made significant improvements during the last few years in reducing major ship maintenance backlogs and aircraft depot-level repair back orders; improving aircraft engine spares; restoring ship depot availabilities; ramping up ordnance and spare parts production; maintaining steady "mission capable" rates in deployed aircraft; fully funding aviation initial outfitting; and, investing in reliability improvements. Throughout FY 2007, we will continue to seek improved availability of non-deployed aircraft and the ability to meet our goal of 100 percent deployed-airframe availability.

Prior to 2001, Naval Aviation metrics were unreliable, inconsistent, and lacked a common language (e.g., sorties, parts, dollars). There was limited predictability in parts requirements, and "full-mission-capable/mission-capable" (FMC/MC) were our only



Figure 2: Aircraft Carrier Build Schedule (Calendar Years)

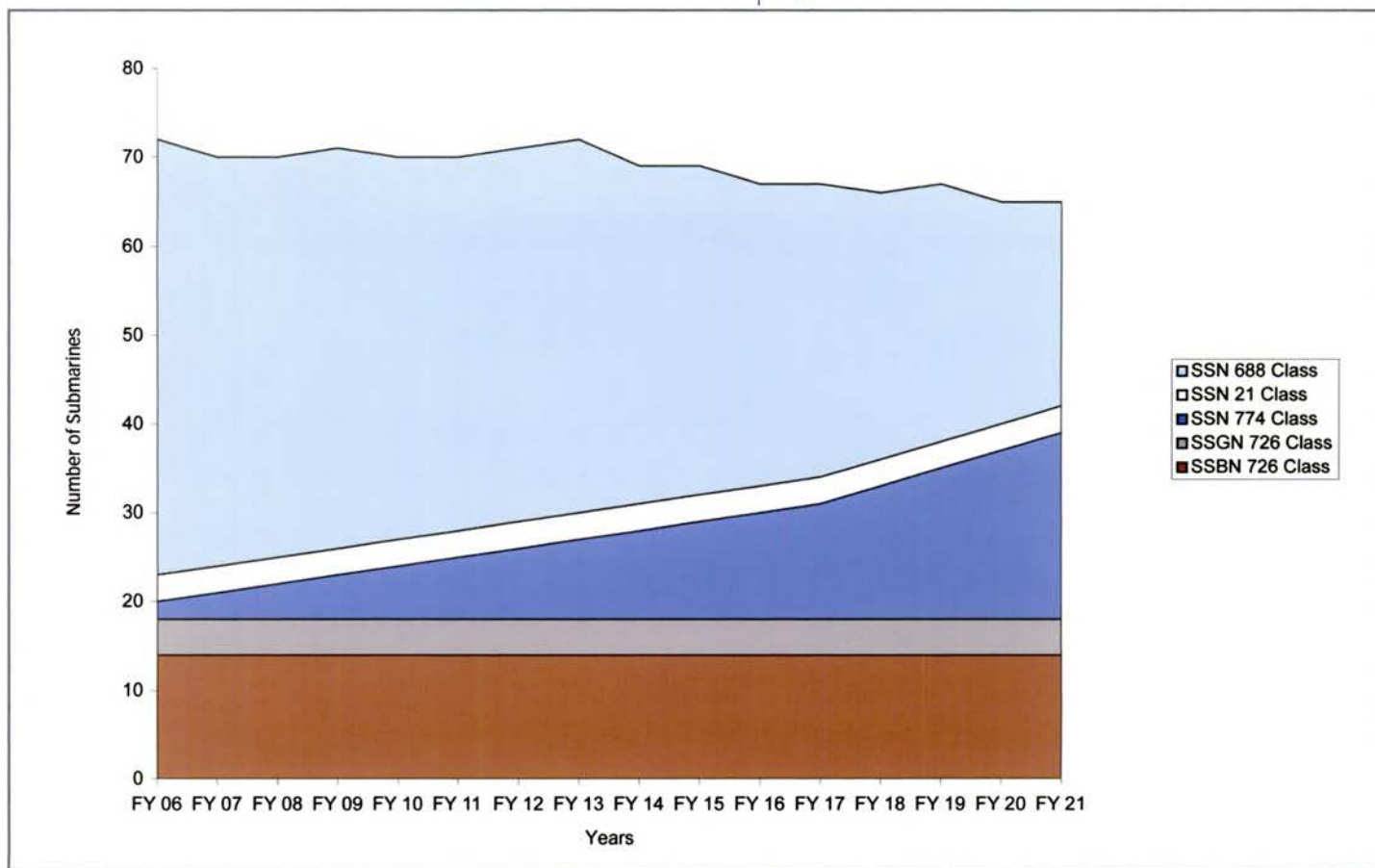
Aircraft Carrier Build Schedule



readiness metrics. The focus supported near-term solutions, i.e., buying supplies and parts as opposed to integrating all support elements in a longer-term framework. To deal with these problems, in August 2001 the CNO tasked Commander, Naval Air Forces Pacific (CNAP), with the responsibility for overseeing the entire spectrum of naval aviation. This responsibility included implementing a comprehensive program to make fundamental process changes in the way the Navy provides manpower, equipment, and training to stateside naval aviation commands between deployments: the Naval Aviation Readiness Integration Improvement Program (NAVRIIP). Led by flag officers from 17 commands, NAVRIIP has been defining and executing changes to sustain near- and long-term aviation readiness goals. The primary goal is to achieve “cost-wise” readiness by balancing and aligning interactions between operational-level maintenance, intermediate-level maintenance, and the logistics infrastructure that supports them. In January 2004, the scope of NAVRIIP grew to include deployed units and the operational metric of cost-wise aircraft ready for tasking. Since then, NAVRIIP has been conducting events like “Boots on the Ground” to give its leadership face-to-face interaction with Sailors and Marines from all parts of the enterprise—from the depots and maintenance facilities to in-theater warfighters supporting Operation Enduring Freedom and Operation Iraqi Freedom.



Figure 3: Attack, Guided-Missile, Ballistic-Missile Submarines





Continued military readiness depends on reliable access to all necessary training, testing, and operational exercise areas. Our forces must get their first experience with live arms before they engage in actual combat, a goal implicit in our “train as you fight” philosophy. Our military training ranges are national assets that allow our forces to train in a controlled, realistic, and safe environment. Urban encroachment, the obligations of environmental compliance on land and at sea, concerns about noise and airspace congestion requires a comprehensive approach to sustain access to training ranges. Inadequately trained people perform poorly in combat and increase risk in peacetime. Compliance with legal regulatory requirements combined with forward leaning environmental strategies provides us the greatest flexibility with the use of our testing and training ranges. We continue to develop processes and procedures to allow our troops to train as they fight.

Through the processes and procedures, the Navy is instituting strategies that combat urban encroachment, bring Navy into environmental compliance and manage our overall land and sea resources effectively. Actions taken during the last three years have addressed critical Navy needs regarding encroachment and future training challenges. Readiness-specific changes to the Marine Mammal Protection Act (MMPA), Endangered Species Act (ESA), and Migratory Bird Treaty Act (MBTA) have helped the Navy

Figure 4: Surface Warship Projections

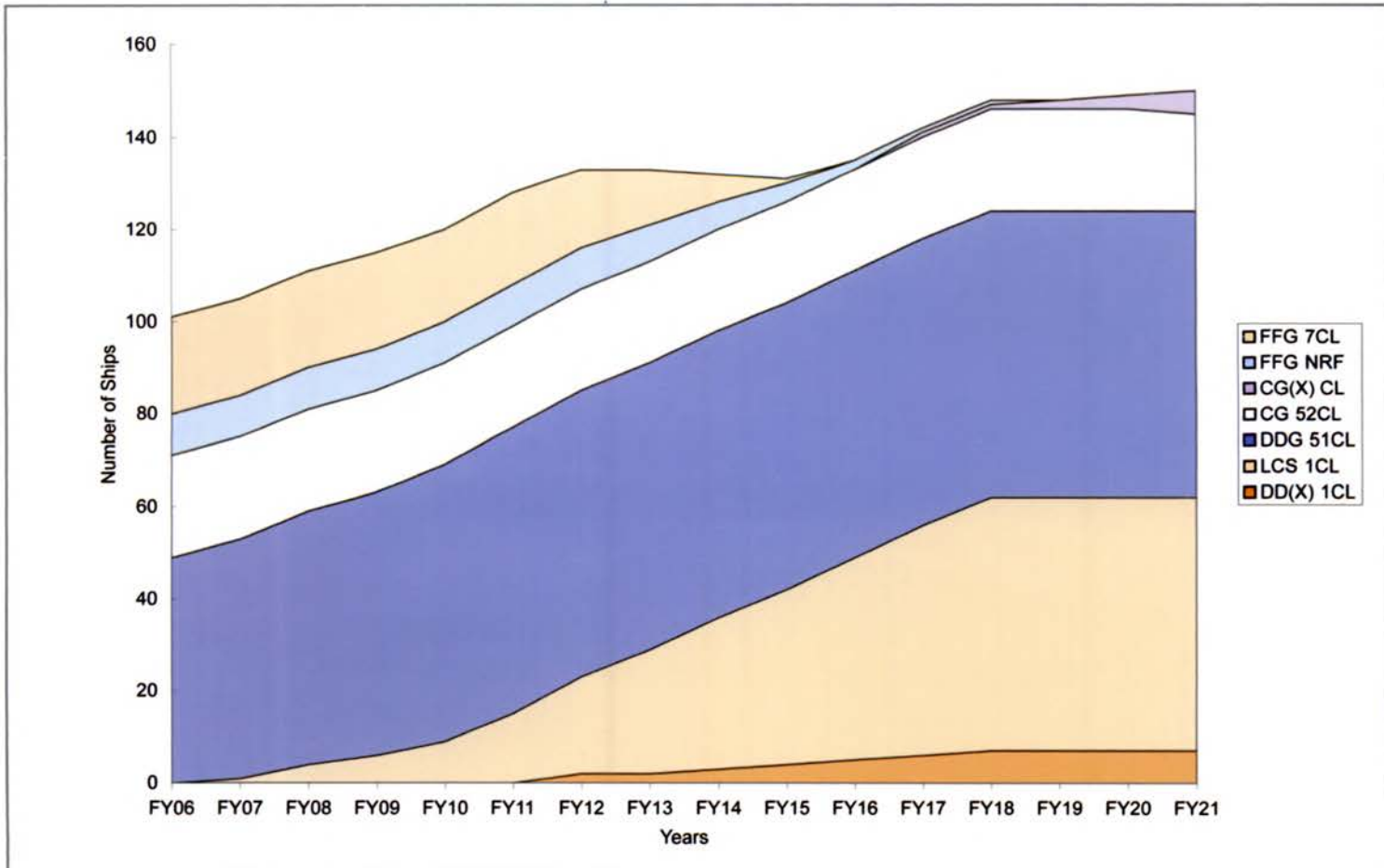
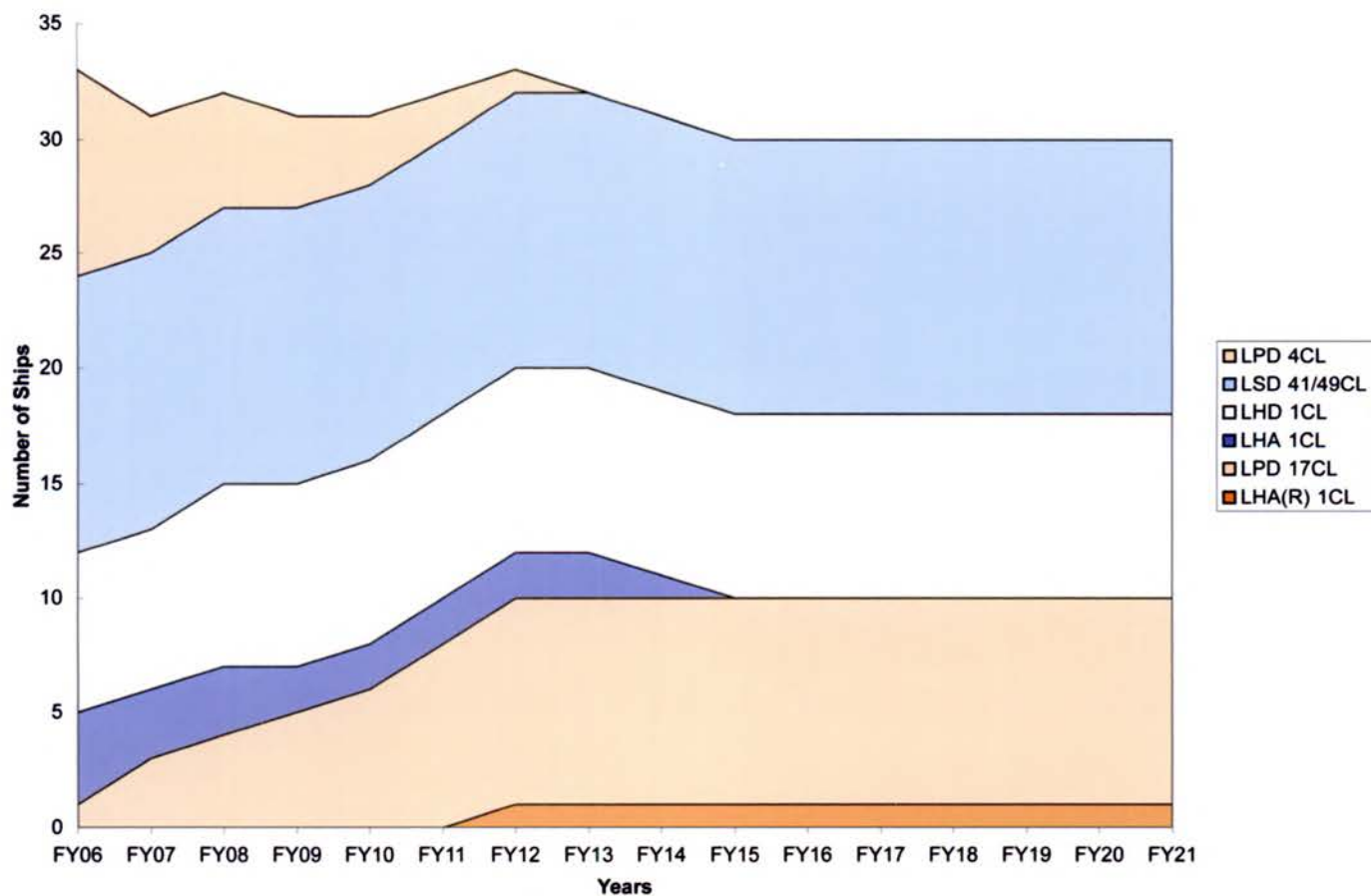


Figure 5: Amphibious Ship Projections



meet training and operational challenges. The Navy and Marine Corps will continue demonstrating leadership in both their military readiness role and as environmental stewards of the oceans and the lands on which we train and operate. The Navy has initiated a comprehensive training range and operating area sustainment program to ensure continued access to its at-sea ranges and operating areas. The Director, Material Readiness and Logistics (N4) has established a Navy Range Office to oversee this important effort.

Although sustaining current operational readiness and maintaining aging equipment and infrastructure are top priorities, modernizing our forces is a growing concern. The need to pay for current readiness must first be balanced with the initiatives to improve and ultimately replace the equipment we have in the fleet today. Adequate readiness can be sustained in the future only with modernization and recapitalization programs that deliver adequate numbers of technologically superior platforms and systems to the fleet. This has become a challenging task. The fleet is aging, and there is real and growing tension between maintaining near-term readiness and supporting future modernization and recapitalization.

Modernization enables our current forces to continue to be valuable warfighting assets in the years ahead, while concurrently trying to mitigate escalating support costs of aging equipment. Also, as technological cycle times are now shorter than platform service life, particularly in information technologies that are the “backbone” of our advanced systems, it is fiscally prudent to modernize the force through timely upgrades, and, when it makes good operational and business sense to do so, to incorporate commercial open-source technologies and systems.

Our Sea Enterprise initiatives, under the auspices of *Sea Power 21*, will lower our cost of doing business so we can maintain near-term readiness and still invest more for the future. Sustained future naval readiness begins with a recapitalization program that delivers the right number of technologically superior platforms and systems for the fleet. We therefore need to invest with a focused and expanded program to maintain naval superiority throughout the first half of the 21st Century. The Navy has reinvigorated an aggressive effort to realign its shore establishment to free-up funds for future readiness and modernization of the operating forces. There are three primary components of this effort: the reduction of infrastructure costs and consolidation of redundant services and functions; the establishment of Navy-wide standards and metrics for all shore installation functions; and, the identification and implementation of best business practices, particularly under the Sea Enterprise initiative.

Figure 6: FY2007 - 2013 Aircraft Procurement Plan

	FY07	FY08	FY09	FY10	FY11	FY12	FY13
F-35 Joint Strike Fighter	0	6	8	18	19	40	42
F/A-18E/F Super Hornet	34	24	20	24	19	21	0
EA-18G	8	18	22	18	8	2	0
E-2C/D Hawkeye	2	0	3	3	4	4	4
MH-60R Seahawk	25	27	31	28	28	25	27
MH-60S Seahawk	18	18	18	18	18	18	18
P-8A Maritime Multi-Mission Aircraft	0	0	0	6	8	10	13
KC-130J Hercules	3	4	2	2	2	2	2
MV-22 Osprey	14	21	30	30	30	30	30
VXX Executive Transport Helicopter	0	0	4	3	4	4	4
UH-1Y/AH-1Z Super Cobra/Huey	11	20	25	28	28	24	24
T-45 Goshawk	12	0	0	0	0	0	0
T-6A Texan II JPATS	20	44	44	44	43	43	22
C-40 Clipper	0	0	1	0	1	1	1
C-37B	0	0	0	0	0	0	0
Broad Area Maritime Surveillance UAV	0	0	0	0	0	4	4
VTUAV Fire Scout	4	3	5	6	6	9	10
F-5 TacAir Aggressor	5	0	0	0	0	0	0
Total	156	185	213	228	218	237	203

MEETING TODAY'S AND TOMORROW'S NEEDS

Future operations require two primary attributes for the Navy: speed and agility. Speed and agility must also apply to the way we run the business of putting combat power to sea. This means expediting efforts to achieve true integration with our joint partners and to align more closely our requirements and procurement decision processes. And, we must reshape the technological and industrial bases to deliver the faster, more agile Navy we are becoming. While we have made important steps forward in Sea Enterprise, we have still more to do to generate the resources to implement the *Sea Power 21* vision. Innovation, elimination of unnecessary costs, and increasing efficiency and effectiveness have and will help us find those resources.

Our mobility, adaptability, variable visibility, and capabilities matched with our knowledge of the battlespace and immense firepower make the Navy an especially useful force for assuring security, at home and abroad, and supporting freedom and stability throughout the world. The challenges facing us today, and those emerging just over the horizon, confirm that ready, modern, and capable naval forces will remain vital to the nation's security, its interests, its citizens, and its friends. By balancing our present needs and future imperatives with the enhanced capabilities provided by technological and innovative advancements, we will bridge to the future of a transformed Navy.

Chapter Three provides summaries of the Navy's programs for our people, our sensor and weapon systems, and our ships, aircraft, and submarines. Balanced against competing priorities within available resources, these programs set our course for the future, to ensure that the vision of *Sea Power 21* be realized.



Figure 7: FY 2007-2013 Shipbuilding Plan

	FY07	FY08	FY09	FY10	FY11	FY12	FY13
CVN 21 Next-Generation Aircraft Carrier	0	1	0	0	0	1	1
CG(X) Next Generation Cruiser	0	0	0	0	1	0	0
DDG 51 Arleigh Burke Class	0	0	0	0	0	0	0
DD(1000) Next-Generation Destroyer	2	0	1	1	1	1	1
LCS Littoral Combat Ship	2	3	6	6	6	6	6
SSN 774 Virginia Class	1	1	1	1	1	2	2
LPD 17 San Antonio Class	0	1	0	0	0	0	0
LHD/LHA(R) Amphibious Assault Ship	1	0	0	0	0	0	0
T-AKE Lewis and Clark Cargo/ammunition Ship	1	1	0	0	0	0	0
Maritime Prepositioning Force Future (MPF(F))	0	0	2	3	3	1	1
T-ATF Fleet Ocean Tug	0	0	0	0	0	0	0
JCC (X) Joint Command Control	0	0	0	0	0	1	1
JHSV Joint Highspeed Vessel	0	0	1	1	1	0	0
Total	7	7	11	12	13	12	12

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CHAPTER 3

REQUIREMENTS TO CAPABILITIES

SEA POWER FOR A NEW ERA

The “Arc of Instability” throughout the globe is substantially a maritime domain and, therefore, the Navy/Marine Corps Team is uniquely suited to respond and to ensure the Navy’s ability to carry out Sea Strike, Sea Shield, and Sea Base operations. No more responsive, no more lethal force provides America’s leaders with such a powerful range of options than the Navy/Marine Corps Team. As the Chief of Naval Operations’ *Sea Power 21... A Naval Vision* states, “In a world of violent horizons, the Navy/Marine Corps team will serve America: anywhere, anytime, around the world, around the clock.”

SEA STRIKE

PLATFORMS

Aircraft

AH-1Z Super Cobra and UH-1Y Huey Upgrade

Description

The AH-1 and UH-1 Upgrade Program will ensure that the MAGTF possesses credible rotary-wing attack and utility support platforms for the next 20 years. The H-1 Upgrade Program will provide 100 UH-1Ys and 180 AH-1Zs to the Warfighter. The H-1 Upgrade Program is designed to reduce life-cycle costs, significantly improve operational capabilities, and extend the service life of both aircraft. Eighty four percent commonality between the two aircraft will greatly enhance the maintainability and deploy-ability of the systems, with the capability to support and operate both aircraft within the same squadron structure.

The Upgrade Program replaces the current two-bladed rotor system on the UH-1N and AH-1W aircraft with a new four-bladed, all-composite rotor system, coupled with a sophisticated fully integrated, state-of-the-art cockpit. In addition to the new main rotor system and cockpit, the H-1 Upgrade will incorporate a new performance-matched transmission, a four-bladed tail rotor and drive system, and upgraded landing gear for both aircraft. The integrated glass cockpit with modern avionics systems will provide a more lethal platform, as well as enhanced joint interoperability through the digital architecture. Operational enhancements include a dramatic increase in range, speed, payload, and lethality of both aircraft, with a significant decrease in logistics footprint. The UH-1Y will operate at nearly twice the current range with more than double the payload. The AH-1Z will realize similar performance increases, with the ability to carry twice the current load of precision-guided munitions.

The H-1 Upgrade Program is an economical and comprehensive upgrade of both UH-1N and AH-1W helicopters, which will resolve existing operational safety issues, while significantly enhancing the capability and operational effectiveness of the attack and utility helicopter fleet. A key modernization effort, the H-1 Upgrade will provide a bridge until the introduction of a Joint Advanced Rotorcraft design. Due to substantial operational demands and aircraft attrition, both resulting from the Global War on Terrorism, the Marine Corps has adopted a “build new” strategy for the UH-1Y beginning in FY 2006 and is currently examining a “build new” strategy for the AH-1Z in order to preclude significant inventory shortfalls.

Status

The preliminary design review was approved in June 1997, and the



critical design review was completed in September 1998. Low rate initial production began in the first quarter FY 2004. Five EMD (Engineering and Manufacturing Design) aircraft have been produced, four of which will eventually become composite maintenance trainers and one aircraft (without an integrated avionics suite) which was used for live-fire test and evaluation. Phase I of OPEVAL concluded in November 2006, with Phase II scheduled to begin in Fall of 2007. Delivery of production aircraft began in January 2007. The UH-1Y is scheduled to meet IOC in the fourth quarter of FY 2008 while the AH-1Z will meet IOC in the third quarter of FY 2011. FOC for the UH-1Y is FY 2012, and FOC for the AH-1Z is FY 2018.

Developers

Bell Helicopter Textron; Fort Worth and Amarillo, Texas

AV-8B Harrier II+

Description

The AV-8B Harrier II is a single-seat, light attack aircraft that provides offensive air support to the MAGT. By virtue of its Vertical/Short Take-Off and Landing (V/STOL) capability, the AV-8B can operate from a variety of amphibious ships, rapidly constructed expeditionary airfields, forward sites (e.g., roads, FARPs), and damaged conventional airfields.

Two variants of the aircraft are in operational service: the Night Attack and the Radar/Night Attack Harrier. The Night Attack Harrier improved upon the original AV-8B design by incorporating a Navigation, Forward-Looking InfraRed (NAVFLIR) sensor, a moving map, night vision goggle compatibility, and a higher performance engine. The current Radar/Night Attack Harrier, or Harrier II+, has all the improvements of the Night Attack aircraft plus the AN/APG-65 multi-mode radar. The fusion of night and radar capabilities allows the Harrier to be responsive to the MAGTF's needs for expeditionary, night, and adverse weather offensive air support.

Status

The AV-8B Harrier Open Systems Core Avionics Requirement (OSCAR), which updates obsolete software and computer equipment, has entered service. OSCAR with Operational Flight Program H2.0 enables the AV-8B to employ both 1,000 and 500-pound variants of the Joint Direct Attack Munitions and provides tremendous improvements in radar and Litening advanced targeting pod capability.

The Litening advanced targeting pod provides the AV-8B with a significant improvement in its lethality and survivability. This third-generation, forward-looking infrared set, dual field-of-view TV seeker, and infrared marker provides improved target recogni-



tion and identification, while the laser designator and laser spot tracker provide precision targeting capability. Some Litening pods have also been equipped with a video downlink, which enables real-time video to be sent to ground-based commanders and forward-air controllers. This facilitates time-sensitive targeting and reduces the risk of fratricide and collateral damage.

In order to maintain a world-class training environment, the two-seat TAV-8B trainers are undergoing an upgrade program that adds new color displays, night vision goggle-compatible lighting, and a more powerful and reliable Rolls Royce Pegasus (408) engine. These improvements are increasing the training capability of the AV-8B fleet replacement squadron, as well as the abilities of our replacement pilots reporting to their fleet squadrons. The enhancements to the Harrier are a critical link for providing continued support to the MAGTF, until the JSF transition is complete.

Developers

Boeing: St. Louis, Missouri



CNATRA Naval Aviation Training Aircraft

Description

Commander, Naval Air Training Command's (CNATRA) mission, the on-time delivery of aviators (USN/USMC/USAF/USCG pilots and military flight officers) trained with leading edge technologies, is key to affordable fleet readiness and *Sea Power 21*. CNATRA's training aircraft inventory include the T-34C TurboMentor, T-6A Texan II, TH-57, T-2 Buckeye, T-45 Goshawk, T-44A Pegasus, TC-12 Huron, and the T-39 Sabreliner.

The first aircraft that all aspiring future USN/USMC pilots and flight officers fly is the T-34C TurboMentor (pilots) and the T-6A Texan II (flight officers). The T-34 started its Navy career in 1977 and has successfully and honorably completed its service at NAS Pensacola where it was a primary training aircraft for student Naval Flight Officers (NFOs). While still in use at NAS Whiting Field and NAS Corpus Christi, the TurboMentor is scheduled to be replaced with the T-6A with Avionics Upgrade Package (AUP), Texan II in FY 2011 at Whiting Field and FY 2015 at Corpus Christi.

The T-6A w/AUP Texan II is one component of the Joint Primary Aircraft Training System (JPATS) along with simulators, computer-aided academics, and a Training Integration Management System (TIMS). The aircraft, built by Raytheon Aircraft Company, is a derivative of the Swiss Pilatus PC-9 aircraft with a Pratt & Whitney PT-6A-68 engine, digital cockpit, Martin-Baker ejection seats, cockpit pressurization, and an onboard oxygen-generating system. In FY 2007 the Navy resumes full-scale procurement of the T-6A.

The T-2C Buckeye is used for the tactical maneuvering portion of

Strike/Strike-Fighter NFO training at NAS Pensacola. Designed in the mid-1950s, the Buckeye is scheduled to be divested by FY 2010 and it will be replaced by the T-45 Goshawk.

The T-45 Goshawk, the Navy version of the British Aerospace Hawk aircraft, is used for the intermediate and advanced portions of the Navy/Marine Corps pilot training program for jet carrier aviation and tactical strike syllabus. The T-45 replaces the T-39/T-2 as the training platform for the Strike Fighter Undergraduate Military Flight Office (UMFO) training program. Upgrades to the T-45 include converting all analog cockpits (T-45A) to digital cockpits (T-45C), resolving an engine surge issue to make the aircraft more fuel efficient and safer to operate, and extending service life until 2030. The T-45 is currently in production and the last aircraft will be procured in FY 2007.

The TH-57 Sea Ranger, a derivative of the commercial Bell Jet Ranger 206, is the Navy's sole advanced rotary training platform used at NAS Whiting Field. Upgrades to the TH-57 currently underway include energy attenuating seats, exceedence warning systems and a digital cockpit, guaranteeing aircraft availability and relevance to 2025.

The T-44A Pegasus and the TC-12 Huron are both twin-engine, pressurized, fixed-wing aircraft that are used for intermediate and advanced training for multi-engine aircraft. Future upgrades to both aircraft include wing wiring (T-44A), simulator visual upgrades (T-44A) and digital cockpit for the T-44A.

The T-39 Sabreliner is a multipurpose low-wing, twin-jet aircraft that has been in Naval service since the early 1990's. The primary mission of the Sabreliner is to conduct intermediate and advanced training for Strike/Strike-Fighter NFOs. The T-39 will also be replaced by the T-45 with a Virtual Mission Training System (VMTS) in the NFO syllabus.

CNATRA has recently charted a course to revolutionize NFO training by utilizing the T-6, the T-45C with VMTS and high fidelity simulators to train future NFO's. This new training program will capitalize on cutting edge technologies, while allowing the Navy to divest two aging platforms (T-2, T-39). The new program is planned for IOC at NAS Pensacola in FY 2010.

Status

T-45 and T-6 are currently in production. T-45 procurement programs for 12 aircraft in FY 2007, to meet an inventory requirement of 223. Production line shutdown scheduled for FY 2008. The planned inventory objective is 315 aircraft.

Developers

Ratheon (T-6); Wichita, Kansas
Boeing (T-45); St. Louis, Missouri





E-6B Mercury

Description

The E-6B platform, derived from the Boeing 707, provides the Commander, U.S. Strategic Command with the command, control, and communications capability needed for execution and direction of strategic forces. Designed to support a robust and flexible nuclear deterrent posture well into the 21st Century, the E-6B performs VLF emergency communications, the U. S. Strategic Command Airborne Command Post mission, and Airborne Launch Control of ground-based ICBMs. It is the Navy's only survivable means of nuclear command and control.

Status

In order to sustain and improve E-6B capability, the Block I modification program was developed. The contract for Block I was awarded to Rockwell Collins in March 2004 and it is designed to repair a number of aircraft deficiencies identified by U. S. Strategic Command. IOC is planned for FY 2012. In addition, the Internet Protocol and Bandwidth Expansion program was initiated in 2005 to modernize the E-6B platform as an airborne node of the Distributed National Command and Control system. IOC is planned for FY 2009.

Developers

Boeing; Seattle, Washington
 Rockwell Collins; Cedar Rapids, Iowa
 L3/VERTEX Aerospace; Madison, Mississippi



EA-6B Prowler Airborne Electronic Attack Aircraft (AEA)

Description

The EA-6B Prowler provides Airborne Electronic Attack (AEA) and Anti-Radiation Missile (ARM) capabilities against enemy radar and communications systems. In addition to enhancing strike capabilities of carrier air wings and Marine expeditionary forces, an expeditionary Prowler force has provided AEA capability during numerous joint and allied operations since 1995 against traditional and non-traditional target sets in support of ground forces. These capabilities continue to be demonstrated in the Global War on Terror where EA-6B operations in Afghanistan and Iraq protect coalition forces and disrupt critical communications links. The enormous demand for AEA in Operation Enduring Freedom and Operation Iraqi Freedom has driven EA-6B utilization rates to record levels.

Status

The Improved Capability (ICAP) III upgrade reached IOC in September 2005 with the "Cougars" of VAQ-139. This generational leap in electronic attack capability deployed for the first time in

2006. The ICAP III includes a completely redesigned receiver system (ALQ-218), new displays, and MIDS/Link-16, which dramatically improve joint interoperability. Additionally, the ALQ-218 will also form the heart of the EA-18G "Growler" AEA system – the follow on platform for the EA-6B.

Developers

Northrop Grumman Corporation; Bethpage, New York

EA-18G Growler Airborne Electronic Attack Aircraft

Description

The EA-18G Growler will replace the EA-6B Prowler as DoD's sole tactical electronic attack aircraft. Like the Prowler, the EA-18G will provide full-spectrum electronic attack to counter enemy air defenses and communication networks. The Growler will maintain a high degree of commonality with the F/A-18F, retaining the latter's inherent strike-fighter and self-protection capabilities while providing air-to-air self-protection to free other assets for other strike-fighter tasking.

Status

The EA-18G Growler is on schedule and under budget as it progresses towards 2009 IOC. The aircraft completed Critical Design Review in April 2005 and initial procurement of the first four aircraft began in FY 2006. The Growler's first flight was flown one month ahead of schedule in August 2006 and is currently undergoing test and development at NAS Patuxent River, Maryland. An inventory objective of 84 aircraft is planned to support a 10-squadron carrier based force structure.

Developers

Boeing; St. Louis, Missouri
Northrop Grumman; Bethpage, New York

F/A-18 A-D Hornet Strike-Fighter Aircraft

Description

The F/A-18 Hornet is Naval Aviation's principal strike-fighter. This state-of-the-art, multi-mission aircraft serves the Navy and Marine Corps, as well as the armed forces of several allied countries. Its reliability, maintainability, safety record, high performance, and multiple weapons-delivery capability highlight the Hornet's success. Budgeted improvements to the original Hornet A/C/D variants have provided significant warfighting improvements, including addition of the Global Positioning System (GPS), Multi-Functional Information Distribution System (MIDS), AIM-9X Sidewinder/Joint Helmet-Mounted Cueing System, Combined



Interrogator Transponder, Joint Direct Attack Munition/Joint Stand-Off Weapon (JDAM/JSOW) delivery capability, and Digital Communication System for close-air support. The aircraft's weapons, communications, navigation, and Defensive Electronic Countermeasures systems are also being upgraded to ensure combat relevance.

Status

Although the FA-18A through Ds are out of production, the existing inventory of 673 Navy and Marine Corps aircraft will continue to comprise half of Naval Aviation's strike assets through 2012, and will serve in active squadrons until 2023.

Developers

Boeing; St. Louis, Missouri

General Electric; Lynn, Massachusetts



F/A-18E/F Super Hornet Strike-Fighter Aircraft

Description

The FA-18E/F Super Hornet provides significant improvements in combat range, payload, survivability, and growth capacity required to keep the strike-fighter force lethal and relevant well into the 21st Century. There is extensive commonality of weapons systems, avionics, and software among F/A-18 variants, and the infrastructure supporting the Super Hornet builds upon existing organizations. The FA-18E/F is replacing the F-14 and early model FA-18s. The lethality, flexibility, reliability, and survivability of the FA-18E/F make it the right aircraft to fulfill missions associated with regional and littoral conflicts.

Status

Aircraft FA-18E-1 first flew on 29 November 1995 and full-rate production deliveries commenced in October 2001. The Navy awarded a multi-year contract, compared to five single-year contracts, for procurement of 222 aircraft from 2000-2004, saving taxpayers 7.4 percent (\$700 million). A second multi-year contract was awarded in FY 2004 for 210 aircraft procured in 2005 through 2009, saving \$1 billion over the single-year price. In June 2002, Navy awarded a multi-year contract for production of 480 engines, saving another \$51 million. The first Super Hornets to deploy were onboard USS *Abraham Lincoln* (CVN 72) in the summer 2002. VFA-115 (FA-18E) led strikes into Iraq on the opening night of Operation Iraqi Freedom. The second and third Super Hornet squadrons to deploy, VFA-14 (FA-18E) and VFA-41 (FA-18F), flew from USS *Nimitz* (CVN 68) in spring 2003. This deployment initiated EOC for the Shared Reconnaissance Pod (SHARP), the Joint Helmet Mounted Cueing System (JHMCS), the Multifunctional Information Distribution System (MIDS), and the Advanced Targeting Forward-Looking Infra-Red (ATFLIR) system. ATFLIR reached IOC with VFA-102 in September 2003. Lot 26

(and beyond) FA-18E/Fs will have Active Electronically Scanned Array (AESA) Radar Systems. Pacific Fleet aircraft are based at NAS Lemoore, California and forward deployed to NAF Atsugi, Japan. NAS Oceana, Virginia and MCAS Cherry Point, North Carolina have been chosen as Atlantic Fleet home bases.

Developers

Boeing; St. Louis, Missouri
General Electric; Lynn, Massachusetts

F-35 Joint Strike Fighter (JSF)

Description

The JSF F-35 Lightning II program will deliver a transformational family of next-generation strike aircraft, combining stealth and enhanced sensors to provide lethal, survivable, and supportable tactical jet aviation strike fighters that complement the FA-18E/F. The Navy Carrier Variant (CV), the Marine Corps Short Takeoff and Vertical Landing (STOVL) and Air Force Conventional Takeoff and Landing (CTOL) "family of aircraft" design share a high level of commonality while meeting U.S. service and allied partner needs. The keystone of this effort is a mission systems avionics suite that delivers unparalleled interoperability among U.S. armed services and coalition partners. Agreements for international participation in System Development and Demonstration (SDD) have been negotiated with Australia, Canada, Denmark, Italy, the Netherlands, Norway, Turkey, and the United Kingdom. Security Cooperation Partnership memorandums of understanding have been established with Israel and Singapore.

Status

The JSF is in its sixth year of a planned 12-year SDD program. The 31 March 2006 Defense Acquisition Board approved: long-lead funding for LRIP Lot 1 CTOL aircraft; general framework for International Participation in Operational Test; close-out of prior Block 2 net-centric capabilities tasking; and decision criteria for LRIP 1 full funding and LRIP 2 long-lead funding. First CTOL variant SDD flight is scheduled for first quarter FY 2007. First STOVL flight is scheduled for second quarter FY 2008, and the first CV flight in second quarter FY 2009. Marine Corps has scheduled IOC in 2012 and the Navy in 2015. All key performance parameters are projected to be met at IOC. The DoD Base Realignment and Closure Commission 2005 directed the first JSF Integrated Training Center to be at Eglin Air Force Base, Florida.

Developers

Lockheed Martin; Fort Worth, Texas
Pratt Whitney (PW F135 engine); East Hartford, Connecticut





MV-22 Osprey

Description

The MV-22 Osprey is a tilt-rotor, Vertical/Short Take-Off or Landing (V/STOL) aircraft designed as the medium-lift replacement for the Vietnam-era CH-46E and CH-53D helicopters. The MV-22 design incorporates advanced technologies in composite materials, survivability, airfoil design, fly-by-wire controls, digital avionics, and manufacturing. The MV-22 is capable of carrying 24 combat-equipped Marines or a 10,000-pound external load, and has a strategic self-deployment capability of 2,100 nautical miles with a single aerial refueling. The MV-22 flight capabilities are far superior to the CH-46E it replaces in that it has twice the speed, three times the payload, and six times the range. The MV-22's 38-foot proprotor system and engine/transmission nacelle mounted on each wingtip allow it to operate as a helicopter for take-off and landing. Once airborne, the nacelles rotate forward 90 degrees, transitioning the MV-22 into a high-speed (240+ knots), high-altitude (25,000 feet), fuel-efficient turboprop aircraft. The MV-22 represents a revolutionary change in aircraft capability to meet a plethora of expeditionary and unique missions for the 21st Century. A Special Operation Forces variant, the CV-22, is being procured by the U.S. Air Force and SOCOM.

Status

The MV-22 completed OPEVAL in June 2005 and designated operationally suitable and operationally effective. The aircraft was subsequently approved for Milestone III and full-rate production in September 2005. The FY 2007 budget contains fourteen MV-22s and two CV-22s. Production is currently ramping up to full-rate. Congress authorized a Joint five-year, multi-year procurement contract (FY 2008 - FY 2012) which will award during the second quarter of FY 2007. The program of record includes 360 MV-22s for the Marine Corps, 50 CV-22s for USSOCOM, and 48 MV-22s for the Navy, for a total of 458 V-22 aircraft. The Osprey will reach IOC in FY 2007. Three CH-46E squadrons (HMM-263 /HMM-162/HMM-266) have been retired and have entered the transition and training to become operational MV-22 squadrons. HMM-263 and HMM-162 have been redesignated as VMM squadrons, and VMM-263 is set for the first operational MV-22 deployment in 2007.

Developers

Bell Helicopter Textron; Fort Worth, Texas
 Boeing Defense and Space Group, Helicopter Division;
 Philadelphia, Pennsylvania
 Rolls Royce; Indianapolis, Indiana

Navy Unmanned Combat Air System (N-UCAS)

Description

Originating as two prototype developments for the Navy and Air Force, it became a DARPA managed joint program (J-UCAS) in FY 2004. Program management transferred to the Air Force in FY 2006. The 2005 QDR and other program decisions restructured the J-UCAS program to initiate development of an “unmanned longer-range carrier-based aircraft ... to provide greater standoff capability ... and increase naval reach and persistence.” Program management and associated technologies were transferred to the Navy in August 2006. The CV demonstration will mature technologies and reduce risk in preparation for a follow-on acquisition program. The primary operational objective for the Navy is for a carrier based, multi-mission unmanned Low Observable vehicle that conducts surveillance, reconnaissance, strike, and suppression of enemy air defenses. The Navy’s emphasis at IOC is on the penetrating surveillance/reconnaissance role, where target identification and precise location capability best leverage the significant Navy investment in stand-off weapons. The acquisition program will field Navy UCAS in the 2021 time frame.

Status

The program intends to hold a limited competition to develop, build and test a CV-based UCAS Demonstration System. Participants will be limited to the Boeing Company and Northrop Grumman Systems Corporation. The Demonstration System effort will be structured to mature critical technologies and reduce risk for aircraft carrier integration of an operationally relevant UCAS with Low Observable platform. This will include Carrier Controlled Approach operations, launch and recovery operations, deck operations and supportability. Activities will focus on a ship-board demonstration in 2013. The Program Office anticipates release of a request for proposal in early FY 2007.

Developers

To be determined.

VH-71A Presidential Helicopter Replacement

Description

The VH-3D/VH-60N presidential helicopter replacement, recently designated VH-71A, is a conventional helicopter based on the Agusta Westland EH-101. It will provide safe and timely transportation for the president and vice president of the United States, foreign heads of state, and others as directed by the White House Military Office. When the president is onboard Marine One, this aircraft is the Commander-in-Chief’s primary command and



control platform and must provide him with the flexibility and capabilities necessary to execute the duties of his office. Its capabilities, which will be delivered in two increments, are split into four functional areas: aircraft operations, communications, survivability, and presidential accommodations. VH-71A will have increased capabilities in these areas, while retaining its core capabilities carried forward from the VH-3D and VH-60N.

Status

Milestone B/C Defense Acquisition Board held on 12 January 2005. Milestone B was approved for Increment I and II System Development and Demonstration (SDD). Milestone C was approved for five pilot production Increment I aircraft. The SDD Contract for Increment I and II was awarded to Lockheed Martin on 28 January 2005. IOC is planned for first quarter FY 2010.

Developers

Lockheed Martin; Agusta, Westland
Lockheed Martin; Owego, New York
Bell Helicopter
General Electric

SURFACE AND EXPEDITIONARY WARFARE SHIPS AND CRAFT

Aircraft Carriers

CVN 68, CVN 21 *Nimitz* and CVN 21 Program

Description

There are currently nine *Nimitz*-class nuclear-powered aircraft carriers in active service, comprising more than three-quarters of the U.S. Navy's aircraft carrier force. Since USS *Nimitz* (CVN 68) was commissioned in 1975, these ships replaced, on a one-for-one basis, an ever-aging fleet of fossil-fueled carriers. In doing so, they have allowed the Navy to maintain an operational fleet that meets the Fleet Response Plan commitments, as well as the presence requirements for Combatant Commanders in support of national goals. The mission of the *Nimitz*-class aircraft carrier is to support and operate the aircraft that engage in attack, survey, and conduct electronic warfare against sea-borne, air-borne, and land-based targets in support of Joint and Coalition forces. America's carriers deploy throughout the world in support of U.S. strategy and commitments. Additionally, our carriers continue to play an increasingly important role as the Navy adjusts its emphasis toward the world's littoral regions. This becomes especially important as permanent forward-deployed, land-based forces are brought home to the United States.

While the baseline *Nimitz* design is still one of the most potent



warfighting machines ever made, little has been invested in research and development during the past 40+ years that could have incrementally incorporated leading-edge technologies and systems into these premier capital ships. It is primarily for this reason that the Navy has embraced a program to develop, acquire, and operate a new-design aircraft carrier to replace all U.S. aircraft carriers in service today. In 1993, in an effort to ensure that a new class of aircraft carriers would capture the elements of the Revolutions in Military and Business Affairs, the Navy established a future sea-based air platforms working group to investigate the requirements and technologies and systems available at the time. Based primarily on these initial studies, the Navy established the CVN 21 Program to develop an evolutionary, next-generation, nuclear-powered aircraft carrier.

CVN 78, the lead ship of the CVN 21 Program, is scheduled for delivery to the Fleet in late 2015. The follow ships, CVN 79 and CVN 80, will be built as CVN 78 repeats at four-year intervals and are expected to deliver to the fleet in 2019 and 2023, respectively. Following this and subsequent three-ship blocks, a fifth year will be inserted into the construction cycle to allow for the insertion of new technologies that have evolved in the previous decade. This class of aircraft carriers will incorporate such advanced features as: a new, more efficient nuclear propulsion plant, an Electro-Magnetic Aircraft Launch System (EMALS), Advanced Arresting Gear (AAG), and a nearly three-fold increase in electrical generation capacity when comparing it to a *Nimitz*-class carrier. These improvements, coupled with a slightly expanded Flight Deck and other topside changes designed to increase operational efficiency, will provide significantly higher sortie generation rates. At the same time, maintenance and manpower requirements for the ship will be greatly reduced from today's levels, allowing the Navy to reap over \$5 billion dollars in life-cycle cost savings per ship over their 50-year service life.

Quality of life improvements for the crew are of utmost importance for Navy leaders, as it is anticipated that this class of aircraft carrier will sail the world's oceans for the next 100 years. The principal design objectives for the ships of the CVN 21 Program are to provide a flexible infrastructure that will facilitate the seamless insertion of new warfighting capabilities as they become available, and to continue reducing total ownership costs. Meeting these objectives is a high priority for the Navy, and ensures that our aircraft carriers remain the centerpiece of *Sea Power 21*, and that they are fully capable of meeting the daunting operational requirements well into the next century.

Status

USS *George H.W. Bush* (CVN 77), the tenth and final ship of the *Nimitz*-class, is currently under construction at the Northrop Grumman Newport News Shipyard in Newport News, Virginia. CVN 77 was christened and launched in October 2006, with delivery expected in November 2008. CVN 77 is a modified-repeat



of the USS *Ronald Reagan* (CVN 76) and is the numerical replacement for USS *Kitty Hawk* (CV 63), which retires in 2008 after 47 years of service. All aircraft carriers acquired subsequent to CVN 77 will be developed by the CVN 21 Program. Delivery of the lead ship, CVN 78, is scheduled for 2015. CVN 78 is the numerical replacement for the Navy's first nuclear-powered aircraft carrier, USS *Enterprise* (CVN 65), which is scheduled for decommissioning in 2013, following more than 52 years of operational service. CVN 79, the second ship of the class, is scheduled for delivery in 2019.

Developers

Northrop Grumman; Newport News, Virginia

Submarines

Advanced SEAL Delivery System (ASDS)

Description

ASDS, a combat submersible, is 65 feet long, is operated by a two-man crew, and can carry Navy SEAL personnel or other Special Operations Forces (SOF). The ASDS is a multi-mission platform capable of personnel delivery or intelligence operations. It is launched from one of two host submarines, USS *Charlotte* (SSN 766) or USS *Greeneville* (SSN 772), much like the Deep Submergence Rescue Vehicle (DSRV). The ASDS eliminates the extended exposure to water and increased atmospheric pressure inherent with in-service wet submersible SEAL Delivery Vehicles (SDVs) and carries improved sensors and communications equipment, resulting in improved personnel and equipment performance.

Status

The first ASDS is home ported with SEAL Delivery Vehicle Team ONE (SDVT ONE) in Pearl Harbor, Hawaii. The ASDS completed OPEVAL in the summer of 2003 and conducted training exercises in the Pacific—proving the capability to operate from a forward operating base. Progress toward building the full complement of ASDSs is dependent on improving the operational reliability of ASDS Hull 1. Future SSGNs and *Virginia* (SSN 774)-class submarines will host the ASDS as the program proceeds.

Developers

Northrop Grumman; Annapolis, Maryland



SENSORS

Airborne

APG-79 Active Electronically Scanned Array (AESA) Radar System

Description

APG-79 AESA Phase I upgrade provides multi-mode function flexibility while enhancing performance in the air-to-air arena, hostile electronic countermeasures environments, and air-to-ground targeting functions. Phase II will provide significant electronic warfare improvements to target hostile emitters while providing aircraft electronic protection and electronic attack functions. Growth provisions will allow for reconnaissance capability through the use of synthetic aperture radar technology and improved hardware and software.

Status

The APG-79 completed subcontractor competition in November 1999, and the Engineering and Manufacturing Development (EMD) contract was awarded in February 2001 to reach IOC in 2007. AESA Total Phase I program procurement is 415 systems, 280 forward fit and 135 retrofit. AESA Milestone C and LRIP II approval was received in January 2004, for initial delivery with Lot 27 Super Hornets in FY 2005.

Developers

Boeing; St. Louis, Missouri
Raytheon; El Segundo, California

ASD-12V Shared Reconnaissance Pod (SHARP)

Description

The SHARP replaces the F-14 Tactical Airborne Reconnaissance Pod System (TARPS) and will be carried on the F/A-18E/F to support strike warfare, amphibious warfare, and anti-surface warfare decision-making. SHARP provides near-real time, dual-band EO/IR medium and high altitude standoff imagery. SHARP incorporates NITF formatted day/night digital imagery utilizing the USQ-123 Common Data Link-Navy (CDL-N) for real time connectivity. SHARP deployed with VFA-41 in support of Operation Iraqi Freedom in 2003 and with VFA-102 as part of the forward-deployed naval forces in Japan.

Status

SHARP MAS EO/IR completed IOC in September 2006.

Developers

Raytheon; Indianapolis, Indiana
Recon Optical Inc.; Barrington, Illinois
L3Comm West; Salt Lake City, Utah





ASQ-228 Advanced Targeting Forward-Looking Infra-Red (ATFLIR)

Description

The ATFLIR will provide the F/A-18A+/C/D/E/F with a significantly enhanced capability to detect, track, and attack air and ground targets. New laser-guided and GPS standoff weapons systems and higher-altitude attack profiles require improved performance over the current AAS-38/46 Targeting FLIR. The ATFLIR is designed to provide a quantum leap in operational effectiveness to fully support the standoff precision strike mission. Improved reliability and maintainability will increase operational availability while reducing total ownership costs.

Status

ATFLIR completed Phase I OPEVAL in September 2003 and was determined to be operationally suitable and effective, and was recommended for further fleet introduction. ATFLIR achieved IOC with VFA-102 in September 2003 and demonstrated its combat capability in support of Operation Iraqi Freedom. The program was awarded Milestone III/FRP decision on 17 October 2003. The Navy will procure 82 ATFLIR in FY 2007. Program objective is 410 systems.

Developers

Boeing; St. Louis, Missouri
Raytheon; El Segundo, California

Subsurface

BYG-1 Submarine Combat Control System

Description

The BYG-1 is the combat control system common across all submarine platforms [except *Ohio*-class (SSBN 726)] which incorporates tactical control, weapon control, and Tactical Local Area Network (TacLAN) functions into a single procurement program. BYG-1 allows the submarine force to rapidly update the ship safety tactical picture, integrates the common tactical picture into the battle group, improves torpedo interfaces, and provides tactical Tomahawk capability. BYG-1 systems will be updated continuously with hardware enhancements to address COTS obsolescence and capability improvements as defined by the Advanced Processor Build (APB) process. These updates are referred to as Tech Insertion (TI) kits and are differentiated by year of development (i.e., TI00, TI04, and so on). The TI upgrades provide the baseline for all future BYG-1 procurements. In addition, this budget also provides tech insertion "kits" to update existing BYG-1 platforms.



Status

BYG-1 is scheduled to be installed on all attack-and guided-missile submarines by FY 2012.

Developers

Raytheon; Portsmouth, Rhode Island
 General Dynamics Advanced Information Systems; Manassas, Virginia
 Progeny; Manassas, Virginia
 Lockheed Martin; Eagan, Minnesota

WEAPONS**Airborne****AGM-88E Advanced Anti-Radiation Guided Missile (AARGM)****Description**

The latest evolution of the HARM weapon system is the Navy's AGM-88E AARGM. The AGM-88E is an ACAT-IC SDD program with a planned IOC in FY 2009. AARGM was successfully demonstrated as an ATD and Quick Bolt ACTD sponsored by European Command. The AGM-88E project upgrades legacy HARM with a new guidance section incorporating multi-sensor, multi-spectral digital anti-radiation homing detection capability, GPS/INS guidance, and a millimeter wave terminal seeker. AARGM also includes a netted situation awareness/targeting capability and weapon impact assessment reporting via direct connectivity with national technical means. The U.S. DoD and the Ministry of Defense of the Republic of Italy have signed an international Memorandum of Agreement for cooperative development of AGM-88E. The AARGM system will provide U.S. Navy/Marine Corps and the Italian Air Force with a transformational and affordable Destruction of Enemy Air Defenses (DEAD) and time-sensitive strike capability upgrade to HARM. The legacy HARM program was a joint-service program with Navy as lead service. HARM is Navy's only anti-radiation, defense-suppression, air-to-surface missile. Employed successfully in naval operations for decades, HARM is designed to destroy or suppress broadcasting enemy electronic emitters, especially those associated with radar sites used to direct anti-aircraft guns and surface-to-air missiles. AGM-88B (Block IIIA) and AGM-88C (Block V) are the currently fielded fleet configurations of HARM.

Status

FY 1992 was the last year of production of Navy all-up HARM rounds. AGM-88E AARGM planned IOC is FY 2009. The AGM-88E program plans conversion of 1,750 older AGM-88B weapons for the F/A-18C/D/E/F and EA-18G aircraft.



Developers

AARGM: ATK Missile Systems Company, Inc;
Woodland Hills, California
HARM: Raytheon; Tucson, Arizona

**AGM-154 Joint Standoff Weapon (JSOW)****Description**

A new family of Stand-off Outside Point Defense (SOPD) weapons was added to the fleet with introduction of JSOW in 1999. A joint Navy/Air Force weapon-development program, with Navy as lead service, JSOW replaces five types of the aging air-to-ground weapons in the inventory. With war-proven effectiveness, the JSOW family of precision-guided weapons allows naval aircraft to attack targets at increased standoff distances, greatly increasing aircraft and aircrew survivability. JSOW is useable in adverse weather conditions and gives aircrews the ability to attack multiple targets in a single sortie. The JSOW family uses a common weapon body or "truck" for all variants. The AGM-154A carries BLU-97 combined-effect bomblets for use against area targets. AGM-154C (Unitary) was developed with a penetration warhead (BROACH).

Status

AGM-154A reached IOC in 1999, and the AGM-154C variant achieved IOC in FY 2005. Procurement of JSOW C continues across the FYDP with a total of 3,879 units FY 2006-2013.

Developers

Raytheon; Tucson, Arizona

**AIM-9X Sidewinder Short-Range
Air-to-Air Missile****Description**

The AIM-9X Sidewinder is a joint Navy/Air Force program that provides a major upgrade to the existing AIM-9M missile by integrating a steering focal plane array seeker, an extremely agile airframe, and state-of-the-art signal processors. This enhanced capability results in significantly improved target acquisition, missile kinematics, and improved infrared counter-countermeasures performance. The AIM-9X Pre-Planned Product Improvement (P3I) Program will result in SRM air superiority well into the 21st Century. Coupled with the Joint Helmet-Mounted Cueing System, the Sidewinder's high off-boresight capability revolutionizes employment of these air-to-air missiles. The AIM-9X is planned for the Joint Strike Fighter and integrated on F/A-18A+/C/D Hornet and the F/A-18E/F Super Hornet.

Status

The AIM-9X Program is a post-Milestone C program. Achieving IOC in February 2004, the missile is being produced as part of Lot 5 and is ahead of schedule. AIM-9X BLOCK II is a P3I program that will incorporate a redesigned Advanced Optical Targeting Device (AOTD) to address obsolescence and incorporation of datalink capability. AIM-9X BLOCK II production will begin FY 2009. Planned procurement across the FYDP is 1,232 missiles, in addition to 174 in FY 2007.

Developers

Raytheon; Tucson, Arizona

**AIM-120 Advanced Medium Range
Air-to-Air Missile (AMRAAM)**
Description

AIM-120 AMRAAM is an all-weather, all environment radar guided missile developed by the U.S. Air Force and Navy. The missile is currently deployed on the F/A 18A+/C/D Hornet and the F/A-18E/F Super Hornet, and will be deployed on the EA-18G and Joint Strike Fighter (JSF) aircraft. Entering the fleet in September 1993, AMRAAM has evolved to maintain air superiority through Pre-Planned Product Improvement (P3I) programs. This modernization plans include clipped wings for internal carriage, a propulsion enhancement program, increased warhead lethality, and enhanced electronic counter-countermeasures (ECCM) capabilities through hardware and software upgrades. Most importantly to the warfighter, the missile has improved capabilities against low and high altitude targets in an advancing threat environment.

Status

The AMRAAM is a post-Milestone C program. Deliveries of AIM-120C began reaching the fleet in 1996. The AIM-120C7 missile variant is a product of P3I and is scheduled to achieve IOC in third quarter FY2007. Continued procurement of the AMRAAM, with a P3I contract for the AIM-120D missile, will provide significant network-centric warfare capability, GPS, improved high-off-boresight capability, and missile kinematics. AIM-120D IOC is scheduled for first quarter FY 2010. Planned procurement across the FYDP is 550 missiles, in addition to 150 missiles planned for FY 2007 (BES08 Data).

Developers

Raytheon; Tucson, Arizona

