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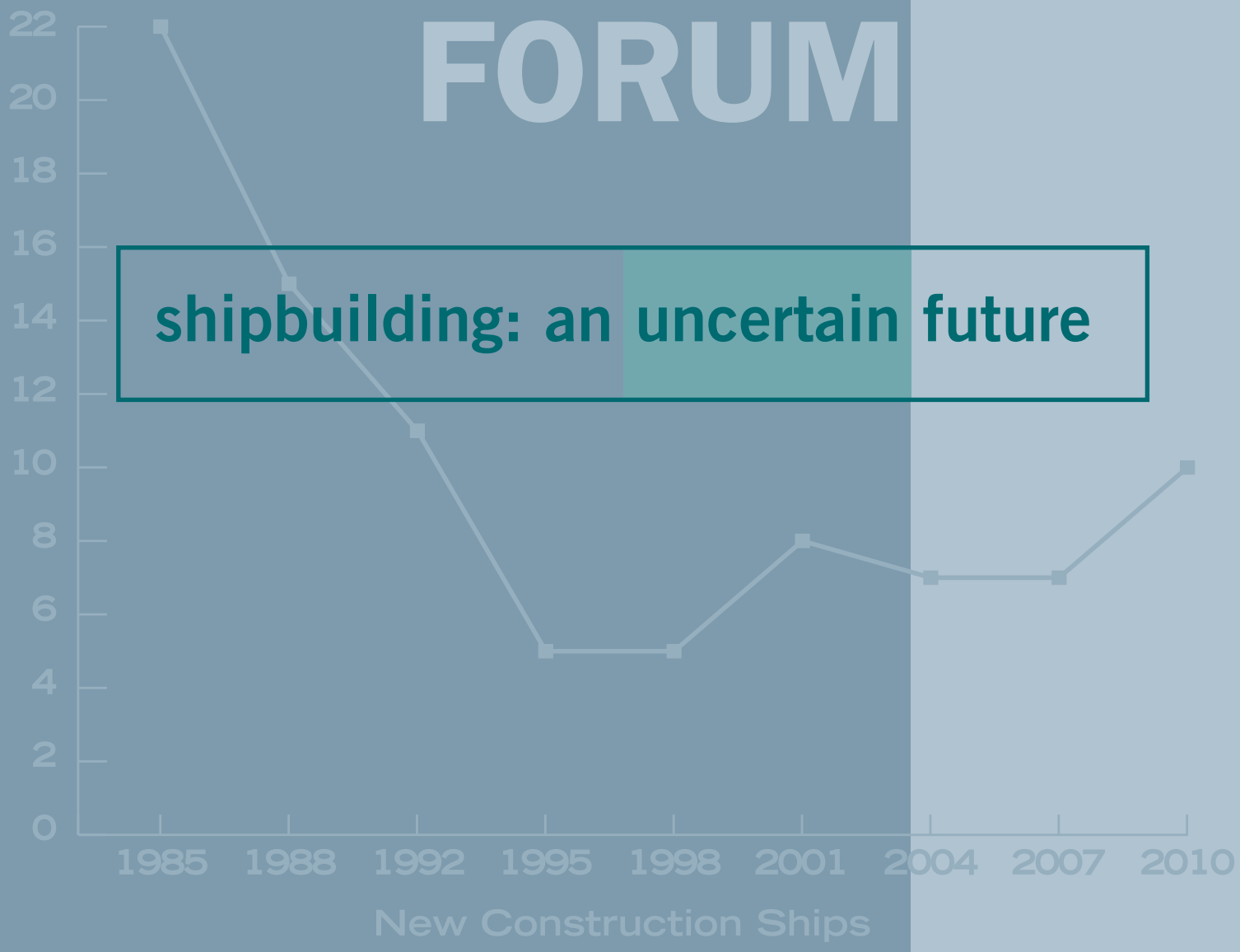
shipbuilding: an uncertain future



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Shipbuilding Strategies for Success

By Sheila M. McNeill, National President

There are few issues in official Washington that attract more heat and less light than the annual release of the Navy's plan for new ship construction. Billions of dollars are at stake as the shipbuilding industry struggles with overcapacity and Congress reconciles defense needs with domestic priorities and deficit reduction. But we have to get it right. Building a powerful and effective Navy and Marine Corps for the future is a central element of our national security strategy.

Shipbuilding is a volatile issue in part because there is no stability in the shipbuilding program. Even in the best of years, the Navy buys a few ships at very high unit cost. Changing the number of ships in the plan has a huge effect on every constituency, including the services, shipyards, unions and our political leadership. Nonetheless, the numbers change frequently along with shifting defense priorities, alterations in total Pentagon spending and evolving political agendas.

Currently, the Navy is in the midst of a transformation that will bring fundamental change to its structure, operations and people. Defense spending seems likely to level off after several years of gain, and members of Congress remain reluctant to commit future Congresses to a long-term course of action. Meanwhile, shipbuilders yearn for some stability year-to-year to guide their investments in infrastructure, materials and skilled labor. These factors help explain why the shipbuilding program has become a lightning rod for confrontation and conflict.

Congress, the Office of Management and Budget (OMB) and the Navy have struggled for years to bring a measure of constancy to naval shipbuilding. Their results are difficult to discern. A major barrier to their success arises each time the Navy buys a large capital ship, such as an aircraft carrier or large-deck amphibious ship. They cost from $3 billion to $11 billion each and are purchased every four to five years, creating sharp spikes in the Navy's budget. Best-laid plans to the contrary, those extraordinary costs collide with limits on top-line defense spending and inevitably lead to cuts in other resources, such as readiness and aircraft. The tradeoffs and budget churn also generate a lot of blowback from groups affected, such as aircraft makers and their congressional advocates, and wreak havoc for managers in the Navy and at the shipbuilding companies.

There are, however, ways to reduce those spikes, mitigate the accompanying tradeoffs and lay the groundwork for less internecine warfare and more efficient operations by government and industry.

First, large capital ships should be purchased on a split-funding basis, with procurement costs spread over two years rather than one. This is not a novel acquisition strategy. Congress and OMB have approved split funding for major carrier overhauls costing about $3 billion each. Also, some of the costs of large capital ships already are paid over several years. For example, the power plant and many of the components and materials for new carriers are purchased up to six years prior to construction at a typical cost of $3 billion during the "advance procurement" period.

Second, large capital ships should be procured heel-to-toe. As a carrier is finishing the second year of a split-funding procurement cycle, the Navy should begin procurement of a large-deck amphibious ship. This would help moderate the budget spikes despite the fact that these two classes of ships are built in separate yards.

Third, the detailed design costs of all lead ships of a class should be funded during advance procurement. Advance funding of these costs — typically $500 million for a destroyer to $1.1 billion for a carrier to cover detailed engineering, production drawings and related tasks — would provide an enormous advantage to industry planners without increasing costs to the taxpayer.

These acquisition practices will help government and industry better plan and program the procurement of Navy ships, but they will do little to increase the size of the fleet or improve the rate of production. That will not happen until the Navy develops and issues a shipbuilding plan for the future that reflects the analyses of innovations in operating procedures and the real world requirements of the post-9/11 military strategy.

The Navy's figure for a nominal fleet of 375 ships was generated prior to 9/11 and without benefit of the lessons learned from Sea Swap, the Fleet Response Plan or other initiatives intended to get more sea days and combat capability out of existing resources. The resultant increases in utility may mean the United States will need fewer ships. However, the oceans are not getting any smaller and threats to our nation abound.

It is incumbent upon the Navy and Marine Corps to quickly complete and release the results of the several analyses under way that were conducted as guideposts to the future. Only then will we know the number, type and capabilities of the ships that will comprise our Navy fleet for the next half-century. This strategy will provide a foundation for broad support of our Navy, Marine Corps and shipbuilding program by the Navy League, the Congress and the American people.

Throughout this tough and tedious process, the Navy League will, as always, serve as the clear and forceful voice of support for our sea services and a strong national defense. ■

Sheila M. McNeill

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SHIPBUILDING: An Uncertain Future

MICHAEL PETTERS is president of Northrop Grumman Newport News. A former Navy submarine officer, Petters joined Newport News in 1987 and has held a variety of posts with the company.

MICHAEL W. TONER is executive vice president of General Dynamics' Marine Systems Group. He joined Electric Boat in 1965 and has held executive posts in operations, innovation and other areas of the company.

A senior analyst for the Congressional Research Service, **RONALD O'ROURKE** is nationally known for his penetrating analyses of naval issues.

SEAPOWER Editor in Chief **RICHARD C. BARNARD** was moderator.

For the nation's major naval shipbuilders, the bad news just keeps coming. In August, a preliminary budget document revealed that the Navy intended to cut the 2006 shipbuilding budget by one-third, deleting two of six ships in the plan that year. In December, the picture turned even darker. Additional documents leaked to the press disclosed the Pentagon's plans for larger reductions through 2011, including cuts to the next-generation destroyer program, Virginia-class submarine and LPD-17 amphibious ship.

The cuts hurt, but many in government and industry are equally concerned about the constant change in a defense sector that relies on the production of a few ships per year at very high unit costs. Each fluctuation has a roller-coaster effect on every interested constituency, including Congress, the sea services, labor unions and industry.

Shifting congressional budget priorities, deficit reduction pressures and overcapacity in the shipyards contribute to the volatility that has become a perennial trait of the Navy's shipbuilding plan. The Navy and taxpayers suffer as each cut in a shipbuilding program drives up the unit costs of ships that remain, while shipbuilders lack the stability that guides their year-to-year investments in infrastructure, materials and skilled labor.

In early January, *Seapower* invited three of the nation's leading shipbuilding experts to participate in a *Seapower* Forum, a discussion of vital defense issues of the day.

BARNARD: ***In a recent* Seapower *interview, Navy Secretary Gordon England said, "I'm concerned about shipyards because we need an industrial base, but … frankly, the industrial base needs to adjust to the Navy and not the other way around." The forecast for shipbuilding over the next few years is bleak. Can industry provide quality naval vessels at reasonable prices in an ever-changing environment with very low build rates?***

PETTERS: If there was a clear, stable picture of what the Navy wants, and what sort of infrastructure needs to be in place to support that, the industry would adapt. But what you've had instead are the annual perturbations. That's a challenge for us. We make investments in ships that take eight years to build, then the ship gets delayed because of the way the budget process works.

Newport News invested $500 million into facilities to build half of the Seawolf-class submarines. There was an expectation there would be 30 or 32 subs built. There were three, and my friend [Michael Toner] built them all. That's what we wrestle with.

TONER: Mike is dead on. I think Secretary England has it right, but it's up to the Navy to establish the stability. What's the plan? Give us a stable plan and then we can make the investments. Industry will do what industry needs to do. But it is a very dif-

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SEAPOWER FORUM PARTICIPANTS, FROM LEFT, RICHARD C. BARNARD, RON O'ROURKE, MICHAEL W. TONER AND MICHAEL PETTERS DISCUSS NAVAL SHIPBUILDING ISSUES.

ficult environment to make investment in, that's for sure. We invested $250 million at Bath Iron Works based on continuing [the DDG-51 guided-missile destroyer program]. That was as stable as we can get right now, as was the 688-class submarine — a very stable program: that's what's necessary for the industry to take costs out.

O'ROURKE: When you get into reduced annual quantities, there is an upward pressure on prices. But there are some steps you can take in that environment to keep prices low. First, make sure that you have your overhead costs under control. Second, use the best new shipbuilding technologies and processes. Third, take advantage of parts commonality between ship classes as much as you can. Fourth, pursue foreign sales where possible to try and improve your economies of scale. A fifth step would be to take the available amount of shipbuilding and concentrate it into a smaller number of yards — a decision for others to make.

Lastly, I don't think it's unreasonable to expect the Navy and DoD at some point to come forward with an agreed-upon consensus plan for the future size and structure of the Navy, and a corresponding shipbuilding plan that supports that structure.

BARNARD: ***Do any of you expect the Navy to come out with a six-year plan that is definitive as to the number and types of each ship that will be built — a plan that will not change? Is that politically feasible, given the environment in which the shipbuilding budget is prepared each year?***

TONER: We're struggling right now with the Navy's language about the plan. It has been not about numbers of different types of ships. It's really been about what kind of capabilities are needed at sea. Industry is having a hard time trying to figure out what that means in terms of number of ships, number of hulls and the kinds of skills we need in the yard to help provide those capabilities. And I think Congress is really struggling with this, as well.

There's a capability in numbers. Today, we can put more bombs on target from fewer platforms than we could 10 years ago. But if you have a target in Iraq and another one thousands of miles away, you can't do that from one platform.

O'ROURKE: In terms of defining capabilities, the Navy right now has some issues to work through, like sea basing or the Navy's role in missile defense. Once you define the basket of capabilities that you want your future Navy to have, you then translate that into a force structure of numbers of ships and aircraft and other things. Those numbers may be expressed as a range and they may change over time as missions and technologies change.

BARNARD: ***These are fast-changing, challenging times. When would you reasonably expect the government to come up with a plan?***

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MICHAEL PETTERS

O'ROURKE: I would hope that one of the things we get out of the QDR [Quadrennial Defense Review] when it's released at the end of this year or early next year would be this agreed-upon plan for the future. The QDR is a process that can attack issues like this and resolve them.

PETTERS: I'm a little concerned that, lacking a plan, this is going to be resolved through the process of sending budgets to Congress. You are going to make policy changes inside the budget without ever having had any full, vetted debate about the policies.

"The goal for the Navy is to find a contracting structure that provides incentives for the shipbuilders to restrain their costs but at the same time reaches a balance of risk versus rewards." — RON O'ROURKE

BARNARD: ***Can Electric Boat and Newport News subsist on one submarine every year and, within that context, is it time for some further consolidation in the industry?***

PETTERS: The teaming agreement that we [Electric Boat and Newport News] put in place has been very successful and certainly we want to move to two subs per year.

BARNARD: *Two per year?*

TONER: We started in '97, and it was going to be two per year by 2000 or 2001; it's been a moving target.

PETTERS: You want to take advantage of the strengths that each yard brings to the process. You do that by moving down the learning curve. And when you have low volumes, you have less opportunity to make it more efficient.

TONER: We delivered [the attack submarine] *Virginia*; we're going to deliver *Texas*. When we get those two tasks done and meld this process together, we will start to take costs out of the Virginia-class submarine.

O'ROURKE: You asked if the two yards can subsist on one submarine per year. But you didn't ask whether they could thrive or whether they are achieving the kind of a scale they prefer.

You could continue into the future to have the two yards subsist, but you'll pay a premium because it's not a very economical way to build submarines.

There are other issues. Newport News is not just a submarine yard, so that answer will also depend, in part, on what other work goes into that yard — carrier construction, carrier overhaul and so on. Electric Boat is not just a submarine construction yard. It also has a large design and engineering staff, and an emerging issue is whether there is enough work to keep that staff active and up to date.

We don't want to get ourselves into the same situation as the British. They ran their submarine design and engineering staff down and encountered problems the next time they tried to build a submarine.

BARNARD: ***The Navy wants to restrain costs, yet it continues to issue cost-plus contracts. Is that counterproductive?***

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MICHAEL W. TONER

O'ROURKE: The goal for the Navy is to find a contracting structure that provides incentives for the shipbuilders to restrain their costs but at the same time reaches a balance of risk versus rewards. You need to make sure that the arrangement does not disadvantage shipbuilding relative to other industry sectors. If you do that, you will send a message that it's not a good sector for business people to invest in.

PETTERS: The implication of the question is that somehow a cost-plus contract is not going to restrain the cost. In fact, you choose that kind of contract because you have risks out there and cost-plus allows you to start moving down the path to retiring those risks. You've chosen that type of agreement as a fundamental way to constrain your costs.

TONER: There has to be risk sharing [between government and industry]. The lead ship should be built in a cost-plus environment. As you get a mature product, we can move it into the fixed-price arena. If you didn't do that, the fixed price for a lead ship would be astronomical because we would bear all the risks. Our prototype goes to sea, and some of them go in harm's way the very first time they go to sea. We don't build one to practice going down the runway.

BARNARD: ***The Navy League has proposed some steps that would, in our view, bring a measure of stability to the shipbuilding program by reducing funding volatility. These include detailed design costs funded during advance procurement of lead ships, split funding for large capital ships and by split funding we mean a 50-50 split for two years, which may be politically feasible in the current environment.***

O'ROURKE: Alternative mechanisms like advance appropriations or split funding can get you around the spiking problem and therefore smooth out the costs. But you should not think of mechanisms like that as something that can turn two ships into three or a six-ship budget into a 10-ship budget. That's magical thinking. And there are presentations that I've seen that can encourage people to engage in magical think-

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RON O'ROURKE

ing because they can show a lot of extra ships being put into a FYDP [Future Years Defense Plan]. But what that doesn't show is that you still have to continue paying for those ships in the years beyond the FYDP. The amount of money you have [in those years beyond the FYDP] will no longer get the number of ships you thought it would.

In terms of the detail design costs and how they are included into the cost of the lead ship, it is interesting to compare that to other areas of defense procurement. As far as I know, we don't take the equivalent of that and load it into the procurement costs of the first aircraft in an aircraft procurement program. If we did, I'd like to know what that airplane would cost.

TONER: All the schemes, incremental funding and so on, I'm not sure they are the panacea that they're laid out to be because there is no stability in the shipbuilding plan. The POMs [program objective memoranda] over the last three or four years have said the Navy is going to build 40, 45 ships [over six years] and we end up with 30 or 35. When you have that instability, incremental funding could be a problem because at the end of the day, you've got to pay for the ships.

PETTERS: The funding mechanisms have to be looked at. There are ways to work through the financing of capital ships and the way we do it today is probably not to our advantage. I think split funding is a possibility. You might be right that two years is all you could hope for, politically.

BARNARD: ***The defense budget is under tremendous pressure. Will the Navy be forced to bypass the procurement of one of its planned ships, such as the DD(X) [future destroyer]?***

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O'ROURKE: Prudent people in the industry or elsewhere should not assume that the funding situation is going to get markedly easier in future years. They should count on it remaining as tight as it is now or maybe even growing somewhat tighter in the future.

The cutback in the DD(X) program that was announced recently is significant not only for the DD(X) itself but potentially for the CG(X) [future cruiser] as well. When this program was first announced, nominally they were looking at building up to 24 DD(X)s and 24 CG(X)s and you could spread the [research and development] costs for that program, which are at least $10 billion, over as many as 48 ships. The DD(X) program is now being planned for one ship per year for five years and maybe one additional ship during a CG(X) gap year. That's six ships at one per year, more or less.

The cutback in the DD(X) program raises the possibility that the average acquisition cost for the entire DD(X)/CG(X) effort may now have increased to the point where it may attract attention and raise questions about the cost effectiveness of the entire effort. That situation is somewhat analogous to where the Seawolf program was in early 1992, just before the previous Bush administration announced that it was terminating procurement of the Seawolf — a decision that ultimately resulted in the Seawolf being limited to three ships. When the submarine community saw that the Seawolf program was in trouble, they began early conceptual work on a new, smaller and less-expensive attack submarine design — today's Virginia class.

The surface community might want to take a good hard look at the situation to avoid getting into an even more difficult situation potentially than the submarine community found itself in the mid-1990s. One option would be to start looking right now at working up an alternative smaller and less-expensive design than the basic DD(X)/CG(X) design.

TONER: If the number of ships in a new program collapses, then the cost of the individual ship is going to be significant. It really gets down to a stable Navy plan … how many and what capabilities, which we don't know.

BARNARD: ***Would it be wise to at least do some preliminary work on smaller, less costly design?***

PETTERS: We have this kind of dilemma on virtually every program that the department puts forward. Is this the right design? Or should we be working on something a little less capable or a little bit smaller, a little bit more affordable. With submarines, there is talk right now of something even smaller than the *Virginia*. But as soon as you start making noises about working on something that's more affordable and less capable, then you start to lose the steam behind the program that you really need to have. That's a big challenge. ■

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