

**Report to Congress on
Annual Long-Range Plan for Construction of
Naval Vessels for
FY 2007**

Annual Long-Range Plan for Construction of Naval Vessels for FY 2007

I. Reporting Requirement

This report is submitted in accordance with Chapter 9, Section 231 of Title 10 United States Code, which requires the Secretary of Defense to submit with the Defense Budget, an annual long range plan for the construction of Naval vessels that includes the following:

(a) ANNUAL NAVAL VESSEL CONSTRUCTION PLAN AND CERTIFICATION – The Secretary of Defense shall include with the defense budget materials for a fiscal year:

(1) A plan for the construction of combatant and support vessels for the Navy developed in accordance with this section; and

(2) A certification by the Secretary that both the budget for that fiscal year and the future-years defense program provide for funding of the construction of naval vessels at a level that is sufficient for the procurement of the vessels provided for in the plan.

(b) ANNUAL NAVAL VESSEL CONSTRUCTION PLAN – Each such naval vessel construction plan shall contain the following:

(1) A detailed program for the construction of combatant and support vessels for the Navy over the next 30 fiscal years.

(2) A description of the necessary naval vessel force structure to meet the requirements of the national security strategy of the United States or the most recent Quadrennial Defense Review (*QDR*).

(3) The estimated levels of annual funding necessary to carry out the program, together with a discussion of the procurement strategies on which such estimated levels of annual funding are based.

(c) ASSESSMENT WHEN VESSEL CONSTRUCTION BUDGET IS INSUFFICIENT TO MEET APPLICABLE REQUIREMENTS – If the budget for a fiscal year provides for funding of the construction of naval vessels at a level that is not sufficient to sustain the naval vessel force structure specified in the naval vessel construction plan for that fiscal year under subsection (a), the Secretary shall include an assessment that describes and discusses the risks associated with the reduced force structure of naval vessels that will result from funding naval vessel construction at such level.

This report is also submitted in response to House Appropriations Committee (HAC) Report 109-119, which states:

The Committee directs the Navy to submit to the congressional defense committees a ten-year shipbuilding plan, not later than the date of submission of the fiscal year 2007 President's budget. This plan should include total program quantities required, unit and budget costs assumed, and an assessment of technological risks remaining in each new design class. The plan should include new construction vessels funding in Research, Development, Test and Evaluation, Navy, the National Defense Sealift Fund, and the Shipbuilding and Conversion, Navy appropriations.

Submission of the Report

An interim report for FY 2006 was submitted to allow for the incorporation of recommendations from the Long-Range Shipbuilding Study (LRSS) established by the Assistant Secretary of the Navy for Research, Development and Acquisition and the Deputy Chief of Naval Operations (Warfare Requirements & Programs) in the final report. The LRSS focused on the development of an executable and affordable long-range shipbuilding plan addressing build rates, fiscal constraints, the industrial base, and evolving requirements such as the Global War on Terrorism (GWOT). The Chief of Naval Operations (CNO) force structure assessment in 2005 defined the specific future naval battle force composition. Continued future assessment will be factored into the fiscal year 2008 budget submittal. The Navy's FY 2007 report reflects both the Navy's recent planning efforts and the results of the *FY 2006 Quadrennial Defense Review (QDR 06)*. Additionally, this report is supplemented with shipbuilding planning information that fulfills the reporting requirements of House Appropriations Committee Report 109-119.

II. Background

Because of the complex configuration and size of naval vessels, design time can range from two to five years and construction time can range from two to seven years and acquisition costs can be substantial. Naval vessels are procured in relatively low rates and a naval vessel's estimated service life is comparatively long: 25 years for smaller ships and up to 45-50 years for ballistic missile submarines and nuclear aircraft carriers. As a result, 30-40 years are required to make a substantial change in the Navy's force structure. With this in mind, the Navy uses a planning methodology that incorporates three specific phases reflecting the appropriate focus of each time period. These are:

Near-Term: This period includes the current budget year and future years defense plan (FYDP). During this phase, the Navy endeavors to minimize adjustments to the plan in order to balance the mix of ships, unit cost and resources available in the budget, while addressing industrial and vendor base concerns. Given known requirements and quantities the cost estimates are reasonably accurate.

Mid-Term: This period is beyond the FYDP out to approximately 10 to 15 years. Requirements are based on Defense-wide planning scenarios and incorporate intelligence assessments of future threats and operating environments. Cost estimates are representative based on delivering ship classes started in the near-term.

Far-Term: This period begins 15 or more years into the future. Because the requirements are not clear, the number and type of ships are estimated based on Joint and internal Navy analytical efforts. Cost estimates in this period are notional due to uncertainties in requirements, quantities, business conditions/costs and various other uncertainties associated with the shipbuilding industry and the needs of the Navy.

III. Force Structure Requirement

A. Quadrennial Defense Review

The *FY 2006 Quadrennial Defense Review (QDR 06)* continued the effort started with *QDR 01* to make capabilities-based force planning the basis for the transformation of the armed forces. *QDR 06* developed operational guidance for the national defense and national military strategies and shaping the future force to improve capabilities and expand capacity to address four priorities:

- Defeat Terrorist Extremists
- Defending the Homeland in Depth
- Shaping the Choices of Countries at Strategic Crossroads
- Preventing Hostile State and Non-state Actors from Acquiring or Using Weapons of Mass Destruction (WMD)

QDR 06 sets a twenty-year course for the Department of Defense and provides an opportunity to continue to reshape the U.S. armed forces to meet current and emerging security responsibilities. The *QDR 06* construct places new emphasis on the unique operational demands associated with homeland defense and the GWOT, shifts focus from optimizing for conflicts in two particular regions to building a portfolio of capabilities with global reach and serves as a bridge from today's threat-based force to a future capabilities-based transformational force.

B. Force Structure

The Chief of Naval Operations (CNO) has developed a shipbuilding plan that builds the Navy the nation needs - a Navy that is both affordable and meets future national security requirements outlined in *QDR 06* with acceptable risk. Force structure requirements were developed and validated through detailed joint campaign and mission level analysis, optimized through innovative sourcing initiatives (Fleet Response Plan (FRP), Sea Swap, forward posturing) that increase platform operational availability, and balanced with shipbuilding industrial base requirements.

The future Navy will remain sea based, with global speed and persistence provided by forward deployed forces, supplemented by rapidly deployable forces through the FRP. To maximize return on investment, the Navy that fights the GWOT and executes Maritime Security Operations will be complementary to the Navy required to fight and win in any Major Combat Operation (MCO). This capabilities-based, threat-oriented Navy can be disaggregated and distributed world wide to support Combatant Commander GWOT demands. The resulting distributed and netted force, working in conjunction with our joint and maritime partners, will provide both actionable intelligence through persistent, Maritime Domain Awareness, and the ability to take action where and when a threat is identified. The same force can be rapidly aggregated to provide the strength needed to defeat any potential adversary in a MCO. The warships represented by this shipbuilding plan will sustain operations in forward areas longer, be able to respond more quickly to emerging contingencies, and generate more sorties and simultaneous attacks against greater numbers of multiple targets and with greater effect than our current fleet.

Table 1 identifies a force level of about 313 ships. These requirements are indexed to the DoD FY 2020 threat assessments and are compliant with the *QDR 06* and *Strategic Planning Guidance*.

Table 1. Future Naval Force Structure

Type/Class	Required
Aircraft Carriers	11
Surface Combatants	88
Littoral Combat Ships	55
Attack Submarines	48
Cruise Missile Submarines	4
Ballistic Missile Submarines	14
Expeditionary Warfare Ships	31
Combat Logistics Force	30
Maritime Prepositioning Force (Future)	12
Support Vessels	20
Total Naval Force	313

IV. Naval Vessel Construction Plan

The near-term plan shown in Table 2 displays the Department of the Navy (DoN) naval vessel construction plans for FY 2007 and the planned Future Years Defense Plan (FYDP) as reflected in the FY 2007 President's Budget submission.

Table 2. FY 2007-2011 Shipbuilding Budget

Ship Type	Near Term FY 2007 Plan and FYDP									Total		
	FY \$M Qty									FY (07-11)		
	FY07	Qty	FY08	Qty	FY09	Qty	FY10	Qty	FY11	Qty	\$ M	Qty
CVN 21	784		3,482	1	3,858		1,679		541		10,345	1
SSN 774 ¹	2,452	1	2,499	1	3,527	1	3,748	1	3,766	1	15,992	5
DDG 51	356		86								442	
DD(X)	2,568	2	3,055		2,607	1	2,701	1	2,308	1	13,240	5
CG(X)									3,235	1	3,235	1
LPD 17	297		1,501	1							1,799	1
LHAR	1,136	1	1,380				2,004	1	1,728		6,248	2
LCS ²	521	2	948	3	1,764	6	1,774	6	1,825	6	6,832	23
LCS RDT&E,N ³	100		37		7						144	
T-AKE-CLF ⁴	455	1	400	1							855	2
MPF(F)- T-AKE ⁴			36		406	1	424	1	444	1	1,310	3
MPF(F)-LMSR ⁴					134		998	1	1,005	1	2,137	2
MPF(F)- LHA(R) ⁴									1,241	1	1,241	1
MPF(F)- MLP ⁴					1,055	1			880	1	1,935	2
JHSV					198	1	174	1	182	1	554	3
Total New Construction	8,669	7	13,425	7	13,556	11	13,503	12	17,156	14	66,308	51

Notes:

1. Rise in funding in FY 2009 - FY 2011 due to start of Multi-Year Procurement/Economic Order Quantity buy in FY 2009 that includes 2 SSNs/yr in FY 2012 and FY 2013 as supporting advance procurement.
2. Does not include LCS mission modules which are funded in Other Procurement Navy (OPN).
3. Remaining RDT&E,N funding for FY 2005 & FY 2006 LCS funded in RDT&E,N.
4. Funded in National Defense Sealift Fund (NDSF).

Table 3 addresses the House Appropriations Committee (HAC) request for additional information for the ten-year period (FY 2007-2016) to include total new construction vessel quantities required and unit/budget costs assumed. There are no new construction vessels from FY 2007 – 2016 funded in the Research, Development, Test and Evaluation, Navy (RDT&E,N) appropriation.

Table 3. Average Unit Cost of Platforms (FY 2007-2016) (FY07 \$M)

Ship Type	Comp. Realistic SCN Deflation (FY07\$M)		
	Endcost	Qty.	AUC ¹
CVN 21 ²	23,648	3	7,883
CG(X) ²	15,036	6	2,506
DD(X) ²	16,393	7	2,342
LCS	13,749	51	270
SSN 774 ²	37,306	15	2,487
LPD 17	1,504	1	1,504
LHA(R) ²	5,805	2	2,902
T-AKE	842	2	421
MPF(F)- LHA(R)	4,170	2	2,085
MPF(F)- MLP ²	2,353	3	784
MPF(F)- T-AKE ²	1,151	3	384
MPF(F)-LMSR ²	2,705	3	902
HSS ²	917	1	917
T-ATF(X)	174	4	44
JCC(X) ²	3,243	2	1,621
JHSV ²	484	3	161

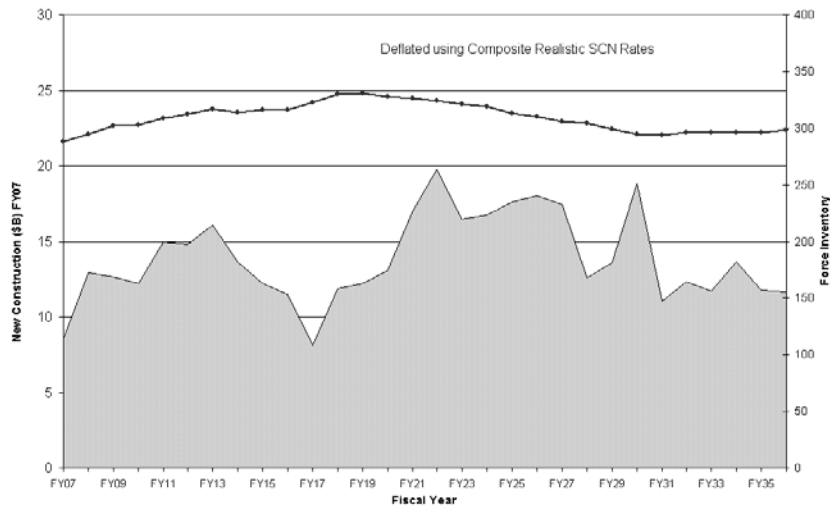
Note:

1. Average Unit Cost (AUC) represents average unit end cost of ships procured in FY 2007-2016 and deflates these costs using composite realistic platform based SCN deflation rates.
2. Excludes Detail Design Cost that is normally associated with lead ships.

VIII. Estimated Levels of Annual Funding Required to Support the Long Range Shipbuilding Program

Figure 1, provides the estimated annual new construction funding required to execute the Long-Range Naval Vessel Construction Plan (Table 4) presented in FY 2007 dollars. Committing these resources to new ship construction is part of the Navy's integrated plan to ensure the Navy will meet future operational mission requirements in support of the *National Military Strategy*. The profile in Figure 1 is based on various procurement strategies the Department is currently pursuing in its FY 2007 budget to include multi-year contracts and split funding of large deck ships.

Figure 1. Annual Funding Required to Support the Long Range Shipbuilding Program (2007-2036)



IX. Assessment of Technological Risks in New Ship Class Design

HAC Report 109-119 directed an assessment of technological risk remaining in each new design for the ten-year period (FY 2007-2016). Below is a discussion of the remaining technological risks per ship class with a description of the risk mitigation efforts and risk management strategies the Navy is employing to avoid delays in ship construction schedules, cost overruns, or shortfalls in critical war fighting capabilities.

CVN 21: During Milestone B in 2004, the CVN 21 program completed an independent Technology Readiness Level Assessment (TRA) validated by the Under Secretary of Defense for Acquisition, Technology and Logistics. The TRA noted satisfactory progress in all key technology areas and supported progression in System Detail Design and Development. There are several new technologies being built into the CVN 21 Class, including Advanced Arresting Gear, Joint Precision Approach and Landing System, Electromagnetic Aircraft Launching System, Advanced Weapons Elevators, a 1,100-ton air conditioning plant, Heavy Underway Replenishment capability, and a Dynamic Armor Protection System. All of the technologies are tracked through the CVN 21 risk management process that provides on-ramp/off-ramp strategies as part of their risk mitigation plans. The program Milestone B review concluded that all technologies were of sufficient maturation to continue.

DD(X): The DD(X) successfully completed an independent Technology Readiness Level Assessment (TRA) validated by the Deputy Under Secretary of Defense (Science and Technology). The TRA noted satisfactory progress in all key technology areas, particularly those associated with the 10 Engineering Development Models (EDMs). Satisfactory technology readiness was demonstrated as part of preparations for the recent Milestone B (authorization for low-rate initial production), and all EDMs will achieve maturity prior to ship installation.

MLP: With respect to the Mobile Landing Platform (MLP), the remaining technological risk concerns at-sea vehicle transfer and skin-to-skin operations. Risk mitigation efforts are being executed and the Capability Development Document (CDD) is under development, as the ship has not entered Preliminary Design. Final CDD is not anticipated to add additional risks.

CG(X): Development of a new advanced radar includes technological and schedule risk. This risk is being mitigated through focused device and component development in projects such as the Digital Array Radar, Wide bandgap/SiC projects, S-band Risk Reduction program, and several international cooperative development projects. Radar development and production efforts for DD(X), Cobra Judy Replacement, and the Aegis Ballistic Missile Defense program should mitigate remaining risks.

X. Naval Vessel Construction Risk

The Department of Defense's approach to risk management considers four areas of risk: *Force Management*, *Future Challenges*, *Operational*, and *Institutional* risk. This framework allows the Department of Defense to consider tradeoffs amongst fundamental objectives and fundamental resource constraints. This same approach was used in the assessment of this shipbuilding plan. Of the four areas, *Future Challenges Risks and Operational Risks* represent the most important measures of risk for the Future Years Defense Plan (FYDP).

Future Challenges Risk is a measure of the ability to invest in new capabilities and develop new operational concepts to dissuade or defeat emerging challenges. The Future Challenges Risk approach also recognizes that desired Navy capabilities and missions may change over time. The minimum ship requirement, as currently understood, to meet these objectives supports the capability-based force level of approximately 313 ships as described earlier. Ships not currently in the battle force that are identified in this FYDP force structure are the T-AKE Auxiliary Dry Cargo ship, destroyers (DD(X)), the Littoral Combat Ships (LCS), and the ships that comprise the Maritime Prepositioning Force (Future), along with the next generation Carrier program, Joint High Speed Vessel (JHSV) next generation cruiser (CG(X)), and High Speed Sealift (HSS) vessels. As a result, Future Challenges Risk today is moderate since the majority of the ship types listed above are either currently under construction or will be variants of programs presently being brought into production.

Operational Risk involves assessing the adequacy of the force to accomplish a wider range of near-term operations from the most demanding warfighting tasks to smaller-scale contingencies. Commitment to the long-range shipbuilding plan is required to allow the Navy to fully implement networked operations and the requirements of *QDR 06*. The Navy is currently below its required force structure, and the mix of ships is different than estimated requirements. However, the existing inventory of Naval ships is more than adequate for the challenges we face today. Our future force requirements are reflective of the continuing evolution of opposing Navies throughout the world and will ensure that the US Navy remains preeminent throughout the period of this report. In the near term, fewer ships, or a different mix of ships than proposed earlier in this report is not untenable. Rather, it merely introduces moderate risk and may challenge the Navy in its ability to fulfill some of its operational requirements, primarily steady-state forward presence demands.

This shipbuilding plan incorporates force structure changes that clearly reflect the wider range of operations and contingencies called for in the new defense strategy. Further risk mitigation will come in the form of a long-term commitment to transform and recapitalize the force to meet emerging threats. Deviation from this plan (e.g., not investing in future capabilities) would have the effect of increasing risk and not adequately preparing for future threats.

XI. Summary

During the last year, the Chief of Naval Operations established a focused effort to clearly define naval force structure requirements. These efforts culminated in a force that reflects the requirements defined by the *FY 2006 Quadrennial Defense Review*. This force structure was developed using a capability-based approach and anticipated threats for the FY 2020 time period. The 2007 Annual Long Range Plan for Construction of Naval Vessels is an investment plan that is both executable and affordable based on balancing several factors including naval force operational capability, affordability and the ability of the shipbuilding industrial base to execute the plan. The Navy continues to analyze operational requirements, ship designs and costs, acquisition plans and tools and industrial base capacity to further improve its shipbuilding plan. Full funding and support for execution of this plan is crucial to transforming the U.S. Navy to a force tuned to the 21st Century and its evolving requirements.