

HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON PROJECTION FORCES TESTIMONY
DD(X) PROGRAM DEVELOPMENT

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Mr. Chairman and distinguished members, thank you for the opportunity to testify before you today on the status of the DD(X) program, the way ahead for this program, the Navy's shipbuilding plans, and our industry.

As you know, I was recently selected as president of the Ship Systems sector of the Northrop Grumman Corporation. Though I am new to shipbuilding, I have over 34 years of technical and program management experience in the defense industry. Much of this experience has been associated with the Navy and Naval programs. I can say that I am familiar with the business challenges that face the shipbuilding industry today.

My most recent experience comes from a key leadership role with Northrop Grumman Integrated Systems, where I led the Airborne Early Warning and Electronic Warfare Systems division. The principle customer for that business unit is the U.S. Navy. Prior to joining Northrop Grumman, I spent several years with Raytheon's Aircraft Integration Systems, and I have experience from the customer side where I began my career in the Naval Air Systems Command and Naval Sea Systems Command.

The Navy has recently done an exceptional job of responding to criticisms about the DD(X) program -- making a clear and accurate case for the platform requirement, the program maturity and schedule, and putting the cost for the ship in appropriate context. You asked me to speak to the program's status, the technology and design maturity, the acquisition strategy, industrial base considerations, and potential cost reduction measures. I will speak to all of these areas during the course of my remarks.

DD(X) is arguably the most transformational surface ship design and ship development program the U.S. Navy has undertaken. For DD(X), the Navy originally chose to have one contract with an overall prime contractor to develop the contract specifications and manage development activities. As prime, Northrop Grumman selected and managed sub-contracts with all other industry partners. As the Navy's prime, we successfully balanced cost, risk, and technical execution.

We are very proud of our team's performance on this program. In close partnership with the Navy, we have been able to manage concurrency and integration challenges. Northrop Grumman has led six integration teams, consisting of more than 100 companies in 35 states comprised of over 4,000 engineers.

We have transformed in several extraordinary ways to meet these new responsibilities. The Navy has, over the last decade or so, shifted many of the key program management responsibilities to our industry and we have made significant investments to respond to this new role. This is a marked change in the character of the relationship between industry and the customer and should be a key consideration in any future acquisition strategies.

We have built a new model for the execution of ship development programs, that is in large part, drawn from experience in the aeronautics industry and formed and led a truly national team that is -- in Phase III of the program -- on schedule. The recently released GAO report on Navy shipbuilding cost growth (Defense Acquisitions, Improved Management Practices Could Help Minimize Cost Growth in Navy Shipbuilding Programs) argues for just such an approach in program development, because it leads to more credible and realistic cost estimates for first-of-a-class ships by initiating to detailed design -- before going into contract competition for production. The acquisition strategy that the Navy is proposing now seeks to meet the goal of a mature design before considering competition. We do not shy from the prospect of competition -- as you are aware we competed for the Phase III award of this program. We assumed the role of

Prime as directed by the Navy for the DD(X) program and committed ourselves to leading the team to success.

As to the program status, I am confident the Navy has provided you great detail on how far we have come and I do not plan to repeat that detailed progress here. The DD(X) team has successfully fulfilled contractual and schedule requirements to date – on cost. We laid out a robust risk reduction plan and risks have been retired as anticipated – a source of great concern for critics only six months ago. Ship designs mature and adjust with time in order to fulfill the needs and requirements set forth by our customer. We, as a team, have consistently met those changing requirements. We have successfully managed and accommodated changes in weight, radar suite, propulsion, electrical distribution, materials and cost, in addition to meeting all technical milestone requirements. All of the Engineering Development Models (EDMs) have passed the Navy's preliminary design reviews, and most have now completed critical design reviews. We are where we planned to be in this phase of the program. The program technologies and design are at the maturity levels we predicted and planned for.

This is perhaps the greatest irony. This revolutionary program has been delivered by the DD(X) national industry team with the Navy, as promised – on schedule, on cost, and to the Navy's expectations. Now that the program has defied the critics who did not believe this transformational program could be delivered on schedule and on cost – it is now most threatened by fiscal rather than requirement and technology readiness concerns. Not because the costs for the program have spiraled out of control, or the failure of the national team concept, but because the Navy simply has less to spend on ship programs.

The committee asked me to address industrial base considerations and potential cost reductions. The American shipbuilding industry knows and appreciates who our customers are. To ensure our men and women in uniform have the best ships available we are doing an enormous amount of investing in improving first-time quality. For Northrop Grumman, that means a huge investment in capital improvements not only by the Northrop Grumman, but also by our host states of Louisiana and Mississippi. These

investments were made with a program of record that required expansion and modernization.

Improvements in facilities, automation, design tools, using best practices and utilizing proven process improvement methodologies such as Lean Enterprise and Six Sigma have yielded great results. We have a responsibility to the American taxpayer and to our shareholders to become more efficient and best-of-class competitors in our business. This is not just rhetoric; we are well along in this journey. We are now seeing new efficiencies in production – reduced build cycles and reduced amount of rework as a result of our efforts.

We are committed to trimming the controllable elements in our overhead. We are moving to reduce the build-span on the ships that we have under construction. We are improving and have accepted a new standard for ourselves for “First time Quality.” Our Lean/Six Sigma processes are now paying very tangible dividends in program cost reductions, expressed in significantly reduced Estimates at Completion (EAC’s) and/or savings that we share with our customer. We have reorganized the supply chain management organization across all eight ship class programs that we are currently developing and we have realigned our management structure to focus our resources on the management of the ship classes under design and construction by Northrop Grumman. And they are aligned with the customer’s organization – Expeditionary Warfare, Surface Combatant and Coast Guard programs. And, we are no longer two shipyards. We have streamlined to one sector and we are sourcing facilities in Louisiana and Mississippi to build ships in either locality and in some cases even the same ship. This gives us the opportunity to manage resources more effectively and help mitigate the large growth and retraction cycles of the past. This will be the way we will build DD(X).

The results for us have been dramatic. For example:

- Improved production processes for new DDGs resulted in a reduction of 500,000 man-hours per ship.

- Construction span-time estimates for the LHD are expected to decrease more than 10 percent, while LPD construction times will shrink more than 20 percent. This will result in millions of dollars of cost reductions, some of which we are already experiencing.
- Tracking to a decreased base-line cost for the LHD-8 program which includes a \$12M cost reduction in engineering and a \$33M cost reduction in construction.
- Sector-wide validated cost reductions in excess of \$60M per year with more projected in the near future.

Unfortunately, there are limits on how much we can achieve in future savings given the low production rates currently projected by our customer. This dramatic decrease in the future rate of construction over the last six months coupled with the lack of ship building predictability and stability will substantially increase costs.

As shipbuilding projections are reduced and moved into the future, the return on capital investments declines. As fewer ships in each program are built, the cost per ship goes up considerably. Additionally, the positive impact of process improvements on a ship-by-ship basis is dramatically reduced.

We have continued to move ahead with business decisions to modernize our facilities and processes, and we are leading our industry in taking this path; however, we are at the point where we must have a reliable long-range shipbuilding blueprint in order for the industry to shape itself responsibly. The complex character of the new ships under construction now demands such an approach or the nation will lose the capacity to design and produce these ships. Our customer does recognize this – while we, on the other hand, understand the budget pressures on the DoD. The members of Congress who have come out in significant numbers to support shipbuilding understand these National Security requirements and are working hard to ensure we maintain an

acceptable level of ship construction to meet the country's requirements. We are grateful for that support.

We are at a strategic crossroads today as we determine the industrial capacity the Nation needs to build the ships it requires to protect its vital interests. In many respects DD(X) has become a lightning rod to best define and resolve these decisions.

The first decade of the 21st century is marked by fiscal challenges which are leading to low rate production of the Navy's capital ships. Low rate production shrinks shipbuilder backlogs and threatens affordability targets. Low rate production also slows the rate of technology insertion. The decision to implement transformational concurrent technology timed for insertion in the first of the DD(X) class, is the best way to ensure fielding credible solutions to future threats. Paying for the nonrecurring costs of development once and using it in other new ship classes, like LHA-R and CVN-21, allows the nation to amortize the investment. Developing a common hull form with all the inherent shipboard capabilities in DDX to become CGX (as we saw in transitioning from the Spruance class to Ticonderoga class cruisers) further returns the initial investment and could provide the stability for planning that is so important for future shipbuilding affordability. The cost of a more gradual approach might save resources in the short term but the cost will be far greater in the longer term. The Navy has argued these points convincingly, stating a less capable DD(X) does not deliver appreciable savings, and a modified DDG-51, with DD(X) technologies, would not satisfy critical requirements and would not be cost effective.

We recently completed an independent analysis examining the overall impact of the effectiveness of our process improvement efforts on the DDG program. One of the findings of this analysis was the significant loss of learning which results from irregular build intervals and the introduction of inexperienced or "green" labor. This analysis demonstrated even more dramatically than we had understood before that the rate at which we build ships is very critical to stability in learning and significantly affects the cost of ships. A steady rate with shorter intervals between start of fabrication promotes

stable workforce and generates a steep learning curve, which significantly reduces production costs. The amount of "green," or inexperienced labor that must be employed is largely driven by our need to lay-off and then build back up as a reaction to changing requirements or acquisition strategies. The analysis clearly supports arguments for a stable shipbuilding plan.

We recognize that the Navy does not exist to keep us in business. However, the decisions we make today will shape our Naval force structure for decades to come. Ships take a long time to design and build. And because the effects of those decisions are not immediately apparent, we can easily slip into a false sense of security until the Navy and the industry find ourselves "in extremis."

We in industry see the effects immediately – in a declining labor force...in a reduced ability to attract capital...in a shrinking vendor industrial base that may not be there in the future when we need it. The highly skilled workforce in our shipyards will have gone off to other jobs... and new workers will not have been trained. The extraordinary intellectual capital – the engineers, designers, scientists -- will have departed for other industries, where their skills are in high demand. Next-generation technologies designed for ships like the DD(X) risk never being matured and taken to sea.

The timeline for shipbuilders to generate new capacity is not a short one. While the fiscal challenges faced by the Department of the Navy are real, the consequences of not building to the requirements it has defined will likely be irreversible in the shipbuilding industry-capacity gone without reconstitution.

A requirement must be defined and a commitment made to build to that requirement so we can responsibly shape our business to that goal. Comparative adjusted cost figures between DDG-51 and DD(X) reveal a better bargain for the nation with DD(X). The real issue at hand is not sticker price, nor schedule challenges – but rather how much the nation is willing to spend for the fleet it requires.

Shipbuilding plans that significantly change every year severely disrupts the American industrial base. This is not just a shipyard problem it is a national industrial base issue. DD(X) is a program that has shrunk from 18-24 ships to now 8-12 in just a year. Shaping a responsible business plan around this level of turbulence is challenging at best. Our investments in capital projects must be guided by a clear business gauge to show a return to our investors. There is a high cost to the Nation for this turbulence – measured in dollar costs and lost capabilities to shape world events, respond to crisis and fight wars. With planning stability we can adjust our investments and right-size the industrial base to meet the nation's expectations.

We have delivered a successfully developed program in DD(X) – by any measure it is worthy of a national commitment. This program is part of a larger picture – the strategy to frame a comprehensive shipbuilding plan. The future of the U.S. Navy and the American shipbuilding industry will be governed by a national determination to build a fleet based on clearly defined force requirements consistently funded by a long-term resourcing plan.

Thank you for allowing me to testify today on behalf of your shipbuilding industry. I would be pleased to answer your questions.